



Open Source Used In Cisco Unified Computing System - Manager 4.3.4

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1.3 openssl 0.9.8g

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/**
* rijndael-alg-fst.c
*
* @version 3.0 (December 2000)
*
* Optimised ANSI C code for the Rijndael cipher (now AES)
*
* @author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>
* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>
* @author Paulo Barreto <paulo.barreto@terra.com.br>

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```

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1.5 pcre 7.8

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1.7 libpcap 1.7.3

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1.9 openssl 1.0.2j

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1.10 libidn 1.33-1

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1.12 cpio 2.11-24.el7

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1.14 geo-ip 1.5.0-11.el7

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1.15 ncurses 5.9-13.20130511.el7

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1.16 pkix-ssh 11.0

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1.17 apr-util 1.6.1

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1.18 openssl 1.0.2k

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1.22 cracklib 2.9.0-11.el7

1.23 bzip2 1.0.8

1.24 dmidcode 3.5

1.24.1 Available under license :

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1.25 cracklib 2.9.0-11.el7

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^L

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To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

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Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!
This package was debianized by Jean Pierre LeJacq
<jplejacq@quoininc.com> on Wed, 25 Feb 1998. Martin Pitt

<martin@piware.de> was the package's maintainer up to version 2.7.19-1. The current maintainer is Jan Dittberner <jandd@debian.org>.

It was downloaded from <http://sourceforge.net/projects/cracklib>

Copyright (c) 1993 Alec Muffett <alecm@crypto.dircon.co.uk>,
Copyright (c) 2005-2009 Nathan Neulinger <nneul@umr.edu>,
Copyright (c) 2008-2009 Jan Dittberner <jan@dittberner.info>

Modifications: Added cronjob, configuration file, and man pages.

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Copyright information:

CrackLib was originally licensed with a variant of the Artistic license. In the interests of wider acceptance and more modern licensing, it was switched with the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed as of 2007-10-01 with the following email from Alec Muffett. Cracklib's license was changed from the GPL to the LGPL after consensus of all previous developers in October 2008, effective with release 2.8.15 released on 2009-11-19. See the email discussion below for both license changes.

EFFECTIVE

OCT 2008, LICENSE IS BEING CHANGED TO LGPL-2.1 (though not reflected in released code until Nov 2009 - slow release cycle...)

Discussion thread from mailing list archive, with approval from everyone actively involved or holding original licensing rights included.

[Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:16

Attachments: Message as HTML

looks like 2.8.11 is out and marked as "GPL-2" ... releasing libraries unde=
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GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists
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Re: [Cracklib-devel] cracklib license

From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:18

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-- Nathan
=20

Nathan Neulinger EMail: nneul@um...

University of Missouri - Rolla Phone: (573) 341-6679

UMR Information Technology Fax: (573) 341-4216

> -----Original Message-----

> From: cracklib-devel-bounces@li...

> [mailto:cracklib-devel-bounces@li...] On Behalf Of

> Mike Frysinger

> Sent: Monday, October 01, 2007 8:15 PM

> To: cracklib-devel@li...

> Subject: [Cracklib-devel] cracklib license

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Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:33

Attachments: Message as HTML

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Re: [Cracklib-devel] cracklib license

From: Neulinger, Nathan <nneul@um...> - 2007-10-02 01:46

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> -----Original Message-----

> From: cracklib-devel-bounces@li...

> [mailto:cracklib-devel-bounces@li...] On Behalf Of

> Mike Frysinger
> Sent: Monday, October 01, 2007 8:33 PM
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> Subject: Re: [Cracklib-devel] cracklib license
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Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2007-10-02 08:57

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I am sympathetic. Guys, what do you reckon?

What I am hearing so far is that LGPL makes sense, since it can be
linked with any code, not just GPL...

-a

Re: [Cracklib-devel] cracklib license

From: Devin Reade <gdr@gn...> - 2007-10-02 15:04

I would

like to see it under LGPL as well. I think it is in everyone's best interests to have as secure systems as possible, and I think tainting it via GPL will just make it less likely that the library gets used, and will not usually cause companies/developers to GPL the dependent code (where it is not already GPL).

I like GPL, I use it when I can, but I don't think that it's the correct license in this situation.

Devin

--

If it's sinful, it's more fun.

Re: [Cracklib-devel] cracklib license

From: Nalin Dahyabhai <nalin@re...> - 2008-01-28 16:32

On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>> Seems like the ideal thing here would be for you and the other distro
>> maintainers to get together with Alec in a conversation and come to a
>> decision as to what licensing scheme y'all want. I haven't really done
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> I am sympathetic. Guys, what do you reckon?

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> What I am hearing so far is that LGPL makes sense, since it can be
> linked with any code, not just GPL...

My apologies for not chiming in in anything resembling a reasonable timeframe.

I'd also suggest the LGPL, for the reason you noted above. Alternately, GPLv2 with the option of using the library under a later version of the GPL would permit applications which were released under version 3 of the GPL to use the library, too, which would be sufficient for the packages which are included in Fedora. FWIW, I'd personally lean toward LGPL.

In any case, I thank you both for working on sorting this out.

Cheers,

Nalin

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-05 21:27

Attachments: Message as HTML

On Monday 28 January 2008, Nalin Dahyabhai wrote:

> On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>>> Seems like the ideal thing here would be for you and the other distro
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> In any case, I thank you both for working on sorting this out.

looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
the change now ?

-mike

Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2008-10-05 23:18

>> In any case, I thank you both for working on sorting this out.

>

> looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
> the change now ?

yes. go for it. thanks++

-a

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-25 22:34

Attachments: Message

as HTML

On Sunday 05 October 2008, Alec Muffett wrote:

> >> In any case, I thank you both for working on sorting this out.

> >

> > looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we

> > make the change now ?

>

> yes. go for it. thanks++

Nathan Neulinger is the only one who can actually make said change ...

-mike

BELOW IS ORIGINAL LICENSING DISCUSSION RE CHANGING TO GPL from Artistic.

CrackLib was originally licensed with a variant of the Artistic license. In the interests of wider acceptance and more modern licensing, it was switched with the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed as of 2007-10-01 with the following email from Alec Muffett.

The below email references nneul@umr.edu address, as that is the address that was used at the time. For any future emails regarding this, please use

nneul@neulinger.org.

From alecm@crypticide.com Mon Oct 1 12:26:03 2007

Received: from umr-exproto2.cc.umr.edu ([131.151.0.192]) by UMR-CMAIL1.umr.edu with Microsoft SMTPSVC(6.0.3790.3959);

Mon, 1 Oct 2007 12:26:03 -0500

Received: from scansrv2.srv.mst.edu ([131.151.1.114]) by umr-exproto2.cc.umr.edu with Microsoft

SMTPSVC(6.0.3790.3959);
Mon, 1 Oct 2007 12:26:02 -0500
Received: (qmail 8022 invoked from network); 1 Oct 2007 16:59:55 -0000
Received: from smtp1.srv.mst.edu (131.151.1.43)
by scanin-ipvs.cc.umn.edu with SMTP; 1 Oct 2007 16:59:55 -0000
Received: from spunkymail-mx8.g.dreamhost.com (mx1.spunky.mail.dreamhost.com [208.97.132.47])
by smtp1.srv.mst.edu (8.13.1/8.13.1) with ESMTP id 191Gxtpr020623
for <nneul@umn.edu>; Mon, 1 Oct 2007 11:59:55 -0500
Received: from rutherford.zen.co.uk (rutherford.zen.co.uk [212.23.3.142])
by spunkymail-mx8.g.dreamhost.com (Postfix) with ESMTP id 2C7734D311
for <nneul@neulinger.org>; Mon, 1 Oct
2007 09:59:50 -0700 (PDT)
Received: from [82.68.43.14] (helo=[192.168.1.3])
by rutherford.zen.co.uk with esmtp (Exim 4.50)
id 1IcOcX-0004Qt-6L
for nneul@neulinger.org; Mon, 01 Oct 2007 16:59:49 +0000
Mime-Version: 1.0 (Apple Message framework v752.2)
In-Reply-To: <1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
References: <1190922867.3457.147.camel@localhost.localdomain>
<EC90713277D2BE41B7110CCD74E235CEF44F38@UMR-CMAIL1.umn.edu>
<1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
Content-Type: text/plain; charset=US-ASCII; delsp=yes; format=flowed
Message-Id: <117A1264-F6DC-4E25-B0DD-56FBFE6E9F@crypticide.com>
Content-Transfer-Encoding: 7bit
From: Alec Muffett <alecm@crypticide.com>
Subject: Re: cracklib license
Date: Mon, 1 Oct 2007 17:59:46 +0100
To: Nathan Neulinger <nneul@neulinger.org>
X-Mailer: Apple Mail (2.752.2)
X-Originating-Rutherford-IP: [82.68.43.14]
Return-Path: alecm@crypticide.com
X-OriginalArrivalTime: 01 Oct 2007 17:26:03.0008 (UTC) FILETIME=[2420C000:01C80450]
Status:
RO
Content-Length: 585
Lines: 21

>
> ----- Forwarded message -----
> From: Neulinger, Nathan <nneul@umn.edu>
> Date: Sep 27, 2007 2:58 PM
> Subject: RE: cracklib license
> To: alecm@crypto.dircon.co.uk
>
> Any chance you could write me a self-contained email stating clearly
> that the license is being changed to GPL, so I could include that
> email
> in the repository and clean up the repository/tarballs? I have all the

> original discussion, but something succinct and self contained
> would be
> ideal.

The license for my code in the Cracklib distribution is henceforth GPL.

Happy now? :-)

-a

EFFECTIVE OCT 2008, LICENSE IS BEING CHANGED TO LGPL-2.1 (though not reflected
in released code until Nov 2009 - slow release cycle...)

Discussion thread from mailing list archive, with approval from everyone actively
involved or holding original licensing rights included.

[Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2007-10-02 01:16

Attachments: Message as HTML

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GPL-2 is not desirable at all ... this is why the LGPL-2.1 exists
=2Dmike

Re: [Cracklib-devel] cracklib license

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Nathan Neulinger EMail: nneul@um...

University of Missouri - Rolla Phone: (573) 341-6679

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> [mailto:cracklib-devel-bounces@li...] On Behalf Of

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>> additional

code, so whatever licensing y'all come up with is fine

>> by me.

>

> I am sympathetic. Guys, what do you reckon?

>

> What I am hearing so far is that LGPL makes sense, since it can be

> linked with any code, not just GPL...

My apologies for not chiming in in anything resembling a reasonable timeframe.

I'd also suggest the LGPL, for the reason you noted above. Alternately, GPLv2 with the option of using the library under a later version of the GPL would permit applications which were released under version 3 of the GPL to use the library, too, which would be sufficient for the packages which are included in Fedora. FWIW, I'd personally lean toward LGPL.

In any case, I thank you both for working on sorting this out.

Cheers,

Nalin

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-05 21:27

Attachments: Message as HTML

On Monday 28 January 2008, Nalin Dahyabhai wrote:

> On Tue, Oct 02, 2007 at 09:57:31AM +0100, Alec Muffett wrote:

>>> Seems like the ideal thing here would be for you and the other distro
>>> maintainers to get together with Alec in a conversation and come to a
>>> decision as to what licensing scheme y'all want. I haven't really done
>>> much other than cleaning up the packaging and patches and a small
>>> bit of

>>> additional code, so whatever licensing y'all come up with is fine
>>> by me.

>>

>> I am sympathetic. Guys, what do you reckon?

>>

>> What I am hearing so far is that LGPL makes sense, since it can be
>> linked with any code, not just GPL...

>

> My apologies for not chiming in in anything resembling a reasonable
> timeframe.

>

> I'd also suggest the LGPL, for the reason you noted above. Alternately,
> GPLv2 with the option of using

the library under a later version of the

> GPL would permit applications which were released under version 3 of the
> GPL to use the library, too, which would be sufficient for the packages
> which are included in Fedora. FWIW, I'd personally lean toward LGPL.

>

> In any case, I thank you both for working on sorting this out.

looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
the change now ?

-mike

Re: [Cracklib-devel] cracklib license

From: Alec Muffett <alecm@cr...> - 2008-10-05 23:18

>> In any case, I thank you both for working on sorting this out.

>

> looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we make
> the change now ?

yes. go for it. thanks++

-a

Re: [Cracklib-devel] cracklib license

From: Mike Frysinger <vapier@ge...> - 2008-10-25 22:34

Attachments: Message as HTML

On Sunday 05 October

2008, Alec Muffett wrote:

> >> In any case, I thank you both for working on sorting this out.

> >

> > looks like everyone is OK with LGPL-2.1 (GNU Lesser license), so can we
> > make the change now ?

>

> yes. go for it. thanks++

Nathan Neulinger is the only one who can actually make said change ...

-mike

BELOW IS ORIGINAL LICENSING DISCUSSION RE CHANGING TO GPL from Artistic.

CrackLib was originally licensed with a variant of the Artistic license. In the interests of wider acceptance and more modern licensing, it was switched with the original author's blessing to GPL v2.

This approval was carried out in email discussions in 2005, and has been reconfirmed as of 2007-10-01 with the following email from Alec Muffett.

The below email references nneul@umr.edu address, as that is the address that was used at the time. For any future emails regarding this, please use nneul@neulinger.org.

From
alecm@crypticide.com Mon Oct 1 12:26:03 2007
Received: from umr-exproto2.cc.umn.edu ([131.151.0.192]) by UMR-CMAIL1.umn.edu with Microsoft
SMTPSVC(6.0.3790.3959);
Mon, 1 Oct 2007 12:26:03 -0500
Received: from scansrv2.srv.mst.edu ([131.151.1.114]) by umr-exproto2.cc.umn.edu with Microsoft
SMTPSVC(6.0.3790.3959);
Mon, 1 Oct 2007 12:26:02 -0500
Received: (qmail 8022 invoked from network); 1 Oct 2007 16:59:55 -0000
Received: from smtp1.srv.mst.edu (131.151.1.43)
by scanin-ipvs.cc.umn.edu with SMTP; 1 Oct 2007 16:59:55 -0000
Received: from spunkymail-mx8.g.dreamhost.com (mx1.spunky.mail.dreamhost.com [208.97.132.47])
by smtp1.srv.mst.edu (8.13.1/8.13.1) with ESMTP id 191Gxtpr020623
for <nneul@umn.edu>; Mon, 1 Oct 2007 11:59:55 -0500
Received: from rutherford.zen.co.uk (rutherford.zen.co.uk [212.23.3.142])
by spunkymail-mx8.g.dreamhost.com (Postfix) with ESMTP id 2C7734D311
for <nneul@neulinger.org>; Mon, 1 Oct 2007 09:59:50 -0700 (PDT)
Received: from
[82.68.43.14] (helo=[192.168.1.3])
by rutherford.zen.co.uk with esmtp (Exim 4.50)
id 1IcOeX-0004Qt-6L
for nneul@neulinger.org; Mon, 01 Oct 2007 16:59:49 +0000
Mime-Version: 1.0 (Apple Message framework v752.2)
In-Reply-To: <1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
References: <1190922867.3457.147.camel@localhost.localdomain>
<EC90713277D2BE41B7110CCD74E235CEF44F38@UMR-CMAIL1.umn.edu>
<1b1b3fd80710010908k11dac0afp1f2dd471059ff9a4@mail.gmail.com>
Content-Type: text/plain; charset=US-ASCII; delsp=yes; format=flowed
Message-Id: <117A1264-F6DC-4E25-B0DD-56FBFE6E9F@crypticide.com>
Content-Transfer-Encoding: 7bit
From: Alec Muffett <alecm@crypticide.com>
Subject: Re: cracklib license
Date: Mon, 1 Oct 2007 17:59:46 +0100
To: Nathan Neulinger <nneul@neulinger.org>
X-Mailer: Apple Mail (2.752.2)
X-Originating-Rutherford-IP: [82.68.43.14]
Return-Path: alecm@crypticide.com
X-OriginalArrivalTime: 01 Oct 2007 17:26:03.0008 (UTC) FILETIME=[2420C000:01C80450]
Status: RO
Content-Length:
585
Lines: 21

>
> ----- Forwarded message -----

> From: Neulinger, Nathan <nneul@umr.edu>
> Date: Sep 27, 2007 2:58 PM
> Subject: RE: cracklib license
> To: alecm@crypto.dircon.co.uk
>
> Any chance you could write me a self-contained email stating clearly
> that the license is being changed to GPL, so I could include that
> email
> in the repository and clean up the repository/tarballs? I have all the
> original discussion, but something succinct and self contained
> would be
> ideal.

The license for my code in the Cracklib distribution is henceforth GPL.

Happy now? :-)

-a

1.26 expat 2.0.0

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1.27 tcl 8.3.0

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1.28 tcl 8.3.3

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1.32 tcl 8.5.14

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1.33 sshpass 1.06

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1.34 netbsd-resolv 2.17-196.el7_4.2

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1.35 lua 5.3.3

1.36 tcl 8.5.9

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```
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```

```
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1.38 centos-release 7-1.1503.el7.centos.2.8

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-*- coding: utf-8 -*-

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Special Recognition

One of the key reasons we got delayed on the CentOS-6 release was lack of suitable build resources, especially when we had to repeatedly build large chunks of code. Norwood S came forward and worked with me to setup a large build machine, then tune the build process and help improve the overall build, test and validate process we were using. This build machine he donated to the project was about 5 times more capable than the entire buildsystem we had. And he did this out of his own pocket, from his

own time, and has since upgraded the machine as well. It's now a 128GB, 48 core machine, with 4 SSD's and 4 sata disks : but the key metric is that it can build from source, the entire CentOS-7 distro in under 22 hrs.

Having this capability was key in our ability to build, test and deliver CentOS-7 as rapidly as we have been able to.

We'd like to dedicate the CentOS-7 Release to Mr Norwood S, of Phoenix, AZ, USA for his continued support for the project.

Contributors:

The Red Hat developers, without whom CentOS would look very different

Akemi Matsuno-Yagi

Alain Reguera Delgado
Alan Bartlett
Andreas Thienemann
Anssi Johansson
Athmane Madjoudj
Bonnie King
Brian Stinson
Carl Trieloff
Christoph Galuschka
Fabian Arrotin
James Moger
Jeff Sheltren
Jim Perrin
Johnny Hughes Jr
Karanbir Singh
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Kay Williams
Manuel Wolfshant
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Michael Scherer
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Ralph Angenendt
Stephen John Smoogen
Trevor Hemsley
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1.39 rsync 2.6.9

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1.40 ipmi-tool 1.8.17

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1.41 net-tools 2.10

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1.42 perl 5.16.3

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The End

abstract: 'Build and install Perl modules'

author:

- 'Ken Williams <kwilliams@cpan.org>'

- "Development questions, bug reports, and patches should be sent to the\nModule-Build mailing list at <module-build@perl.org>."

build_requires:

File::Temp: 0.15

Test::Harness: 3.16

Test::More: 0.49

generated_by: 'Module::Build version 0.3608'

license: gpl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Module-Build

resources:

MailingList: <mailto:module-build@perl.org>

license: <http://dev.perl.org/licenses/>

repository: <http://github.com/dagolden/module-build/>

version: 3

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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```
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```

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Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

```
That's all there is to it!
#!perl
```

```
=head1 NAME
```

```
copyright.t
```

```
=head1 DESCRIPTION
```

Tests that the latest copyright years in the top-level README file and the C<perl -v> output match each other.

If the test fails, update at least one of README and perl.c so that they match reality.

Optionally you can pass the C<--now> option to check they are at the current year. This isn't checked by default, so that it doesn't fail for people working on older releases. It should be run before making a new release.

```
=cut
```

```
use strict;
use Config;
BEGIN { require './test.pl' }

if ( $Config{usecrosscompile} ) {
    skip_all( "Not all files are available during cross-compilation" );
}

my ($opt) = @ARGV;

my $readme_year = readme_year();
my $v_year = v_year();

# Check that both copyright dates are up-to-date, but only if requested, so
# that tests still pass for people intentionally working on older versions:
if ($opt eq '--now')
{
    my $current_year = (gmtime)[5] + 1900;
    is $v_year, $current_year, 'perl -v copyright includes current
year';
    is $readme_year, $current_year, 'README copyright includes current year';
}

# Otherwise simply check that the two copyright dates match each other:
else
{
    is $readme_year, $v_year, 'README and perl -v copyright dates match';
}

done_testing;

sub readme_year
# returns the latest copyright year from the top-level README file
{

    open my $readme, '<', './README' or die "Opening README failed: $!";

    # The copyright message is the first paragraph:
    local $/= "";
    my $copyright_msg = <$readme>;
```

```
my ($year) = $copyright_msg =~ /\.*\b(\d{4,})/s
    or die "Year not found in README copyright message '$copyright_msg'";

$year;
}
```

```
sub v_year
# returns the latest copyright year shown in perl -v
{

my $output = runperl switches => ['-v'];
my ($year) = $output =~ /copyright 1987.*\b(\d{4,})/i
    or die "Copyright statement not found in perl -v output '$output'";

$year;
}
```

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1.43 ipmi-tool 1.8.18

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1.44 gpm 2.1.0

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1.45 cyrus-sasl 2.1.27

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1.46 libconfig 1.7.2

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For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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Upstream-Name: ls-config

Source: <https://github.com/lucas-net-pl/ls-config>

Files: *

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@c

@c %**start of header

@c All text is ignored before the setfilename.

@setfilename LGPL.info

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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When a ``work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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As an exception to the Sections above, you may also combine or link a ``work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

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Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable ``work that uses the Library'', as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

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Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

@end enumerate

For an executable, the required form of the ``work that uses the Library'' must include any data and utility programs needed for reproducing the executable from

it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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@page

@center How to Apply These Terms to Your New Libraries

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<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice
}
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@c @bye

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy

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- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
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@c Local Variables:

@c ispell-local-pdict: "ispell-dict"

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Version 2.1, February 1999

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Any

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```
#ifndef X86_BSD_NAT_H
#define X86_BSD_NAT_H

#include "x86-nat.h"

/* Low level x86 XSAVE info. */
extern size_t x86bsd_xsave_len;

/* A prototype *BSD/x86 target. */

template<typename BaseTarget>
class x86bsd_nat_target
: public x86_nat_target<BaseTarget>
{
    using base_class = x86_nat_target<BaseTarget>;
public:
#ifdef HAVE_PT_GETDBREGS
    void mourn_inferior () override
    {
        x86_cleanup_dregs ();
        base_class::mourn_inferior ();
    }
}

```

```
#endif /* HAVE_PT_GETDBREGS */
```

```
};
```

```
#endif /* x86-bsd-nat.h */
```

```
/* Native-dependent code for modern i386 BSD's.
```

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```
#ifndef I386_BSD_NAT_H
```

```
#define I386_BSD_NAT_H
```

```
/* Helper functions. See definitions. */
```

```
extern void i386bsd_fetch_inferior_registers (struct regcache *regcache,  
                                             int regnum);
```

```
extern void i386bsd_store_inferior_registers  
(struct regcache *regcache,  
     int regnum);
```

```
/* A prototype *BSD/i386 target. */
```

```
template<typename BaseTarget>
```

```
class i386_bsd_nat_target : public x86bsd_nat_target<BaseTarget>
```

```
{
```

```
public:
```

```
void fetch_registers (struct regcache *regcache, int regnum) override  
{ i386bsd_fetch_inferior_registers (regcache, regnum); }
```

```
void store_registers (struct regcache *regcache, int regnum) override  
{ i386bsd_store_inferior_registers (regcache, regnum); }
```

```
};
```

```
#endif /* i386-bsd-nat.h */
```

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```
#ifndef AMD64_BSD_NAT_H
#define AMD64_BSD_NAT_H
```

```
#include "x86-bsd-nat.h"
```

```
/* Helper functions. See definitions. */
```

```
extern void amd64bsd_fetch_inferior_registers (struct regcache *regcache,
                                             int regnum);
```

```
extern
```

```
void amd64bsd_store_inferior_registers (struct regcache *regcache,
                                       int regnum);
```

```
/* A prototype *BSD/AMD64 target. */
```

```
template<typename BaseTarget>
```

```
class amd64_bsd_nat_target : public x86bsd_nat_target<BaseTarget>
```

```
{
```

```
public:
```

```
void fetch_registers (struct regcache *regcache, int regnum) override
{ amd64bsd_fetch_inferior_registers (regcache, regnum); }
```

```
void store_registers (struct regcache *regcache, int regnum) override
{ amd64bsd_store_inferior_registers (regcache, regnum); }
```

```
};
```

```
#endif /* i386-bsd-nat.h */
```

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Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free

library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference

between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an

appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote

it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition,

mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the

Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative

work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under

Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

9. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

10. Each time you redistribute the Library (or any work based on the Library), the recipient automatically receives a license from the original licensor to copy, distribute, link with or modify the Library subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.

11. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Library at all. For example, if a patent license would not permit royalty-free redistribution of the Library by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Library.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply,

and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system;

it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each

version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

14. If you wish to incorporate parts of the Library into other free programs whose distribution conditions are incompatible with these, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

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15. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

16. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

Copyright (C) <year>

<name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Library General Public License for more details.

You should have received a copy of the GNU Library General Public
License along with this library; if not, write to the Free
Software Foundation, Inc., 675 Mass Ave, Cambridge, MA 02139, USA.

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the library, if
necessary. Here is a sample; alter
the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

@ignore

@c Set file name and title for man page.

@setfilename gpl

@settitle GNU General Public License

@c man begin SEEALSO

gfdl(7), fsf-funding(7).

@c man end

@c man begin COPYRIGHT

Copyright @copyright{ } 2007 Free Software Foundation, Inc. @url{http://fsf.org/}

Everyone is permitted to copy and distribute verbatim copies of this
license document, but changing it is not allowed.

@c man end

@end ignore

@node Copying

@c man begin DESCRIPTION

@appendix GNU GENERAL PUBLIC LICENSE

@c The GNU General Public License.

@center Version 3, 29 June 2007

@c This file is intended to be included within another document,

@c hence no sectioning command or @node.

@display

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

@end display

@heading Preamble

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The

licenses for most software and other practical works are designed to take away your freedom to share and change the works. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change all versions of a program---to make sure it remains free software for all its users. We, the Free Software Foundation, use the GNU General Public License for most of our software; it applies also to any other work released this way by its authors. You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights

or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:

(1) assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as

changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary.

To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

@heading TERMS AND CONDITIONS

@enumerate 0

@item Definitions.

``This License" refers to version 3 of the GNU General Public License.

``Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

``The Program" refers to any copyrightable work licensed under this License. Each licensee is addressed as ``you". ``Licensees" and ``recipients" may be individuals or organizations.

To ``modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a ``modified version" of the earlier work or a work ``based on" the earlier work.

A ``covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

@item Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all

the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

@item Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

@item Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological

measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

When you convey a covered work, you waive any legal power to forbid circumvention of technological measures to the extent such circumvention is effected by exercising rights under this License with respect to the covered work, and you disclaim any intention to limit operation or modification of the work as a means of enforcing, against the work's users, your or third parties' legal rights to forbid circumvention of technological measures.

@item Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

@item
Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

@enumerate a

@item

The work must carry prominent notices stating that you modified it, and giving a relevant date.

@item

The work must carry prominent notices stating that it is released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to ``keep intact all notices".

@item

You must license the entire work, as a whole, under this License to

anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

@item

If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

@end enumerate

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

@item Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

@enumerate a

@item

Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

@item

Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used

for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

@item

Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

@item

Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

@item

Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

@end enumerate

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of

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```
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This program comes with ABSOLUTELY NO WARRANTY; for details type @samp{show w}.
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@end smallexample
```

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```
@c man end
```

```
BEGIN {
  FS="\"";
  print "/* ==> Do not modify this file!! " \
  "-*- buffer-read-only: t -*- vi" \
  ":set ro:";
  print " It is created automatically by copying.awk.";
  print " Modify copying.awk instead. <== */";
  print ""
  print "#include \"defs.h\""
  print "#include \"command.h\""
  print "#include \"gdbcmd.h\""
  print ""
  print "static void show_copying_command (const char *, int);"
  print ""
  print "static void show_warranty_command (const char *, int);"
  print ""
  print "static void";
  print "show_copying_command (const char *ignore, int from_tty)";
  print "{";
}
```

```

NR == 1,/^[ ]*15\. Disclaimer of Warranty\.[ ]*$/ {
    if ($0 ~ //)
    {
        printf " printf_filtered (\\"\n\");\n";
    }
    else if ($0 !~ /^[ ]*15\. Disclaimer of Warranty\.[ ]*$/)
    {
        printf " printf_filtered (\\"";
        for (i = 1; i < NF; i++)
        printf "%s\\\"", $i;
        printf "%s\\n\");\n", $NF;
    }
}
/^[ ]*15\. Disclaimer of Warranty\.[ ]*$/ {

    print "}";
    print "";
    print "static void";
    print "show_warranty_command (const char *ignore, int from_tty)";
    print "{";
}
/^[ ]*15\. Disclaimer of Warranty\.[ ]*$/,/^[ ]*END OF TERMS AND CONDITIONS[ ]*$/ {
    if (! ($0 ~ /^[ ]*END OF TERMS AND CONDITIONS[ ]*$/))
    {
        printf " printf_filtered (\\"";
        for (i = 1; i < NF; i++)
        printf "%s\\\"", $i;
        printf "%s\\n\");\n", $NF;
    }
}
END {
    print "}";
    print "";
    print "void"
    print "_initialize_copying (void)";
    print "{";
    print " add_cmd (\\"copying\\", no_set_class, show_copying_command, ";
    print " _(\\"Conditions for redistributing copies of GDB.\\"), ";
    print " &showlist);";
    print " add_cmd (\\"warranty\\", no_set_class, show_warranty_command, ";
    print " _(\\"Various kinds of warranty you do not have.\\"), ";
    print " &showlist);";
    print "";
    print " /* For old-timers, allow \\"info copying\\", etc. */";
    print " add_info (\\"copying\\", show_copying_command, ";

    print " _(\\"Conditions for redistributing copies of GDB.\\"));";
    print " add_info (\\"warranty\\", show_warranty_command, ";

```

```
print " _(\\"Various kinds of warranty you do not have.\");";
print "}";
}
/* BSD Kernel Data Access Library (libkvm) interface.
```

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```
#define _KMEMUSER
#include "defs.h"
#include "cli/cli-cmds.h"
#include "command.h"
#include "frame.h"
#include "regcache.h"
#include "target.h"
#include "process-stratum-target.h"
#include "value.h"
#include "gdbcore.h"
#include
  "inferior.h"      /* for get_exec_file */
#include "gdbthread.h"

#include <fcntl.h>
#include <kvm.h>
#ifdef HAVE_NLIST_H
#include <nlist.h>
#endif
#include <paths.h>
#include "readline/readline.h"
#include <sys/param.h>
#include <sys/proc.h>
#ifdef HAVE_SYS_USER_H
#include <sys/user.h>
#endif
```

```

#include "bsd-kvm.h"

/* Kernel memory device file. */
static const char *bsd_kvm_corefile;

/* Kernel memory interface descriptor. */
static kvm_t *core_kd;

/* Address of process control block. */
static struct pcb *bsd_kvm_paddr;

/* Pointer to architecture-specific function that reconstructs the
   register state from PCB and supplies it to REGCACHE. */
static int (*bsd_kvm_supply_pcb)(struct regcache *regcache, struct pcb *pcb);

/* This is the ptid we use while we're connected to kvm. The kvm
   target currently doesn't export any view of the running processes,
   so this represents the kernel task. */
static ptid_t bsd_kvm_ptid;

/* The libkvm target. */

static
const target_info bsd_kvm_target_info = {
    "kvm",
    N_("Kernel memory interface"),
    N_("Use a kernel virtual memory image as a target.\n\
Optionally specify the filename of a core dump.")
};

class bsd_kvm_target final : public process_stratum_target
{
public:
    bsd_kvm_target () = default;

    const target_info &info () const override
    { return bsd_kvm_target_info; }

    void close () override;

    void fetch_registers (struct regcache *, int) override;
    enum target_xfer_status xfer_partial (enum target_object object,
        const char *annex,
        gdb_byte *readbuf,
        const gdb_byte *writebuf,
        ULONGEST offset, ULONGEST len,
        ULONGEST *xfered_len) override;

```

```

void files_info () override;
bool thread_alive (ptid_t ptid) override;
const char *pid_to_str (ptid_t) override;

bool has_memory () override { return true; }
bool has_stack () override { return true; }
bool has_registers () override { return true; }
};

/* Target ops for libkvm interface. */
static bsd_kvm_target
bsd_kvm_ops;

static void
bsd_kvm_target_open (const char *arg, int from_tty)
{
    char errbuf[_POSIX2_LINE_MAX];
    char *execfile = NULL;
    kvm_t *temp_kd;
    char *filename = NULL;

    target_preopen (from_tty);

    if (arg)
    {
        char *temp;

        filename = tilde_expand (arg);
        if (filename[0] != '/')
        {
            temp = concat (current_directory, "/", filename, (char *)NULL);
            xfree (filename);
            filename = temp;
        }
    }

    execfile = get_exec_file (0);
    temp_kd = kvm_openfiles (execfile, filename, NULL,
        write_files ? O_RDWR : O_RDONLY, errbuf);
    if (temp_kd == NULL)
        error (("s"), errbuf);

    bsd_kvm_corefile = filename;
    unpush_target (&bsd_kvm_ops);
    core_kd = temp_kd;
    push_target (&bsd_kvm_ops);

```

```

add_thread_silent (bsd_kvm_ptid);
inferior_ptid = bsd_kvm_ptid;

target_fetch_registers (get_current_regcache (), -1);

reinit_frame_cache ();
print_stack_frame (get_selected_frame (NULL), 0, SRC_AND_LOC, 1);
}

void
bsd_kvm_target::close ()
{
    if (core_kd)
    {
        if (kvm_close (core_kd) == -1)
            warning (("s"), kvm_geterr(core_kd));
        core_kd = NULL;
    }

    inferior_ptid = null_ptid;
    discard_all_inferiors ();
}

static LONGEST
bsd_kvm_xfer_memory (CORE_ADDR addr, ULONGEST len,
                    gdb_byte *readbuf, const gdb_byte *writebuf)
{
    ssize_t nbytes = len;

    if (readbuf)
        nbytes = kvm_read (core_kd, addr, readbuf, nbytes);
    if (writebuf && nbytes > 0)
        nbytes = kvm_write (core_kd, addr, writebuf, nbytes);
    return nbytes;
}

enum target_xfer_status
bsd_kvm_target::xfer_partial (enum target_object object,
                             const char *annex, gdb_byte *readbuf,
                             const gdb_byte *writebuf,
                             ULONGEST offset, ULONGEST len, ULONGEST *xfered_len)
{
    switch (object)
    {
        {
            case TARGET_OBJECT_MEMORY:
                {
                    LONGEST ret = bsd_kvm_xfer_memory (offset, len, readbuf, writebuf);

```



```

if (ret < 0)
    return TARGET_XFER_E_IO;
else if (ret == 0)
    return TARGET_XFER_EOF;
else
    {
        *xfered_len = (ULONGEST)
ret;
        return TARGET_XFER_OK;
    }
}

default:
    return TARGET_XFER_E_IO;
}

void
bsd_kvm_target::files_info ()
{
    if (bsd_kvm_corefile && strcmp (bsd_kvm_corefile, _PATH_MEM) != 0)
        printf_filtered (_("\tUsing the kernel crash dump %s.\n"),
            bsd_kvm_corefile);
    else
        printf_filtered (_("\tUsing the currently running kernel.\n"));
}

/* Fetch process control block at address PADDR. */

static int
bsd_kvm_fetch_pcb (struct regcache *regcache, struct pcb *paddr)
{
    struct pcb pcb;

    if (kvm_read (core_kd, (unsigned long) paddr, &pcb, sizeof pcb) == -1)
        error ("%s", kvm_geterr (core_kd));

    gdb_assert (bsd_kvm_supply_pcb);
    return bsd_kvm_supply_pcb (regcache, &pcb);
}

void
bsd_kvm_target::fetch_registers (struct regcache *regcache, int regnum)
{
    struct nlist nl[2];

    if (bsd_kvm_paddr)
        {

```

```

    bsd_kvm_fetch_pcb (regcache, bsd_kvm_paddr);
    return;
}

/* On dumping core, BSD kernels store the faulting context (PCB)

in the variable "dumppcb". */
memset (nl, 0, sizeof nl);
nl[0].n_name = "_dumppcb";

if (kvm_nlist (core_kd, nl) == -1)
    error ("%s", kvm_geterr (core_kd));

if (nl[0].n_value != 0)
{
    /* Found dumppcb. If it contains a valid context, return
immediately. */
    if (bsd_kvm_fetch_pcb (regcache, (struct pcb *) nl[0].n_value))
return;
}

/* Traditional BSD kernels have a process proc0 that should always
be present. The address of proc0's PCB is stored in the variable
"proc0paddr". */

memset (nl, 0, sizeof nl);
nl[0].n_name = "_proc0paddr";

if (kvm_nlist (core_kd, nl) == -1)
    error ("%s", kvm_geterr (core_kd));

if (nl[0].n_value != 0)
{
    struct pcb *paddr;

    /* Found proc0paddr. */
    if (kvm_read (core_kd, nl[0].n_value, &paddr, sizeof paddr) == -1)
error ("%s", kvm_geterr (core_kd));

    bsd_kvm_fetch_pcb (regcache, paddr);
    return;
}

#ifdef HAVE_STRUCT_THREAD_TD_PCB
/* In FreeBSD kernels
for 5.0-RELEASE and later, the PCB no longer
lives in `struct proc' but in `struct thread'. The `struct
thread' for the initial thread for proc0 can be found in the

```

```

variable "thread0". */

memset (nl, 0, sizeof nl);
nl[0].n_name = "_thread0";

if (kvm_nlist (core_kd, nl) == -1)
    error ("%s", kvm_geterr (core_kd));

if (nl[0].n_value != 0)
{
    struct pcb *paddr;

    /* Found thread0. */
    nl[0].n_value += offsetof (struct thread, td_pcb);
    if (kvm_read (core_kd, nl[0].n_value, &paddr, sizeof paddr) == -1)
error ("%s", kvm_geterr (core_kd));

    bsd_kvm_fetch_pcb (regcache, paddr);
    return;
}
#endif

/* i18n: PCB == "Process Control Block". */
error (_("Cannot find a valid PCB"));
}

/* Kernel memory interface commands. */
struct cmd_list_element *bsd_kvm_cmdlist;

static void
bsd_kvm_cmd (const char *arg, int fromtty)
{
    /* ??? Should this become an alias for "target kvm"? */
}

#ifdef HAVE_STRUCT_THREAD_TD_PCB

static
void
bsd_kvm_proc_cmd (const char *arg, int fromtty)
{
    CORE_ADDR addr;

    if (arg == NULL)
        error_no_arg (_("proc address"));

    if (core_kd == NULL)

```

```

    error (_("No kernel memory image.));

    addr = parse_and_eval_address (arg);
#ifdef HAVE_STRUCT_LWP
    addr += offsetof (struct lwp, l_addr);
#else
    addr += offsetof (struct proc, p_addr);
#endif

    if (kvm_read (core_kd, addr, &bsd_kvm_paddr, sizeof bsd_kvm_paddr) == -1)
        error (("s"), kvm_geterr (core_kd));

    target_fetch_registers (get_current_regcache (), -1);

    reinit_frame_cache ();
    print_stack_frame (get_selected_frame (NULL), 0, SRC_AND_LOC, 1);
}

#endif

static void
bsd_kvm_pcb_cmd (const char *arg, int fromtty)
{
    if (arg == NULL)
        /* i18n: PCB == "Process Control Block". */
        error_no_arg (_("pcb address"));

    if (core_kd == NULL)
        error (_("No kernel memory image.));

    bsd_kvm_paddr = (struct pcb *) (u_long) parse_and_eval_address (arg);

    target_fetch_registers (get_current_regcache (),
        -1);

    reinit_frame_cache ();
    print_stack_frame (get_selected_frame (NULL), 0, SRC_AND_LOC, 1);
}

bool
bsd_kvm_target::thread_alive (ptid_t ptid)
{
    return true;
}

const char *
bsd_kvm_target::pid_to_str (ptid_t ptid)
{

```

```

static char buf[64];
xsnprintf (buf, sizeof buf, "<kvm>");
return buf;
}

/* Add the libkvm interface to the list of all possible targets and
register CUPPLY_PCB as the architecture-specific process control
block interpreter. */

void
bsd_kvm_add_target (int (*supply_pcb)(struct regcache *, struct pcb *))
{
gdb_assert (bsd_kvm_supply_pcb == NULL);
bsd_kvm_supply_pcb = supply_pcb;

add_target (bsd_kvm_target_info, bsd_kvm_target_open);

add_prefix_cmd ("kvm", class_obscure, bsd_kvm_cmd, _("\\
Generic command for manipulating the kernel memory interface."),
&bsd_kvm_cmdlist, "kvm ", 0, &cmdlist);

#ifdef HAVE_STRUCT_THREAD_TD_PCB
add_cmd ("proc", class_obscure, bsd_kvm_proc_cmd,
_("Set current context from proc address"), &bsd_kvm_cmdlist);
#endif
add_cmd ("pcb", class_obscure, bsd_kvm_pcb_cmd,
/* i18n: PCB == "Process Control Block". */
_("Set current context from pcb address"), &bsd_kvm_cmdlist);

/* Some notes on the ptid usage on this target.

The pid field represents the kvm inferior instance. Currently,
we don't support multiple kvm inferiors, but we start at 1
anyway. The lwp field is set to != 0, in case the core wants to
refer to the whole kvm inferior with ptid(1,0,0).

If kvm is made to export running processes as gdb threads,
the following form can be used:
ptid (1, 1, 0) -> kvm inferior 1, in kernel
ptid (1, 1, 1) -> kvm inferior 1, process 1
ptid (1, 1, 2) -> kvm inferior 1, process 2
ptid (1, 1, n) -> kvm inferior 1, process n */

bsd_kvm_ptid = ptid_t (1, 1, 0);
}
#!/usr/bin/env python

# Copyright (C) 2011-2019 Free Software Foundation, Inc.

```

```

#
# This file is part of GDB.
#
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```

```

"""copyright.py

```

This script updates the list of years in the copyright notices in most files maintained by the GDB project.

Usage: cd src/gdb && python copyright.py

Always review the output of this script before committing it!

A useful command to review

the output is:

```

% filterdiff -x \*.c -x \*.cc -x \*.h -x \*.exp updates.diff

```

This removes the bulk of the changes which are most likely to be correct.

```

"""

```

```

import datetime
import os
import os.path
import subprocess

```

```

def get_update_list():
    """Return the list of files to update.

```

Assumes that the current working directory when called is the root of the GDB source tree (NOT the gdb/ subdirectory!). The names of the files are relative to that root directory.

```

"""

```

```

result = []
for gdb_dir in ('gdb', 'sim', 'include/gdb'):
    for root, dirs, files in os.walk(gdb_dir, topdown=True):
        for dirname in dirs:
            reldirname = "%s/%s" % (root, dirname)

```

```

    if (dirname in EXCLUDE_ALL_LIST
        or reldirname in EXCLUDE_LIST
        or reldirname in NOT_FSF_LIST
        or reldirname in BY_HAND):
        # Prune this directory from our search list.
        dirs.remove(dirname)
for filename in files:
    relpath = "%s/%s" % (root, filename)
    if (filename in EXCLUDE_ALL_LIST
        or relpath in EXCLUDE_LIST
        or relpath in NOT_FSF_LIST
        or relpath in BY_HAND):
        # Ignore this file.
        pass
    else:
        result.append(relpath)
return result

def update_files(update_list):
    """Update the copyright header of the files in the given list.

    We use gnulib's update-copyright script for that.
    """
    # We want to use year intervals in the copyright notices, and
    # all years should be collapsed to one single year interval,
    # even if there are "holes" in the list of years found in the
    # original copyright notice (OK'ed by the FSF, case [gnu.org #719834]).
    os.environ['UPDATE_COPYRIGHT_USE_INTERVALS'] = '2'

    # Perform the update, and save the output in a string.
    update_cmd
    = ['bash', 'gdb/gnulib/import/extra/update-copyright']
    update_cmd += update_list

    p = subprocess.Popen(update_cmd, stdout=subprocess.PIPE,
                          stderr=subprocess.STDOUT)
    update_out = p.communicate()[0]

    # Process the output. Typically, a lot of files do not have
    # a copyright notice :-(. The update-copyright script prints
    # a well defined warning when it did not find the copyright notice.
    # For each of those, do a sanity check and see if they may in fact
    # have one. For the files that are found not to have one, we filter
    # the line out from the output, since there is nothing more to do,
    # short of looking at each file and seeing which notice is appropriate.
    # Too much work! (~4,000 files listed as of 2012-01-03).
    update_out = update_out.splitlines()

```

```

warning_string = ': warning: copyright statement not found'
warning_len = len(warning_string)

for line in update_out:
    if line.endswith('\n'):

        line = line[:-1]
        if line.endswith(warning_string):
            filename = line[:-warning_len]
            if may_have_copyright_notice(filename):
                print line
        else:
            # Unrecognized file format. !?!
            print "*** " + line

def may_have_copyright_notice(filename):
    """Check that the given file does not seem to have a copyright notice.

    The filename is relative to the root directory.
    This function assumes that the current working directory is that root
    directory.

    The algorithm is fairly crude, meaning that it might return
    some false positives. I do not think it will return any false
    negatives... We might improve this function to handle more
    complex cases later...
    """
    # For now, it may have a copyright notice if we find the word
    # "Copyright" at the (reasonable) start of the given file, say
    # 50 lines...
    MAX_LINES = 50

    fd = open(filename)

    lineno = 1
    for line in fd:
        if 'Copyright' in line:
            return True
        lineno += 1
    if lineno > 50:
        return False
    return False

def main ():
    """The main subprogram."""
    if not os.path.isfile("gnulib/import/extra/update-copyright"):

```



```

    print "Error: This script must be called from the gdb directory."
root_dir = os.path.dirname(os.getcwd())
os.chdir(root_dir)

update_list = get_update_list()
update_files (update_list)

# Remind the user that some files need to be updated by HAND...

if MULTIPLE_COPYRIGHT_HEADERS:
    print
    print("\033[31m"
          "REMINDER: Multiple copyright headers must be updated by hand:"
          "\033[0m")
    for filename in MULTIPLE_COPYRIGHT_HEADERS:
        print " ", filename

if BY_HAND:
    print
    print "\033[31mREMINDER: The following files must be updated by hand." \
          "\033[0m"
    for filename in BY_HAND:
        print " ", filename

#####
#
#
Some constants, placed at the end because they take up a lot of room.
# The actual value of these constants is not significant to the understanding
# of the script.
#
#####

# Files which should not be modified, either because they are
# generated, non-FSF, or otherwise special (e.g. license text,
# or test cases which must be sensitive to line numbering).
#
# Filenames are relative to the root directory.
EXCLUDE_LIST = (
    'gdb/nat/glibc_thread_db.h',
    'gdb/CONTRIBUTE',
    'gdb/gnulib/import'
)

# Files which should not be modified, either because they are
# generated, non-FSF, or otherwise special (e.g. license text,
# or test cases which must be sensitive to line numbering).
#

```

```
# Matches any file or directory name anywhere. Use with caution.
# This is mostly for files that can be found in multiple directories.
# Eg: We want all
files named COPYING to be left untouched.
```

```
EXCLUDE_ALL_LIST = (
    "COPYING", "COPYING.LIB", "CVS", "configure", "copying.c",
    "fdl.texi", "gpl.texi", "aclocal.m4",
)
```

```
# The list of files to update by hand.
```

```
BY_HAND = (
    # Nothing at the moment :-).
)
```

```
# Files containing multiple copyright headers. This script is only
# fixing the first one it finds, so we need to finish the update
# by hand.
```

```
MULTIPLE_COPYRIGHT_HEADERS = (
    "gdb/doc/gdb.texinfo",
    "gdb/doc/refcard.tex",
    "gdb/gdbarch.sh",
)
```

```
# The list of file which have a copyright, but not head by the FSF.
```

```
# Filenames are relative to the root directory.
```

```
NOT_FSF_LIST = (
    "gdb/exc_request.defs",
    "gdb/gdbtk",
    "gdb/testsuite/gdb.gdbtk/",
    "sim/arm/armemu.h", "sim/arm/armos.c", "sim/arm/gdbhost.c",
    "sim/arm/dbg_hif.h", "sim/arm/dbg_conf.h", "sim/arm/communicate.h",
    "sim/arm/armos.h", "sim/arm/armcopro.c", "sim/arm/armemu.c",
    "sim/arm/kid.c", "sim/arm/thumbemu.c", "sim/arm/armdefs.h",
    "sim/arm/armopts.h",
    "sim/arm/dbg_cp.h", "sim/arm/dbg_rdi.h",
    "sim/arm/parent.c", "sim/arm/armsupp.c", "sim/arm/armrdi.c",
    "sim/arm/bag.c", "sim/arm/armvirt.c", "sim/arm/main.c", "sim/arm/bag.h",
    "sim/arm/communicate.c", "sim/arm/gdbhost.h", "sim/arm/armfpe.h",
    "sim/arm/arminit.c",
    "sim/common/cgen-fpu.c", "sim/common/cgen-fpu.h",
    "sim/common/cgen-accftp.c",
    "sim/mips/m16run.c", "sim/mips/sim-main.c",
    "sim/moxie/moxie-gdb.dts",
    # Not a single file in sim/ppc/ appears to be copyright FSF :-(.
    "sim/ppc/filter.h", "sim/ppc/gen-support.h", "sim/ppc/ld-insn.h",
    "sim/ppc/hw_sem.c", "sim/ppc/hw_disk.c", "sim/ppc/idecode_branch.h",
    "sim/ppc/sim-endian.h", "sim/ppc/table.c", "sim/ppc/hw_core.c",
```

```

"sim/ppc/gen-support.c", "sim/ppc/gen-semantics.h", "sim/ppc/cpu.h",
"sim/ppc/sim_callbacks.h", "sim/ppc/RUN", "sim/ppc/Makefile.in",
"sim/ppc/emul_chirp.c", "sim/ppc/hw_nvram.c", "sim/ppc/dc-test.01",
"sim/ppc/hw_phb.c", "sim/ppc/hw_eeprom.c", "sim/ppc/bits.h",
"sim/ppc/hw_vm.c", "sim/ppc/cap.h", "sim/ppc/os_emul.h",
"sim/ppc/options.h", "sim/ppc/gen-idecode.c", "sim/ppc/filter.c",
"sim/ppc/corefile-n.h", "sim/ppc/std-config.h", "sim/ppc/ld-decode.h",
"sim/ppc/filter_filename.h", "sim/ppc/hw_shm.c",
"sim/ppc/pk_disklabel.c", "sim/ppc/dc-simple", "sim/ppc/misc.h",
"sim/ppc/device_table.h", "sim/ppc/ld-insn.c", "sim/ppc/inline.c",
"sim/ppc/emul_bugapi.h", "sim/ppc/hw_cpu.h", "sim/ppc/debug.h",
"sim/ppc/hw_ide.c", "sim/ppc/debug.c", "sim/ppc/gen-itable.h",
"sim/ppc/interrupts.c", "sim/ppc/hw_glue.c", "sim/ppc/emul_unix.c",
"sim/ppc/sim_calls.c", "sim/ppc/dc-complex", "sim/ppc/ld-cache.c",
"sim/ppc/registers.h", "sim/ppc/dc-test.02", "sim/ppc/options.c",
"sim/ppc/igen.h", "sim/ppc/registers.c", "sim/ppc/device.h",
"sim/ppc/emul_chirp.h", "sim/ppc/hw_register.c", "sim/ppc/hw_init.c",
"sim/ppc/sim-endian-n.h", "sim/ppc/filter_filename.c",
"sim/ppc/bits.c", "sim/ppc/idecode_fields.h",
"sim/ppc/hw_memory.c",
"sim/ppc/misc.c", "sim/ppc/double.c", "sim/ppc/psim.h",
"sim/ppc/hw_trace.c", "sim/ppc/emul_netbsd.h", "sim/ppc/psim.c",
"sim/ppc/ppc-instructions", "sim/ppc/tree.h", "sim/ppc/README",
"sim/ppc/gen-icache.h", "sim/ppc/gen-model.h", "sim/ppc/ld-cache.h",
"sim/ppc/mon.c", "sim/ppc/corefile.h", "sim/ppc/vm.c",
"sim/ppc/INSTALL", "sim/ppc/gen-model.c", "sim/ppc/hw_cpu.c",
"sim/ppc/corefile.c", "sim/ppc/hw_opic.c", "sim/ppc/gen-icache.c",
"sim/ppc/events.h", "sim/ppc/os_emul.c", "sim/ppc/emul_generic.c",
"sim/ppc/main.c", "sim/ppc/hw_com.c", "sim/ppc/gen-semantics.c",
"sim/ppc/emul_bugapi.c", "sim/ppc/device.c", "sim/ppc/emul_generic.h",
"sim/ppc/tree.c", "sim/ppc/mon.h", "sim/ppc/interrupts.h",
"sim/ppc/cap.c", "sim/ppc/cpu.c", "sim/ppc/hw_phb.h",
"sim/ppc/device_table.c", "sim/ppc/lf.c", "sim/ppc/lf.c",
"sim/ppc/dc-stupid", "sim/ppc/hw_pal.c", "sim/ppc/ppc-spr-table",
"sim/ppc/emul_unix.h", "sim/ppc/words.h",
"sim/ppc/basics.h",
"sim/ppc/hw_htab.c", "sim/ppc/lf.h", "sim/ppc/ld-decode.c",
"sim/ppc/sim-endian.c", "sim/ppc/gen-itable.c",
"sim/ppc/idecode_expression.h", "sim/ppc/table.h", "sim/ppc/dgen.c",
"sim/ppc/events.c", "sim/ppc/gen-idecode.h", "sim/ppc/emul_netbsd.c",
"sim/ppc/igen.c", "sim/ppc/vm_n.h", "sim/ppc/vm.h",
"sim/ppc/hw_iobus.c", "sim/ppc/inline.h",
"sim/testsuite/sim/bfin/s21.s", "sim/testsuite/sim/mips/mips32-dsp2.s",
)

```

```

if __name__ == "__main__":
    main()

```

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Version 2, June 1991

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[This is the first released version of the library GPL. It is
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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever

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b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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```
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Ty Coon, President of Vice

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The

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d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

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Aleksey Gurtovoy (agurtovoy@meta-comm.com)

Andrei Alexandrescu (andrewalex - at - hotmail.com) (See Boost list message of August 12, 2004 11:06:58 AM EST)

Andrew Lumsdaine ()

Anthony Williams (anthony -at- justsoftwaresolutions.co.uk)

Beman Dawes (bdawes@acm.org)

Brad King (brad.king -at- kitware.com) (See Boost list message of Wed, 21 Jul 2004 11:15:46 -0400)

Brian Osman (osman -at- vvisions.com) (See CVS log)

Bruce Barr (schmoost -at- yahoo.com) (See Boost list of Mon, 16 Aug 2004 15:06:43 -0500)

Bruno da Silva de Oliveira (bruno - at - esss.com.br)

Christain Engstrom (christian.engstrom -at- glindra.org) (See Boost list message of Mon, 30 Aug 2004 14:31:49 +0200)

Cromwell D Enage (sponage -at- yahoo.com) (See Boost list message of August 12, 2004 11:49:13 AM EST)

Dan Gohman (djk

-at- cray.com) (See Boost list message of Sat, 21 Aug 2004 10:54:59 +0100)

Dan Nuffer (dan -at- nuffer.name)

Daniel Frey (d.frey -at- gmx.de, daniel.frey -at- aixigo.de)

Daniel Nuffer (dan -at- nuffer.name)

Darin Adler (darin -at- bentspoon.com) (Email to Andreas Huber, see change log)

Daryle Walker (darylew - at - hotmail.com)

Dave Abrahams (dave@boost-consulting.com)

Dave Moore (dmoore -at- viefinancial.com) (See Boost list message of 18 Dec 2003 15:35:50 -0500)

David Abrahams (dave@boost-consulting.com)

Dietmar Kuehl (dietmar_kuehl -at- yahoo.com) (Email to Andreas Huber, see change log)

Douglas Gregor (gregod -at- cs.rpi.edu, dgregor -at- cs.indiana.edu, doug.gregor -at- gmail.com)

Dr John Maddock (john - at - johnmaddock.co.uk)

Edward D. Brey (brey -at- ductape.net) (Email to Andreas Huber, see change log)

Eric Ford (un5o6n902 -at- sneakemail.com) (See Boost list message of Sun, 15 Aug 2004 10:29:13 +0100)

Eric Friedman (ebf@users.sourceforge.net)

Eric Niebler (eric@boost-consulting.com)

Fernando

Cacciola (fernando_cacciola@ciudad.com.ar)

Fernando Luis Cacciola Carballal (fernando_cacciola@ciudad.com.ar)

Francois Faure (Francois.Faure -at- imag.fr) (See CVS log)

Gary Powell (powellg - at - amazon.com) (See Boost list message of 10 Feb 2004 14:22:46 -0800)

Gennadiy Rozental (rogeeff -at- mail.com) (Email to Andreas Huber, see change log)
Gottfried Ganssaue (Gottfried.Ganssaue -at- HAUFE.DE) (See Boost List message of Mon, 16 Aug 2004 10:09:19 +0200)
Gottfried Ganaue (Gottfried.Ganssaue -at- HAUFE.DE) (Alternative spelling of Gottfried Ganssaue)
Greg Colvin (gregory.colvin -at- oracle.com) (See Boost list message of Sat, 14 Aug 2004 10:57:00 +0100)
Gregory Colvin (gregory.colvin -at- oracle.com) (See Boost list message of Sat, 14 Aug 2004 10:57:00 +0100)
Gunter Winkler (gunter.winkler -at- unibw-muenchen.de) (See Boost List message of Mon, 16 Aug 2004 10:24:17 +0200)
Hartmut Kaiser (hartmut.kaiser -at- gmail.com)
Herve Bronnimann (hbr -at- poly.edu)
Herv
Brnnimann (hbr -at- poly.edu)
Housemarque Oy (Ilari Kuittinen ilari.kuittinen -at- housemarque.fi)
Howard Hinnant (hinnant -at- twcnv.rr.com) (See Boost list message of July 25, 2004 3:44:49 PM EST)
Hubert Holin (hubert_holin -at- users.sourceforge.net)
Indiana University ()
Itay Maman (imaman -at- users.sourceforge.net)
Jaakko Jrv (jajarvi -at- osl.iu.edu)
Jaap Suter (j.suter -at- student.utwente.nl) (See Boost list message of Thu, 16 Sep 2004 09:32:43 -0700)
Jeff Garland (jeff - at - crystalclearsoftware.com) (see Boost list post of July 25, 2004 19:31:09 -0700)
Jens Maurer (Jens.Maurer@gmx.net)
Jeremy G Siek (jsiek@osl.iu.edu)
Jeremy Siek (jsiek@osl.iu.edu)
Joel de Guzman (joel -at- boost-consulting.com) (See Boost list message of July 25, 2004 8:32:00 PM EST)
John Bandela (jbandela-at-ufl.edu)
John Maddock (john - at - johnmaddock.co.uk)
John R Bandela (jbandela-at-ufl.edu)
Jonathan Turkanis (turkanis -at- coderage dot com)
Juergen Hunold (hunold -at- ive.uni-hannover.de) (See Boost List Message of Fri, 13 Aug 2004 19:39:55 +0200)
Kevlin Henney (kevin -at- curbralan.com) (See Boost list message of Wed, 15 Sep 2004 18:15:17 +0200)
Kresimir Fresl (fresl -at- master.grad.hr) (See Boost List message of August 16, 2004 8:23:35 AM EST)
Lars Gullik Bjnnes (larsbj -at- lyx.org) (See Boost list message of Tue, 17 Aug 2004 15:49:02 +0100)
Lie-Quan Lee (liequan - at - slac.stanford.edu, llee - at - cs.indiana.edu)
Maarten Keijzer (mkeijzer -at- cs.vu.nl) (See Boost list message of Wed, 18 Aug 2004 21:43:18 +0100)
Mac Murrett (mmurrett -at- mac.com)
Marc Wintermantel (wintermantel -at- imes.mavt.ethz.ch, wintermantel -at- even-ag.ch) (See CVS log)
Michael Glassford (glassfordm - at - hotmail.com)
Michael Stevens (Michael.Stevens - at - epost.de)
Multi Media Ltd. (pdimov@mmltd.net)
Nicolai M Josuttis (solutions -at- josuttis.com) (See Boost list message of Mon, 30 Aug 2004 10:52:00 +0100)
Nikolay Mladenov (nickm -at- sitius.com) (See Boost list message of Tue, 17 Aug 2004 15:45:33 +0100)
Paul Mensoides (pmenso57 -at- comcast.net) (See Boost list message of July 21, 2004 1:12:21 AM EST)
Pavol Droba (droba -at- topmail.sk)
Peter Dimov (pdimov@mmltd.net)
R W Grosse-Kunstleve (RWGrosse-Kunstleve@lbl.gov)
Ralf W. Grosse-Kunstleve (RWGrosse-Kunstleve@lbl.gov)

Rational Discovery LLC (Greg Landrum Landrum -at- RationalDiscovery.com) (See Boost list post of Tue, 17 Aug 2004 10:35:36 +0100)

Rene Rivera (grafik/redshift-software.com, rrivera/acm.org)

Robert Ramey (ramey@www.rrsd.com)

Roland Richter (roland -at- flll.jku.at) (See Boost list post of Mon, 16 Aug 2004 22:16:55 +0200)

Roland Schwarz (roland.schwarz -at- chello.at)

Ronald Garcia (garcia -at- cs.indiana.edu) (Email to Andreas Huber, see change log)

Samuel Krempp (krempp -at- crans.ens-cachan.fr) (See Boost list message of Mon, 27 Sep 2004 13:18:36 +0200)

Stefan Seefeld (seefeld -at- sympatico.ca)

Stephen Cleary (sccleary -at- jerviswebb.com) (See Boost list message of Tue, 28 Sep 2004 13:11:46 +0100)

Steve

Cleary (Variant of Stephen Cleary)

Sylvain Pion (Sylvain.Pion - at - sophia.inria.fr)

The Trustees of Indiana University ()

Thomas Witt (witt - at - ive.uni-hannover.de, witt - at - acm.org, witt - at - styleadvisor.com)

Thorsten Jrgen Ottosen (nesotto - at - cs.auc.dk)

Thorsten Ottosen (nesotto - at - cs.auc.dk)

Toon Knapen (toon dot knapen - at - fft.be)

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Vladimir Prus (ghost@cs.msu.su)

William E. Kempf () (email to Beman Dawes, 9/14/2006 4:18 PM)

Joerg Walter (jhr.walter - at - t-online.de : email to ublas mailing list Mon, 17 Sep 2007 10:17:08 +0200)

Mathias Koch (mkoch - at - idesis.de 7 : email to boost-owner@lists.boost.org Sep 2007 13:20:09 +0200)

--- end ---

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This is an attempt to acknowledge early contributions to the garbage collector. Later contributions should instead be mentioned in README.changes.

HISTORY -

Early versions of this collector were developed as a part of research projects supported in part by the National Science Foundation and the Defense Advance Research Projects Agency.

The garbage collector originated as part of the run-time system for the Russell programming language implementation. The first version of the garbage collector was written primarily by Al Demers. It was then refined and mostly rewritten, primarily by Hans-J. Boehm, at Cornell U., the University of Washington, Rice University (where it was first used for C and assembly code), Xerox PARC, SGI, and HP Labs. However, significant contributions have also been made by many others.

Some other contributors:

More recent contributors are mentioned in the modification history in README.changes. My apologies for any omissions.

The SPARC specific code was originally contributed by Mark Weiser.

The Encore Multimax modifications were supplied by Kevin Kenny (kenny@m.cs.uiuc.edu). The adaptation to the IBM PC/RT is largely due to Vernon Lee, on machines made available to Rice by IBM.

Much of the HP specific code and a number of good suggestions for improving the generic code are due to Walter Underwood.

Robert Brazile (brazile@diamond.bbn.com) originally supplied the ULTRIX code. Al Dosser (dosser@src.dec.com) and Regis Cridlig (Regis.Cridlig@cl.cam.ac.uk) subsequently provided updates and information on variation between ULTRIX systems. Parag Patel (parag@netcom.com) supplied the A/UX code.

Jesper Peterson(jep@mtiame.mtia.oz.au), Michel Schinz, and Martin Tauchmann (martintauchmann@bigfoot.com) supplied the Amiga port.

Thomas Funke (thf@zelator.in-berlin.de(?)) and

Brian D.Carlstrom (bdc@clark.lcs.mit.edu) supplied the NeXT ports.

Douglas Steel (doug@wg.icl.co.uk) provided ICL DRS6000 code.

Bill Janssen (janssen@parc.xerox.com) supplied

the SunOS dynamic loader

specific code. Manuel Serrano (serrano@cornas.inria.fr) supplied linux and

Sony News specific code. Al Dosser provided Alpha/OSF/1 code. He and

Dave Detlefs(detlefs@src.dec.com) also provided several generic bug fixes.

Alistair G. Crooks(agg@uts.amdahl.com) supplied the NetBSD and 386BSD ports.

Jeffrey Hsu (hsu@soda.berkeley.edu) provided the FreeBSD port.

Brent Benson (brent@jade.ssd.csd.harris.com) ported the collector to a Motorola 88K processor running CX/UX (Harris NightHawk).
Ari Huttunen (Ari.Huttunen@hut.fi) generalized the OS/2 port to nonIBM development environments (a nontrivial task).
Patrick Beard (beard@cs.ucdavis.edu) provided the initial MacOS port.
David Chase, then at Olivetti Research, suggested several improvements.
Scott Schwartz (schwartz@groucho.cse.psu.edu) supplied some of the code to save and print call stacks for leak detection on a SPARC.
Jesse Hull and John Ellis supplied the C++ interface code.
Zhong Shao performed much of the experimentation that led to the current typed allocation facility. (His dynamic type inference code hasn't made it into the released version of the collector, yet.)

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<!DOCTYPE html>

<html>

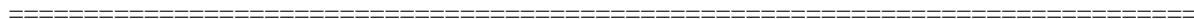
<head></head>

<body>

```
<h3>
  Copyright Test
</h3>
<p class="copyright">
  1963, 1964, 1965 Jane Doe
</p>
<p class="copyright">
  2018 Joe Blow, John Coe
</p>
<p class="copyright">
  1977, 1985 Someone else
</p>
</body>
</html>
```

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```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE article PUBLIC "-//Boost//DTD BoostBook XML V1.0//EN"
"http://www.boost.org/tools/boostbook/dtd/boostbook.dtd">
<article id="copyright_test" last-revision="DEBUG MODE Date: 2000/12/20 12:00:00 $"
xmlns:xi="http://www.w3.org/2001/XInclude">
  <title>Copyright Test</title>
  <articleinfo>
    <copyright>
      <year>1963</year> <year>1964</year> <year>1965</year> <holder>Jane Doe</holder>
    </copyright>
    <copyright>
      <year>2018</year> <holder>Joe Blow, John Coe</holder>
    </copyright>
    <copyright>
      <year>1977</year> <year>1985</year> <holder>Someone else</holder>
    </copyright>
  </articleinfo>
</article>
```

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////

```
[#mpl]
# MPL Support, <boost/mp11/mpl.hpp>
:toc:
:toc-title:
:idprefix:
```

The header `<boost/mp11/mpl.hpp>`, when included, defines the necessary support infrastructure for `mp_list` and `std::tuple` to be valid link:../../../../libs/mpl[MPL] sequences.

NOTE: `mpl.hpp` is not included by `<boost/mp11.hpp>`.

1.51 apr 1.7.0

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1.52 ptpd v1rc1

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1.53 ncurses 6.2

1.53.1 Available under license :

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```
-- vile:txtmode fc=72
-- $Id: COPYING,v 1.9 2020/02/08 13:34:12 tom Exp $
Upstream source https://invisible-island.net/ncurses/ncurses.html
This package is used for testing builds of ncurses.
```

Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

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-- vile: txtmode file-encoding=utf-8

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Current ncurses maintainer: Thomas Dickey <dickey@invisible-island.net>

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-- vile: txtmode file-encoding=utf-8

1.54 netperf 2.6.0

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1.55 openssl 1.0.1e

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1.56 smartmontools 6.5

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1.59 openssl 0.9.8w

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1.60 pixman 0.40.0

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- */

1.61 zstd 1.3.6

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Version 2, June 1991

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Gnomovision version 69, Copyright (C) year name of author
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This is free software, and you are welcome to redistribute
it
under certain conditions; type `show c' for details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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1.62 flexnet-publisher 10.8.0.1

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```
[core]
repositoryformatversion = 0
filemode = true
bare = false
logallrefupdates = true
[remote "origin"]
url = https://dscm.esl.cisco.com/git/153/comp-15304913.git
fetch = +refs/heads/*:refs/remotes/origin/*
[branch "skywalker_com"]
remote = origin
merge = refs/heads/skywalker_com
```


333f8b22c5dad178e0e0fc0db61cc88b252a5a4c

[core]

repositoryformatversion = 0

filemode = true

bare = false

logallrefupdates = true

[remote "origin"]

url = https://dscm.esl.cisco.com/git/153/comp-15301477.git

fetch = +refs/heads/*:refs/remotes/origin/*

[branch "h_cn12k"]

remote = origin

merge = refs/heads/h_cn12k

ref: refs/remotes/origin/skywalker_com

000 18b34bd8ae4af33255a6f417361e11786b620994 nxbld

<nxbld@cisco.com> 1571052915 -0700 fetch origin +refs/notes/*:refs/notes/* +refs/heads/*:refs/remotes/origin/*:

storing ref

6317bf6b870ced4150254b3da3f7958fa95f2ae2

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15301477
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77ee697ca7602fbf6d6606595ef5f11b850322b7 branch 'skywalker_com' of https://dscm.esl.cisco.com/git/153/comp-15301477

8f15c2fd12e6e400435d10ecb76d70be3428b18e branch 'skywalker_rel_8_2_0_sk_0_148_com' of https://dscm.esl.cisco.com/git/153/comp-15301477

a62b8e3e13b7662737fae6408c7450342c3b743b branch 'skywalker_rel_8_3_0_cv_0_4pe_com' of https://dscm.esl.cisco.com/git/153/comp-15301477

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b0b35d80ac5678321816490e1985fc4c08e07651 branch 'skywalker_rel_8_3_0_cv_0_787_com' of https://dscm.esl.cisco.com/git/153/comp-15301477

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e1576d658f29c5357d3d8b5879a41973f8fad31 branch 'sl_sch' of https://dscm.esl.cisco.com/git/153/comp-15301477

1e7f589498d137e2e17b4919259e2765704013ae branch 'sl_sch_zn73' of https://dscm.esl.cisco.com/git/153/comp-15301477

7cb89e672ad2f3d78eec01581ab26d6c1bc30212 branch 'sla_cadmen' of https://dscm.esl.cisco.com/git/153/comp-15301477

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2b8ef31e0fd8ae86010c6fe5158a3767f45b282b branch 'smu_n7k_r710' of https://dscm.esl.cisco.com/git/153/comp-15301477

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839e43b16e95c906f6da38914b9272c00ac7860b branch 'smu_rel_9_2_3' of https://dscm.esl.cisco.com/git/153/comp-15301477

cd39088d730d51369ac0a70b0194bf2fbbab8a38 branch 'ssp_r1_0_fcs1_throttle' of https://dscm.esl.cisco.com/git/153/comp-15301477

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'test_aron' of <https://dscm.esl.cisco.com/git/153/comp-15301477>
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filemode = true
bare = false
logallrefupdates = true
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url = https://dscm.esl.cisco.com/git/153/comp-15301478.git
fetch = +refs/heads/*:refs/remotes/origin/*
[branch "skywalker_com"]
remote = origin
merge = refs/heads/skywalker_com
00000000000000000000000000000000 06bd77b5d7b50a7afdce738674ec142c655701bf nxbld
<nxbld@cisco.com> 1571052911 -0700 clone: from https://dscm.esl.cisco.com/git/153/comp-15301478.git
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1.63 libidn 2.3.0

1.63.1 Available under license :

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Version 3, 29 June 2007

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1.64 openssh 7.6-p1

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1.66 ipmiutil 3.1.3

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Upstream-Contact: Andy Cress <arcess at users.sourceforge.net>

Source: <http://ipmiutil.sourceforge.net>

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Upstream-Name: ipmiutil

Upstream-Contact: Andy Cress <arcress@users.sourceforge.net>

Source: <http://ipmiutil.sourceforge.net>

Comment: This package was debianized by Andy Cress on 2010-10-29,
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Upstream-Name: ipmiutil

Upstream-Contact: Andy Cress <arcress@users.sourceforge.net>

Source: <http://ipmiutil.sourceforge.net>

<http://www.openmash.org/lxr/source/src/getopt.c?c=gsm>

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1.67 libconfig 1.5

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Upstream Author: Mark A Lindner

Mark Lindner - Lead developer & maintainer.

Daniel Marjamdki - Enhancements & bugfixes.

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We call this license the "Lesser" General Public License because it does less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage

the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library" and a ``work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

@page

@center GNU LESSER GENERAL PUBLIC LICENSE

@center TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called ``this License"). Each licensee is addressed as ``you".

A ``library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The ``Library", below, refers to any such software library or work which has been distributed under these terms. A ``work based on the Library" means either the Library or any derivative work under copyright law:

that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

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You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

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You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

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The modified work must itself be a software library.

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You must cause the files modified to carry prominent notices stating

that you changed the
files and the date of any change.

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You must cause the whole of the work to be licensed at no charge to all
third parties under the terms of this License.

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@item

If a facility in the modified Library refers to a function or a table of
data to be supplied by an application program that uses the facility,
other than as an argument passed when the facility is invoked, then you
must make a good faith effort to ensure that, in the event an
application does not supply such function or table, the facility still
operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a
purpose that is entirely well-defined independent of the application.
Therefore, Subsection 2d requires that any application-supplied function
or table used by this function must be optional: if the application does
not supply it, the square root function must still compute square
roots.)

@end enumerate

These requirements apply
to the modified work as a whole. If
identifiable sections of that work are not derived from the Library, and
can be reasonably considered independent and separate works in
themselves, then this License, and its terms, do not apply to those
sections when you distribute them as separate works. But when you
distribute the same sections as part of a whole which is a work based on
the Library, the distribution of the whole must be on the terms of this
License, whose permissions for other licensees extend to the entire
whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest
your rights to work written entirely by you; rather, the intent is to
exercise the right to control the distribution of derivative or
collective works based on the Library.

In addition, mere aggregation of another work not based on the Library
with the Library (or with a work based on the Library) on a volume of a
storage or distribution
medium does not bring the other work under the
scope of this License.

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You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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@item

You may copy and distribute the Library (or a portion or derivative of it, under Section 2)

in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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@item

A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a ``work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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As an exception to the Sections above, you may also combine or link a ``work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

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@item

Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable ``work that uses the Library", as object code and/or

source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

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@item

Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

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Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

@end enumerate

For an executable, the required form of the ``work that uses the Library'' must include any data and utility programs needed for reproducing the executable from

it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them

and the Library together in an executable that you distribute.

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You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

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Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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@center NO WARRANTY

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@center END OF TERMS AND CONDITIONS

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@page

@center How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the ``copyright" line and a pointer to where the full notice is found.

@format

@t{

<one line to give the library's name and a brief idea of what it does.>

Copyright (C) <year> <name of author>

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Lesser General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful,
but WITHOUT ANY WARRANTY; without even the implied warranty of
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU
Lesser General Public License for more details.

```
You should have received a copy of the GNU Lesser
General Public
License along with this library; if not, write to the Free Software
Foundation, Inc., 59 Temple Place, Suite 330, Boston, MA 02111-1307 USA
}
@end format
```

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer" for the library, if
necessary. Here is a sample; alter the names:

```
@format
@t{
Yoyodyne, Inc., hereby disclaims all copyright interest in the
library `Frob' (a library for tweaking knobs) written by James Random Hacker.
```

```
<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice
}
@end format
```

That's all there is to it!

```
@c @bye
```

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Version 2.1, February 1999

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[This is the first released version of the Lesser GPL. It also counts
as the successor of the GNU Library Public License, version 2, hence
the version number 2.1.]

Preamble

The licenses for most software are designed to take away your
freedom to share and change it. By contrast, the GNU General Public

Licenses are intended to guarantee your freedom to share and change free software--to make sure the software is free for all its users.

This license, the Lesser General Public License, applies to some specially designated software packages--typically libraries--of the Free Software Foundation and other authors who decide to use it. You can use it too, but we suggest you first think carefully about whether this license or the ordinary General Public License is the better strategy to use in any particular case, based on the explanations below.

When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot

effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

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For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

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Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium,

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You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of

this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary

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License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

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lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c

lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c

lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including the following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
slave/kpropd_rpc.c
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lib/krb5/kadm5/kadm_host_srv_names.c
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1.69 pciutils 3.7.0

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1.70 dhcp 4.4.2b1

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* `configure.ac`, `Makefile.am`: The original versions were derived from the ones in the XML Catalog Manager project, version 2.2.

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* `atf-c/ui.c`: The `format_paragraph` and `format_text` functions were derived from the ones in the Monotone project, revision 3a0982da308228d796df35f98d787c5cff2bb5b6.

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* `atf-c++/detail/io.hpp`, `atf-c++/detail/io.cpp`, `atf-c++/detail/io_test.cpp`: These files were derived from the `file_handle`, `systembuf`, `pipe` and `pistream` classes and tests found in the Boost.Process library.

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* `admin/check-style.sh`,
`admin/check-style-common.awk`,
`admin/check-style-cpp.awk`, `admin/check-style-shell.awk`: These files, except the first one, were first implemented in the Buildtool project. They were later adapted to be part of Boost.Process and, during that process, the shell script was created.

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    <xsl:param name="text"/>
    <xsl:value-of select="$isc.copyright.leader"/>
    <xsl:value-of select="normalize-space(substring-before($text, '&#10;'))"/>
    <xsl:text>&#10;</xsl:text>
    <xsl:variable name="rest" select="substring-after($text, '&#10;')"/>
    <xsl:if test="translate($rest, '&#9;&#32;', '')">
      <xsl:call-template name="isc.copyright.format">
        <xsl:with-param
name="text" select="$rest"/>
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  <xsl:variable name="isc.copyright.text">
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      <xsl:with-param name="text">
        <xsl:for-each select="book/info/copyright | refentry/docinfo/copyright">
          <xsl:text>Copyright (C) </xsl:text>
          <xsl:call-template name="copyright.years">
            <xsl:with-param name="years" select="year"/>
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          <xsl:value-of select="holder"/>
          <xsl:value-of select="$isc.copyright.breakline"/>
          <xsl:text>&#10;</xsl:text>
        </xsl:for-each>
      </xsl:with-param>
    </xsl:call-template>
  </xsl:variable>
```

```
<xsl:value-of select="$isc.copyright.text"/>
  </xsl:with-param>
</xsl:call-template>
</xsl:variable>
</xsl:stylesheet>
```

<!--

- Local variables:

- mode: sgml

- End:

-->

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A

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this

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This option is useful when you wish to copy part of the code of the

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6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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1.74 openssl 1.0.1e-51.el7_2.7

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1.76 procps 3.3.10-3.e17

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1.77 shadow 4.1.5.1-18.el7

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We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The

threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute

the object code for the work under the terms of Section 6.

Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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a)

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4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

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- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
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Jan 21, 2002

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```
@ignore
@c Set file name and title for man page.
@setfilename gpl
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@c man begin SEEALSO
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```
@c man end
@end ignore
@node Copying
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@unnumbered GNU General Public License
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This is an attempt to acknowledge early contributions to the garbage collector. Later contributions should instead be mentioned in README.changes.

HISTORY -

Early versions of this collector were developed as a part of research projects supported in part by the National Science Foundation and the Defense Advance Research Projects Agency.

The garbage collector originated as part of the run-time system for the Russell programming language implementation. The first version of the garbage collector was written primarily by Al Demers. It was then refined and mostly rewritten, primarily by Hans-J. Boehm, at Cornell U.,

the University of Washington, Rice University (where it was first used for C and assembly code), Xerox PARC, SGI, and HP Labs. However, significant contributions have also been made by many others.

Some other contributors:

More recent contributors are mentioned in the modification history in README.changes. My apologies for any omissions.

The SPARC specific code was originally contributed by Mark Weiser.

The Encore Multimax modifications were supplied by Kevin Kenny (kenny@m.cs.uiuc.edu). The adaptation to the IBM PC/RT is largely due to Vernon Lee, on machines made available to Rice by IBM.

Much of the HP specific code and a number of good suggestions for improving the generic code are due to Walter Underwood.

Robert Brazile (brazile@diamond.bbn.com) originally supplied the ULTRIX code. Al Dosser (dosser@src.dec.com) and Regis Cridlig (Regis.Cridlig@cl.cam.ac.uk) subsequently provided updates and information on variation between ULTRIX systems. Parag Patel (parag@netcom.com) supplied the A/UX code.

Jesper Peterson(jep@mtiame.mtia.oz.au), Michel Schinz, and Martin Tauchmann (martintauchmann@bigfoot.com) supplied the Amiga port.

Thomas Funke (thf@zelator.in-berlin.de(?)) and

Brian D.Carlstrom (bdc@clark.lcs.mit.edu) supplied the NeXT ports.

Douglas Steel (doug@wg.icl.co.uk) provided ICL DRS6000 code.

Bill Janssen (janssen@parc.xerox.com) supplied

the SunOS dynamic loader

specific code. Manuel Serrano (serrano@cornas.inria.fr) supplied linux and

Sony News specific code. Al Dosser provided Alpha/OSF/1 code. He and

Dave Detlefs(detlefs@src.dec.com) also provided several generic bug fixes.

Alistair G. Crooks(agg@uts.amdahl.com) supplied the NetBSD and 386BSD ports.

Jeffrey Hsu (hsu@soda.berkeley.edu) provided the FreeBSD port.

Brent Benson (brent@jade.ssd.csd.harris.com) ported the collector to

a Motorola 88K processor running CX/UX (Harris NightHawk).

Ari Huttunen (Ari.Huttunen@hut.fi) generalized the OS/2 port to

nonIBM development environments (a nontrivial task).

Patrick Beard (beard@cs.ucdavis.edu) provided the initial MacOS port.

David Chase, then at Olivetti Research, suggested several improvements.

Scott Schwartz (schwartz@groucho.cse.psu.edu) supplied some of the

code to save and print call stacks for leak detection on a SPARC.

Jesse Hull and John Ellis supplied the C++ interface code.

Zhong Shao performed much of the

experimentation that led to the

current typed allocation facility. (His dynamic type inference code hasn't made it into the released version of the collector, yet.)

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To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary

General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, whereas the latter must be combined with the library in order to run.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,

then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a

given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any executables

containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user

installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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For example, if you distribute copies of such a program, whether gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

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"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

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1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The

"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally

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programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

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section 10

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a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

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1.84 open-ldap 2.4.40-8.el7

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1.86 kmod 28

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1.87 libpcap 1.10.0

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1.88 gobject-introspection 1.58.0

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1.89 Iz4 1.9.3

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Upstream-Name: liblz4

Upstream-Contact: Yann Collet <Cyan4973@github.com>

Source: <https://github.com/lz4/lz4>

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contribution to the Google C++ Testing Framework project. People
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here. Please keep the list sorted by first names.

Ajay Joshi <jaj@google.com>

Balzs Dn <balazs.dan@gmail.com>

Bharat Mediratta <bharat@menalto.com>

Chandler Carruth <chandlerc@google.com>

Chris Prince <cprince@google.com>

Chris Taylor <taylorc@google.com>

Dan Egnor <egnor@google.com>

Eric Roman <eroman@chromium.org>

Hady Zalek <hady.zalek@gmail.com>

Jeffrey Yasskin <jyasskin@google.com>

Ji Sigursson <joi@google.com>

Keir Mierle <mierle@gmail.com>

Keith Ray <keith.ray@gmail.com>

Kenton Varda <kenton@google.com>

Manuel Klimek <klimek@google.com>
Markus Heule <markus.heule@gmail.com>
Mika Raento <mikie@iki.fi>
Mikls Fazekas <mfazekas@szemafor.com>
Pasi Valminen <pasi.valminen@gmail.com>
Patrick Hanna <phanna@google.com>
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Sean McAfee <eefacm@gmail.com>
Sigurur sgeirsson <siggi@google.com>
Tracy Bialik <tracy@pentad.com>
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1.100 popt 1.18-1.el8

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting

Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes

2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes
3.1.1	3.1	2009	PSF	yes
3.1.2	3.1.1	2010	PSF	yes
3.1.3	3.1.2	2010	PSF	yes
3.1.4	3.1.3	2011	PSF	yes
3.2	3.1	2011	PSF	yes
3.2.1	3.2	2011		
	PSF	yes		
3.2.2	3.2.1	2011	PSF	yes
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1.102 open-ldap 2.4.59

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```

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```
Gnomovision version 69, Copyright (C) 19yy name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
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```

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'Gnomovision' (which makes passes at compilers) written by James Hacker.

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

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1.105 sqlite 3.7.17-4.el7

1.105.1 Available under license :

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is free to use SQLite from multiple threads, but it must make sure

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/custombuild.html

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application code is free to use these routines as well, if desired.

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/34to35.html

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rIW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/changes.html

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%%BeginResource: procset Adobe_CoolType_Core 2.31 0

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/art/sqlite370.eps

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License: Public Domain

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite.spec

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* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/consortium.html

No license file was found, but licenses were detected in source scan.

procset Adobe_CoolType_Utility_MAKEOCF 1.23 0

procset Adobe_CoolType_Utility_T42 1.0 0

procset Adobe_AGM_Image 1.0 0

Found in path(s):

* %%BeginResource

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<dd><p>The psow query parameter works with the default windows and unix VFSEs but might be a no-op for other proprietary or non-standard VFSEs.

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/requirements.html

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No license file was found, but licenses were detected in source scan.

application is free to use the same [database connection](..c3ref/sqlite3.html) or the

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/c3ref/c_config_covering_index_scan.html
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)putinterval

Found in path(s):

* 1 index 0(BadFont
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Copyright 1987-2006 Adobe Systems Incorporated.
Copyright 1987-2004 Adobe Systems Incorporated.
Copyright 1987-2001 Adobe Systems Incorporated.

Found in path(s):

* %%Copyright
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/*

** Return a pointer to the "temporary page" buffer held internally
** by the pager. This is a buffer that is big enough to hold the
** entire content of a database page. This buffer is used internally
** during rollback and will be overwritten whenever a rollback
** occurs. But other modules are free to use it too, as long as
** no rollbacks are happening.
*/

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/src/pager.c
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The **TH3** test harness is a set of proprietary tests, written in

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* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/testing.html

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```
# 2006 September 14
#
# The author disclaims copyright to this source code. In place of
# a legal notice, here is a blessing:
#
# May you do good and not evil.
# May you find forgiveness for yourself and forgive others.
# May you share freely, never taking more than you give.
#
#*****
# This file implements regression tests for SQLite library. The
# focus of this script is testing the FTS2 module.
#
# $Id: fts2c.test,v 1.1 2006/10/19 23:36:26 shess Exp $
#

set testdir [file dirname $argv0]
source $testdir/tester.tcl

# If SQLITE_ENABLE_FTS2 is defined, omit this file.
ifcapable !fts2 {
    finish_test
    return
}

# Create a table of sample email data. The data comes from email
# archives of Enron executives that was published as part of the
# litigation against that company.
#
do_test fts2c-1.1 {
    db eval {
        CREATE VIRTUAL TABLE email
        USING fts2([from],[to],subject,body);
        BEGIN TRANSACTION;
        INSERT INTO email([from],[to],subject,body) VALUES('savita.puthigai@enron.com', 'traders.eol@enron.com,
        traders.eol@enron.com', 'EnronOnline- Change to Autohedge', 'Effective Monday, October 22, 2001 the following
        changes will be made to the Autohedge functionality on EnronOnline.

        The volume on the hedge will now respect the minimum volume and volume increment settings on the parent
        product. See rules below:

        ? If the transaction volume on the child is less than half of the parent's minimum volume no hedge will occur.
        ? If the transaction volume on the child is more than half the parent's minimum volume but less than half the volume
        increment on the parent, the hedge will volume will be the parent's minimum volume.
        ? For all other volumes, the same rounding rules will apply based on the volume increment on the parent product.
```

Please see example below:

Parent's Settings:

Minimum: 5000

Increment: 1000

Volume on Autohedge

transaction Volume Hedged

1 - 2499 0

2500 - 5499 5000

5500 - 6499 6000');

INSERT INTO email([from],[to],subject,body) VALUES('dana.davis@enron.com', 'laynie.east@enron.com, lisa.king@enron.com, lisa.best@enron.com,', 'Leaving Early', 'FYI:

If it's ok with everyone's needs, I would like to leave @4pm. If you think you will need my assistance past the 4 o'clock hour just let me know; I'll be more than willing to stay.');

INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuere workplace.com', 'louise.kitchen@enron.com', '<<Concur Expense Document>> - CC02.06.02', 'The following expense report is ready for approval:

Employee Name: Christopher F. Calger

Status last changed by: Mollie E. Gustafson Ms

Expense Report Name: CC02.06.02

Report Total: \$3,972.93

Amount Due Employee: \$3,972.93

To approve this expense report, click on the following link for Concur Expense.

<http://expense.ms.enron.com>');

INSERT INTO email([from],[to],subject,body)

VALUES('jeff.duff@enron.com', 'julie.johnson@enron.com', 'Work request', 'Julie,

Could you print off the current work request report by 1:30 today?

Gentlemen,

I'd like to review this today at 1:30 in our office. Also, could you provide me with your activity reports so I can have Julie enter this information.

JD');

INSERT INTO email([from],[to],subject,body) VALUES('v.weldon@enron.com', 'gary.l.carrier@usa.dupont.com, scott.joyce@bankofamerica.com', 'Enron News', 'This could turn into something big....

<http://biz.yahoo.com/rf/010129/n29305829.html>');

INSERT INTO email([from],[to],subject,body) VALUES('mark.haedicke@enron.com', 'paul.simons@enron.com', 'Re: First Polish Deal!', 'Congrats! Things seem to be building rapidly now on the Continent. Mark');

INSERT INTO email([from],[to],subject,body) VALUES('e.carter@enron.com', 't..robinson@enron.com', 'FW: Producers Newsletter 9-24-2001', '

The producer lumber pricing sheet.

-----Original Message-----

From: Johnson, Jay
Sent: Tuesday,
October 16, 2001 3:42 PM
To: Carter, Karen E.
Subject: FW: Producers Newsletter 9-24-2001

-----Original Message-----

From: Daigre, Sergai
Sent: Friday, September 21, 2001 8:33 PM
Subject: Producers Newsletter 9-24-2001

');

INSERT INTO email([from],[to],subject,body) VALUES('david.delainey@enron.com', 'kenneth.lay@enron.com', 'Greater Houston Partnership', 'Ken, in response to the letter from Mr Miguel San Juan, my suggestion would be to offer up the Falcon for their use; however, given the tight time frame and your recent visit with Mr. Fox that it would be difficult for either you or me to participate.

I spoke to Max and he agrees with this approach.

I hope this meets with your approval.

Regards

Delainey');

INSERT INTO email([from],[to],subject,body) VALUES('lachandra.fenceroy@enron.com', 'lindy.donoho@enron.com', 'FW: Bus Applications Meeting Follow Up', 'Lindy,

Here is the original memo we discussed earlier. Please provide any information that you may have.

Your cooperation is greatly appreciated.

Thanks,

lachandra.fenceroy@enron.com
713.853.3884
877.498.3401 Pager

-----Original Message-----

From: Bisbee, Joanne
Sent: Wednesday, September 26, 2001 7:50 AM
To: Fenceroy, LaChandra
Subject: FW: Bus Applications Meeting Follow Up

Lachandra, Please get with David Duff today and see what this is about. Who are our TW accounting business

users?

-----Original Message-----

From: Koh, Wendy
Sent: Tuesday, September 25, 2001 2:41 PM
To: Bisbee, Joanne
Subject: Bus Applications Meeting Follow Up

Lisa brought up a TW change effective Nov 1. It involves eliminating a turnback surcharge. I have no other information, but you might check with the business folks for any system changes required.

Wendy');

INSERT INTO email([from],[to],subject,body) VALUES('danny.mccarty@enron.com', 'fran.fagan@enron.com', 'RE: worksheets', 'Fran,

If Julie's merit needs to be lump sum, just move it over to that column. Also, send me Eric Gadd's sheets as well. Thanks.

Dan

-----Original Message-----

From: Fagan, Fran
Sent: Thursday, December 20, 2001 11:10 AM
To: McCarty, Danny
Subject: worksheets

As discussed, attached are your sheets for bonus and merit.

Thanks,

Fran Fagan
Sr. HR Rep
713.853.5219

<< File: McCartyMerit.xls >> << File: mccartyBonusCommercial_UnP.xls >>

);

INSERT INTO email([from],[to],subject,body) VALUES('bert.meyers@enron.com', 'shift.dl-portland@enron.com', 'OCTOBER SCHEDULE', 'TEAM,

PLEASE SEND ME ANY REQUESTS THAT YOU HAVE FOR OCTOBER. SO FAR I HAVE THEM FOR LEAF. I WOULD LIKE TO HAVE IT DONE BY THE 15TH OF THE MONTH. ANY QUESTIONS PLEASE GIVE ME A CALL.

BERT');

INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com', 'john.arnold@enron.com', 'bilal.bajwa@enron.com, john.griffith@enron.com,', 'TRV Notification: (NG - PROPT P/L - 09/27/2001)', 'The report named: NG - PROPT P/L <http://trv.corp.enron.com/linkFromExcel.asp?report_cd=11&report_name=NG+-+PROPT+P/L&category_cd=5&category_name=FINANCIAL&toc_hide=1&sTV1=5&TV1Exp=Y¤t_efct_d

ate=09/27/2001>,
published as of 09/27/2001 is now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('patrice.mims@enron.com', 'calvin.eakins@enron.com',
'Re: Small business supply assistance', 'Hi Calvin

I spoke with Rickey (boy, is he long-winded!!). Gave him the name of our credit guy, Russell Diamond.

Thank for your help!');

INSERT INTO email([from],[to],subject,body) VALUES('legal <.hall@enron.com>', 'stephanie.panus@enron.com',
'Termination update', 'City of Vernon and Salt River Project terminated their contracts. I will fax these notices to you.');

INSERT INTO email([from],[to],subject,body) VALUES('d..steffes@enron.com', 'richard.shapiro@enron.com',
'EES / ENA Government Affairs Staffing & Outside Services', 'Rick --

Here is the information on staffing and outside services. Call if you need anything else.

Jim

');

INSERT INTO email([from],[to],subject,body)
VALUES('gelliott@industrialinfo.com', 'pcopello@industrialinfo.com', 'ECAAR (Gavin), WSCC (Diablo Canyon),
& NPCC (Seabrook)', 'Dear Power Outage Database Customer',
Attached you will find an excel document. The outages contained within are forced or rescheduled outages. Your daily delivery will still contain these outages.

In addition to the two excel documents, there is a dbf file that is formatted like your daily deliveries you receive nightly. This will enable you to load the data into your regular database. Any questions please let me know. Thanks.

Greg Elliott

IIR, Inc.

713-783-5147 x 3481

outages@industrialinfo.com

THE INFORMATION CONTAINED IN THIS E-MAIL IS LEGALLY PRIVILEGED AND CONFIDENTIAL INFORMATION INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE. YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION, OR COPY OF THIS E-MAIL TO UNAUTHORIZED ENTITIES IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE DELETE IT.

- OUTAGE.dbf
- 111201R.xls
- 111201.xls ');

INSERT INTO email([from],[to],subject,body) VALUES('enron.announcements@enron.com',
'all_ena_egm_eim@enron.com', 'EWS Brown Bag', 'MARK YOUR LUNCH CALENDARS NOW !

You are invited to attend the EWS Brown Bag Lunch Series

Featuring: RAY BOWEN, COO

Topic: Enron Industrial Markets

Thursday, March 15, 2001
11:30 am - 12:30 pm
EB 5 C2

You bring your lunch, Limited Seating
We provide drinks and dessert. RSVP x 3-9610');
INSERT INTO email([from],[to],subject,body) VALUES('chris.germany@enron.com',
'ingrid.immer@williams.com', 'Re: About St Pauls', 'Sounds good to me. I bet this is next to the Warick?? Hotel.

"Immer, Ingrid" <Ingrid.Immer@Williams.com> on 12/21/2000 11:48:47 AM
To: ""chris.germany@enron.com"" <chris.germany@enron.com>
cc:
Subject: About St Pauls

<<About St Pauls.url>>
?
?http://www.stpaulshouston.org/about.html

Chris,

I like the looks of this place.? What do you think about going
here Christmas
eve?? They have an 11:00 a.m. service and a candlelight service at 5:00 p.m.,
among others.

Let me know.?? ii

- About St Pauls.url

);
INSERT INTO email([from],[to],subject,body) VALUES('nas@cpuc.ca.gov', 'skatz@sempratrading.com,
kmcree@sablaw.com, thompson@wrightlaw.com,', 'Reply Brief filed July 31, 2000', '- CPUC01-#76371-v1-
Revised_Reply_Brief__Due_today_7_31_.doc');
INSERT INTO email([from],[to],subject,body) VALUES('gascontrol@agresources.com', 'dscott4@enron.com,
lcampbel@enron.com', 'Alert Posted 10:00 AM November 20,2000: E-GAS Request Reminder', 'Alert Posted 10:00
AM November 20,2000: E-GAS Request Reminder
As discussed in the Winter Operations Meeting on Sept.29,2000,
E-Gas(Emergency Gas) will not be offered this winter as a service from AGLC.
Marketers and Poolers can receive gas via Peaking and IBSS nominations(daisy
chain) from other marketers up to the 6 p.m. Same Day 2 nomination cycle.

);
INSERT INTO email([from],[to],subject,body) VALUES('dutch.quigley@enron.com',
'rwoolkwitz@powermerchants.com', ', ')

Here is a goody for you');

INSERT INTO email([from],[to],subject,body) VALUES('ryan.o"rourke@enron.com', 'k..allen@enron.com,
randy.bhatia@enron.com, frank.ermis@enron.com,', 'TRV Notification: (West VaR - 11/07/2001)', 'The report
named: West VaR

<http://trv.corp.enron.com/linkFromExcel.asp?report_cd=36&report_name=West+VaR&category_cd=2&category_name=WEST&toc_hide=1&sTV1=2&TV1Exp=Y¤t_efct_date=11/07/2001>, published as of 11/07/2001 is
now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('mjones7@txu.com', 'cstone1@txu.com,
ggreen2@txu.com, timpowell@txu.com,', 'Enron / HPL Actuals for July 10, 2000', 'Teco Tap 10.000 / Enron ;
110.000 / HPL IFERC

LS HPL LSK IC 30.000 / Enron

);
INSERT INTO email([from],[to],subject,body) VALUES('susan.pereira@enron.com', 'kkw816@aol.com', 'soccer
practice', 'Kathy-

Is it safe to assume that practice is cancelled for
tonight??

Susan Pereira');

INSERT INTO email([from],[to],subject,body) VALUES('mark.whitt@enron.com', 'barry.tycholiz@enron.com',
'Huber Internal Memo', 'Please look at this. I didn"t know how deep to go with the desk. Do you think this works.

);
INSERT INTO email([from],[to],subject,body) VALUES('m..forney@enron.com', 'george.phillips@enron.com', ',
'George,
Give me a call and we will further discuss opportunities on the 13st floor.

Thanks,
JMForney
3-7160');

INSERT INTO email([from],[to],subject,body) VALUES('brad.mckay@enron.com', 'angusmcka@aol.com', 'Re: (no
subject)', 'not yet');

INSERT INTO email([from],[to],subject,body) VALUES('adam.bayer@enron.com', 'jonathan.mckay@enron.com',
'FW: Curve Fetch File', 'Here is the curve fetch file sent to me. It has plenty of points in it. If you give me a list of
which ones you need we may be able to construct a secondary worksheet to vlookup the values.

adam
35227

-----Original Message-----

From: Royed, Jeff

Sent: Tuesday,

September 25, 2001 11:37 AM

To: Bayer, Adam

Subject: Curve Fetch File

Let me know if it works. It may be required to have a certain version of Oracle for it to work properly.

Jeff Royed

Enron

Energy Operations

Phone: 713-853-5295);

INSERT INTO email([from],[to],subject,body) VALUES('matt.smith@enron.com', 'yan.wang@enron.com', 'Report Formats', 'Yan,

The merged reports look great. I believe the only orientation changes are to "unmerge" the following six reports:

31 Keystone Receipts

15 Questar Pipeline

40 Rockies Production

22 West_2

23 West_3

25 CIG_WIC

The orientation of the individual reports should be correct. Thanks.

Mat

PS. Just a reminder to add the "*" by the title of calculated points.');

INSERT INTO email([from],[to],subject,body) VALUES('michelle.lokay@enron.com', 'jimboman@bigfoot.com', 'Egyptian Festival', '----- Forwarded by Michelle Lokay/ET&S/Enron on 09/07/2000 10:08 AM -----

"Karkour, Randa" <Randa.Karkour@COMPAQ.com>

on 09/07/2000 09:01:04 AM

To: ""Agheb (E-mail)" <Agheb@aol.com>, "Leila Mankarious (E-mail)"

<Leila_Mankarious@mhhs.org>, ""Marymankarious (E-mail)"

<marymankarious@aol.com>, "Michelle lokay (E-mail)" <mlokay@enron.com>, "Ramy Mankarious (E-mail)" <Mankarious@aol.com>

cc:

Subject: Egyptian Festival

<<Egyptian Festival.url>>

<http://www.egyptianfestival.com/>

- Egyptian Festival.url

);

INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com',
'sherry.dawson@enron.com', 'Urgent!!! --- New EAST books', 'This has to be done.....')

Thanks

----- Forwarded by Errol McLaughlin/Corp/Enron on 12/20/2000

08:39 AM -----

From: William Kelly @ ECT

12/20/2000 08:31 AM

To: Kam Keiser/HOU/ECT@ECT, Darron C Giron/HOU/ECT@ECT, David
Baumbach/HOU/ECT@ECT, Errol McLaughlin/Corp/Enron@ENRON

cc: Kimat Singla/HOU/ECT@ECT, Kulvinder Fowler/NA/Enron@ENRON,
Kyle R

Lilly/HOU/ECT@ECT, Jeff Royed/Corp/Enron@ENRON, Alejandra
Chavez/NA/Enron@ENRON, Crystal Hyde/HOU/ECT@ECT

Subject: New EAST books

We have new book names in TAGG for our intramonth portfolios and it is extremely important that any deal booked to the East is communicated quickly to someone on my team. I know it will take some time for the new names to sink in and I do not want us to miss any positions or P&L.

Thanks for your help on this.

New:

Scott Neal : East Northeast

Dick Jenkins: East Marketeast

WK

);

INSERT INTO email([from],[to],subject,body) VALUES('david.forster@enron.com', 'eol.wide@enron.com',
'Change to Stack Manager', 'Effective immediately, there is a change to the Stack Manager which will
affect any Inactive Child.

An inactive Child with links to Parent products will not have their calculated prices updated until the Child product is Activated.

When the Child Product is activated, the price will be recalculated and updated BEFORE it

is displayed on the web.

This means that if you are inputting a basis price on a Child product, you will not see the final, calculated price until you Activate the product, at which time the customer will also see it.

If you have any questions, please contact the Help Desk on:

Americas: 713 853 4357
Europe: + 44 (0) 20 7783 7783
Asia/Australia: +61 2 9229 2300

Dave');

INSERT INTO email([from],[to],subject,body) VALUES('vince.kaminski@enron.com', 'jhh1@email.msn.com', 'Re: Light reading - see pieces beginning on page 7', 'John,

I saw it. Very interesting.

Vince

"John H Herbert" <jhh1@email.msn.com> on 07/28/2000 08:38:08 AM
To: "Vince J Kaminski" <Vince_J_Kaminski@enron.com>
cc:
Subject: Light reading - see pieces beginning on page 7

Cheers and have a nice weekend,

JHHerbert

- gd000728.pdf

');

INSERT INTO email([from],[to],subject,body) VALUES('matthew.lenhart@enron.com', 'mmmarcanel@equiva.com', 'RE:', 'i will try to line up a pig for you ');

INSERT INTO email([from],[to],subject,body)

VALUES('jae.black@enron.com', 'claudette.harvey@enron.com, chaun.roberts@enron.com, judy.martinez@enron.com', 'Disaster Recovery Equipment', 'As a reminder...there are several pieces of equipment

that are set up on the 30th Floor, as well as on our floor, for the Disaster Recovery Team. PLEASE DO NOT TAKE, BORROW OR USE this equipment. Should you need to use another computer system, other than yours, or make conference calls please work with your Assistant to help find or set up equipment for you to use.

Thanks for your understanding in this matter.

T.Jae Black

East Power Trading

Assistant to Kevin Presto

off. 713-853-5800

fax 713-646-8272

cell 713-539-4760);

INSERT INTO email([from],[to],subject,body) VALUES('eric.bass@enron.com', 'dale.neuner@enron.com', '5 X 24', 'Dale,

Have you heard anything more on the 5 X 24s? We would like to get this product out ASAP.

Thanks,

Eric');

INSERT INTO email([from],[to],subject,body) VALUES('messenger@smartreminders.com', 'm..tholt@enron.com', '10% Coupon - PrintPal Printer Cartridges - 100% Guaranteed', '[IMAGE] [IMAGE][IMAGE][IMAGE]

Dear SmartReminders Member,

[IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE]

We respect your privacy and are a Certified Participant of the BBBOnLine Privacy Program. To be removed from future offers,click here.

SmartReminders.com is a permission based service. To unsubscribe click here . ');

INSERT INTO email([from],[to],subject,body) VALUES('benjamin.rogers@enron.com', 'mark.bernstein@enron.com', 'The guy you are talking about left CIN under a "cloud of suspicion" sort of speak. He was the one who got into several bad deals and PPA's in California for CIN, thus he left on a bad note. Let me know if you need more detail than that, I felt this was the type of info you were looking for. Thanks!

Ben');

INSERT INTO email([from],[to],subject,body)

VALUES('enron_update@concuere workplace.com', 'michelle.cash@enron.com', 'Expense Report Receipts Not Received', 'Employee Name: Michelle Cash

Report Name: Houston Cellular 8-11-01

Report Date: 12/13/01

Report ID: 594D37C9ED2111D5B452

Submitted On: 12/13/01

You are only allowed 2 reports with receipts outstanding. Your expense reports will not be paid until you meet this requirement.');

INSERT INTO email([from],[to],subject,body) VALUES('susan.mara@enron.com', 'ray.alvarez@enron.com, mark.palmer@enron.com, karen.denne@enron.com', 'CAISO Emergency Motion -- to discontinue market-based rates for', 'FYI. the latest broadside against the generators.

Sue Mara

Enron Corp.

Tel: (415) 782-7802

Fax:(415) 782-7854

----- Forwarded by Susan J Mara/NA/Enron on 06/08/2001 12:24 PM -----

"Milner, Marcie" <MMilner@coral-energy.com> 06/08/2001 11:13 AM To: ""smara@enron.com"" <smara@enron.com> cc: Subject: CAISO Emergency Motion

Sue, did you see this emergency motion the CAISO filed today? Apparently they are requesting that FERC discontinue market-based rates immediately and grant refunds plus interest on the difference between cost-based rates and market revenues received back to May 2000. They are requesting the commission act within 14 days. Have you heard anything about what they are doing?

Marcie

<http://www.caiso.com/docs/2001/06/08/200106081005526469.pdf>

');

INSERT INTO email([from],[to],subject,body) VALUES('fletcher.sturm@enron.com', 'eloy.escobar@enron.com', 'Re: General Brinks Position Meeting', 'Eloy,

Who is General Brinks?

Fletch');

INSERT INTO email([from],[to],subject,body) VALUES('nailia.dindarova@enron.com',
'richard.shapiro@enron.com', 'Documents for Mark Frevert (on EU developments and lessons from', 'Rick,

Here are the documents that Peter has prepared for Mark Frevert.

Nailia

----- Forwarded by Nailia Dindarova/LON/ECT on 25/06/2001

16:36 -----

Nailia Dindarova

25/06/2001 15:36

To:

Michael Brown/Enron@EUEnronXGate

cc: Ross Sankey/Enron@EUEnronXGate, Eric Shaw/ENRON@EUEnronXGate, Peter
Styles/LON/ECT@ECT

Subject: Documents for Mark Frevert (on EU developments and lessons from
California)

Michael,

These are the documents that Peter promised to give to you for Mark Frevert.
He has now handed them to him in person but asked me to transmit them
electronically to you, as well as Eric and Ross.

Nailia

');

INSERT INTO email([from],[to],subject,body) VALUES('peggy.a.kostial@accenture.com',
'dave.samuels@enron.com', 'EOL-Accenture Deal Sheet', 'Dave -

Attached are our comments and suggested changes. Please call to review.

On the time line for completion, we have four critical steps to complete:

Finalize market analysis to refine business case, specifically
projected revenue stream

Complete counterparty surveying, including targeting 3 CPs for letters
of intent

Review Enron asset base for potential reuse/ licensing
Contract
negotiations

Joe will come back to us with an updated time line, but it is my expectation that we are still on the same schedule (we just begun week three) with possibly a week or so slippage.....contract negotiations will probably be the critical path.

We will send our cut at the actual time line here shortly. Thanks,

Peggy

(See attached file: accenture-dealpoints v2.doc)

- accenture-dealpoints v2.doc ');

INSERT INTO email([from],[to],subject,body) VALUES('thomas.martin@enron.com', 'thomas.martin@enron.com', 'Re: Guadalupe Power Partners LP', '----- Forwarded by Thomas A Martin/HOU/ECT on 03/20/2001 03:49 PM -----

Thomas A Martin

10/11/2000 03:55 PM

To: Patrick Wade/HOU/ECT@ECT

cc:

Subject: Re: Guadalupe Power Partners LP

The deal is physically served at Oasis Waha or Oasis Katy and is priced at either HSC, Waha or Katytailgate GD at buyers option three days prior to NYMEX close.

');

INSERT INTO email([from],[to],subject,body)

VALUES('judy.townsend@enron.com', 'dan.junek@enron.com, chris.germany@enron.com', 'Columbia

Distribution's Capacity Available for Release - Sum', '----- Forwarded by Judy Townsend/HOU/ECT on 03/09/2001 11:04

AM -----

agoddard@nsource.com on 03/08/2001 09:16:57 AM

To: " - *Koch, Kent" <kkoch@nsource.com>, " -

*Millar, Debra" <dmillar@nsource.com>, " - *Burke, Lynn"

<lburke@nsource.com>

cc: " - *Heckathorn, Tom" <theckathorn@nsource.com>

Subject: Columbia Distribution's Capacity Available for Release - Sum

Attached is Columbia Distribution's notice of capacity available for release for

the summer of 2001 (Apr. 2001 through Oct. 2001).

Please note that the deadline for bids is 3:00pm EST on March 20, 2001.

If you have any questions, feel free to contact any of the representatives listed at the bottom of the attachment.

Aaron Goddard

- 2001Summer.doc

');

INSERT INTO

email([from],[to],subject,body) VALUES('rhonda.denton@enron.com', 'tim.belden@enron.com, dana.davis@enron.com, genia.fitzgerald@enron.com,', 'Split Rock Energy LLC', 'We have received the executed EEI contract from this CP dated 12/12/2000.

Copies will be distributed to Legal and Credit.');

INSERT INTO email([from],[to],subject,body) VALUES('kerrymcelroy@dwt.com', 'jack.speer@alcoa.com, crow@millernash.com, michaelearly@earthlink.net,', 'Oral Argument Request', ' - Oral Argument Request.doc');

INSERT INTO email([from],[to],subject,body) VALUES('mike.carson@enron.com', 'rlmichaelis@hormel.com', ', 'Did you come in town this wk end..... My new number at our house is :

713-668-3712..... my cell # is 281-381-7332

the kid');

INSERT INTO email([from],[to],subject,body) VALUES('cooper.richey@enron.com', 'trycooper@hotmail.com', 'FW: Contact Info', '

-----Original Message-----

From: Punja, Karim

Sent: Thursday, December 13, 2001 2:35 PM

To: Richey, Cooper

Subject: Contact Info

Cooper,

Its

been a real pleasure working with you (even though it was for only a small amount of time)

I hope we can stay in touch.

Home# 234-0249

email: kpunja@hotmail.com

Take Care,

Karim.

');

INSERT INTO email([from],[to],subject,body) VALUES('bjm30@earthlink.net', 'mcguinn.k@enron.com, mcguinn.ian@enron.com, mcguinn.stephen@enron.com,', 'email address change', 'Hello all.

I haven't talked to many of you via email recently but I do want to give you my new address for your email file:

bjm30@earthlink.net

I hope all is well.

Brian McGuinn');

INSERT INTO email([from],[to],subject,body) VALUES('shelley.corman@enron.com', 'steve.hotte@enron.com', 'Flat Panels', 'Can you please advise what is going on with the flat panels that we had planned to distribute to our gas logistics team. It was in the budget and we had the okay, but now I'm hearing there is some hold-up & the units are stored on 44.

Shelley');

INSERT INTO email([from],[to],subject,body) VALUES('sara.davidson@enron.com', 'john.schwartzenburg@enron.com, scott.dieball@enron.com, recipients@enron.com,', '2001 Enron Law Conference (Distribution List 2)', ' Enron Law Conference

San Antonio, Texas May 2-4, 2001 Westin Riverwalk

See attached memo for more details!!

? Registration for the law conference this year will be handled through an Online RSVP Form on the Enron Law Conference Website at <http://lawconference.corp.enron.com>. The website is still under construction and will not be available until Thursday, March 15, 2001.

? We will send you another e-mail to confirm when the Law Conference Website is operational.

? Please complete the Online RSVP Form as soon as it is available and submit it no later than Friday, March 30th.

');

INSERT INTO email([from],[to],subject,body) VALUES('tori.kuykendall@enron.com', 'heath.b.taylor@accenture.com', 'Re:', 'hey - thats funny about john - he definitely remembers him - i'll call pat and let him know - we are coming on saturday - i just havent had a chance to call you guys back -- looking forward to it -- i probably need the

directions again though');

INSERT INTO email([from],[to],subject,body) VALUES('darron.giron@enron.com', 'bryce.baxter@enron.com',
'Re: Feedback for Audrey Cook', 'Bryce,

I'll get it done today.

DG 3-9573

From: Bryce Baxter 06/12/2000 07:15 PM

To: Darron C Giron/HOU/ECT@ECT

cc:

Subject: Feedback for Audrey Cook

You were identified as a reviewer for Audrey Cook. If possible, could you complete her feedback by end of business Wednesday? It will really help me in the PRC process to have your input. Thanks.

);

INSERT INTO email([from],[to],subject,body) VALUES('casey.evans@enron.com', 'stephanie.sever@enron.com',
'Gas EOL ID', 'Stephanie,

In conjunction with the recent movement of several power traders, they are changing the names of their gas books as well. The names of the new gas books and traders are as follows:

PWR-NG-LT-SPP:

Mike Carson

PWR-NG-LT-SERC: Jeff King

If you need to know their power desk to map their ID to their gas books, those desks are as follows:

EPMI-LT-SPP: Mike Carson

EPMI-LT-SERC: Jeff King

I will be in training this afternoon, but will be back when class is over. Let me know if you have any questions.

Thanks for your help!

Casey');

INSERT INTO email([from],[to],subject,body) VALUES('darrell.schoolcraft@enron.com',
'david.roensch@enron.com, kimberly.watson@enron.com, michelle.lokay@enron.com,', 'Postings', 'Please see the
attached.

ds

');

INSERT INTO email([from],[to],subject,body) VALUES('mcominsky@aol.com', 'cpatman@bracepatt.com, james_derrick@enron.com', 'Jurisprudence Luncheon', 'Carrin & Jim --

It was an honor and a pleasure to meet both of you yesterday. I know we will have fun working together on this very special event.

Jeff left the jurisprudence luncheon lists for me before he left on vacation.

I wasn't sure whether he transmitted them

to you as well. Would you please

advise me if you would like them sent to you? I can email the MS Excel files or I can fax the hard copies to you. Please advise what is most convenient.

I plan to be in town through the holidays and can be reached by phone, email, or cell phone at any time. My cell phone number is 713/705-4829.

Thanks again for your interest in the ADL's work. Martin.

Martin B. Cominsky

Director, Southwest Region

Anti-Defamation League

713/627-3490, ext. 122

713/627-2011 (fax)

MCominsky@aol.com');

INSERT INTO email([from],[to],subject,body) VALUES('phillip.love@enron.com', 'todagost@utmb.edu, gbsonnta@utmb.edu', 'New President', 'I had a little bird put a word in my ear. Is there any possibility for Ben Raimier to be Bush's secretary of HHS? Just curious about that infamous UTMB rumor mill. Hope things are well, happy holidays.

PL');

INSERT INTO email([from],[to],subject,body) VALUES('marie.heard@enron.com', 'ehamilton@fna.com', 'ISDA Master Agreement',

'Erin:

Pursuant to your request, attached are the Schedule to the ISDA Master Agreement, together with Paragraph 13 to the ISDA Credit Support Annex. Please let me know if you need anything else. We look forward to hearing your comments.

Marie

Marie Heard

Senior Legal Specialist

Enron North America Corp.

Phone: (713) 853-3907

Fax: (713) 646-3490
marie.heard@enron.com

);
INSERT INTO email([from],[to],subject,body) VALUES('andrea.ring@enron.com', 'beverly.beaty@enron.com',
'Re: Tennessee Buy - Louis Dreyfus', 'Beverly - once again thanks so much for your help on this.

);
INSERT INTO email([from],[to],subject,body) VALUES('karolyn.criado@enron.com', 'j..bonin@enron.com,
felicia.case@enron.com, b..clapp@enron.com,', 'Price List week of Oct. 8-9, 2001', '
Please contact me if you have any questions regarding last weeks prices.

Thank you,
Karolyn Criado
3-9441

);
INSERT INTO email([from],[to],subject,body)
VALUES('kevin.presto@enron.com', 'edward.baughman@enron.com, billy.braddock@enron.com', 'Associated',
'Please begin working on filling our Associated short position in 02. I would like to take this risk off the books.

In addition, please find out what a buy-out of VEPCO would cost us. With Rogers transitioning to run our retail risk management, I would like to clean up our customer positions.

We also need to continue to explore a JEA buy-out.

Thanks.);
INSERT INTO email([from],[to],subject,body) VALUES('stacy.dickson@enron.com', 'gregg.penman@enron.com',
'RE: Constellation TC 5-7-01', 'Gregg,

I am at home with a sick baby. (Lots of fun!) I will call you about this tomorrow.

Stacy');
INSERT INTO email([from],[to],subject,body) VALUES('joe.quenet@enron.com', 'dfincher@utilicorp.com', '', 'hey
big guy.....check this out.....

w ww.gorelieberman-2000.com/");
INSERT INTO email([from],[to],subject,body) VALUES('k..allen@enron.com', 'jacquestc@aol.com', '',
'Jacques,

I sent you a fax of Kevin Kolb's comments on the release. The payoff on the note would be \$36,248 (\$36090(principal) + \$158 (accrued interest)).

This is assuming we wrap this up on Tuesday.

Please email to confirm that their changes are ok so I can set up a meeting on Tuesday to reach closure.

Phillip');

INSERT INTO email([from],[to],subject,body) VALUES('kourtney.nelson@enron.com',
'mike.swerzbin@enron.com', 'Adjusted L/R Balance', 'Mike,

I placed the adjusted L/R Balance on the Enronwest site. It is under the "Staff/Kourtney Nelson". There are two links:

- 1) "Adj L_R" is the same data/format from the weekly strategy meeting.
- 2) "New Gen 2001_2002" link has all of the supply side info that is used to calculate the L/R balance
-Please note the Data Flag column, a value of "3" indicates the project was cancelled, on hold, etc and is not included in the calc.

Both of these sheets are interactive Excel spreadsheets and thus you can play around with the data as you please. Also, James Bruce is working to get his gen report on the web. That will help with your access to information on new gen.

Please let me know if you have any questions or feedback,

Kourtney

Kourtney Nelson

Fundamental Analysis

Enron North America

(503) 464-8280

kourtney.nelson@enron.com');

INSERT INTO email([from],[to],subject,body) VALUES('d..thomas@enron.com', 'naveed.ahmed@enron.com',
'FW: Current Enron TCC Portfolio', '

-----Original Message-----

From: Grace, Rebecca M.

Sent: Monday, December 17, 2001 9:44 AM

To: Thomas, Paul D.

Cc: Cashion, Jim; Allen, Thresa A.; May, Tom

Subject: RE: Current Enron TCC Portfolio

Paul,

I reviewed NY's list. I agree with all of their contracts numbers and mw amounts.

Call if you have any more questions.

Rebecca

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:08 AM
To: Grace, Rebecca M.
Subject: FW: Current Enron TCC Portfolio

<< File: enrontccs.xls >>

Rebecca,
Let me know if
you see any differences.

Paul
X 3-0403

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:04 AM
To: Ahmed, Naveed
Subject: FW: Current Enron TCC Portfolio

-----Original Message-----

From: Thomas, Paul D.
Sent: Thursday, December 13, 2001 10:01 AM
To: Baughman, Edward D.
Subject: Current Enron TCC Portfolio

);
INSERT INTO email([from],[to],subject,body) VALUES('stephanie.panus@enron.com',
'william.bradford@enron.com, debbie.brackett@enron.com,', 'Coastal Merchant Energy/El Paso Merchant Energy',
'Coastal Merchant Energy, L.P. merged with and into El Paso Merchant Energy,
L.P., effective February 1, 2001, with the surviving entity being El Paso
Merchant Energy, L.P. We currently have ISDA Master Agreements with both
counterparties. Please see the attached memo regarding the existing Masters
and let us know which agreement should be terminated.

Thanks,
Stephanie

);
INSERT INTO email([from],[to],subject,body) VALUES('kam.keiser@enron.com',
'c..kenne@enron.com', 'RE: What about this too???' , '

-----Original Message-----

From: Kenne, Dawn C.
Sent: Wednesday, February 06, 2002 11:50 AM
To: Keiser, Kam
Subject: What about this too???

<< File: Netco Trader Matrix.xls >>

);
INSERT INTO email([from],[to],subject,body) VALUES('chris.meyer@enron.com', 'joe.parks@enron.com',
'Centana', 'Talked to Chip. We do need Cash Committe approval given the netting feature of your deal, which
means Batch Funding Request. Please update per my previous e-mail and forward.

Thanks

chris
x31666');
INSERT INTO email([from],[to],subject,body) VALUES('debra.perlingiere@enron.com',
'jworman@academyofhealth.com', ', 'Have a great weekend! Happy Fathers Day!

Debra Perlingiere
Enron North America Corp.
1400 Smith Street, EB 3885
Houston, Texas 77002
dperlin@enron.com
Phone 713-853-7658
Fax 713-646-3490');
INSERT INTO email([from],[to],subject,body) VALUES('outlook.team@enron.com', ', 'Demo by Martha Janousek
of Dashboard & Pipeline
Profile / Julia &', 'CALENDAR ENTRY: APPOINTMENT

Description:
Demo by Martha Janousek of Dashboard & Pipeline Profile / Julia & Dir Rpts. - 4102

Date: 1/5/2001
Time: 9:00 AM - 10:00 AM (Central Standard Time)

Chairperson: Outlook Migration Team

Detailed Description:');
INSERT INTO email([from],[to],subject,body) VALUES('diana.seifert@enron.com', 'mark.taylor@enron.com',
'Guest access Chile', 'Hello Mark,

Justin Boyd told me that your can help me with questions regarding Chile.
We got a request for guest access through MG.
The company is called Escondida and is a subsidiary of BHP Australia.

Please advise if I can set up a guest account or not.

F.Y.I.: MG is planning to put a "in w/h Chile" contract for Copper on-line as soon as Enron has done the due diligence for this country.

Thanks !

Best regards

Diana Seifert

EOL PCG');

INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuere workplace.com', 'mark.whitt@enron.com', '<<Concur Expense Document>> - 121001',

'The Approval status has changed on the following report:

Status last changed by: Barry L. Tycholiz

Expense Report Name: 121001

Report Total: \$198.98

Amount Due Employee: \$198.98

Amount Approved: \$198.98

Amount Paid: \$0.00

Approval Status: Approved

Payment Status: Pending

To review this expense report, click on the following link for Concur Expense.

<http://expensecms.enron.com>');

INSERT INTO email([from],[to],subject,body) VALUES('kevin.hyatt@enron.com', ', 'Technical Support', 'Outside the U.S., please refer to the list below:

Australia:

1800 678-515

support@palm-au.com

Canada:

1905 305-6530

support@palm.com

New Zealand:

0800 446-398

support@palm-nz.com

U.K.:

0171 867 0108

eurosupport@palm.3com.com

Please refer to the Worldwide Customer Support card for a complete technical support contact list.');

INSERT INTO email([from],[to],subject,body) VALUES('geoff.storey@enron.com', 'dutch.quigley@enron.com', 'RE:', 'duke contact?'

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 10:14 AM

To: Storey, Geoff

Subject: RE:

bp corp Albert LaMore 281-366-4962

running the reports now

-----Original Message-----

From: Storey, Geoff

Sent: Wednesday, October 31, 2001 10:10 AM

To: Quigley, Dutch

Subject: RE:

give me a contact over there too

BP

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 9:42 AM

To: Storey, Geoff

Subject:

Coral Jeff Whitnah 713-767-5374

Relaint Steve McGinn 713-207-4000');

INSERT INTO email([from],[to],subject,body) VALUES('pete.davis@enron.com', 'pete.davis@enron.com', 'Start Date: 4/22/01; HourAhead hour: 3; <CODESITE>', 'Start Date: 4/22/01; HourAhead hour: 3; No ancillary schedules awarded.

Variances detected.

Variances detected in Load schedule.

LOG MESSAGES:

PARSING FILE -->> O:\Portland\WestDesk\California Scheduling\ISO Final Schedules\2001042203.txt

---- Load Schedule ----

\$\$\$ Variance found in table tblLoads.

Details: (Hour: 3 / Preferred:

1.92 / Final: 1.89)

TRANS_TYPE: FINAL

LOAD_ID: PGE4

MKT_TYPE: 2
TRANS_DATE: 4/22/01
SC_ID: EPMI

```
);  
INSERT INTO email([from],[to],subject,body) VALUES('john.postlethwaite@enron.com',  
'john.zufferli@enron.com', 'Reference', 'John, hope things are going well up there for you. The big day is almost  
here for you and Jessica. I was wondering if I could use your name as a job reference if need be. I am just trying to  
get everything in order just in case something happens.
```

```
John');  
INSERT INTO email([from],[to],subject,body) VALUES('jeffrey.shankman@enron.com',  
'lschiffm@jonesday.com', 'Re:', 'I saw you called on the cell this a.m. Sorry I missed you. (I was in the  
shower). I have had a shitty week--I suspect my silence (not only to you,  
but others) after our phone call is a result of the week. I'm seeing Glen at  
11:15....talk to you');  
INSERT INTO email([from],[to],subject,body) VALUES('litebytz@enron.com', ', 'Lite Bytz RSVP', '  
This week's Lite Bytz presentation  
will feature the following TOOLZ speaker:
```

Richard McDougall
Solaris 8
Thursday, June 7, 2001

If you have not already signed up, please RSVP via email to litebytz@enron.com by the end of the day Tuesday, June 5, 2001.

*Remember: this is now a Brown Bag Event--so bring your lunch and we will provide cookies and drinks.

Click below for more details.

<http://home.enron.com:84/messaging/litebytztoolzprint.jpg>);

```
COMMIT;  
}  
} {}
```

```
#####  
# Everything above just builds an interesting test database. The actual  
# tests come after this comment.  
#####
```

```
do_test fts2c-1.2 {  
  execsql {  
    SELECT rowid FROM email WHERE email MATCH 'mark'  
  }  
} {6 17 25 38 40 42 73 74}  
do_test fts2c-1.3 {  
  execsql {
```

```

    SELECT rowid FROM email WHERE email MATCH 'susan'
  }
} {24 40}
do_test fts2c-1.4 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark
susan'
  }
} {40}
do_test fts2c-1.5 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'susan mark'
  }
} {40}
do_test fts2c-1.6 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH "'mark susan'"
  }
} {}
do_test fts2c-1.7 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark -susan'
  }
} {6 17 25 38 42 73 74}
do_test fts2c-1.8 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH '-mark susan'
  }
} {24}
do_test fts2c-1.9 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark OR susan'
  }
} {6 17 24 25 38 40 42 73 74}

# Some simple tests of the automatic "offsets(email)" column. In the sample
# data set above, only one message, number 20, contains the words
# "gas" and "reminder" in both body and subject.
#
do_test fts2c-2.1 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE email MATCH 'gas reminder'
  }
} {20 {2 0 42 3 2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}
do_test fts2c-2.2 {
  execsql {

```



```

SELECT rowid, offsets(email) FROM email
WHERE email MATCH 'subject:gas reminder'
}
} {20 {2 0 42 3 2 1 54 8 3 1 54 8}}
do_test fts2c-2.3 {
execsql {
SELECT rowid, offsets(email) FROM email
WHERE email MATCH 'body:gas reminder'
}
} {20 {2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}
do_test fts2c-2.4 {
execsql {
SELECT rowid, offsets(email) FROM email
WHERE subject MATCH 'gas reminder'
}
} {20 {2 0 42 3 2 1 54 8}}
do_test fts2c-2.5 {
execsql {
SELECT rowid, offsets(email) FROM email
WHERE body MATCH 'gas reminder'
}
} {20 {3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}

# Document 32 contains 5 instances of the world "child". But only
# 3 of them are paired with "product". Make sure only those instances
# that match the phrase appear in the offsets(email) list.
#
do_test fts2c-3.1 {
execsql {
SELECT rowid, offsets(email) FROM email
WHERE body MATCH 'child product' AND +rowid=32
}
} {32 {3 0 94 5 3 0 114 5 3 0
207 5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7 3 1 493 7}}
do_test fts2c-3.2 {
execsql {
SELECT rowid, offsets(email) FROM email
WHERE body MATCH "child product"
}
} {32 {3 0 207 5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7}}

# Snippet generator tests
#
do_test fts2c-4.1 {
execsql {
SELECT snippet(email) FROM email
WHERE email MATCH 'subject:gas reminder'
}
}

```

```

} {{Alert Posted 10:00 AM November 20,2000: E-<b>GAS</b> Request <b>Reminder</b>}}
do_test fts2c-4.2 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'christmas candlelight'
  }
} {{<b>...</b> place.? What do you think about going here <b>Christmas</b>
eve?? They have an 11:00 a.m. service and a <b>candlelight</b> service at 5:00 p.m.,
among others. <b>...</b>}}

do_test fts2c-4.3 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <b>Deal</b> <b>Sheet</b> <b>...</b> intent
  Review Enron
  asset base for <b>potential</b> <b>reuse</b>/ licensing
  Contract negotiations <b>...</b>}}

do_test fts2c-4.4 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
    WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <<<Deal>>> <<<Sheet>>> intent
  Review Enron asset base for <<<potential>>> <<<reuse>>>/ licensing
  Contract negotiations }}

do_test fts2c-4.5 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
    WHERE email MATCH 'first things'
  }
} {{Re: <<<First>>> Polish Deal! Congrats! <<<Things>>> seem to be building rapidly now on the }}

do_test fts2c-4.6 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'chris is here'
  }
} {{<b>chris</b>.germany@enron.com <b>...</b> Sounds good to me. I bet this <b>is</b> next to the Warick??
Hotel. <b>...</b> place.? What do you think about going <b>here</b> Christmas
eve?? They have an 11:00 a.m. <b>...</b>}}

do_test fts2c-4.7 {
  execsql {
    SELECT
  snippet(email) FROM email
    WHERE email MATCH "'pursuant to'"
  }
} {{Erin:

```

Pursuant to your request, attached are the Schedule to ...}}

do_test fts2c-4.8 {

execsql {

SELECT snippet(email) FROM email

WHERE email MATCH 'ancillary load davis'

}

} {{pete.davis@enron.com ... Start Date: 4/22/01; HourAhead hour: 3; No ancillary schedules awarded.

Variances detected.

Variances detected in Load schedule.

LOG MESSAGES:

PARSING ...}}

Combinations of AND and OR operators:

#

do_test fts2c-5.1 {

execsql {

SELECT snippet(email) FROM email

WHERE email MATCH 'questar enron OR com'

}

} {{matt.smith@enron.com ... six reports:

31 Keystone Receipts

15 Questar Pipeline

40 Rockies Production

22 West_2 ...}}

do_test fts2c-5.2 {

execsql {

SELECT snippet(email) FROM email

WHERE email MATCH 'enron OR com questar'

}

} {{matt.smith@enron.com ...

six reports:

31 Keystone Receipts

15 Questar Pipeline

40 Rockies Production

22 West_2 ...}}

finish_test

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/fts2c.test

No license file was found, but licenses were detected in source scan.

```
/*
** The "printf" code that follows dates from the 1980's. It is in
** the public domain. The original comments are included here for
** completeness. They are very out-of-date but might be useful as
** an historical reference. Most of the "enhancements" have been backed
** out so that the functionality is now the same as standard printf().
**
*****
**
** This file contains code for a set of "printf"-like routines. These
** routines format strings much like the printf() from the standard C
** library, though the implementation here has enhancements to support
** SQLite.
*/
```

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/src/printf.c
```

No license file was found, but licenses were detected in source scan.

<copyright.html> and is thus free for

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/about.html
```

No license file was found, but licenses were detected in source scan.

```
<html>
<title>SQLite Copyright Release Template</title>
<body bgcolor="white">
<h1 align="center">
Copyright Release for<br>
Contributions To SQLite
</h1>

<p>
SQLite is software that implements an embeddable SQL database engine.
SQLite is available for free download from http://www.sqlite.org/.
The principal author and maintainer of SQLite has disclaimed all
copyright interest in his contributions to SQLite
and thus released his contributions into the public domain.
In order to keep the SQLite software unencumbered by copyright
claims, the principal author asks others who may from time to
time contribute changes and enhancements to likewise disclaim
their own individual copyright interest.
</p>
```

<p>

Because the SQLite software found at <http://www.sqlite.org/> is in the public domain, anyone is free to download the SQLite software from that website, make changes to the software, use, distribute, or sell the modified software, under either the original name or under some new name, without any need to obtain permission, pay royalties, acknowledge the original source of the software, or in any other way compensate, identify, or notify the original authors. Nobody is in any way compelled to contribute their SQLite changes and enhancements back to the SQLite website. This document concerns only changes and enhancements to SQLite that are intentionally and deliberately contributed back to the SQLite website.

</p>

<p>

For the purposes of this document, "SQLite software" shall mean any computer source code, documentation, makefiles, test scripts, or other information that is published on the SQLite website, <http://www.sqlite.org/>. Precompiled binaries are excluded from the definition of "SQLite software" in this document because the process of compiling the software may introduce information from outside sources which is not properly a part of SQLite.

</p>

<p>

The header comments on the SQLite source files exhort the reader to share freely and to never take more than one gives. In the spirit of that exhortation I make the following declarations:

</p>

<p>

I dedicate to the public domain any and all copyright interest in the SQLite software that was publicly available on the SQLite website (<http://www.sqlite.org/>) prior to the date of the signature below and any changes or enhancements to the SQLite software that I may cause to be published on that website in the future. I make this dedication for the benefit of the public at large and to the detriment of my heirs and successors. I intend this dedication to be an overt act of relinquishment in perpetuity of all present and future rights to the SQLite software under copyright law.

</p>

<p>
To the best of my knowledge and belief, the changes and enhancements that I have contributed to SQLite are either originally written by me or are derived from prior works which I have verified are also in the public domain and are not subject to claims of copyright by other parties.
</p>

<p>
To the best of my knowledge and belief, no individual, business, organization, government, or other entity has any copyright interest in the SQLite software as it existed on the SQLite website as of the date on the signature line below.
</p>

<p>
I agree never to publish any additional information to the SQLite website (by CVS, email, scp, FTP, or any other means) unless that information is an original work of authorship by me or is derived from prior published versions of SQLite.
I agree never to copy and paste code into the SQLite code base from other sources.
I agree never to publish on the SQLite website any information that would violate a law or breach a contract.
</p>

<p>
<table width="100%" cellpadding="0" cellspacing="0">
<tr>
<td width="60%" valign="top">
Signature:
<p> </p>
<p> </p>
<p> </p>
</td><td valign="top" align="left">
Date:
</td></tr>
<td colspan=2>
Name
(printed):
</td>
</tr>
</table>
</body>
</html>

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-riW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/copyright-release.html
No license file was found, but licenses were detected in source scan.

MMFauxFont.prc

Found in path(s):

* %%BeginFile

No license file was found, but licenses were detected in source scan.

public domain. No claim of ownership is made

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-riW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/faq.html
No license file was found, but licenses were detected in source scan.

2010 July 16

#

The author disclaims copyright to this source code. In place of
a legal notice, here is a blessing:

#

May you do good and not evil.

May you find forgiveness for yourself and forgive others.

May you share freely, never taking more than you give.

#

#

This file implements tests to verify that the "testable statements" in
the lang_select.html document are correct.

#

set testdir [file dirname \$argv0]

source \$testdir/tester.tcl

ifcapable !compound {

finish_test

return

}

do_execsql_test e_select-1.0 {

CREATE TABLE t1(a, b);

INSERT INTO t1 VALUES('a', 'one');

INSERT INTO t1 VALUES('b', 'two');

INSERT INTO t1 VALUES('c', 'three');

CREATE TABLE t2(a, b);

```

INSERT INTO t2 VALUES('a', 'I');
INSERT INTO t2 VALUES('b', 'II');
INSERT INTO t2 VALUES('c', 'III');

```

```

CREATE TABLE t3(a, c);
INSERT INTO
t3 VALUES('a', 1);
INSERT INTO t3 VALUES('b', 2);

```

```

CREATE TABLE t4(a, c);
INSERT INTO t4 VALUES('a', NULL);
INSERT INTO t4 VALUES('b', 2);

```

```
} {}
```

```

set t1_cross_t2 [list          \
a one  a I   a one  b II  \
a one  c III b two  a I   \
b two  b II  b two  c III  \
c three a I   c three b II  \
c three c III          \
]
set t1_cross_t1 [list          \
a one  a one  a one  b two  \
a one  c three b two  a one  \
b two  b two  b two  c three \
c three a one  c three b two  \
c three c three          \
]

```

```

# This proc is a specialized version of [do_execsql_test].
#
# The second argument to this proc must be a SELECT statement that
# features a cross join of some time. Instead of the usual ",",
# "CROSS JOIN" or "INNER JOIN" join-op, the string %JOIN% must be
# substituted.
#
# This test runs the SELECT three times - once with:
#
# * s/%JOIN%/./
# * s/%JOIN%/JOIN/
#
# * s/%JOIN%/INNER JOIN/
# * s/%JOIN%/CROSS JOIN/
#
# and checks that each time the results of the SELECT are $res.
#
proc do_join_test {tn select res} {
  foreach {tn2 joinop} [list 1, 2 "CROSS JOIN" 3 "INNER JOIN"] {

```



```

set S [string map [list %JOIN% $joinop] $select]
uplevel do_execsql_test $tn.$tn2 [list $S] [list $res]
}
}

#-----
# The following tests check that all paths on the syntax diagrams on
# the lang_select.html page may be taken.
#
# EVIDENCE-OF: R-11353-33501 -- syntax diagram join-constraint
#
do_join_test e_select-0.1.1 {
  SELECT count(*) FROM t1 %JOIN% t2 ON (t1.a=t2.a)
} {3}
do_join_test e_select-0.1.2 {
  SELECT count(*) FROM t1 %JOIN% t2 USING (a)
} {3}
do_join_test e_select-0.1.3 {
  SELECT count(*) FROM t1 %JOIN% t2
} {9}
do_catchsql_test e_select-0.1.4 {
  SELECT count(*) FROM t1, t2 ON (t1.a=t2.a) USING (a)
} {1 {cannot have both ON and USING clauses in the
same join}}
do_catchsql_test e_select-0.1.5 {
  SELECT count(*) FROM t1, t2 USING (a) ON (t1.a=t2.a)
} {1 {near "ON": syntax error}}

# EVIDENCE-OF: R-40919-40941 -- syntax diagram select-core
#
# 0: SELECT ...
# 1: SELECT DISTINCT ...
# 2: SELECT ALL ...
#
# 0: No FROM clause
# 1: Has FROM clause
#
# 0: No WHERE clause
# 1: Has WHERE clause
#
# 0: No GROUP BY clause
# 1: Has GROUP BY clause
# 2: Has GROUP BY and HAVING clauses
#
do_select_tests e_select-0.2 {
  0000.1 "SELECT 1, 2, 3 " {1 2 3}
  1000.1 "SELECT DISTINCT 1, 2, 3 " {1 2 3}
  2000.1 "SELECT ALL 1, 2, 3 " {1 2 3}

```

```

0100.1 "SELECT a, b, a||b FROM t1 " {
  a one aone b two btwo c three cthree
}
1100.1 "SELECT DISTINCT a, b, a||b FROM t1 " {
  a one aone b two btwo c three cthree
}
1200.1 "SELECT ALL a, b, a||b FROM t1 " {
  a one aone b two btwo c three cthree
}

0010.1 "SELECT 1, 2, 3 WHERE 1 " {1 2 3}
0010.2 "SELECT 1, 2, 3 WHERE 0 " {}
0010.3 "SELECT 1, 2, 3 WHERE NULL
" {}

1010.1 "SELECT DISTINCT 1, 2, 3 WHERE 1 " {1 2 3}

2010.1 "SELECT ALL 1, 2, 3 WHERE 1 " {1 2 3}

0110.1 "SELECT a, b, a||b FROM t1 WHERE a!='x' " {
  a one aone b two btwo c three cthree
}
0110.2 "SELECT a, b, a||b FROM t1 WHERE a=='x'" {}

1110.1 "SELECT DISTINCT a, b, a||b FROM t1 WHERE a!='x' " {
  a one aone b two btwo c three cthree
}

2110.0 "SELECT ALL a, b, a||b FROM t1 WHERE a=='x'" {}

0001.1 "SELECT 1, 2, 3 GROUP BY 2" {1 2 3}
0002.1 "SELECT 1, 2, 3 GROUP BY 2 HAVING count(*)=1" {1 2 3}
0002.2 "SELECT 1, 2, 3 GROUP BY 2 HAVING count(*)>1" {}

1001.1 "SELECT DISTINCT 1, 2, 3 GROUP BY 2" {1 2 3}
1002.1 "SELECT DISTINCT 1, 2, 3 GROUP BY 2 HAVING count(*)=1" {1 2 3}
1002.2 "SELECT DISTINCT 1, 2, 3 GROUP BY 2 HAVING count(*)>1" {}

2001.1 "SELECT ALL 1, 2, 3 GROUP BY 2" {1 2 3}
2002.1 "SELECT ALL 1, 2, 3 GROUP BY 2 HAVING count(*)=1" {1 2 3}
2002.2 "SELECT ALL 1, 2, 3 GROUP BY 2 HAVING count(*)>1" {}

0101.1 "SELECT count(*),
max(a) FROM t1 GROUP BY b" {1 a 1 c 1 b}
0102.1 "SELECT count(*), max(a) FROM t1 GROUP BY b HAVING count(*)=1" {
  1 a 1 c 1 b
}

```

0102.2 "SELECT count(*), max(a) FROM t1 GROUP BY b HAVING count(*)=2" { }

1101.1 "SELECT DISTINCT count(*), max(a) FROM t1 GROUP BY b" {1 a 1 c 1 b}

1102.1 "SELECT DISTINCT count(*), max(a) FROM t1
GROUP BY b HAVING count(*)=1" {

1 a 1 c 1 b

}

1102.2 "SELECT DISTINCT count(*), max(a) FROM t1
GROUP BY b HAVING count(*)=2" {

}

2101.1 "SELECT ALL count(*), max(a) FROM t1 GROUP BY b" {1 a 1 c 1 b}

2102.1 "SELECT ALL count(*), max(a) FROM t1
GROUP BY b HAVING count(*)=1" {

1 a 1 c 1 b

}

2102.2 "SELECT ALL count(*), max(a) FROM t1
GROUP BY b HAVING count(*)=2" {

}

0011.1 "SELECT 1, 2, 3 WHERE 1 GROUP BY 2" {1 2 3}

0012.1 "SELECT 1, 2, 3 WHERE 0 GROUP BY 2 HAVING count(*)=1" { }

0012.2 "SELECT 1, 2, 3 WHERE 0 GROUP BY 2 HAVING count(*)>1" { }

1011.1 "SELECT

DISTINCT 1, 2, 3 WHERE 0 GROUP BY 2" { }

1012.1 "SELECT DISTINCT 1, 2, 3 WHERE 1 GROUP BY 2 HAVING count(*)=1"
{1 2 3}

1012.2 "SELECT DISTINCT 1, 2, 3 WHERE NULL GROUP BY 2 HAVING count(*)>1" { }

2011.1 "SELECT ALL 1, 2, 3 WHERE 1 GROUP BY 2" {1 2 3}

2012.1 "SELECT ALL 1, 2, 3 WHERE 0 GROUP BY 2 HAVING count(*)=1" { }

2012.2 "SELECT ALL 1, 2, 3 WHERE 'abc' GROUP BY 2 HAVING count(*)>1" { }

0111.1 "SELECT count(*), max(a) FROM t1 WHERE a='a' GROUP BY b" {1 a}

0112.1 "SELECT count(*), max(a) FROM t1
WHERE a='c' GROUP BY b HAVING count(*)=1" {1 c}

0112.2 "SELECT count(*), max(a) FROM t1
WHERE 0 GROUP BY b HAVING count(*)=2" { }

1111.1 "SELECT DISTINCT count(*), max(a) FROM t1 WHERE a<'c' GROUP BY b"
{1 a 1 b}

1112.1 "SELECT DISTINCT count(*), max(a) FROM t1 WHERE a>'a'
GROUP BY b HAVING count(*)=1" {

1 c 1 b

}

1112.2 "SELECT DISTINCT count(*), max(a) FROM t1 WHERE 0
GROUP BY b HAVING

```

count(*)=2" {
}

2111.1 "SELECT ALL count(*), max(a) FROM t1 WHERE b>'one' GROUP BY b"
      {1 c 1 b}
2112.1 "SELECT ALL count(*), max(a) FROM t1 WHERE a!='b'
      GROUP BY b HAVING count(*)=1" {
1 a 1 c
}
2112.2 "SELECT ALL count(*), max(a) FROM t1
      WHERE 0 GROUP BY b HAVING count(*)=2" { }
}

```

EVIDENCE-OF: R-41378-26734 -- syntax diagram result-column

#

```

do_select_tests e_select-0.3 {
1 "SELECT * FROM t1" {a one b two c three}
2 "SELECT t1.* FROM t1" {a one b two c three}
3 "SELECT 'x'||a||'x' FROM t1" {xax xbx xc}
4 "SELECT 'x'||a||'x' alias FROM t1" {xax xbx xc}
5 "SELECT 'x'||a||'x' AS alias FROM t1" {xax xbx xc}
}

```

EVIDENCE-OF: R-43129-35648 -- syntax diagram join-source

#

EVIDENCE-OF: R-36683-37460 -- syntax diagram join-op

#

```

do_select_tests e_select-0.4 {
1 "SELECT t1.rowid FROM t1" {1 2 3}
2 "SELECT t1.rowid FROM t1,t2" {1 1 1 2 2 2 3 3 3}
3 "SELECT t1.rowid FROM t1,t2,t3" {1 1 1 1 1 1 2 2 2 2 2 2 3
3 3 3 3 3}

4 "SELECT t1.rowid FROM t1" {1 2 3}
5 "SELECT t1.rowid FROM t1 JOIN t2" {1 1 1 2 2 2 3 3 3}
6 "SELECT t1.rowid FROM t1 JOIN t2 JOIN t3"
  {1 1 1 1 1 1 2 2 2 2 2 2 3 3 3 3 3 3}

7 "SELECT t1.rowid FROM t1 NATURAL JOIN t3" {1 2}
8 "SELECT t1.rowid FROM t1 NATURAL LEFT OUTER JOIN t3" {1 2 3}
9 "SELECT t1.rowid FROM t1 NATURAL LEFT JOIN t3" {1 2 3}
10 "SELECT t1.rowid FROM t1 NATURAL INNER JOIN t3" {1 2}
11 "SELECT t1.rowid FROM t1 NATURAL CROSS JOIN t3" {1 2}

12 "SELECT t1.rowid FROM t1 JOIN t3" {1 1 2 2 3 3}
13 "SELECT t1.rowid FROM t1 LEFT OUTER JOIN t3" {1 1 2 2 3 3}
14 "SELECT t1.rowid FROM t1 LEFT JOIN t3" {1 1 2 2 3 3}

```

```

15 "SELECT t1.rowid FROM t1 INNER JOIN t3" {1 1 2 2 3 3}
16 "SELECT t1.rowid FROM t1 CROSS JOIN t3" {1 1 2 2 3 3}
}

# EVIDENCE-OF: R-28308-37813 -- syntax diagram compound-operator
#
do_select_tests e_select-0.5 {
1 "SELECT rowid FROM t1 UNION ALL SELECT rowid+2 FROM t4" {1 2 3 3 4}
2 "SELECT rowid FROM t1 UNION
   SELECT rowid+2 FROM t4" {1 2 3 4}
3 "SELECT rowid FROM t1 INTERSECT SELECT rowid+2 FROM t4" {3}
4 "SELECT rowid FROM t1 EXCEPT SELECT rowid+2 FROM t4" {1 2}
}

# EVIDENCE-OF: R-06480-34950 -- syntax diagram ordering-term
#
do_select_tests e_select-0.6 {
1 "SELECT b||a FROM t1 ORDER BY b||a"           {onea threec twob}
2 "SELECT b||a FROM t1 ORDER BY (b||a) COLLATE nocase" {onea threec twob}
3 "SELECT b||a FROM t1 ORDER BY (b||a) ASC"      {onea threec twob}
4 "SELECT b||a FROM t1 ORDER BY (b||a) DESC"     {twob threec onea}
}

# EVIDENCE-OF: R-23926-36668 -- syntax diagram select-stmt
#
do_select_tests e_select-0.7 {
1 "SELECT * FROM t1" {a one b two c three}
2 "SELECT * FROM t1 ORDER BY b" {a one c three b two}
3 "SELECT * FROM t1 ORDER BY b, a" {a one c three b two}

4 "SELECT * FROM t1 LIMIT 10" {a one b two c three}
5 "SELECT * FROM t1 LIMIT 10 OFFSET 5" {}
6 "SELECT * FROM t1 LIMIT 10, 5" {}

7 "SELECT * FROM t1 ORDER
   BY a LIMIT 10" {a one b two c three}
8 "SELECT * FROM t1 ORDER BY b LIMIT 10 OFFSET 5" {}
9 "SELECT * FROM t1 ORDER BY a,b LIMIT 10, 5" {}

10 "SELECT * FROM t1 UNION SELECT b, a FROM t1"
    {a one b two c three one a three c two b}
11 "SELECT * FROM t1 UNION SELECT b, a FROM t1 ORDER BY b"
    {one a two b three c a one c three b two}
12 "SELECT * FROM t1 UNION SELECT b, a FROM t1 ORDER BY b, a"
    {one a two b three c a one c three b two}
13 "SELECT * FROM t1 UNION SELECT b, a FROM t1 LIMIT 10"
    {a one b two c three one a three c two b}
14 "SELECT * FROM t1 UNION SELECT b, a FROM t1 LIMIT 10 OFFSET 5"

```

```

    {two b}
15 "SELECT * FROM t1 UNION SELECT b, a FROM t1 LIMIT 10, 5"
    {}
16 "SELECT * FROM t1 UNION SELECT b, a FROM t1 ORDER BY a LIMIT 10"
    {a one b two c three one a three c two b}
17 "SELECT * FROM t1 UNION SELECT b, a FROM t1 ORDER BY b LIMIT 10 OFFSET 5"
    {b two}
18 "SELECT * FROM t1 UNION SELECT b, a FROM t1 ORDER
BY a,b LIMIT 10, 5"
    {}
}

```

```

#-----
# The following tests focus on FROM clause (join) processing.
#

```

```

# EVIDENCE-OF: R-16074-54196 If the FROM clause is omitted from a simple
# SELECT statement, then the input data is implicitly a single row zero
# columns wide
#

```

```

do_select_tests e_select-1.1 {
1 "SELECT 'abc'"      {abc}
2 "SELECT 'abc' WHERE NULL" {}
3 "SELECT NULL"      {{{}}
4 "SELECT count(*)"  {1}
5 "SELECT count(*) WHERE 0" {0}
6 "SELECT count(*) WHERE 1" {1}
}

```

```

# EVIDENCE-OF: R-48114-33255 If there is only a single table in the
# join-source following the FROM clause, then the input data used by the
# SELECT statement is the contents of the named table.
#

```

```

# The results of the SELECT queries suggest that they are operating on the
# contents of the table 'xx'.
#

```

```

do_execsql_test e_select-1.2.0 {
CREATE TABLE xx(x, y);
INSERT INTO xx VALUES('iJIsIPepMuAhU', X'10B00B897A15BAA02E3F98DCE8F2');
INSERT INTO xx VALUES(NULL, -16.87);
INSERT INTO xx VALUES(-17.89, 'linguistically');
} {}
do_select_tests e_select-1.2 {
1 "SELECT quote(x), quote(y) FROM xx" {
'iJIsIPepMuAhU' X'10B00B897A15BAA02E3F98DCE8F2'
NULL          -16.87
-17.89        'linguistically'
}
}

```

```

2 "SELECT count(*), count(x), count(y) FROM xx" {3 2 3}
3 "SELECT sum(x), sum(y) FROM xx"      {-17.89 -16.87}
}

# EVIDENCE-OF: R-23593-12456 If there is more than one table specified
# as part of the join-source following the FROM keyword, then the
# contents of each named table are joined into a single dataset for the
# simple SELECT statement to operate on.
#
# There are more detailed tests for subsequent requirements that add
# more detail to this idea. We just add a single test that shows that
# data is coming from each of the three tables following the FROM clause
# here to show that the statement, vague
# as it is, is not incorrect.
#
do_select_tests e_select-1.3 {
1 "SELECT * FROM t1, t2, t3" {
    a one a I a 1 a one a I b 2 a one b II a 1
    a one b II b 2 a one c III a 1 a one c III b 2
    b two a I a 1 b two a I b 2 b two b II a 1
    b two b II b 2 b two c III a 1 b two c III b 2
    c three a I a 1 c three a I b 2 c three b II a 1
    c three b II b 2 c three c III a 1 c three c III b 2
}
}

#
# The following block of tests - e_select-1.4.* - test that the description
# of cartesian joins in the SELECT documentation is consistent with SQLite.
# In doing so, we test the following three requirements as a side-effect:
#
# EVIDENCE-OF: R-46122-14930 If the join-op is "CROSS JOIN", "INNER
# JOIN", "JOIN" or a comma (",") and there is no ON or USING clause,
# then the result of the join is simply the cartesian product of the
# left and right-hand datasets.
#
# The tests are built on this assertion. Really, they test that the output
# of a CROSS JOIN, JOIN,
# INNER JOIN or "," join matches the expected result
# of calculating the cartesian product of the left and right-hand datasets.
#
# EVIDENCE-OF: R-46256-57243 There is no difference between the "INNER
# JOIN", "JOIN" and "," join operators.
#
# EVIDENCE-OF: R-07544-24155 The "CROSS JOIN" join operator produces the
# same data as the "INNER JOIN", "JOIN" and "," operators
#

```

```

# All tests are run 4 times, with the only difference in each run being
# which of the 4 equivalent cartesian product join operators are used.
# Since the output data is the same in all cases, we consider that this
# qualifies as testing the two statements above.
#
do_execsql_test e_select-1.4.0 {
CREATE TABLE x1(a, b);
CREATE TABLE x2(c, d, e);
CREATE TABLE x3(f, g, h, i);

-- x1: 3 rows, 2 columns
INSERT INTO x1 VALUES(24, 'converging');
INSERT INTO x1 VALUES(NULL, X'CB71');
INSERT INTO x1 VALUES('blonds', 'proprietary');

-- x2: 2 rows, 3 columns
INSERT INTO x2 VALUES(-60.06, NULL,
NULL);
INSERT INTO x2 VALUES(-58, NULL, 1.21);

-- x3: 5 rows, 4 columns
INSERT INTO x3 VALUES(-39.24, NULL, 'encompass', -1);
INSERT INTO x3 VALUES('presenting', 51, 'reformation', 'dignified');
INSERT INTO x3 VALUES('conducting', -87.24, 37.56, NULL);
INSERT INTO x3 VALUES('coldest', -96, 'dramatists', 82.3);
INSERT INTO x3 VALUES('alerting', NULL, -93.79, NULL);
} {}

# EVIDENCE-OF: R-59089-25828 The columns of the cartesian product
# dataset are, in order, all the columns of the left-hand dataset
# followed by all the columns of the right-hand dataset.
#
do_join_test e_select-1.4.1.1 {
SELECT * FROM x1 %JOIN% x2 LIMIT 1
} [concat {24 converging} {-60.06 {} {}}]

do_join_test e_select-1.4.1.2 {
SELECT * FROM x2 %JOIN% x1 LIMIT 1
} [concat {-60.06 {} {}} {24 converging}]

do_join_test e_select-1.4.1.3 {
SELECT * FROM x3 %JOIN% x2 LIMIT 1
} [concat {-39.24 {} encompass -1} {-60.06 {} {}}]

do_join_test e_select-1.4.1.4 {
SELECT * FROM x2 %JOIN% x3 LIMIT 1
} [concat

```



```
{-60.06 {} {} } {-39.24 {} encompass -1}}
```

```
# EVIDENCE-OF: R-44414-54710 There is a row in the cartesian product  
# dataset formed by combining each unique combination of a row from the  
# left-hand and right-hand datasets.
```

```
#
```

```
do_join_test e_select-1.4.2.1 {
```

```
SELECT * FROM x2 %JOIN% x3
```

```
} [list -60.06 {} {}   -39.24 {} encompass -1          \  
   -60.06 {} {}   presenting 51 reformation dignified \  
   -60.06 {} {}   conducting -87.24 37.56 {}          \  
   -60.06 {} {}   coldest -96 dramatists 82.3        \  
   -60.06 {} {}   alerting {} -93.79 {}              \  
   -58 {} 1.21    -39.24 {} encompass -1              \  
   -58 {} 1.21    presenting 51 reformation dignified \  
   -58 {} 1.21    conducting -87.24 37.56 {}          \  
   -58 {} 1.21    coldest -96 dramatists 82.3        \  
   -58 {} 1.21    alerting {} -93.79 {}              \  
]
```

```
# TODO: Come back and add a few more like  
the above.
```

```
# EVIDENCE-OF: R-20659-43267 In other words, if the left-hand dataset  
# consists of Nlhs rows of Mlhs columns, and the right-hand dataset of  
# Nrhs rows of Mrhs columns, then the cartesian product is a dataset of  
# Nlhs.Nrhs rows, each containing Mlhs+Mrhs columns.
```

```
#
```

```
# x1, x2 (Nlhs=3, Nrhs=2) (Mlhs=2, Mrhs=3)
```

```
do_join_test e_select-1.4.3.1 {
```

```
SELECT count(*) FROM x1 %JOIN% x2
```

```
} [expr 3*2]
```

```
do_test e_select-1.4.3.2 {
```

```
expr {[length [execsql {SELECT * FROM x1, x2}]] / 6}
```

```
} [expr 2+3]
```

```
# x2, x3 (Nlhs=2, Nrhs=5) (Mlhs=3, Mrhs=4)
```

```
do_join_test e_select-1.4.3.3 {
```

```
SELECT count(*) FROM x2 %JOIN% x3
```

```
} [expr 2*5]
```

```
do_test e_select-1.4.3.4 {
```

```
expr {[length [execsql {SELECT * FROM x2 JOIN x3}]] / 10}
```

```
} [expr 3+4]
```

```
# x3, x1 (Nlhs=5, Nrhs=3) (Mlhs=4, Mrhs=2)
```

```
do_join_test e_select-1.4.3.5 {
```

```
SELECT count(*) FROM x3 %JOIN% x1
```

```
} [expr 5*3]
```

```
do_test e_select-1.4.3.6 {
```

```

expr {[length [execsql {SELECT * FROM x3 CROSS JOIN x1}]] / 15}
} [expr 4+2]

# x3, x3 (Nlhs=5,
Nrhs=5) (Mlhs=4, Mrhs=4)
do_join_test e_select-1.4.3.7 {
SELECT count(*) FROM x3 %JOIN% x3
} [expr 5*5]
do_test e_select-1.4.3.8 {
expr {[length [execsql {SELECT * FROM x3 INNER JOIN x3 AS x4}]] / 25}
} [expr 4+4]

# Some extra cartesian product tests using tables t1 and t2.
#
do_execsql_test e_select-1.4.4.1 { SELECT * FROM t1, t2 } $t1_cross_t2
do_execsql_test e_select-1.4.4.2 { SELECT * FROM t1 AS x, t1 AS y } $t1_cross_t1

do_select_tests e_select-1.4.5 [list
\
1 { SELECT * FROM t1 CROSS JOIN t2 } $t1_cross_t2 \
2 { SELECT * FROM t1 AS y CROSS JOIN t1 AS x } $t1_cross_t1 \
3 { SELECT * FROM t1 INNER JOIN t2 } $t1_cross_t2 \
4 { SELECT * FROM t1 AS y INNER JOIN t1 AS x } $t1_cross_t1 \
]

# EVIDENCE-OF: R-22775-56496 If there is an ON clause specified, then
# the ON expression is evaluated for each row of the cartesian product
# as a boolean expression. All rows for which
# the expression evaluates
# to false are excluded from the dataset.
#
foreach {tn select res} [list
\
1 { SELECT * FROM t1 %JOIN% t2 ON (1) } $t1_cross_t2 \
2 { SELECT * FROM t1 %JOIN% t2 ON (0) } [list] \
3 { SELECT * FROM t1 %JOIN% t2 ON (NULL) } [list] \
4 { SELECT * FROM t1 %JOIN% t2 ON ('abc') } [list] \
5 { SELECT * FROM t1 %JOIN% t2 ON ('1ab') } $t1_cross_t2 \
6 { SELECT * FROM t1 %JOIN% t2 ON (0.9) } $t1_cross_t2 \
7 { SELECT * FROM t1 %JOIN% t2 ON ('0.9') } $t1_cross_t2 \
8 { SELECT * FROM t1 %JOIN% t2 ON (0.0) } [list] \
\
9 { SELECT t1.b, t2.b FROM t1 %JOIN% t2 ON (t1.a = t2.a) } \
{one I two II three III} \
\
10 { SELECT t1.b, t2.b FROM t1 %JOIN% t2 ON (t1.a = 'a') } \
{one I one II one III} \
\
11 { SELECT t1.b, t2.b
FROM t1 %JOIN% t2 ON (CASE WHEN t1.a = 'a' THEN NULL ELSE 1 END) } \

```

```

    {two I two II two III three I three II three III} \
] {
do_join_test e_select-1.3.$tn $select $res
}

# EVIDENCE-OF: R-63358-54862 If there is a USING clause specified as
# part of the join-constraint, then each of the column names specified
# must exist in the datasets to both the left and right of the join-op.
#
do_select_tests e_select-1.4 -error {
cannot join using column %s - column not present in both tables
} {
1 { SELECT * FROM t1, t3 USING (b) } "b"
2 { SELECT * FROM t3, t1 USING (c) } "c"
3 { SELECT * FROM t3, (SELECT a AS b, b AS c FROM t1) USING (a) } "a"
}

# EVIDENCE-OF: R-55987-04584 For each pair of namesake columns, the
# expression "lhs.X = rhs.X" is evaluated for each row of
the cartesian
# product as a boolean expression. All rows for which one or more of the
# expressions evaluates to false are excluded from the result set.
#
do_select_tests e_select-1.5 {
1 { SELECT * FROM t1, t3 USING (a) } {a one 1 b two 2}
2 { SELECT * FROM t3, t4 USING (a,c) } {b 2}
}

# EVIDENCE-OF: R-54046-48600 When comparing values as a result of a
# USING clause, the normal rules for handling affinities, collation
# sequences and NULL values in comparisons apply.
#
# EVIDENCE-OF: R-35466-18578 The column from the dataset on the
# left-hand side of the join operator is considered to be on the
# left-hand side of the comparison operator (=) for the purposes of
# collation sequence and affinity precedence.
#
do_execsql_test e_select-1.6.0 {
CREATE TABLE t5(a COLLATE nocase, b COLLATE binary);
INSERT INTO t5 VALUES('AA', 'cc');
INSERT INTO t5 VALUES('BB', 'dd');
INSERT INTO t5 VALUES(NULL, NULL);
CREATE TABLE t6(a COLLATE binary, b COLLATE nocase);
INSERT INTO
t6 VALUES('aa', 'cc');
INSERT INTO t6 VALUES('bb', 'DD');
INSERT INTO t6 VALUES(NULL, NULL);
} {}

```

```

foreach {tn select res} {
  1 { SELECT * FROM t5 %JOIN% t6 USING (a) } {AA cc cc BB dd DD}
  2 { SELECT * FROM t6 %JOIN% t5 USING (a) } {}
  3 { SELECT * FROM (SELECT a COLLATE nocase, b FROM t6) %JOIN% t5 USING (a) }
    {aa cc cc bb DD dd}
  4 { SELECT * FROM t5 %JOIN% t6 USING (a,b) } {AA cc}
  5 { SELECT * FROM t6 %JOIN% t5 USING (a,b) } {}
} {
do_join_test e_select-1.6.$tn $select $res
}

```

EVIDENCE-OF: R-57047-10461 For each pair of columns identified by a
USING clause, the column from the right-hand dataset is omitted from
the joined dataset.

#

EVIDENCE-OF: R-56132-15700 This is the only difference between a USING
clause and its equivalent ON constraint.

#

```

foreach {tn select res} {
  1a { SELECT * FROM t1 %JOIN% t2 USING (a)      }
    {a one I b two II c three III}
  1b { SELECT * FROM t1 %JOIN% t2 ON (t1.a=t2.a) }
    {a one a I b two b II c three c III}

  2a {
SELECT * FROM t3 %JOIN% t4 USING (a)      }
    {a 1 {} b 2 2}
  2b { SELECT * FROM t3 %JOIN% t4 ON (t3.a=t4.a) }
    {a 1 a {} b 2 b 2}

  3a { SELECT * FROM t3 %JOIN% t4 USING (a,c)      } {b 2}
  3b { SELECT * FROM t3 %JOIN% t4 ON (t3.a=t4.a AND t3.c=t4.c) } {b 2 b 2}

```

```

4a { SELECT * FROM (SELECT a COLLATE nocase, b FROM t6) AS x
    %JOIN% t5 USING (a) }
    {aa cc cc bb DD dd}

```

```

4b { SELECT * FROM (SELECT a COLLATE nocase, b FROM t6) AS x
    %JOIN% t5 ON (x.a=t5.a) }
    {aa cc AA cc bb DD BB dd}

```

```

} {
do_join_test e_select-1.7.$tn $select $res
}

```

EVIDENCE-OF: R-41434-12448 If the join-op is a "LEFT JOIN" or "LEFT
OUTER JOIN", then after the ON or USING filtering clauses have been
applied, an extra row is added to the output for each row in the
original left-hand input dataset that corresponds to no rows at all in
the composite dataset (if any).

```

#
do_execsql_test e_select-1.8.0 {
CREATE TABLE t7(a, b, c);
CREATE TABLE t8(a, d, e);

INSERT
INTO t7 VALUES('x', 'ex', 24);
INSERT INTO t7 VALUES('y', 'why', 25);

INSERT INTO t8 VALUES('x', 'abc', 24);
INSERT INTO t8 VALUES('z', 'ghi', 26);
} {}

do_select_tests e_select-1.8 {
1a "SELECT count(*) FROM t7 JOIN t8 ON (t7.a=t8.a)" {1}
1b "SELECT count(*) FROM t7 LEFT JOIN t8 ON (t7.a=t8.a)" {2}
2a "SELECT count(*) FROM t7 JOIN t8 USING (a)" {1}
2b "SELECT count(*) FROM t7 LEFT JOIN t8 USING (a)" {2}
}

# EVIDENCE-OF: R-15607-52988 The added rows contain NULL values in the
# columns that would normally contain values copied from the right-hand
# input dataset.
#
do_select_tests e_select-1.9 {
1a "SELECT * FROM t7 JOIN t8 ON (t7.a=t8.a)" {x ex 24 x abc 24}
1b "SELECT * FROM t7 LEFT JOIN t8 ON (t7.a=t8.a)"
{x ex 24 x abc 24 y why 25 {} {} {}}
2a "SELECT * FROM t7 JOIN t8 USING (a)" {x ex 24 abc 24}
2b "SELECT * FROM t7 LEFT JOIN t8 USING (a)" {x ex 24 abc 24 y why 25 {} {}}
}

# EVIDENCE-OF: R-01809-52134 If the NATURAL keyword is added to any of
#
the join-ops, then an implicit USING clause is added to the
# join-constraints. The implicit USING clause contains each of the
# column names that appear in both the left and right-hand input
# datasets.
#
do_select_tests e_select-1-10 {
1a "SELECT * FROM t7 JOIN t8 USING (a)" {x ex 24 abc 24}
1b "SELECT * FROM t7 NATURAL JOIN t8" {x ex 24 abc 24}

2a "SELECT * FROM t8 JOIN t7 USING (a)" {x abc 24 ex 24}
2b "SELECT * FROM t8 NATURAL JOIN t7" {x abc 24 ex 24}

3a "SELECT * FROM t7 LEFT JOIN t8 USING (a)" {x ex 24 abc 24 y why 25 {} {}}

```

```
3b "SELECT * FROM t7 NATURAL LEFT JOIN t8" {x ex 24 abc 24 y why 25 {} {}}
```

```
4a "SELECT * FROM t8 LEFT JOIN t7 USING (a)" {x abc 24 ex 24 z ghi 26 {} {}}
```

```
4b "SELECT * FROM t8 NATURAL LEFT JOIN t7" {x abc 24 ex 24 z ghi 26 {} {}}
```

```
5a "SELECT * FROM t3 JOIN t4 USING (a,c)" {b 2}
```

```
5b "SELECT * FROM t3 NATURAL JOIN t4" {b 2}
```

```
6a "SELECT * FROM t3 LEFT JOIN t4 USING (a,c)" {a 1 b 2}
```

```
6b "SELECT * FROM t3 NATURAL LEFT JOIN t4" {a 1 b 2}
```

```
}
```

```
# EVIDENCE-OF: R-49566-01570 If the left and right-hand input datasets
```

```
# feature no common column names, then the NATURAL keyword has no effect
```

```
# on the results of the join.
```

```
#
```

```
do_execsql_test e_select-1.11.0 {
```

```
CREATE TABLE t10(x, y);
```

```
INSERT INTO t10 VALUES(1, 'true');
```

```
INSERT INTO t10 VALUES(0, 'false');
```

```
} {}
```

```
do_select_tests e_select-1-11 {
```

```
1a "SELECT a, x FROM t1 CROSS JOIN t10" {a 1 a 0 b 1 b 0 c 1 c 0}
```

```
1b "SELECT a, x FROM t1 NATURAL CROSS JOIN t10" {a 1 a 0 b 1 b 0 c 1 c 0}
```

```
}
```

```
# EVIDENCE-OF: R-39625-59133 A USING or ON clause may not be added to a
```

```
# join that specifies the NATURAL keyword.
```

```
#
```

```
foreach {tn sql} {
```

```
1 {SELECT * FROM t1 NATURAL LEFT JOIN t2 USING (a)}
```

```
2 {SELECT * FROM t1 NATURAL LEFT JOIN t2 ON (t1.a=t2.a)}
```

```
3 {SELECT * FROM t1 NATURAL LEFT JOIN t2 ON (45)}
```

```
} {
```

```
do_catchsql_test e_select-1.12.$tn "
```

```
$sql
```

```
" {1 {a NATURAL join may not have an ON or USING clause}}
```

```
}
```

```
#-----
```

```
#
```

```
The next block of tests - e_select-3.* - concentrate on verifying
```

```
# statements made regarding WHERE clause processing.
```

```
#
```

```
drop_all_tables
```

```
do_execsql_test e_select-3.0 {
```

```
CREATE TABLE x1(k, x, y, z);
```

```
INSERT INTO x1 VALUES(1, 'relinquished', 'aphasia', 78.43);
```

```

INSERT INTO x1 VALUES(2, X'A8E8D66F', X'07CF', -81);
INSERT INTO x1 VALUES(3, -22, -27.57, NULL);
INSERT INTO x1 VALUES(4, NULL, 'bygone', 'picky');
INSERT INTO x1 VALUES(5, NULL, 96.28, NULL);
INSERT INTO x1 VALUES(6, 0, 1, 2);

```

```

CREATE TABLE x2(k, x, y2);
INSERT INTO x2 VALUES(1, 50, X'B82838');
INSERT INTO x2 VALUES(5, 84.79, 65.88);
INSERT INTO x2 VALUES(3, -22, X'0E1BE452A393');
INSERT INTO x2 VALUES(7, 'mistrusted', 'standardized');
} {}

```

```

# EVIDENCE-OF: R-06999-14330 If a WHERE clause is specified, the WHERE
# expression is evaluated for each row in the input data as a boolean
# expression.

```

```

All rows for which the WHERE clause expression evaluates
# to false are excluded from the dataset before continuing.

```

```

#

```

```

do_execsql_test e_select-3.1.1 { SELECT k FROM x1 WHERE x } {3}
do_execsql_test e_select-3.1.2 { SELECT k FROM x1 WHERE y } {3 5 6}
do_execsql_test e_select-3.1.3 { SELECT k FROM x1 WHERE z } {1 2 6}
do_execsql_test e_select-3.1.4 { SELECT k FROM x1 WHERE '1' || z } {1 2 4 6}
do_execsql_test e_select-3.1.5 { SELECT k FROM x1 WHERE x IS NULL } {4 5}
do_execsql_test e_select-3.1.6 { SELECT k FROM x1 WHERE z - 78.43 } {2 4 6}

```

```

do_execsql_test e_select-3.2.1a {
SELECT k FROM x1 LEFT JOIN x2 USING(k)
} {1 2 3 4 5 6}
do_execsql_test e_select-3.2.1b {
SELECT k FROM x1 LEFT JOIN x2 USING(k) WHERE x2.k
} {1 3 5}
do_execsql_test e_select-3.2.2 {
SELECT k FROM x1 LEFT JOIN x2 USING(k) WHERE x2.k IS NULL
} {2 4 6}

```

```

do_execsql_test e_select-3.2.3 {
SELECT k FROM x1 NATURAL JOIN x2 WHERE x2.k
} {3}
do_execsql_test e_select-3.2.4 {
SELECT k FROM x1
NATURAL JOIN x2 WHERE x2.k-3
} {}

```

```

#-----

```

```

# Tests below this point are focused on verifying the testable statements
# related to calculating the result rows of a simple SELECT statement.
#

```

```

drop_all_tables
do_execsql_test e_select-4.0 {
CREATE TABLE z1(a, b, c);
CREATE TABLE z2(d, e);
CREATE TABLE z3(a, b);

INSERT INTO z1 VALUES(51.65, -59.58, 'belfries');
INSERT INTO z1 VALUES(-5, NULL, 75);
INSERT INTO z1 VALUES(-2.2, -23.18, 'suiters');
INSERT INTO z1 VALUES(NULL, 67, 'quartets');
INSERT INTO z1 VALUES(-1.04, -32.3, 'aspen');
INSERT INTO z1 VALUES(63, 'born', -26);

INSERT INTO z2 VALUES(NULL, 21);
INSERT INTO z2 VALUES(36, 6);

INSERT INTO z3 VALUES('subsistence', 'gauze');
INSERT INTO z3 VALUES(49.17, -67);
} {}

# EVIDENCE-OF: R-36327-17224 If a result expression is the special
# expression "*" then all columns in the input data are substituted for
# that one expression.
#
# EVIDENCE-OF:
# R-43693-30522 If the expression is the alias of a table
# or subquery in the FROM clause followed by "." then all columns from
# the named table or subquery are substituted for the single expression.
#
do_select_tests e_select-4.1 {
1 "SELECT * FROM z1 LIMIT 1"      {51.65 -59.58 belfries}
2 "SELECT * FROM z1,z2 LIMIT 1"   {51.65 -59.58 belfries {} 21}
3 "SELECT z1.* FROM z1,z2 LIMIT 1" {51.65 -59.58 belfries}
4 "SELECT z2.* FROM z1,z2 LIMIT 1"  {{{} 21}
5 "SELECT z2.*, z1.* FROM z1,z2 LIMIT 1" {{{} 21 51.65 -59.58 belfries}

6 "SELECT count(*), * FROM z1"    {6 63 born -26}
7 "SELECT max(a), * FROM z1"      {63 63 born -26}
8 "SELECT *, min(a) FROM z1"      {-5 {} 75 -5}

9 "SELECT *,* FROM z1,z2 LIMIT 1" {
  51.65 -59.58 belfries {} 21 51.65 -59.58 belfries {} 21
}
10 "SELECT z1.*,z1.* FROM z2,z1 LIMIT 1" {
  51.65 -59.58 belfries 51.65 -59.58 belfries
}
}
}

```



```

# EVIDENCE-OF: R-61869-22578
It is an error to use a "*" or "alias.*"
# expression in any context other than a result expression list.
#
# EVIDENCE-OF: R-44324-41166 It is also an error to use a "*" or
# "alias.*" expression in a simple SELECT query that does not have a
# FROM clause.
#
foreach {tn select err} {
  1.1 "SELECT a, b, c FROM z1 WHERE *" {near "*": syntax error}
  1.2 "SELECT a, b, c FROM z1 GROUP BY *" {near "*": syntax error}
  1.3 "SELECT 1 + * FROM z1" {near "*": syntax error}
  1.4 "SELECT * + 1 FROM z1" {near "+": syntax error}

  2.1 "SELECT *" {no tables specified}
  2.2 "SELECT * WHERE 1" {no tables specified}
  2.3 "SELECT * WHERE 0" {no tables specified}
  2.4 "SELECT count(*), *" {no tables specified}
} {
do_catchsql_test e_select-4.2.$tn $select [list 1 $err]
}

# EVIDENCE-OF: R-08669-22397 The number of columns in the rows returned
# by a simple SELECT statement is equal to the number of expressions in
# the result expression list after substitution
# of * and alias.*
# expressions.
#
foreach {tn select nCol} {
  1 "SELECT * FROM z1" 3
  2 "SELECT * FROM z1 NATURAL JOIN z3" 3
  3 "SELECT z1.* FROM z1 NATURAL JOIN z3" 3
  4 "SELECT z3.* FROM z1 NATURAL JOIN z3" 2
  5 "SELECT z1.*, z3.* FROM z1 NATURAL JOIN z3" 5
  6 "SELECT 1, 2, z1.* FROM z1" 5
  7 "SELECT a, *, b, c FROM z1" 6
} {
set ::stmt [sqlite3_prepare_v2 db $select -1 DUMMY]
do_test e_select-4.3.$tn { sqlite3_column_count $::stmt } $nCol
sqlite3_finalize $::stmt
}

# In lang_select.html, a non-aggregate query is defined as any simple SELECT
# that has no GROUP BY clause and no aggregate expressions in the result
# expression list. Other queries are aggregate queries. Test cases

```

```

# e_select-4.4.* through e_select-4.12.*, inclusive, which test the part of
# simple SELECT that is different for aggregate and non-aggregate queries
# verify (in a way) that these definitions are consistent:
#
#
EVIDENCE-OF: R-20637-43463 A simple SELECT statement is an aggregate
# query if it contains either a GROUP BY clause or one or more aggregate
# functions in the result-set.
#
# EVIDENCE-OF: R-23155-55597 Otherwise, if a simple SELECT contains no
# aggregate functions or a GROUP BY clause, it is a non-aggregate query.
#

# EVIDENCE-OF: R-44050-47362 If the SELECT statement is a non-aggregate
# query, then each expression in the result expression list is evaluated
# for each row in the dataset filtered by the WHERE clause.
#
do_select_tests e_select-4.4 {
  1 "SELECT a, b FROM z1"
    {51.65 -59.58 -5 {} -2.2 -23.18 {} 67 -1.04 -32.3 63 born}

  2 "SELECT a IS NULL, b+1, * FROM z1" {
    0 -58.58 51.65 -59.58 belfries
    0 {} -5 {} 75
    0 -22.18 -2.2 -23.18 suiters
    1 68 {} 67 quartets
    0 -31.3 -1.04 -32.3 aspen
    0 1 63 born -26
  }

  3 "SELECT 32*32, d||e FROM z2" {1024 {} 1024 366}
}

# Test cases e_select-4.5.*
# and e_select-4.6.* together show that:
#
# EVIDENCE-OF: R-51988-01124 The single row of result-set data created
# by evaluating the aggregate and non-aggregate expressions in the
# result-set forms the result of an aggregate query without a GROUP BY
# clause.
#
# EVIDENCE-OF: R-57629-25253 If the SELECT statement is an aggregate
# query without a GROUP BY clause, then each aggregate expression in the
# result-set is evaluated once across the entire dataset.
#
do_select_tests e_select-4.5 {

```

```

1 "SELECT count(a), max(a), count(b), max(b) FROM z1"    {5 63 5 born}
2 "SELECT count(*), max(1)"                            {1 1}

3 "SELECT sum(b+1) FROM z1 NATURAL LEFT JOIN z3"      {-43.06}
4 "SELECT sum(b+2) FROM z1 NATURAL LEFT JOIN z3"      {-38.06}
5 "SELECT sum(b IS NOT NULL) FROM z1 NATURAL LEFT JOIN z3" {5}
}

# EVIDENCE-OF: R-26684-40576 Each non-aggregate expression in the
# result-set is evaluated once for an arbitrarily selected row of the
# dataset.
#
#
EVIDENCE-OF: R-27994-60376 The same arbitrarily selected row is used
# for each non-aggregate expression.
#
# Note: The results of many of the queries in this block of tests are
# technically undefined, as the documentation does not specify which row
# SQLite will arbitrarily select to use for the evaluation of the
# non-aggregate expressions.
#
drop_all_tables
do_execsql_test e_select-4.6.0 {
CREATE TABLE a1(one PRIMARY KEY, two);
INSERT INTO a1 VALUES(1, 1);
INSERT INTO a1 VALUES(2, 3);
INSERT INTO a1 VALUES(3, 6);
INSERT INTO a1 VALUES(4, 10);

CREATE TABLE a2(one PRIMARY KEY, three);
INSERT INTO a2 VALUES(1, 1);
INSERT INTO a2 VALUES(3, 2);
INSERT INTO a2 VALUES(6, 3);
INSERT INTO a2 VALUES(10, 4);
} {}
do_select_tests e_select-4.6 {
1 "SELECT one, two, count(*) FROM a1"                  {4 10 4}
2 "SELECT one, two, count(*) FROM a1 WHERE one<3"      {2 3 2}
3 "SELECT one, two, count(*) FROM a1 WHERE one>3"      {4 10
1}
4 "SELECT *, count(*) FROM a1 JOIN a2"                 {4 10 10 4 16}
5 "SELECT *, sum(three) FROM a1 NATURAL JOIN a2"        {3 6 2 3}
6 "SELECT *, sum(three) FROM a1 NATURAL JOIN a2"        {3 6 2 3}
7 "SELECT group_concat(three, ''), a1.* FROM a1 NATURAL JOIN a2" {12 3 6}
}

```

```

# EVIDENCE-OF: R-04486-07266 Or, if the dataset contains zero rows, then
# each non-aggregate expression is evaluated against a row consisting

```

```

# entirely of NULL values.
#
do_select_tests e_select-4.7 {
  1 "SELECT one, two, count(*) FROM a1 WHERE 0"      {{}} {} 0}
  2 "SELECT sum(two), * FROM a1, a2 WHERE three>5"  {{}} {} {} {} {}
  3 "SELECT max(one) IS NULL, one IS NULL, two IS NULL FROM a1 WHERE two=7" {
    1 1 1
  }
}

```

EVIDENCE-OF: R-64138-28774 An aggregate query without a GROUP BY

clause always returns exactly one row of data, even if there are zero

rows of input data.

#

```
foreach {tn select} {
```

```
  8.1 "SELECT count(*) FROM a1"
```

```
  8.2 "SELECT count(*) FROM
```

```
  a1 WHERE 0"
```

```
  8.3 "SELECT count(*) FROM a1 WHERE 1"
```

```
  8.4 "SELECT max(a1.one)+min(two), a1.one, two, * FROM a1, a2 WHERE 1"
```

```
  8.5 "SELECT max(a1.one)+min(two), a1.one, two, * FROM a1, a2 WHERE 0"
```

```
} {
```

```
# Set $nRow to the number of rows returned by $select:
```

```
set ::stmt [sqlite3_prepare_v2 db $select -1 DUMMY]
```

```
set nRow 0
```

```
while {"SQLITE_ROW" == [sqlite3_step $::stmt]} { incr nRow }
```

```
set rc [sqlite3_finalize $::stmt]
```

```
# Test that $nRow==1 and that statement execution was successful
```

```
# (rc==SQLITE_OK).
```

```
do_test e_select-4.$tn [list list $rc $nRow] {SQLITE_OK 1}
```

```
}
```

```
drop_all_tables
```

```
do_execsql_test e_select-4.9.0 {
```

```
  CREATE TABLE b1(one PRIMARY KEY, two);
```

```
  INSERT INTO b1 VALUES(1, 'o');
```

```
  INSERT INTO b1 VALUES(4, 'f');
```

```
  INSERT INTO b1 VALUES(3, 't');
```

```
  INSERT INTO b1 VALUES(2, 't');
```

```
  INSERT INTO b1 VALUES(5, 'f');
```

```
  INSERT INTO b1 VALUES(7, 's');
```

```
  INSERT INTO b1 VALUES(6, 's');
```

```
  CREATE TABLE b2(x, y);
```

```
  INSERT INTO b2 VALUES(NULL, 0);
```

```
  INSERT INTO b2 VALUES(NULL, 1);
```

```
  INSERT
```

```

INTO b2 VALUES('xyz', 2);
INSERT INTO b2 VALUES('abc', 3);
INSERT INTO b2 VALUES('xyz', 4);

```

```

CREATE TABLE b3(a COLLATE nocase, b COLLATE binary);
INSERT INTO b3 VALUES('abc', 'abc');
INSERT INTO b3 VALUES('aBC', 'aBC');
INSERT INTO b3 VALUES('Def', 'Def');
INSERT INTO b3 VALUES('dEF', 'dEF');
} {}

```

```

# EVIDENCE-OF: R-57754-57109 If the SELECT statement is an aggregate
# query with a GROUP BY clause, then each of the expressions specified
# as part of the GROUP BY clause is evaluated for each row of the
# dataset. Each row is then assigned to a "group" based on the results;
# rows for which the results of evaluating the GROUP BY expressions are
# the same are assigned to the same group.

```

```

#
# These tests also show that the following is not untrue:
#

```

```

# EVIDENCE-OF: R-25883-55063 The expressions in the GROUP BY clause do
# not have to be expressions that appear in the result.
#

```

```

do_select_tests e_select-4.9 {

```

```

  1 "SELECT group_concat(one), two FROM b1 GROUP BY two" {
    /#,#

```

```

    f 1 o #,# s #,# t/
  }

```

```

  2 "SELECT group_concat(one), sum(one) FROM b1 GROUP BY (one>4)" {
    1,2,3,4 10 5,6,7 18
  }

```

```

  3 "SELECT group_concat(one) FROM b1 GROUP BY (two>'o'), one%2" {
    4 1,5 2,6 3,7
  }

```

```

  4 "SELECT group_concat(one) FROM b1 GROUP BY (one==2 OR two=='o')" {
    4,3,5,7,6 1,2
  }
}

```

```

# EVIDENCE-OF: R-14926-50129 For the purposes of grouping rows, NULL
# values are considered equal.
#

```

```

do_select_tests e_select-4.10 {

```

```

  1 "SELECT group_concat(y) FROM b2 GROUP BY x" {/#,# 3 #,#/}

```

```

  2 "SELECT count(*) FROM b2 GROUP BY CASE WHEN y<4 THEN NULL ELSE 0 END" {4 1}
}

```

```

# EVIDENCE-OF: R-10470-30318 The usual rules for selecting a collation

```

```

# sequence with which to compare text values apply when evaluating
# expressions in a GROUP BY clause.
#
do_select_tests e_select-4.11 {
  1 "SELECT count(*) FROM b3 GROUP BY b"   {1 1 1 1}
  2 "SELECT count(*) FROM b3 GROUP BY a"   {2 2}
  3 "SELECT count(*) FROM b3 GROUP BY +b"  {1 1 1 1}
  4 "SELECT
count(*) FROM b3 GROUP BY +a"   {2 2}
  5 "SELECT count(*) FROM b3 GROUP BY b||"" {1 1 1 1}
  6 "SELECT count(*) FROM b3 GROUP BY a||"" {1 1 1 1}
}

# EVIDENCE-OF: R-63573-50730 The expressions in a GROUP BY clause may
# not be aggregate expressions.
#
foreach {tn select} {
  12.1 "SELECT * FROM b3 GROUP BY count(*)"
  12.2 "SELECT max(a) FROM b3 GROUP BY max(b)"
  12.3 "SELECT group_concat(a) FROM b3 GROUP BY a, max(b)"
} {
  set res {1 {aggregate functions are not allowed in the GROUP BY clause}}
  do_catchsql_test e_select-4.$tn $select $res
}

# EVIDENCE-OF: R-31537-00101 If a HAVING clause is specified, it is
# evaluated once for each group of rows as a boolean expression. If the
# result of evaluating the HAVING clause is false, the group is
# discarded.
#
# This requirement is tested by all e_select-4.13.* tests.
#
# EVIDENCE-OF: R-04132-09474 If the HAVING clause is an aggregate
# expression, it is evaluated across all rows in the group.
#
# Tested by e_select-4.13.1.*
#
#
EVIDENCE-OF: R-28262-47447 If a HAVING clause is a non-aggregate
# expression, it is evaluated with respect to an arbitrarily selected
# row from the group.
#
# Tested by e_select-4.13.2.*
#
# Tests in this block also show that this is not untrue:
#
# EVIDENCE-OF: R-55403-13450 The HAVING expression may refer to values,
# even aggregate functions, that are not in the result.

```

```

#
do_execsql_test e_select-4.13.0 {
    CREATE TABLE c1(up, down);
    INSERT INTO c1 VALUES('x', 1);
    INSERT INTO c1 VALUES('x', 2);
    INSERT INTO c1 VALUES('x', 4);
    INSERT INTO c1 VALUES('x', 8);
    INSERT INTO c1 VALUES('y', 16);
    INSERT INTO c1 VALUES('y', 32);

    CREATE TABLE c2(i, j);
    INSERT INTO c2 VALUES(1, 0);
    INSERT INTO c2 VALUES(2, 1);
    INSERT INTO c2 VALUES(3, 3);
    INSERT INTO c2 VALUES(4, 6);
    INSERT INTO c2 VALUES(5, 10);
    INSERT INTO c2 VALUES(6, 15);
    INSERT INTO c2 VALUES(7, 21);
    INSERT INTO c2 VALUES(8, 28);
    INSERT INTO c2 VALUES(9, 36);

    CREATE TABLE c3(i PRIMARY
    KEY, k TEXT);
    INSERT INTO c3 VALUES(1, 'hydrogen');
    INSERT INTO c3 VALUES(2, 'helium');
    INSERT INTO c3 VALUES(3, 'lithium');
    INSERT INTO c3 VALUES(4, 'beryllium');
    INSERT INTO c3 VALUES(5, 'boron');
    INSERT INTO c3 VALUES(94, 'plutonium');
} {}

do_select_tests e_select-4.13 {
    1.1 "SELECT up FROM c1 GROUP BY up HAVING count(*)>3" {x}
    1.2 "SELECT up FROM c1 GROUP BY up HAVING sum(down)>16" {y}
    1.3 "SELECT up FROM c1 GROUP BY up HAVING sum(down)<16" {x}
    1.4 "SELECT up||down FROM c1 GROUP BY (down<5) HAVING max(down)<10" {x4}

    2.1 "SELECT up FROM c1 GROUP BY up HAVING down>10" {y}
    2.2 "SELECT up FROM c1 GROUP BY up HAVING up='y'" {y}

    2.3 "SELECT i, j FROM c2 GROUP BY i>4 HAVING i>6" {9 36}
}

# EVIDENCE-OF: R-23927-54081 Each expression in the result-set is then
# evaluated once for each group of rows.
#
# EVIDENCE-OF: R-53735-47017 If the expression is an aggregate
# expression, it is evaluated across all rows in the group.

```

```

#
do_select_tests e_select-4.15
{
1 "SELECT sum(down) FROM c1 GROUP BY up" {15 48}
2 "SELECT sum(j), max(j) FROM c2 GROUP BY (i%3)" {54 36 27 21 39 28}
3 "SELECT sum(j), max(j) FROM c2 GROUP BY (j%2)" {80 36 40 21}
4 "SELECT 1+sum(j), max(j)+1 FROM c2 GROUP BY (j%2)" {81 37 41 22}
5 "SELECT count(*), round(avg(i),2) FROM c1, c2 ON (i=down) GROUP BY j%2"
   {3 4.33 1 2.0}
}

```

EVIDENCE-OF: R-62913-19830 Otherwise, it is evaluated against a single
arbitrarily chosen row from within the group.

EVIDENCE-OF: R-53924-08809 If there is more than one non-aggregate
expression in the result-set, then all such expressions are evaluated
for the same row.

```

#
do_select_tests e_select-4.15 {
1 "SELECT i, j FROM c2 GROUP BY i%2" {8 28 9 36}
2 "SELECT i, j FROM c2 GROUP BY i%2 HAVING j<30" {8 28}
3 "SELECT i, j FROM c2 GROUP BY i%2 HAVING j>30" {9 36}
4 "SELECT i, j FROM c2 GROUP BY i%2 HAVING j>30" {9 36}
5 "SELECT count(*), i, k FROM c2 NATURAL JOIN c3 GROUP
   BY substr(k, 1, 1)"
   {2 5 boron 2 2 helium 1 3 lithium}
}

```

EVIDENCE-OF: R-19334-12811 Each group of input dataset rows
contributes a single row to the set of result rows.

EVIDENCE-OF: R-02223-49279 Subject to filtering associated with the
DISTINCT keyword, the number of rows returned by an aggregate query
with a GROUP BY clause is the same as the number of groups of rows
produced by applying the GROUP BY and HAVING clauses to the filtered
input dataset.

```

#
do_select_tests e_select.4.16 -count {
1 "SELECT i, j FROM c2 GROUP BY i%2" 2
2 "SELECT i, j FROM c2 GROUP BY i" 9
3 "SELECT i, j FROM c2 GROUP BY i HAVING i<5" 4
}

```

#-----
The following tests attempt to verify statements made regarding the ALL
and DISTINCT keywords.

```

#
drop_all_tables

```



```

do_execsql_test e_select-5.1.0 {
CREATE TABLE h1(a, b);
INSERT INTO h1 VALUES(1, 'one');
INSERT INTO h1 VALUES(1, 'T');
INSERT INTO h1 VALUES(1, 'i');
INSERT INTO h1 VALUES(4, 'four');
INSERT INTO h1 VALUES(4, 'IV');
INSERT INTO h1 VALUES(4, 'iv');

CREATE TABLE h2(x COLLATE nocase);
INSERT INTO h2 VALUES('One');
INSERT INTO h2 VALUES('Two');
INSERT INTO h2 VALUES('Three');
INSERT INTO h2 VALUES('Four');
INSERT INTO h2 VALUES('one');
INSERT INTO h2 VALUES('two');
INSERT INTO h2 VALUES('three');
INSERT INTO h2 VALUES('four');

CREATE TABLE h3(c, d);
INSERT INTO h3 VALUES(1, NULL);
INSERT INTO h3 VALUES(2, NULL);
INSERT INTO h3 VALUES(3, NULL);
INSERT INTO h3 VALUES(4, '2');
INSERT INTO h3 VALUES(5, NULL);
INSERT INTO h3 VALUES(6, '2,3');
INSERT INTO h3 VALUES(7, NULL);
INSERT INTO h3 VALUES(8, '2,4');
INSERT INTO h3 VALUES(9, '3');
} {}

# EVIDENCE-OF: R-60770-10612 One of the ALL or DISTINCT keywords may
# follow the SELECT keyword in a simple SELECT statement.
#
do_select_tests e_select-5.1 {
1 "SELECT ALL a FROM h1" {1 1 1 4 4 4}
2 "SELECT
DISTINCT a FROM h1" {1 4}
}

# EVIDENCE-OF: R-08861-34280 If the simple SELECT is a SELECT ALL, then
# the entire set of result rows are returned by the SELECT.
#
# EVIDENCE-OF: R-47911-02086 If neither ALL or DISTINCT are present,
# then the behavior is as if ALL were specified.
#
# EVIDENCE-OF: R-14442-41305 If the simple SELECT is a SELECT DISTINCT,
# then duplicate rows are removed from the set of result rows before it

```

```

# is returned.
#
# The three testable statements above are tested by e_select-5.2.*,
# 5.3.* and 5.4.* respectively.
#
do_select_tests e_select-5 {
  3.1 "SELECT ALL x FROM h2" {One Two Three Four one two three four}
  3.2 "SELECT ALL x FROM h1, h2 ON (x=b)" {One one Four four}

  3.1 "SELECT x FROM h2" {One Two Three Four one two three four}
  3.2 "SELECT x FROM h1, h2 ON (x=b)" {One one Four four}

  4.1 "SELECT DISTINCT x FROM h2" {One Two Three Four}
  4.2 "SELECT DISTINCT x FROM h1, h2 ON (x=b)" {One Four}
}

# EVIDENCE-OF: R-02054-15343 For the purposes of
# detecting duplicate
# rows, two NULL values are considered to be equal.
#
do_select_tests e_select-5.5 {
  1 "SELECT DISTINCT d FROM h3" {{} 2 2,3 2,4 3}
}

# EVIDENCE-OF: R-58359-52112 The normal rules for selecting a collation
# sequence to compare text values with apply.
#
do_select_tests e_select-5.6 {
  1 "SELECT DISTINCT b FROM h1"          {one I i four IV iv}
  2 "SELECT DISTINCT b COLLATE nocase FROM h1" {one I four IV}
  3 "SELECT DISTINCT x FROM h2"          {One Two Three Four}
  4 "SELECT DISTINCT x COLLATE binary FROM h2" {
    One Two Three Four one two three four
  }
}

#-----
# The following tests - e_select-7.* - test that statements made to do
# with compound SELECT statements are correct.
#

# EVIDENCE-OF: R-39368-64333 In a compound SELECT, all the constituent
# SELECTs must return the same number of result columns.
#
# All the other tests in this section use compound SELECTs
# created
# using component SELECTs that do return the same number of columns.
# So the tests here just show that it is an error to attempt otherwise.

```

```

#
drop_all_tables
do_execsql_test e_select-7.1.0 {
CREATE TABLE j1(a, b, c);
CREATE TABLE j2(e, f);
CREATE TABLE j3(g);
} {}
do_select_tests e_select-7.1 -error {
SELECTs to the left and right of %s do not have the same number of result columns
} {
1 "SELECT a, b FROM j1 UNION ALL SELECT g FROM j3" {{UNION ALL}}
2 "SELECT * FROM j1 UNION ALL SELECT * FROM j3" {{UNION ALL}}
3 "SELECT a, b FROM j1 UNION ALL SELECT g FROM j3" {{UNION ALL}}
4 "SELECT a, b FROM j1 UNION ALL SELECT * FROM j3,j2" {{UNION ALL}}
5 "SELECT * FROM j3,j2 UNION ALL SELECT a, b FROM j1" {{UNION ALL}}

6 "SELECT a, b FROM j1 UNION SELECT g FROM j3" {UNION}
7 "SELECT * FROM j1 UNION SELECT * FROM j3" {UNION}
8 "SELECT a, b FROM j1 UNION SELECT g FROM j3" {UNION}
9 "SELECT a, b FROM j1 UNION SELECT * FROM j3,j2" {UNION}
10 "SELECT * FROM j3,j2 UNION SELECT a, b FROM j1" {UNION}

11 "SELECT a, b FROM j1 INTERSECT SELECT g FROM j3" {INTERSECT}
12 "SELECT * FROM j1 INTERSECT SELECT * FROM j3" {INTERSECT}
13 "SELECT a, b FROM j1 INTERSECT SELECT g FROM j3" {INTERSECT}
14 "SELECT a, b FROM j1 INTERSECT SELECT * FROM j3,j2" {INTERSECT}
15 "SELECT * FROM j3,j2 INTERSECT SELECT a, b FROM j1" {INTERSECT}

16 "SELECT a, b FROM j1 EXCEPT SELECT g FROM j3" {EXCEPT}
17 "SELECT * FROM j1 EXCEPT SELECT * FROM j3" {EXCEPT}
18 "SELECT a, b FROM j1 EXCEPT SELECT g FROM j3" {EXCEPT}
19 "SELECT a, b FROM j1 EXCEPT SELECT * FROM j3,j2" {EXCEPT}
20 "SELECT * FROM j3,j2 EXCEPT SELECT a, b FROM j1" {EXCEPT}
}

# EVIDENCE-OF: R-01450-11152 As the components of a compound SELECT must
# be simple SELECT statements, they may not contain ORDER BY or LIMIT
#
# clauses.
#
foreach {tn select op1 op2} {
1 "SELECT * FROM j1 ORDER BY a UNION ALL SELECT * FROM j2,j3"
{ORDER BY} {UNION ALL}
2 "SELECT count(*) FROM j1 ORDER BY 1 UNION ALL SELECT max(e) FROM j2"
{ORDER BY} {UNION ALL}
3 "SELECT count(*), * FROM j1 ORDER BY 1,2,3 UNION ALL SELECT *,* FROM j2"
{ORDER BY} {UNION ALL}
4 "SELECT * FROM j1 LIMIT 10 UNION ALL SELECT * FROM j2,j3"

```

LIMIT {UNION ALL}

5 "SELECT * FROM j1 LIMIT 10 OFFSET 5 UNION ALL SELECT * FROM j2,j3"
LIMIT {UNION ALL}

6 "SELECT a FROM j1 LIMIT (SELECT e FROM j2) UNION ALL SELECT g FROM j2,j3"
LIMIT {UNION ALL}

7 "SELECT * FROM j1 ORDER BY a UNION SELECT * FROM j2,j3"
{ORDER BY} {UNION}

8 "SELECT count(*) FROM j1 ORDER BY 1 UNION SELECT max(e) FROM j2"
{ORDER BY} {UNION}

9 "SELECT count(*), * FROM j1 ORDER BY 1,2,3 UNION SELECT *,* FROM j2"
{ORDER BY} {UNION}

10 "SELECT * FROM j1 LIMIT 10 UNION SELECT * FROM j2,j3"
LIMIT
{UNION}

11 "SELECT * FROM j1 LIMIT 10 OFFSET 5 UNION SELECT * FROM j2,j3"
LIMIT {UNION}

12 "SELECT a FROM j1 LIMIT (SELECT e FROM j2) UNION SELECT g FROM j2,j3"
LIMIT {UNION}

13 "SELECT * FROM j1 ORDER BY a EXCEPT SELECT * FROM j2,j3"
{ORDER BY} {EXCEPT}

14 "SELECT count(*) FROM j1 ORDER BY 1 EXCEPT SELECT max(e) FROM j2"
{ORDER BY} {EXCEPT}

15 "SELECT count(*), * FROM j1 ORDER BY 1,2,3 EXCEPT SELECT *,* FROM j2"
{ORDER BY} {EXCEPT}

16 "SELECT * FROM j1 LIMIT 10 EXCEPT SELECT * FROM j2,j3"
LIMIT {EXCEPT}

17 "SELECT * FROM j1 LIMIT 10 OFFSET 5 EXCEPT SELECT * FROM j2,j3"
LIMIT {EXCEPT}

18 "SELECT a FROM j1 LIMIT (SELECT e FROM j2) EXCEPT SELECT g FROM j2,j3"
LIMIT {EXCEPT}

19 "SELECT * FROM j1 ORDER BY a INTERSECT SELECT * FROM j2,j3"
{ORDER BY} {INTERSECT}

20 "SELECT count(*) FROM j1 ORDER BY 1 INTERSECT SELECT max(e) FROM j2"
{ORDER BY} {INTERSECT}

21 "SELECT count(*), * FROM j1 ORDER
BY 1,2,3 INTERSECT SELECT *,* FROM j2"
{ORDER BY} {INTERSECT}

22 "SELECT * FROM j1 LIMIT 10 INTERSECT SELECT * FROM j2,j3"
LIMIT {INTERSECT}

23 "SELECT * FROM j1 LIMIT 10 OFFSET 5 INTERSECT SELECT * FROM j2,j3"
LIMIT {INTERSECT}

24 "SELECT a FROM j1 LIMIT (SELECT e FROM j2) INTERSECT SELECT g FROM j2,j3"
LIMIT {INTERSECT}

} {
set err "\$op1 clause should come after \$op2 not before"

```

do_catchsql_test e_select-7.2.$tn $select [list 1 $err]
}

# EVIDENCE-OF: R-22874-32655 ORDER BY and LIMIT clauses may only occur
# at the end of the entire compound SELECT.
#
foreach {tn select} {
  1 "SELECT * FROM j1 UNION ALL SELECT * FROM j2,j3 ORDER BY a"
  2 "SELECT count(*) FROM j1 UNION ALL SELECT max(e) FROM j2 ORDER BY 1"
  3 "SELECT count(*), * FROM j1 UNION ALL SELECT *,* FROM j2 ORDER BY 1,2,3"
  4 "SELECT * FROM j1 UNION ALL SELECT * FROM j2,j3 LIMIT 10"
  5 "SELECT * FROM j1 UNION ALL SELECT * FROM j2,j3 LIMIT 10 OFFSET 5"
  6 "SELECT a
FROM j1 UNION ALL SELECT g FROM j2,j3 LIMIT (SELECT 10)"

  7 "SELECT * FROM j1 UNION SELECT * FROM j2,j3 ORDER BY a"
  8 "SELECT count(*) FROM j1 UNION SELECT max(e) FROM j2 ORDER BY 1"
  9 "SELECT count(*), * FROM j1 UNION SELECT *,* FROM j2 ORDER BY 1,2,3"
  10 "SELECT * FROM j1 UNION SELECT * FROM j2,j3 LIMIT 10"
  11 "SELECT * FROM j1 UNION SELECT * FROM j2,j3 LIMIT 10 OFFSET 5"
  12 "SELECT a FROM j1 UNION SELECT g FROM j2,j3 LIMIT (SELECT 10)"

  13 "SELECT * FROM j1 EXCEPT SELECT * FROM j2,j3 ORDER BY a"
  14 "SELECT count(*) FROM j1 EXCEPT SELECT max(e) FROM j2 ORDER BY 1"
  15 "SELECT count(*), * FROM j1 EXCEPT SELECT *,* FROM j2 ORDER BY 1,2,3"
  16 "SELECT * FROM j1 EXCEPT SELECT * FROM j2,j3 LIMIT 10"
  17 "SELECT * FROM j1 EXCEPT SELECT * FROM j2,j3 LIMIT 10 OFFSET 5"
  18 "SELECT a FROM j1 EXCEPT SELECT g FROM j2,j3 LIMIT (SELECT 10)"

  19 "SELECT * FROM j1 INTERSECT SELECT * FROM j2,j3 ORDER BY a"
  20 "SELECT count(*) FROM j1 INTERSECT SELECT
max(e) FROM j2 ORDER BY 1"
  21 "SELECT count(*), * FROM j1 INTERSECT SELECT *,* FROM j2 ORDER BY 1,2,3"
  22 "SELECT * FROM j1 INTERSECT SELECT * FROM j2,j3 LIMIT 10"
  23 "SELECT * FROM j1 INTERSECT SELECT * FROM j2,j3 LIMIT 10 OFFSET 5"
  24 "SELECT a FROM j1 INTERSECT SELECT g FROM j2,j3 LIMIT (SELECT 10)"
} {
do_test e_select-7.3.$tn { catch {execsql $select} msg } 0
}

# EVIDENCE-OF: R-08531-36543 A compound SELECT created using UNION ALL
# operator returns all the rows from the SELECT to the left of the UNION
# ALL operator, and all the rows from the SELECT to the right of it.
#
drop_all_tables
do_execsql_test e_select-7.4.0 {
CREATE TABLE q1(a TEXT, b INTEGER, c);
CREATE TABLE q2(d NUMBER, e BLOB);

```

```

CREATE TABLE q3(f REAL, g);

INSERT INTO q1 VALUES(16, -87.66, NULL);
INSERT INTO q1 VALUES('legible', 94, -42.47);
INSERT INTO q1 VALUES('beauty', 36, NULL);

INSERT INTO q2 VALUES('legible', 1);
INSERT INTO q2 VALUES('beauty', 2);
INSERT INTO q2 VALUES(-65.91,
4);
INSERT INTO q2 VALUES('emanating', -16.56);

INSERT INTO q3 VALUES('beauty', 2);
INSERT INTO q3 VALUES('beauty', 2);
} {}
do_select_tests e_select-7.4 {
1 {SELECT a FROM q1 UNION ALL SELECT d FROM q2}
  {16 legible beauty legible beauty -65.91 emanating}

2 {SELECT * FROM q1 WHERE a=16 UNION ALL SELECT 'x', * FROM q2 WHERE oid=1}
  {16 -87.66 {} x legible 1}

3 {SELECT count(*) FROM q1 UNION ALL SELECT min(e) FROM q2}
  {3 -16.56}

4 {SELECT * FROM q2 UNION ALL SELECT * FROM q3}
  {legible 1 beauty 2 -65.91 4 emanating -16.56 beauty 2 beauty 2}
}

# EVIDENCE-OF: R-20560-39162 The UNION operator works the same way as
# UNION ALL, except that duplicate rows are removed from the final
# result set.
#
do_select_tests e_select-7.5 {
1 {SELECT a FROM q1 UNION SELECT d FROM q2}
  {-65.91 16 beauty emanating legible}

2 {SELECT * FROM q1 WHERE a=16 UNION SELECT 'x', * FROM q2 WHERE oid=1}
  {16 -87.66 {} x legible 1}

3 {SELECT
count(*) FROM q1 UNION SELECT min(e) FROM q2}
  {-16.56 3}

4 {SELECT * FROM q2 UNION SELECT * FROM q3}
  {-65.91 4 beauty 2 emanating -16.56 legible 1}
}

```

```
# EVIDENCE-OF: R-45764-31737 The INTERSECT operator returns the
# intersection of the results of the left and right SELECTs.
#
do_select_tests e_select-7.6 {
  1 {SELECT a FROM q1 INTERSECT SELECT d FROM q2} {beauty legible}
  2 {SELECT * FROM q2 INTERSECT SELECT * FROM q3} {beauty 2}
}
```

```
# EVIDENCE-OF: R-25787-28949 The EXCEPT operator returns the subset of
# rows returned by the left SELECT that are not also returned by the
# right-hand SELECT.
```

```
#
do_select_tests e_select-7.7 {
  1 {SELECT a FROM q1 EXCEPT SELECT d FROM q2} {16}

  2 {SELECT * FROM q2 EXCEPT SELECT * FROM q3}
    {-65.91 4 emanating -16.56 legible 1}
}
```

```
# EVIDENCE-OF: R-40729-56447 Duplicate rows are removed from the results
# of INTERSECT and EXCEPT operators before the result set is returned.
```

```
#
do_select_tests e_select-7.8 {
  0 {SELECT
    * FROM q3} {beauty 2 beauty 2}

  1 {SELECT * FROM q3 INTERSECT SELECT * FROM q3} {beauty 2}
  2 {SELECT * FROM q3 EXCEPT SELECT a,b FROM q1} {beauty 2}
}
```

```
# EVIDENCE-OF: R-46765-43362 For the purposes of determining duplicate
# rows for the results of compound SELECT operators, NULL values are
# considered equal to other NULL values and distinct from all non-NULL
# values.
```

```
#
db nullvalue null
do_select_tests e_select-7.9 {
  1 {SELECT NULL UNION ALL SELECT NULL} {null null}
  2 {SELECT NULL UNION   SELECT NULL} {null}
  3 {SELECT NULL INTERSECT SELECT NULL} {null}
  4 {SELECT NULL EXCEPT   SELECT NULL} {}

  5 {SELECT NULL UNION ALL SELECT 'ab'} {null ab}
  6 {SELECT NULL UNION   SELECT 'ab'} {null ab}
  7 {SELECT NULL INTERSECT SELECT 'ab'} {}
  8 {SELECT NULL EXCEPT   SELECT 'ab'} {null}

  9 {SELECT NULL UNION ALL SELECT 0} {null 0}
```

```

10 {SELECT NULL UNION  SELECT 0} {null 0}
11 {SELECT NULL INTERSECT SELECT 0} {}
12 {SELECT NULL EXCEPT
    SELECT 0} {null}

13 {SELECT c FROM q1 UNION ALL SELECT g FROM q3} {null -42.47 null 2 2}
14 {SELECT c FROM q1 UNION  SELECT g FROM q3} {null -42.47 2}
15 {SELECT c FROM q1 INTERSECT SELECT g FROM q3} {}
16 {SELECT c FROM q1 EXCEPT  SELECT g FROM q3} {null -42.47}
}
db nullvalue {}

```

```

# EVIDENCE-OF: R-51232-50224 The collation sequence used to compare two
# text values is determined as if the columns of the left and right-hand
# SELECT statements were the left and right-hand operands of the equals
# (=) operator, except that greater precedence is not assigned to a
# collation sequence specified with the postfix COLLATE operator.
#

```

```
drop_all_tables
```

```
do_execsql_test e_select-7.10.0 {
```

```

CREATE TABLE y1(a COLLATE nocase, b COLLATE binary, c);
INSERT INTO y1 VALUES('Abc', 'abc', 'aBC');
} {}

```

```
do_select_tests e_select-7.10 {
```

```

1 {SELECT 'abc'          UNION SELECT 'ABC'} {ABC abc}
2 {SELECT 'abc' COLLATE nocase UNION SELECT 'ABC'} {ABC}
3 {SELECT 'abc'
    UNION SELECT 'ABC' COLLATE nocase} {ABC}
4 {SELECT 'abc' COLLATE binary UNION SELECT 'ABC' COLLATE nocase} {ABC abc}
5 {SELECT 'abc' COLLATE nocase UNION SELECT 'ABC' COLLATE binary} {ABC}

```

```
6 {SELECT a FROM y1 UNION SELECT b FROM y1}      {abc}
```

```
7 {SELECT b FROM y1 UNION SELECT a FROM y1}      {Abc abc}
```

```
8 {SELECT a FROM y1 UNION SELECT c FROM y1}      {aBC}
```

```
9 {SELECT a FROM y1 UNION SELECT c COLLATE binary FROM y1} {aBC}
```

```
}
```

```

# EVIDENCE-OF: R-32706-07403 No affinity transformations are applied to
# any values when comparing rows as part of a compound SELECT.
#

```

```
drop_all_tables
```

```
do_execsql_test e_select-7.10.0 {
```

```

CREATE TABLE w1(a TEXT, b NUMBER);
CREATE TABLE w2(a, b TEXT);

```

```
INSERT INTO w1 VALUES('1', 4.1);
```

```
INSERT INTO w2 VALUES(1, 4.1);
```



```

} {}

do_select_tests e_select-7.11 {
  1 { SELECT a FROM w1 UNION SELECT a FROM w2 } {1 1}
  2 { SELECT a FROM w2 UNION SELECT a FROM w1 } {1 1}
  3 { SELECT b FROM w1 UNION SELECT
  b FROM w2 } {4.1 4.1}
  4 { SELECT b FROM w2 UNION SELECT b FROM w1 } {4.1 4.1}

  5 { SELECT a FROM w1 INTERSECT SELECT a FROM w2 } {}
  6 { SELECT a FROM w2 INTERSECT SELECT a FROM w1 } {}
  7 { SELECT b FROM w1 INTERSECT SELECT b FROM w2 } {}
  8 { SELECT b FROM w2 INTERSECT SELECT b FROM w1 } {}

  9 { SELECT a FROM w1 EXCEPT SELECT a FROM w2 } {1}
  10 { SELECT a FROM w2 EXCEPT SELECT a FROM w1 } {1}
  11 { SELECT b FROM w1 EXCEPT SELECT b FROM w2 } {4.1}
  12 { SELECT b FROM w2 EXCEPT SELECT b FROM w1 } {4.1}
}

# EVIDENCE-OF: R-32562-20566 When three or more simple SELECTs are
# connected into a compound SELECT, they group from left to right. In
# other words, if "A", "B" and "C" are all simple SELECT statements, (A
# op B op C) is processed as ((A op B) op C).
#
# e_select-7.12.1: Precedence of UNION vs. INTERSECT
# e_select-7.12.2: Precedence of UNION vs. UNION ALL
# e_select-7.12.3: Precedence of UNION vs. EXCEPT
# e_select-7.12.4: Precedence of INTERSECT vs.
UNION ALL
# e_select-7.12.5: Precedence of INTERSECT vs. EXCEPT
# e_select-7.12.6: Precedence of UNION ALL vs. EXCEPT
# e_select-7.12.7: Check that "a EXCEPT b EXCEPT c" is processed as
# "(a EXCEPT b) EXCEPT c".
#
# The INTERSECT and EXCEPT operations are mutually commutative. So
# the e_select-7.12.5 test cases do not prove very much.
#
drop_all_tables
do_execsql_test e_select-7.12.0 {
  CREATE TABLE t1(x);
  INSERT INTO t1 VALUES(1);
  INSERT INTO t1 VALUES(2);
  INSERT INTO t1 VALUES(3);
} {}
foreach {tn select res} {
  1a "(1,2) INTERSECT (1) UNION (3)" {1 3}

```

```

1b "(3) UNION (1,2) INTERSECT (1)" {1}

2a "(1,2) UNION (3) UNION ALL (1)" {1 2 3 1}
2b "(1) UNION ALL (3) UNION (1,2)" {1 2 3}

3a "(1,2) UNION (3) EXCEPT (1)" {2 3}
3b "(1,2) EXCEPT (3) UNION (1)" {1 2}

4a "(1,2) INTERSECT (1) UNION ALL (3)" {1 3}
4b "(3) UNION (1,2) INTERSECT (1)" {1}

5a "(1,2) INTERSECT (2) EXCEPT
(2)" {}
5b "(2,3) EXCEPT (2) INTERSECT (2)" {}

6a "(2) UNION ALL (2) EXCEPT (2)" {}
6b "(2) EXCEPT (2) UNION ALL (2)" {2}

7 "(2,3) EXCEPT (2) EXCEPT (3)" {}
} {
set select [string map {( {SELECT x FROM t1 WHERE x IN ({} } $select]
do_execsql_test e_select-7.12.$tn $select [list {*}]$res]
}

#-----
# ORDER BY clauses
#

drop_all_tables
do_execsql_test e_select-8.1.0 {
CREATE TABLE d1(x, y, z);

INSERT INTO d1 VALUES(1, 2, 3);
INSERT INTO d1 VALUES(2, 5, -1);
INSERT INTO d1 VALUES(1, 2, 8);
INSERT INTO d1 VALUES(1, 2, 7);
INSERT INTO d1 VALUES(2, 4, 93);
INSERT INTO d1 VALUES(1, 2, -20);
INSERT INTO d1 VALUES(1, 4, 93);
INSERT INTO d1 VALUES(1, 5, -1);

CREATE TABLE d2(a, b);
INSERT INTO d2 VALUES('gently', 'failings');
INSERT INTO d2 VALUES('commercials', 'bathrobe');
INSERT INTO d2 VALUES('iterate', 'sexton');
INSERT INTO d2 VALUES('babied',

```

```
'charitableness');
INSERT INTO d2 VALUES('solemnness', 'annexed');
INSERT INTO d2 VALUES('rejoicing', 'liabilities');
INSERT INTO d2 VALUES('pragmatist', 'guarded');
INSERT INTO d2 VALUES('barked', 'interrupted');
INSERT INTO d2 VALUES('reemphasizes', 'reply');
INSERT INTO d2 VALUES('lad', 'relenting');
} {}
```

```
# EVIDENCE-OF: R-44988-41064 Rows are first sorted based on the results
# of evaluating the left-most expression in the ORDER BY list, then ties
# are broken by evaluating the second left-most expression and so on.
#
```

```
do_select_tests e_select-8.1 {
  1 "SELECT * FROM d1 ORDER BY x, y, z" {
    1 2 -20  1 2 3  1 2 7  1 2 8
    1 4 93  1 5 -1  2 4 93  2 5 -1
  }
}
```

```
# EVIDENCE-OF: R-06617-54588 Each ORDER BY expression may be optionally
# followed by one of the keywords ASC (smaller values are returned
# first) or DESC (larger values are returned first).
```

```
#
# Test cases e_select-8.2.* test the above.
```

```
#
# EVIDENCE-OF: R-18705-33393 If neither ASC or
DESC are specified, rows
# are sorted in ascending (smaller values first) order by default.
#
# Test cases e_select-8.3.* test the above. All 8.3 test cases are
# copies of 8.2 test cases with the explicit "ASC" removed.
```

```
#
do_select_tests e_select-8 {
  2.1 "SELECT * FROM d1 ORDER BY x ASC, y ASC, z ASC" {
    1 2 -20  1 2 3  1 2 7  1 2 8
    1 4 93  1 5 -1  2 4 93  2 5 -1
  }
  2.2 "SELECT * FROM d1 ORDER BY x DESC, y DESC, z DESC" {
    2 5 -1  2 4 93  1 5 -1  1 4 93
    1 2 8  1 2 7  1 2 3  1 2 -20
  }
  2.3 "SELECT * FROM d1 ORDER BY x DESC, y ASC, z DESC" {
    2 4 93  2 5 -1  1 2 8  1 2 7
    1 2 3  1 2 -20  1 4 93  1 5 -1
  }
  2.4 "SELECT * FROM d1 ORDER BY x DESC, y ASC, z ASC" {
    2 4 93  2 5 -1  1 2 -20  1 2 3
```

```
1 2 7 1 2 8 1 4 93 1 5 -1
}
```

```
3.1 "SELECT * FROM d1 ORDER BY x, y, z" {
```

```
1 2 -20 1 2 3 1 2 7 1 2 8
1 4 93 1 5 -1 2 4 93 2 5 -1
```

```
}
```

```
3.3 "SELECT * FROM d1 ORDER BY x DESC, y, z DESC" {
```

```
2 4 93 2 5 -1 1 2 8 1 2 7
1 2 3 1 2 -20 1 4 93 1 5 -1
```

```
}
```

```
3.4 "SELECT * FROM d1 ORDER BY x DESC, y, z" {
```

```
2 4 93 2 5 -1 1 2 -20 1 2 3
1 2 7 1 2 8 1 4 93 1 5 -1
```

```
}
```

```
}
```

EVIDENCE-OF: R-29779-04281 If the ORDER BY expression is a constant
integer K then the expression is considered an alias for the K-th
column of the result set (columns are numbered from left to right
starting with 1).

#

```
do_select_tests e_select-8.4 {
```

```
1 "SELECT * FROM d1 ORDER BY 1 ASC, 2 ASC, 3 ASC" {
```

```
1 2 -20 1 2 3 1 2 7 1 2 8
1 4 93 1 5 -1 2 4 93 2 5 -1
```

```
}
```

```
2 "SELECT * FROM d1 ORDER BY 1 DESC, 2 DESC, 3 DESC" {
```

```
2 5 -1 2 4 93 1 5 -1 1 4 93
1 2 8 1 2 7 1 2 3 1 2 -20
```

```
}
```

```
3 "SELECT * FROM d1 ORDER BY 1 DESC, 2 ASC, 3 DESC" {
```

```
2 4 93 2 5 -1 1 2 8 1 2 7
1 2 3 1 2 -20 1 4 93 1 5
```

```
-1
```

```
}
```

```
4 "SELECT * FROM d1 ORDER BY 1 DESC, 2 ASC, 3 ASC" {
```

```
2 4 93 2 5 -1 1 2 -20 1 2 3
1 2 7 1 2 8 1 4 93 1 5 -1
```

```
}
```

```
5 "SELECT * FROM d1 ORDER BY 1, 2, 3" {
```

```
1 2 -20 1 2 3 1 2 7 1 2 8
1 4 93 1 5 -1 2 4 93 2 5 -1
```

```
}
```

```
6 "SELECT * FROM d1 ORDER BY 1 DESC, 2, 3 DESC" {
```

```
2 4 93 2 5 -1 1 2 8 1 2 7
1 2 3 1 2 -20 1 4 93 1 5 -1
```

```
}
```

```

7 "SELECT * FROM d1 ORDER BY 1 DESC, 2, 3" {
  2 4 93 2 5 -1 1 2 -20 1 2 3
  1 2 7 1 2 8 1 4 93 1 5 -1
}
8 "SELECT z, x FROM d1 ORDER BY 2" {
  /# 1 # 1 # 1 # 1
  # 1 # 1 # 2 # 2/
}
9 "SELECT z, x FROM d1 ORDER BY 1" {
  /-20 1 -1 # -1 # 3 1
  7 1 8 1 93 # 93 #/
}
}

```

EVIDENCE-OF: R-63286-51977 If the ORDER BY expression is an identifier
that corresponds to the alias of one of the output columns, then the
expression is considered an alias for that column.

#

do_select_tests

```

e_select-8.5 {
1 "SELECT z+1 AS abc FROM d1 ORDER BY abc" {
  -19 0 0 4 8 9 94 94
}
2 "SELECT z+1 AS abc FROM d1 ORDER BY abc DESC" {
  94 94 9 8 4 0 0 -19
}
3 "SELECT z AS x, x AS z FROM d1 ORDER BY z" {
  /# 1 # 1 # 1 # 1 # 1 # 1 # 2 # 2/
}
4 "SELECT z AS x, x AS z FROM d1 ORDER BY x" {
  /-20 1 -1 # -1 # 3 1 7 1 8 1 93 # 93 #/
}
}

```

EVIDENCE-OF: R-65068-27207 Otherwise, if the ORDER BY expression is
any other expression, it is evaluated and the returned value used to
order the output rows.

#

EVIDENCE-OF: R-03421-57988 If the SELECT statement is a simple SELECT,
then an ORDER BY may contain any arbitrary expressions.

#

```

do_select_tests e_select-8.6 {
1 "SELECT * FROM d1 ORDER BY x+y+z" {
  1 2 -20 1 5 -1 1 2 3 2 5 -1
  1 2 7 1 2 8 1 4 93 2 4 93
}
2 "SELECT * FROM d1 ORDER BY x*z" {
  1 2 -20 2 5 -1 1 5 -1 1 2 3
}
}

```

```

1 2 7 1 2 8 1
4 93 2 4 93
}
3 "SELECT * FROM d1 ORDER BY y*z" {
1 2 -20 2 5 -1 1 5 -1 1 2 3
1 2 7 1 2 8 2 4 93 1 4 93
}
}

# EVIDENCE-OF: R-28853-08147 However, if the SELECT is a compound
# SELECT, then ORDER BY expressions that are not aliases to output
# columns must be exactly the same as an expression used as an output
# column.
#
do_select_tests e_select-8.7.1 -error {
%s ORDER BY term does not match any column in the result set
} {
1 "SELECT x FROM d1 UNION ALL SELECT a FROM d2 ORDER BY x*z" 1st
2 "SELECT x,z FROM d1 UNION ALL SELECT a,b FROM d2 ORDER BY x, x/z" 2nd
}

do_select_tests e_select-8.7.2 {
1 "SELECT x*z FROM d1 UNION ALL SELECT a FROM d2 ORDER BY x*z" {
-20 -2 -1 3 7 8 93 186 babied barked commercials gently
iterate lad pragmatist reemphasizes rejoicing solemnness
}
2 "SELECT x, x/z FROM d1 UNION ALL SELECT a,b FROM d2 ORDER BY x, x/z" {
1 -1 1 0 1 0 1 0 1 0 1 0 2 -2 2 0
babied charitableness barked
interrupted commercials bathrobe gently
failings iterate sexton lad relenting pragmatist guarded reemphasizes reply
rejoicing liabilities solemnness annexed
}
}

do_execsql_test e_select-8.8.0 {
CREATE TABLE d3(a);
INSERT INTO d3 VALUES('text');
INSERT INTO d3 VALUES(14.1);
INSERT INTO d3 VALUES(13);
INSERT INTO d3 VALUES(X'78787878');
INSERT INTO d3 VALUES(15);
INSERT INTO d3 VALUES(12.9);
INSERT INTO d3 VALUES(null);

CREATE TABLE d4(x COLLATE nocase);
INSERT INTO d4 VALUES('abc');
INSERT INTO d4 VALUES('ghi');

```

```
INSERT INTO d4 VALUES('DEF');
INSERT INTO d4 VALUES('JKL');
} {}
```

```
# EVIDENCE-OF: R-10883-17697 For the purposes of sorting rows, values
# are compared in the same way as for comparison expressions.
```

```
#
```

```
# The following tests verify that values of different types are sorted
# correctly, and that mixed real and integer values are compared properly.
```

```
#
```

```
do_execsql_test e_select-8.8.1 {
  SELECT a FROM d3 ORDER BY a
} {{} 12.9 13 14.1 15 text
xxxx}
```

```
do_execsql_test e_select-8.8.2 {
  SELECT a FROM d3 ORDER BY a DESC
} {xxxx text 15 14.1 13 12.9 {}}
```

```
# EVIDENCE-OF: R-64199-22471 If the ORDER BY expression is assigned a
# collation sequence using the postfix COLLATE operator, then the
# specified collation sequence is used.
```

```
#
```

```
do_execsql_test e_select-8.9.1 {
  SELECT x FROM d4 ORDER BY 1 COLLATE binary
} {DEF JKL abc ghi}
```

```
do_execsql_test e_select-8.9.2 {
  SELECT x COLLATE binary FROM d4 ORDER BY 1 COLLATE nocase
} {abc DEF ghi JKL}
```

```
# EVIDENCE-OF: R-09398-26102 Otherwise, if the ORDER BY expression is
# an alias to an expression that has been assigned a collation sequence
# using the postfix COLLATE operator, then the collation sequence
# assigned to the aliased expression is used.
```

```
#
```

```
# In the test 8.10.2, the only result-column expression has no alias. So the
# ORDER BY expression is not a reference to it and therefore does not inherit
# the collation sequence. In test 8.10.3, "x" is the alias (as well as the
```

```
#
```

```
column name), so the ORDER BY expression is interpreted as an alias and the
# collation sequence attached to the result column is used for sorting.
```

```
#
```

```
do_execsql_test e_select-8.10.1 {
  SELECT x COLLATE binary FROM d4 ORDER BY 1
} {DEF JKL abc ghi}
```

```
do_execsql_test e_select-8.10.2 {
  SELECT x COLLATE binary FROM d4 ORDER BY x
} {abc DEF ghi JKL}
```

```

do_execsql_test e_select-8.10.3 {
    SELECT x COLLATE binary AS x FROM d4 ORDER BY x
} {DEF JKL abc ghi}

# EVIDENCE-OF: R-27301-09658 Otherwise, if the ORDER BY expression is a
# column or an alias of an expression that is a column, then the default
# collation sequence for the column is used.
#
do_execsql_test e_select-8.11.1 {
    SELECT x AS y FROM d4 ORDER BY y
} {abc DEF ghi JKL}
do_execsql_test e_select-8.11.2 {
    SELECT x||" FROM d4 ORDER BY x
} {abc DEF ghi JKL}

# EVIDENCE-OF: R-49925-55905 Otherwise, the BINARY collation sequence is
# used.
#
do_execsql_test e_select-8.12.1 {
    SELECT x FROM d4 ORDER BY x||"
} {DEF JKL abc ghi}

#
# EVIDENCE-OF: R-44130-32593 If an ORDER BY expression is not an integer
# alias, then SQLite searches the left-most SELECT in the compound for a
# result column that matches either the second or third rules above. If
# a match is found, the search stops and the expression is handled as an
# alias for the result column that it has been matched against.
# Otherwise, the next SELECT to the right is tried, and so on.
#
do_execsql_test e_select-8.13.0 {
    CREATE TABLE d5(a, b);
    CREATE TABLE d6(c, d);
    CREATE TABLE d7(e, f);

    INSERT INTO d5 VALUES(1, 'f');
    INSERT INTO d6 VALUES(2, 'e');
    INSERT INTO d7 VALUES(3, 'd');
    INSERT INTO d5 VALUES(4, 'c');
    INSERT INTO d6 VALUES(5, 'b');
    INSERT INTO d7 VALUES(6, 'a');

    CREATE TABLE d8(x COLLATE nocase);
    CREATE TABLE d9(y COLLATE nocase);

    INSERT INTO d8 VALUES('a');
    INSERT INTO d9 VALUES('B');
    INSERT INTO d8 VALUES('c');

```



```

INSERT INTO d9 VALUES('D');
} {}
do_select_tests e_select-8.13 {
1 { SELECT a FROM d5 UNION ALL SELECT
c FROM d6 UNION ALL SELECT e FROM d7
ORDER BY a
} {1 2 3 4 5 6}
2 { SELECT a FROM d5 UNION ALL SELECT c FROM d6 UNION ALL SELECT e FROM d7
ORDER BY c
} {1 2 3 4 5 6}
3 { SELECT a FROM d5 UNION ALL SELECT c FROM d6 UNION ALL SELECT e FROM d7
ORDER BY e
} {1 2 3 4 5 6}
4 { SELECT a FROM d5 UNION ALL SELECT c FROM d6 UNION ALL SELECT e FROM d7
ORDER BY 1
} {1 2 3 4 5 6}

5 { SELECT a, b FROM d5 UNION ALL SELECT b, a FROM d5 ORDER BY b }
{f1 c4 4c 1f}
6 { SELECT a, b FROM d5 UNION ALL SELECT b, a FROM d5 ORDER BY 2 }
{f1 c4 4c 1f}

7 { SELECT a, b FROM d5 UNION ALL SELECT b, a FROM d5 ORDER BY a }
{1f 4c c4 f1}
8 { SELECT a, b FROM d5 UNION ALL SELECT b, a FROM d5 ORDER BY 1 }
{1f 4c c4 f1}

9 { SELECT a, b FROM d5 UNION ALL SELECT b, a+1 FROM d5 ORDER BY a+1 }
{f2 c5 4c 1f}
10 { SELECT a, b FROM d5 UNION ALL
SELECT b, a+1 FROM d5 ORDER BY 2 }
{f2 c5 4c 1f}

11 { SELECT a+1, b FROM d5 UNION ALL SELECT b, a+1 FROM d5 ORDER BY a+1 }
{2f 5c c5 f2}
12 { SELECT a+1, b FROM d5 UNION ALL SELECT b, a+1 FROM d5 ORDER BY 1 }
{2f 5c c5 f2}
}

# EVIDENCE-OF: R-39265-04070 If no matching expression can be found in
# the result columns of any constituent SELECT, it is an error.
#
do_select_tests e_select-8.14 -error {
%s ORDER BY term does not match any column in the result set
} {
1 { SELECT a FROM d5 UNION SELECT c FROM d6 ORDER BY a+1 } 1st
2 { SELECT a FROM d5 UNION SELECT c FROM d6 ORDER BY a, a+1 } 2nd
3 { SELECT * FROM d5 INTERSECT SELECT * FROM d6 ORDER BY 'hello' } 1st

```

```

4 { SELECT * FROM d5 INTERSECT SELECT * FROM d6 ORDER BY blah } 1st
5 { SELECT * FROM d5 INTERSECT SELECT * FROM d6 ORDER BY c,d,c+d } 3rd
6 { SELECT * FROM d5 EXCEPT SELECT * FROM d7 ORDER BY 1,2,b,a/b } 4th
}

```

EVIDENCE-OF:

R-03407-11483 Each term of the ORDER BY clause is

processed separately and may be matched against result columns from

different SELECT statements in the compound.

#

do_select_tests e_select-8.15 {

1 { SELECT a, b FROM d5 UNION ALL SELECT c-1, d FROM d6 ORDER BY a, d }

{1 e 1 f 4 b 4 c}

2 { SELECT a, b FROM d5 UNION ALL SELECT c-1, d FROM d6 ORDER BY c-1, b }

{1 e 1 f 4 b 4 c}

3 { SELECT a, b FROM d5 UNION ALL SELECT c-1, d FROM d6 ORDER BY 1, 2 }

{1 e 1 f 4 b 4 c}

}

#-----

Tests related to statements made about the LIMIT/OFFSET clause.

#

do_execsql_test e_select-9.0 {

CREATE TABLE f1(a, b);

INSERT INTO f1 VALUES(26, 'z');

INSERT INTO f1 VALUES(25, 'y');

INSERT INTO f1 VALUES(24, 'x');

INSERT INTO f1 VALUES(23, 'w');

INSERT INTO f1 VALUES(22, 'v');

INSERT INTO f1 VALUES(21, 'u');

INSERT INTO f1 VALUES(20, 't');

INSERT INTO f1 VALUES(19, 's');

INSERT

INTO f1 VALUES(18, 'r');

INSERT INTO f1 VALUES(17, 'q');

INSERT INTO f1 VALUES(16, 'p');

INSERT INTO f1 VALUES(15, 'o');

INSERT INTO f1 VALUES(14, 'n');

INSERT INTO f1 VALUES(13, 'm');

INSERT INTO f1 VALUES(12, 'l');

INSERT INTO f1 VALUES(11, 'k');

INSERT INTO f1 VALUES(10, 'j');

INSERT INTO f1 VALUES(9, 'i');

INSERT INTO f1 VALUES(8, 'h');

INSERT INTO f1 VALUES(7, 'g');

INSERT INTO f1 VALUES(6, 'f');

INSERT INTO f1 VALUES(5, 'e');

```

INSERT INTO f1 VALUES(4, 'd');
INSERT INTO f1 VALUES(3, 'c');
INSERT INTO f1 VALUES(2, 'b');
INSERT INTO f1 VALUES(1, 'a');
} {}

```

```

# EVIDENCE-OF: R-30481-56627 Any scalar expression may be used in the
# LIMIT clause, so long as it evaluates to an integer or a value that
# can be losslessly converted to an integer.
#

```

```

do_select_tests e_select-9.1 {
  1 { SELECT b FROM f1 ORDER BY a LIMIT 5 } {a b c d e}
  2 { SELECT b FROM f1 ORDER BY a LIMIT 2+3 } {a b c d e}
  3 { SELECT b FROM f1 ORDER BY a LIMIT (SELECT a FROM f1 WHERE
    b = 'e') }
    {a b c d e}
  4 { SELECT b FROM f1 ORDER BY a LIMIT 5.0 } {a b c d e}
  5 { SELECT b FROM f1 ORDER BY a LIMIT '5' } {a b c d e}
}

```

```

# EVIDENCE-OF: R-46155-47219 If the expression evaluates to a NULL value
# or any other value that cannot be losslessly converted to an integer,
# an error is returned.
#

```

```

do_select_tests e_select-9.2 -error "datatype mismatch" {
  1 { SELECT b FROM f1 ORDER BY a LIMIT 'hello' } {}
  2 { SELECT b FROM f1 ORDER BY a LIMIT NULL } {}
  3 { SELECT b FROM f1 ORDER BY a LIMIT X'ABCD' } {}
  4 { SELECT b FROM f1 ORDER BY a LIMIT 5.1 } {}
  5 { SELECT b FROM f1 ORDER BY a LIMIT (SELECT group_concat(b) FROM f1) } {}
}

```

```

# EVIDENCE-OF: R-03014-26414 If the LIMIT expression evaluates to a
# negative value, then there is no upper bound on the number of rows
# returned.
#

```

```

do_select_tests e_select-9.4 {
  1 { SELECT b FROM f1 ORDER BY a LIMIT -1 }
    {a b c d e f g h i j k l m n o p q r s t u v w x y z}
  2 { SELECT b FROM f1 ORDER BY a LIMIT
    length('abc')-100 }
    {a b c d e f g h i j k l m n o p q r s t u v w x y z}
  3 { SELECT b FROM f1 ORDER BY a LIMIT (SELECT count(*) FROM f1)/2 - 14 }
    {a b c d e f g h i j k l m n o p q r s t u v w x y z}
}

```

```

# EVIDENCE-OF: R-33750-29536 Otherwise, the SELECT returns the first N

```

```

# rows of its result set only, where N is the value that the LIMIT
# expression evaluates to.
#
do_select_tests e_select-9.5 {
  1 { SELECT b FROM f1 ORDER BY a LIMIT 0 } {}
  2 { SELECT b FROM f1 ORDER BY a DESC LIMIT 4 } {z y x w}
  3 { SELECT b FROM f1 ORDER BY a DESC LIMIT 8 } {z y x w v u t s}
  4 { SELECT b FROM f1 ORDER BY a DESC LIMIT '12.0' } {z y x w v u t s r q p o}
}

```

```

# EVIDENCE-OF: R-54935-19057 Or, if the SELECT statement would return
# less than N rows without a LIMIT clause, then the entire result set is
# returned.
#

```

```

do_select_tests e_select-9.6 {
  1 { SELECT b FROM f1 WHERE a>21 ORDER BY a LIMIT 10 } {v w x y z}
  2 { SELECT count(*) FROM f1 GROUP BY a/5 ORDER BY 1 LIMIT 10
    } {2 4 5 5 5}
}

```

```

# EVIDENCE-OF: R-24188-24349 The expression attached to the optional
# OFFSET clause that may follow a LIMIT clause must also evaluate to an
# integer, or a value that can be losslessly converted to an integer.
#

```

```

foreach {tn select} {
  1 { SELECT b FROM f1 ORDER BY a LIMIT 2 OFFSET 'hello' }
  2 { SELECT b FROM f1 ORDER BY a LIMIT 2 OFFSET NULL }
  3 { SELECT b FROM f1 ORDER BY a LIMIT 2 OFFSET X'ABCD' }
  4 { SELECT b FROM f1 ORDER BY a LIMIT 2 OFFSET 5.1 }
  5 { SELECT b FROM f1 ORDER BY a
    LIMIT 2 OFFSET (SELECT group_concat(b) FROM f1)
  }
} {
do_catchsql_test e_select-9.7.$tn $select {1 {datatype mismatch}}
}

```

```

# EVIDENCE-OF: R-20467-43422 If an expression has an OFFSET clause, then
# the first M rows are omitted from the result set returned by the
# SELECT statement and the next N rows are returned, where M and N are
# the values that the OFFSET and LIMIT clauses evaluate to,
# respectively.
#

```

```

do_select_tests e_select-9.8 {
  1 { SELECT
    b FROM f1 ORDER BY a LIMIT 10 OFFSET 5 } {f g h i j k l m n o}
  2 { SELECT b FROM f1 ORDER BY a LIMIT 2+3 OFFSET 10 } {k l m n o}
  3 { SELECT b FROM f1 ORDER BY a

```

```

LIMIT (SELECT a FROM f1 WHERE b='j')
OFFSET (SELECT a FROM f1 WHERE b='b')
} {c d e f g h i j k l}
4 { SELECT b FROM f1 ORDER BY a LIMIT '5' OFFSET 3.0 } {d e f g h}
5 { SELECT b FROM f1 ORDER BY a LIMIT '5' OFFSET 0 } {a b c d e}
6 { SELECT b FROM f1 ORDER BY a LIMIT 0 OFFSET 10 } {}
7 { SELECT b FROM f1 ORDER BY a LIMIT 3 OFFSET '1'||'5' } {p q r}
}

# EVIDENCE-OF: R-34648-44875 Or, if the SELECT would return less than
# M+N rows if it did not have a LIMIT clause, then the first M rows are
# skipped and the remaining rows (if any) are returned.
#
do_select_tests e_select-9.9 {
1 { SELECT b FROM f1 ORDER BY a LIMIT 10 OFFSET 20} {u v w x y z}
2 { SELECT a FROM f1 ORDER BY a DESC LIMIT 100 OFFSET 18+4} {4 3 2 1}
}

# EVIDENCE-OF: R-23293-62447 If the OFFSET clause evaluates to a
# negative
# value, the results are the same as if it had evaluated to
# zero.
#
do_select_tests e_select-9.10 {
1 { SELECT b FROM f1 ORDER BY a LIMIT 5 OFFSET -1 } {a b c d e}
2 { SELECT b FROM f1 ORDER BY a LIMIT 5 OFFSET -500 } {a b c d e}
3 { SELECT b FROM f1 ORDER BY a LIMIT 5 OFFSET 0 } {a b c d e}
}

# EVIDENCE-OF: R-19509-40356 Instead of a separate OFFSET clause, the
# LIMIT clause may specify two scalar expressions separated by a comma.
#
# EVIDENCE-OF: R-33788-46243 In this case, the first expression is used
# as the OFFSET expression and the second as the LIMIT expression.
#
do_select_tests e_select-9.11 {
1 { SELECT b FROM f1 ORDER BY a LIMIT 5, 10 } {f g h i j k l m n o}
2 { SELECT b FROM f1 ORDER BY a LIMIT 10, 2+3 } {k l m n o}
3 { SELECT b FROM f1 ORDER BY a
LIMIT (SELECT a FROM f1 WHERE b='b'), (SELECT a FROM f1 WHERE b='j')
} {c d e f g h i j k l}
4 { SELECT b FROM f1 ORDER BY a LIMIT 3.0, '5' } {d e f g h}
5 { SELECT b FROM f1 ORDER
BY a LIMIT 0, '5' } {a b c d e}
6 { SELECT b FROM f1 ORDER BY a LIMIT 10, 0 } {}
7 { SELECT b FROM f1 ORDER BY a LIMIT '1'||'5', 3 } {p q r}
}

```

```
8 { SELECT b FROM f1 ORDER BY a LIMIT 20, 10 } {u v w x y z}
9 { SELECT a FROM f1 ORDER BY a DESC LIMIT 18+4, 100 } {4 3 2 1}

10 { SELECT b FROM f1 ORDER BY a LIMIT -1, 5 } {a b c d e}
11 { SELECT b FROM f1 ORDER BY a LIMIT -500, 5 } {a b c d e}
12 { SELECT b FROM f1 ORDER BY a LIMIT 0, 5 } {a b c d e}
}
```

finish_test

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/e_select.test
No license file was found, but licenses were detected in source scan.
```

```
# 2006 September 14
#
# The author disclaims copyright to this source code. In place of
# a legal notice, here is a blessing:
#
# May you do good and not evil.
# May you find forgiveness for yourself and forgive others.
# May you share freely, never taking more than you give.
#
#*****
# This file implements regression tests for SQLite library. The
# focus of this script is testing the FTS1 module.
#
# $Id: fts1c.test,v 1.11 2006/10/04 17:35:28 drh Exp $
#
```

```
set testdir [file dirname $argv0]
source $testdir/tester.tcl
```

```
# If SQLITE_ENABLE_FTS1 is defined, omit this file.
ifcapable !fts1 {
  finish_test
  return
}
```

```
# Create a table of sample email data. The data comes from email
# archives of Enron executives that was published as part of the
# litigation against that company.
#
do_test fts1c-1.1 {
  db eval {
    CREATE VIRTUAL TABLE email
```

```
USING fts1([from],[to],subject,body);
BEGIN TRANSACTION;
INSERT INTO email([from],[to],subject,body) VALUES('savita.puthigai@enron.com', 'traders.eol@enron.com,
traders.eol@enron.com', 'EnronOnline- Change to Autohedge', 'Effective Monday, October 22, 2001 the following
changes will be made to the Autohedge functionality on EnronOnline.
```

The volume on the hedge will now respect the minimum volume and volume increment settings on the parent product. See rules below:

- ? If the transaction volume on the child is less than half of the parent's minimum volume no hedge will occur.
- ? If the transaction volume on the child is more than half the parent's minimum volume but less than half the volume increment on the parent, the hedge will volume will be the parent's minimum volume.
- ? For all other volumes, the same rounding rules will apply based on the volume increment on the parent product.

Please see example below:

Parent's Settings:

Minimum: 5000

Increment: 1000

Volume on Autohedge

transaction	Volume Hedged
-------------	---------------

1 - 2499	0
----------	---

2500 - 5499	5000
-------------	------

5500 - 6499	6000');
-------------	---------

```
INSERT INTO email([from],[to],subject,body) VALUES('dana.davis@enron.com', 'laynie.east@enron.com,
lisa.king@enron.com, lisa.best@enron.com,', 'Leaving Early', 'FYI:
```

If it's ok with everyone's needs, I would like to leave @4pm. If you think you will need my assistance past the 4 o'clock hour just let me know; I'll be more than willing to stay.');

```
INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuworkplace.com',
'louise.kitchen@enron.com', '<<Concur Expense Document>> - CC02.06.02', 'The following expense report is ready
for approval:
```

Employee Name: Christopher F. Calger

Status last changed by: Mollie E. Gustafson Ms

Expense Report Name: CC02.06.02

Report Total: \$3,972.93

Amount Due Employee: \$3,972.93

To approve this expense report, click on the following link for Concur Expense.

<http://expensxms.enron.com>');

```
INSERT INTO email([from],[to],subject,body)
```

```
VALUES('jeff.duff@enron.com', 'julie.johnson@enron.com', 'Work request', 'Julie,
```

Could you print off the current work request report by 1:30 today?

Gentlemen,

I'd like to review this today at 1:30 in our office. Also, could you provide me with your activity reports so I can have Julie enter this information.

JD');

INSERT INTO email([from],[to],subject,body) VALUES('v.weldon@enron.com', 'gary.l.carrier@usa.dupont.com, scott.joyce@bankofamerica.com', 'Enron News', 'This could turn into something big....

<http://biz.yahoo.com/rf/010129/n29305829.html>');

INSERT INTO email([from],[to],subject,body) VALUES('mark.haedicke@enron.com', 'paul.simons@enron.com', 'Re: First Polish Deal!', 'Congrats! Things seem to be building rapidly now on the Continent. Mark');

INSERT INTO email([from],[to],subject,body) VALUES('e..carter@enron.com', 't..robinson@enron.com', 'FW: Producers Newsletter 9-24-2001', '

The producer lumber pricing sheet.

-----Original Message-----

From: Johnson, Jay

Sent: Tuesday,

October 16, 2001 3:42 PM

To: Carter, Karen E.

Subject: FW: Producers Newsletter 9-24-2001

-----Original Message-----

From: Daigre, Sergai

Sent: Friday, September 21, 2001 8:33 PM

Subject: Producers Newsletter 9-24-2001

');

INSERT INTO email([from],[to],subject,body) VALUES('david.delainey@enron.com', 'kenneth.lay@enron.com', 'Greater Houston Partnership', 'Ken, in response to the letter from Mr Miguel San Juan, my suggestion would be to offer up the Falcon for their use; however, given the tight time frame and your recent visit with Mr. Fox that it would be difficult for either you or me to participate.

I spoke to Max and he agrees with this approach.

I hope this meets with your approval.

Regards

Delainey');

INSERT INTO email([from],[to],subject,body) VALUES('lachandra.fenceroy@enron.com', 'lindy.donoho@enron.com', 'FW: Bus Applications Meeting Follow Up', 'Lindy,

Here is the original memo we discussed earlier. Please provide any information that you may have.

Your cooperation is greatly appreciated.

Thanks,

lachandra.fenceroy@enron.com
713.853.3884
877.498.3401 Pager

-----Original Message-----

From: Bisbee, Joanne
Sent: Wednesday, September 26, 2001 7:50 AM
To: Fenceroy, LaChandra
Subject: FW: Bus Applications Meeting Follow Up

Lachandra, Please get with David Duff today and see what this is about. Who are our TW accounting business users?

-----Original Message-----

From: Koh, Wendy
Sent: Tuesday, September 25, 2001 2:41 PM
To: Bisbee, Joanne
Subject: Bus Applications Meeting Follow Up

Lisa brought up a TW change effective Nov 1. It involves eliminating a turnback surcharge. I have no other information, but you might check with the business folks for any system changes required.

Wendy');

INSERT INTO email([from],[to],subject,body) VALUES('danny.mccarty@enron.com', 'fran.fagan@enron.com', 'RE: worksheets', 'Fran,

If Julie's merit needs to be lump sum, just move it over to that column. Also, send me Eric Gadd's sheets as well. Thanks.

Dan

-----Original Message-----

From: Fagan, Fran
Sent: Thursday, December 20, 2001 11:10 AM
To: McCarty, Danny
Subject: worksheets

As discussed, attached are your sheets for bonus and merit.

Thanks,

Fran Fagan
Sr. HR Rep
713.853.5219

<< File: McCartyMerit.xls >> << File: mccartyBonusCommercial_UnP.xls >>

);
INSERT INTO email([from],[to],subject,body) VALUES('bert.meyers@enron.com', 'shift.dl-portland@enron.com',
'OCTOBER SCHEDULE', 'TEAM,

PLEASE SEND ME ANY REQUESTS THAT YOU HAVE FOR OCTOBER. SO FAR I HAVE THEM FOR
LEAF. I WOULD LIKE TO HAVE IT DONE BY THE 15TH OF THE MONTH. ANY QUESTIONS PLEASE
GIVE ME A CALL.

BERT');
INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com', 'john.arnold@enron.com,
bilal.bajwa@enron.com, john.griffith@enron.com,', 'TRV Notification: (NG - PROPT P/L - 09/27/2001)', 'The
report named: NG - PROPT P/L <[http://trv.corp.enron.com/linkFromExcel.asp?report_cd=11&report_name=NG+-
+PROPT+P/L&category_cd=5&category_name=FINANCIAL&toc_hide=1&sTV1=5&TV1Exp=Y¤t_efct_d
ate=09/27/2001](http://trv.corp.enron.com/linkFromExcel.asp?report_cd=11&report_name=NG+-+PROPT+P/L&category_cd=5&category_name=FINANCIAL&toc_hide=1&sTV1=5&TV1Exp=Y¤t_efct_d
ate=09/27/2001)>,
published as of 09/27/2001 is now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('patrice.mims@enron.com', 'calvin.eakins@enron.com',
'Re: Small business supply assistance', 'Hi Calvin

I spoke with Rickey (boy, is he long-winded!!). Gave him the name of our
credit guy, Russell Diamond.

Thank for your help!');
INSERT INTO email([from],[to],subject,body) VALUES('legal <.hall@enron.com>', 'stephanie.panus@enron.com',
'Termination update', 'City of Vernon and Salt River Project terminated their contracts. I will fax these notices to
you.');

INSERT INTO email([from],[to],subject,body) VALUES('d..steffes@enron.com', 'richard.shapiro@enron.com',
'EES / ENA Government Affairs Staffing & Outside Services', 'Rick --

Here is the information on staffing and outside services. Call if you need anything else.

Jim

);
INSERT INTO email([from],[to],subject,body)
VALUES('gelliott@industrialinfo.com', 'pcopello@industrialinfo.com', 'ECAAR (Gavin), WSCC (Diablo Canyon),
& NPCC (Seabrook)', 'Dear Power Outage Database Customer,
Attached you will find an excel document. The outages contained within are forced or rescheduled outages. Your
daily delivery will still contain these outages.
In addition to the two excel documents, there is a dbf file that is formatted like your daily deliveries you receive
nightly. This will enable you to load the data into your regular database. Any questions please let me know. Thanks.
Greg Elliott
IIR, Inc.
713-783-5147 x 3481
outages@industrialinfo.com

THE INFORMATION CONTAINED IN THIS E-MAIL IS LEGALLY PRIVILEGED AND CONFIDENTIAL
INFORMATION INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE.

YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION, OR COPY OF THIS E-MAIL TO UNAUTHORIZED ENTITIES IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE DELETE IT.

- OUTAGE.dbf
- 111201R.xls
- 111201.xls ');

INSERT INTO email([from],[to],subject,body) VALUES('enron.announcements@enron.com',
'all_ena_egm_eim@enron.com', 'EWS Brown Bag', 'MARK YOUR LUNCH CALENDARS NOW !

You are invited to attend the EWS Brown Bag Lunch Series

Featuring: RAY BOWEN, COO

Topic: Enron Industrial Markets

Thursday, March 15, 2001
11:30 am - 12:30 pm
EB 5 C2

You bring your lunch, Limited Seating

We provide drinks and dessert. RSVP x 3-9610');

INSERT INTO email([from],[to],subject,body) VALUES('chris.germany@enron.com',
'ingrid.immer@williams.com', 'Re: About St Pauls', 'Sounds good to me. I bet this is next to the Warick?? Hotel.

"Immer, Ingrid" <Ingrid.Immer@Williams.com> on 12/21/2000 11:48:47 AM

To: ""chris.germany@enron.com"" <chris.germany@enron.com>

cc:

Subject: About St Pauls

<<About St Pauls.url>>

?

?<http://www.stpaulshouston.org/about.html>

Chris,

I like the looks of this place.? What do you think about going
here Christmas

eve?? They have an 11:00 a.m. service and a candlelight service at 5:00 p.m.,
among others.

Let me know.?? ii

- About St Pauls.url

');

INSERT INTO email([from],[to],subject,body) VALUES('nas@cpuc.ca.gov', 'skatz@sempratradng.com, kmccrea@sablaw.com, thompson@wrightlaw.com,', 'Reply Brief filed July 31, 2000', '- CPUC01-#76371-v1-Revised_Reply_Brief__Due_today_7_31_.doc');

INSERT INTO email([from],[to],subject,body) VALUES('gascontrol@aglresources.com', 'dscott4@enron.com, lcampbel@enron.com', 'Alert Posted 10:00 AM November 20,2000: E-GAS Request Reminder', 'Alert Posted 10:00 AM November 20,2000: E-GAS Request Reminder

As discussed in the Winter Operations Meeting on Sept.29,2000,

E-Gas(Emergency Gas) will not be offered this winter as a service from AGLC.

Marketers and Poolers can receive gas via Peaking and IBSS nominations(daisy chain) from other marketers up to the 6 p.m. Same Day 2 nomination cycle.

');

INSERT INTO email([from],[to],subject,body) VALUES('dutch.quigley@enron.com', 'rwolkwitz@powermerchants.com', ", '

Here is a goody for you');

INSERT INTO email([from],[to],subject,body) VALUES('ryan.o"rourke@enron.com', 'k..allen@enron.com, randy.bhatia@enron.com, frank.ermis@enron.com,', 'TRV Notification: (West VaR - 11/07/2001)', 'The report named: West VaR

<http://trv.corp.enron.com/linkFromExcel.asp?report_cd=36&report_name=West+VaR&category_cd=2&category_name=WEST&toc_hide=1&sTV1=2&TV1Exp=Y¤t_efct_date=11/07/2001>, published as of 11/07/2001 is now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('mjones7@txu.com', 'cstone1@txu.com, gggreen2@txu.com, timpowell@txu.com,', 'Enron / HPL Actuals for July 10, 2000', 'Teco Tap 10.000 / Enron ; 110.000 / HPL IFERC

LS HPL LSK IC 30.000 / Enron

');

INSERT INTO email([from],[to],subject,body) VALUES('susan.pereira@enron.com', 'kkw816@aol.com', 'soccer practice', 'Kathy-

Is it safe to assume that practice is cancelled for tonight??

Susan Pereira');

INSERT INTO email([from],[to],subject,body) VALUES('mark.whitt@enron.com', 'barry.tycholiz@enron.com', 'Huber Internal Memo', 'Please look at this. I didn"t know how deep to go with the desk. Do you think this works.

');

INSERT INTO email([from],[to],subject,body) VALUES('m..forney@enron.com', 'george.phillips@enron.com', ", 'George,

Give me a call and we will further discuss opportunities on the 13st floor.

Thanks,

JMForney

3-7160');

INSERT INTO email([from],[to],subject,body) VALUES('brad.mckay@enron.com', 'angusmcka@aol.com', 'Re: (no subject)', 'not yet');

INSERT INTO email([from],[to],subject,body) VALUES('adam.bayer@enron.com', 'jonathan.mckay@enron.com', 'FW: Curve Fetch File', 'Here is the curve fetch file sent to me. It has plenty of points in it. If you give me a list of which ones you need we may be able to construct a secondary worksheet to vlookup the values.

adam
35227

-----Original Message-----

From: Royed, Jeff
Sent: Tuesday,
September 25, 2001 11:37 AM
To: Bayer, Adam
Subject: Curve Fetch File

Let me know if it works. It may be required to have a certain version of Oracle for it to work properly.

Jeff Royed

Enron

Energy Operations

Phone: 713-853-5295');

INSERT INTO email([from],[to],subject,body) VALUES('matt.smith@enron.com', 'yan.wang@enron.com', 'Report Formats', 'Yan,

The merged reports look great. I believe the only orientation changes are to "unmerge" the following six reports:

31 Keystone Receipts
15 Questar Pipeline
40 Rockies Production
22 West_2
23 West_3
25 CIG_WIC

The orientation of the individual reports should be correct. Thanks.

Mat

PS. Just a reminder to add the "*" by the title of calculated points.');

INSERT INTO email([from],[to],subject,body) VALUES('michelle.lokay@enron.com', 'jimboman@bigfoot.com', 'Egyptian Festival', '----- Forwarded by Michelle Lokay/ET&S/Enron on 09/07/2000
10:08 AM -----

"Karkour, Randa" <Randa.Karkour@COMPAQ.com>

on 09/07/2000 09:01:04 AM

To: ""Agheb (E-mail)" <Agheb@aol.com>, "Leila Mankarious (E-mail)"

<Leila_Mankarious@mhhs.org>, ""Marymankarious (E-mail)"

<marymankarious@aol.com>, "Michelle lokay (E-mail)" <mlokay@enron.com>, "Ramy

Mankarious (E-mail)" <Mankarious@aol.com>

cc:

Subject: Egyptian Festival

<<Egyptian Festival.url>>

<http://www.egyptianfestival.com/>

- Egyptian Festival.url

);

INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com',
'sherry.dawson@enron.com', 'Urgent!!! --- New EAST books', 'This has to be done.....')

Thanks

----- Forwarded by Errol McLaughlin/Corp/Enron on 12/20/2000

08:39 AM -----

From: William Kelly @ ECT

12/20/2000 08:31 AM

To: Kam Keiser/HOU/ECT@ECT, Darron C Giron/HOU/ECT@ECT, David

Baumbach/HOU/ECT@ECT, Errol McLaughlin/Corp/Enron@ENRON

cc: Kimat Singla/HOU/ECT@ECT, Kulvinder Fowler/NA/Enron@ENRON,

Kyle R

Lilly/HOU/ECT@ECT, Jeff Royed/Corp/Enron@ENRON, Alejandra

Chavez/NA/Enron@ENRON, Crystal Hyde/HOU/ECT@ECT

Subject: New EAST books

We have new book names in TAGG for our intramonth portfolios and it is extremely important that any deal booked to the East is communicated quickly to someone on my team. I know it will take some time for the new names to sink in and I do not want us to miss any positions or P&L.

Thanks for your help on this.

New:

Scott Neal : East Northeast

Dick Jenkins: East Marketeast

WK

);

INSERT INTO email([from],[to],subject,body) VALUES('david.forster@enron.com', 'eol.wide@enron.com', 'Change to Stack Manager', 'Effective immediately, there is a change to the Stack Manager which will affect any Inactive Child.

An inactive Child with links to Parent products will not have their calculated prices updated until the Child product is Activated.

When the Child Product is activated, the price will be recalculated and updated BEFORE it is displayed on the web.

This means that if you are inputting a basis price on a Child product, you will not see the final, calculated price until you Activate the product, at which time the customer will also see it.

If you have any questions, please contact the Help Desk on:

Americas: 713 853 4357

Europe: + 44 (0) 20 7783 7783

Asia/Australia: +61 2 9229 2300

Dave);

INSERT INTO email([from],[to],subject,body) VALUES('vince.kaminski@enron.com', 'jhh1@email.msn.com', 'Re: Light reading - see pieces beginning on page 7', 'John,

I saw it. Very interesting.

Vince

"John H Herbert" <jhh1@email.msn.com> on 07/28/2000 08:38:08 AM

To: "Vince J Kaminski" <Vince_J_Kaminski@enron.com>

cc:

Subject: Light reading - see pieces beginning on page 7

Cheers and have a nice weekend,

JHHerbert

- gd000728.pdf

');

INSERT INTO email([from],[to],subject,body) VALUES('matthew.lenhart@enron.com',
'mmmarcanel@equiva.com', 'RE:', 'i will try to line up a pig for you ');

INSERT INTO email([from],[to],subject,body)

VALUES('jae.black@enron.com', 'claudette.harvey@enron.com, chaun.roberts@enron.com,
judy.martinez@enron.com,', 'Disaster Recovery Equipment', 'As a reminder...there are several pieces of equipment
that are set up on the 30th Floor, as well as on our floor, for the Disaster Recovery Team. PLEASE DO NOT
TAKE, BORROW OR USE this equipment. Should you need to use another computer system, other than yours, or
make conference calls please work with your Assistant to help find or set up equipment for you to use.

Thanks for your understanding in this matter.

T.Jae Black

East Power Trading

Assistant to Kevin Presto

off. 713-853-5800

fax 713-646-8272

cell 713-539-4760');

INSERT INTO email([from],[to],subject,body) VALUES('eric.bass@enron.com', 'dale.neuner@enron.com', '5 X
24', 'Dale,

Have you heard anything more on the 5 X 24s? We would like to get this
product out ASAP.

Thanks,

Eric');

INSERT INTO email([from],[to],subject,body) VALUES('messenger@smartreminders.com',
'm..tholt@enron.com', '10% Coupon - PrintPal Printer Cartridges - 100% Guaranteed', '[IMAGE]
[IMAGE][IMAGE][IMAGE]

Dear SmartReminders Member,

[IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE]

We respect your privacy and are a Certified Participant of the BBBOnline Privacy Program. To be removed from future offers,click here.

SmartReminders.com is a permission based service. To unsubscribe click here . ');

INSERT INTO email([from],[to],subject,body) VALUES('benjamin.rogers@enron.com', 'mark.bernstein@enron.com', ', 'The guy you are talking about left CIN under a "cloud of suspicion" sort of speak. He was the one who got into several bad deals and PPA"s in California for CIN, thus he left on a bad note. Let me know if you need more detail than that, I felt this was the type of info you were looking for. Thanks!

Ben');

INSERT INTO email([from],[to],subject,body)

VALUES('enron_update@concuworkplace.com', 'michelle.cash@enron.com', 'Expense Report Receipts Not Received', 'Employee Name: Michelle Cash
Report Name: Houston Cellular 8-11-01
Report Date: 12/13/01
Report ID: 594D37C9ED2111D5B452
Submitted On: 12/13/01

You are only allowed 2 reports with receipts outstanding. Your expense reports will not be paid until you meet this requirement.);

INSERT INTO email([from],[to],subject,body) VALUES('susan.mara@enron.com', 'ray.alvarez@enron.com, mark.palmer@enron.com, karen.denne@enron.com,', 'CAISO Emergency Motion -- to discontinue market-based rates for', 'FYI. the latest broadside against the generators.

Sue Mara

Enron Corp.

Tel: (415) 782-7802

Fax:(415) 782-7854

----- Forwarded by Susan J Mara/NA/Enron on 06/08/2001 12:24 PM -----

"Milner, Marcie" <MMilner@coral-energy.com> 06/08/2001 11:13 AM To: ""smara@enron.com""
<smara@enron.com> cc: Subject: CAISO Emergency Motion

Sue, did you see this emergency motion

the CAISO filed today? Apparently they are requesting that FERC discontinue market-based rates immediately and grant refunds plus interest on the difference between cost-based rates and market revenues received back to May 2000. They are requesting the commission act within 14 days. Have you heard anything about what they are doing?

Marcie

<http://www.caiso.com/docs/2001/06/08/200106081005526469.pdf>

);

INSERT INTO email([from],[to],subject,body) VALUES('fletcher.sturm@enron.com', 'eloy.escobar@enron.com', 'Re: General Brinks Position Meeting', 'Eloy,

Who is General Brinks?

Fletch');

INSERT INTO email([from],[to],subject,body) VALUES('nailia.dindarova@enron.com', 'richard.shapiro@enron.com', 'Documents for Mark Frevert (on EU developments and lessons from', 'Rick,

Here are the documents that Peter has prepared for Mark Frevert.

Nailia

----- Forwarded by Nailia Dindarova/LON/ECT on 25/06/2001

16:36 -----

Nailia Dindarova

25/06/2001 15:36

To:

Michael Brown/Enron@EUEnronXGate

cc: Ross Sankey/Enron@EUEnronXGate, Eric Shaw/ENRON@EUEnronXGate, Peter Styles/LON/ECT@ECT

Subject: Documents for Mark Frevert (on EU developments and lessons from California)

Michael,

These are the documents that Peter promised to give to you for Mark Frevert. He has now handed them to him in person but asked me to transmit them electronically to you, as well as Eric and Ross.

Nailia

);
INSERT INTO email([from],[to],subject,body) VALUES('peggy.a.kostial@accenture.com',
'dave.samuels@enron.com', 'EOL-Accenture Deal Sheet', 'Dave -

Attached are our comments and suggested changes. Please call to review.

On the time line for completion, we have four critical steps to complete:

- Finalize market analysis to refine business case, specifically
projected revenue stream
- Complete counterparty surveying, including targeting 3 CPs for letters
of intent
- Review Enron asset base for potential reuse/ licensing
- Contract
negotiations

Joe will come back to us with an updated time line, but it is my
expectation that we are still on the same schedule (we just begun week
three) with possibly a week or so slippage.....contract negotiations will
probably be the critical path.

We will send our cut at the actual time line here shortly. Thanks,

Peggy

(See attached file: accenture-dealpoints v2.doc)

- accenture-dealpoints v2.doc ');

INSERT INTO email([from],[to],subject,body) VALUES('thomas.martin@enron.com', 'thomas.martin@enron.com',
'Re: Guadalupe Power Partners LP', '----- Forwarded by Thomas A Martin/HOU/ECT on 03/20/2001
03:49 PM -----

Thomas A Martin

10/11/2000 03:55 PM

To: Patrick Wade/HOU/ECT@ECT

cc:

Subject: Re: Guadalupe Power Partners LP

The deal is physically served at Oasis Waha or Oasis Katy and is priced at
either HSC, Waha or Katytailgate GD at buyers option three days prior to
NYMEX close.

);

INSERT INTO email([from],[to],subject,body)

VALUES('judy.townsend@enron.com', 'dan.junek@enron.com, chris.germany@enron.com', 'Columbia
Distribution's Capacity Available for Release - Sum', '----- Forwarded by Judy Townsend/HOU/ECT
on 03/09/2001 11:04

AM -----

agoddard@nsource.com on 03/08/2001 09:16:57 AM

To: " - *Koch, Kent" <kkoch@nsource.com>, " -
*Millar, Debra" <dmillar@nsource.com>, " - *Burke, Lynn"
<lburke@nsource.com>
cc: " - *Heckathorn, Tom" <theckathorn@nsource.com>
Subject: Columbia Distribution's Capacity Available for Release - Sum

Attached is Columbia Distribution's notice of capacity available for release
for
the summer of 2001 (Apr. 2001 through Oct. 2001).

Please note that the deadline for bids is 3:00pm EST on March 20, 2001.

If you have any questions, feel free to contact any of the representatives
listed
at the bottom of the attachment.

Aaron Goddard

- 2001Summer.doc

');

INSERT INTO

email([from],[to],subject,body) VALUES('rhonda.denton@enron.com', 'tim.belden@enron.com,
dana.davis@enron.com, genia.fitzgerald@enron.com,', 'Split Rock Energy LLC', 'We have received the executed
EEI contract from this CP dated 12/12/2000.

Copies will be distributed to Legal and Credit.');

INSERT INTO email([from],[to],subject,body) VALUES('kerrymcelroy@dwt.com', 'jack.speer@alcoa.com,
crow@millernash.com, michaelearly@earthlink.net,', 'Oral Argument Request', ' - Oral Argument Request.doc');

INSERT INTO email([from],[to],subject,body) VALUES('mike.carson@enron.com', 'rlmichaelis@hormel.com', ',
'Did you come in town this wk end..... My new number at our house is :
713-668-3712..... my cell # is 281-381-7332

the kid');

INSERT INTO email([from],[to],subject,body) VALUES('cooper.richey@enron.com', 'trycooper@hotmail.com',
'FW: Contact Info', '

-----Original Message-----

From: Punja, Karim
Sent: Thursday, December 13, 2001 2:35 PM
To: Richey, Cooper
Subject: Contact Info

Cooper,

Its

been a real pleasure working with you (even though it was for only a small amount of time)

I hope we can stay in touch.

Home# 234-0249

email: kpunja@hotmail.com

Take Care,

Karim.

);

INSERT INTO email([from],[to],subject,body) VALUES('bjm30@earthlink.net', 'mcguinn.k@enron.com, mcguinn.ian@enron.com, mcguinn.stephen@enron.com,', 'email address change', 'Hello all.

I haven't talked to many of you via email recently but I do want to give you my new address for your email file:

bjm30@earthlink.net

I hope all is well.

Brian McGuinn);

INSERT INTO email([from],[to],subject,body) VALUES('shelley.corman@enron.com', 'steve.hotte@enron.com', 'Flat Panels', 'Can you please advise what is going on with the flat panels that we had planned to distribute to our gas logistics team. It was in the budget and we had the okay, but now I'm hearing there is some hold-up & the units are stored on 44.

Shelley);

INSERT INTO email([from],[to],subject,body) VALUES('sara.davidson@enron.com', 'john.schwartzenburg@enron.com, scott.dieball@enron.com, recipients@enron.com,', '2001 Enron Law Conference (Distribution List 2)', ' Enron Law Conference

San Antonio, Texas May 2-4, 2001 Westin Riverwalk

See attached memo for more details!!

? Registration for the law conference this year will be handled through an Online RSVP Form on the Enron Law Conference Website at <http://lawconference.corp.enron.com>. The website is still under construction and will not be available until Thursday, March 15, 2001.

? We will send you another e-mail to confirm when the Law Conference Website is operational.

? Please complete the Online RSVP Form as soon as it is available and submit it no later than Friday, March 30th.

');

```
INSERT INTO email([from],[to],subject,body) VALUES('tori.kuykendall@enron.com',  
'heath.b.taylor@accenture.com', 'Re:', 'hey - thats funny about john - he definitely remembers him - i"ll call pat  
and let him know - we are coming  
on saturday - i just havent had a chance to  
call you guys back -- looking forward to it -- i probably need the  
directions again though');
```

```
INSERT INTO email([from],[to],subject,body) VALUES('darron.giron@enron.com', 'bryce.baxter@enron.com',  
'Re: Feedback for Audrey Cook', 'Bryce,
```

I"ll get it done today.

DG 3-9573

From: Bryce Baxter 06/12/2000 07:15 PM

To: Darron C Giron/HOU/ECT@ECT

cc:

Subject: Feedback for Audrey Cook

You were identified as a reviewer for Audrey Cook. If possible, could you complete her feedback by end of business Wednesday? It will really help me in the PRC process to have your input. Thanks.

');

```
INSERT INTO email([from],[to],subject,body) VALUES('casey.evans@enron.com', 'stephanie.sever@enron.com',  
'Gas EOL ID', 'Stephanie,
```

In conjunction with the recent movement of several power traders, they are changing the names of their gas books as well. The names of the new gas books and traders are as follows:

PWR-NG-LT-SPP:

Mike Carson

PWR-NG-LT-SERC: Jeff King

If you need to know their power desk to map their ID to their gas books, those desks are as follows:

EPMI-LT-SPP: Mike Carson

EPMI-LT-SERC: Jeff King

I will be in training this afternoon, but will be back when class is over. Let me know if you have any questions.

Thanks for your help!

Casey');

INSERT INTO email([from],[to],subject,body) VALUES('darrell.schoolcraft@enron.com',
'david.roensch@enron.com, kimberly.watson@enron.com, michelle.lokay@enron.com,', 'Postings', 'Please see the
attached.

ds

');

INSERT INTO email([from],[to],subject,body) VALUES('mcominsky@aol.com', 'cpatman@bracepatt.com,
james_derrick@enron.com', 'Jurisprudence Luncheon', 'Carrin & Jim --

It was an honor and a pleasure to meet both of you yesterday. I know we will
have fun working together on this very special event.

Jeff left the jurisprudence luncheon lists for me before he left on vacation.

I wasn't sure whether he transmitted them

to you as well. Would you please

advise me if you would like them sent to you? I can email the MS Excel files
or I can fax the hard copies to you. Please advise what is most convenient.

I plan to be in town through the holidays and can be reached by phone, email,
or cell phone at any time. My cell phone number is 713/705-4829.

Thanks again for your interest in the ADL's work. Martin.

Martin B. Cominsky

Director, Southwest Region

Anti-Defamation League

713/627-3490, ext. 122

713/627-2011 (fax)

MCominsky@aol.com');

INSERT INTO email([from],[to],subject,body) VALUES('phillip.love@enron.com', 'todagost@utmb.edu,
gbsonnta@utmb.edu', 'New President', 'I had a little bird put a word in my ear. Is there any possibility for Ben
Raimier to be Bush's secretary of HHS? Just curious about that infamous UTMB
rumor mill. Hope things are well, happy holidays.

PL');

INSERT INTO email([from],[to],subject,body) VALUES('marie.heard@enron.com', 'ehamilton@fna.com', 'ISDA

Master Agreement',

'Erin:

Pursuant to your request, attached are the Schedule to the ISDA Master Agreement, together with Paragraph 13 to the ISDA Credit Support Annex. Please let me know if you need anything else. We look forward to hearing your comments.

Marie

Marie Heard

Senior Legal Specialist

Enron North America Corp.

Phone: (713) 853-3907

Fax: (713) 646-3490

marie.heard@enron.com

');

INSERT INTO email([from],[to],subject,body) VALUES('andrea.ring@enron.com', 'beverly.beaty@enron.com', 'Re: Tennessee Buy - Louis Dreyfus', 'Beverly - once again thanks so much for your help on this.

');

INSERT INTO email([from],[to],subject,body) VALUES('karolyn.criado@enron.com', 'j.bonin@enron.com, felicia.case@enron.com, b.clapp@enron.com,', 'Price List week of Oct. 8-9, 2001', '

Please contact me if you have any questions regarding last weeks prices.

Thank you,

Karolyn Criado

3-9441

');

INSERT INTO email([from],[to],subject,body)

VALUES('kevin.presto@enron.com', 'edward.baughman@enron.com, billy.braddock@enron.com', 'Associated', 'Please begin working on filling our Associated short position in 02. I would like to take this risk off the books.

In addition, please find out what a buy-out of VEPCO would cost us. With Rogers transitioning to run our retail risk management, I would like to clean up our customer positions.

We also need to continue to explore a JEA buy-out.

Thanks.');

INSERT INTO email([from],[to],subject,body) VALUES('stacy.dickson@enron.com', 'gregg.penman@enron.com', 'RE: Constellation TC 5-7-01', 'Gregg,

I am at home with a sick baby. (Lots of fun!) I will call you about this tomorrow.

Stacy');

```
INSERT INTO email([from],[to],subject,body) VALUES('joe.quenet@enron.com', 'dfincher@utilicorp.com', '', 'hey big guy.....check this out.....
```

```
w ww.gorelieberman-2000.com/');
```

```
INSERT INTO email([from],[to],subject,body) VALUES('k..allen@enron.com', 'jacqestc@aol.com', '', 'Jacques,
```

I sent you a fax of Kevin Kolb's comments on the release. The payoff on the note would be \$36,248 (\$36090(principal) + \$158 (accrued interest)).

This is assuming we wrap this up on Tuesday.

Please email to confirm that their changes are ok so I can set up a meeting on Tuesday to reach closure.

Phillip');

```
INSERT INTO email([from],[to],subject,body) VALUES('kourtney.nelson@enron.com', 'mike.swerzbin@enron.com', 'Adjusted L/R Balance', 'Mike,
```

I placed the adjusted L/R Balance on the Enronwest site. It is under the "Staff/Kourtney Nelson". There are two links:

- 1) "Adj L_R" is the same data/format from the weekly strategy meeting.
- 2) "New Gen 2001_2002" link has all of the supply side info that is used to calculate the L/R balance -Please note the Data Flag column, a value of "3" indicates the project was cancelled, on hold, etc and is not included in the calc.

Both of these sheets are interactive Excel spreadsheets and thus you can play around with the data as you please. Also, James Bruce is working to get his gen report on the web. That will help with your access to information on new gen.

Please let me know if you have any questions or feedback,

Kourtney

Kourtney Nelson

Fundamental Analysis

Enron North America

(503) 464-8280

```
kourtney.nelson@enron.com');
```

```
INSERT INTO email([from],[to],subject,body) VALUES('d..thomas@enron.com', 'naveed.ahmed@enron.com', 'FW: Current Enron TCC Portfolio', '
```

-----Original Message-----

From: Grace, Rebecca M.
Sent: Monday, December 17, 2001 9:44 AM
To: Thomas, Paul D.
Cc: Cashion, Jim; Allen, Thresa A.; May, Tom
Subject: RE: Current Enron TCC Portfolio

Paul,

I reviewed NY's list. I agree with all of their contracts numbers and mw amounts.

Call if you have any more questions.

Rebecca

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:08 AM
To: Grace, Rebecca M.
Subject: FW: Current Enron TCC Portfolio

<< File: enrontccs.xls >>

Rebecca,
Let me know if you
see any differences.

Paul
X 3-0403

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:04 AM
To: Ahmed, Naveed
Subject: FW: Current Enron TCC Portfolio

-----Original Message-----

From: Thomas, Paul D.
Sent: Thursday, December 13, 2001 10:01 AM
To: Baughman, Edward D.
Subject: Current Enron TCC Portfolio

');

INSERT INTO email([from],[to],subject,body) VALUES('stephanie.panus@enron.com',

'william.bradford@enron.com, debbie.brackett@enron.com,', 'Coastal Merchant Energy/El Paso Merchant Energy', 'Coastal Merchant Energy, L.P. merged with and into El Paso Merchant Energy, L.P., effective February 1, 2001, with the surviving entity being El Paso Merchant Energy, L.P. We currently have ISDA Master Agreements with both counterparties. Please see the attached memo regarding the existing Masters and let us know which agreement should be terminated.

Thanks,
Stephanie
)

INSERT INTO email([from],[to],subject,body) VALUES('kam.keiser@enron.com', 'c.kenne@enron.com', 'RE: What about this too???, '

-----Original Message-----

From: Kenne, Dawn C.
Sent: Wednesday, February 06, 2002 11:50 AM
To: Keiser, Kam
Subject: What about this too???

<< File: Netco Trader Matrix.xls >>

);
INSERT INTO email([from],[to],subject,body) VALUES('chris.meyer@enron.com', 'joe.parks@enron.com', 'Centana', 'Talked to Chip. We do need Cash Committe approval given the netting feature of your deal, which means Batch Funding Request. Please update per my previous e-mail and forward.

Thanks

chris
x31666');
INSERT INTO email([from],[to],subject,body) VALUES('debra.perlingiere@enron.com', 'jworman@academyofhealth.com', ', 'Have a great weekend! Happy Fathers Day!

Debra Perlingiere
Enron North America Corp.
1400 Smith Street, EB 3885
Houston, Texas 77002
dperlin@enron.com
Phone 713-853-7658
Fax 713-646-3490');
INSERT INTO email([from],[to],subject,body) VALUES('outlook.team@enron.com', ', 'Demo by Martha Janousek of Dashboard & Pipeline Profile / Julia &', 'CALENDAR ENTRY: APPOINTMENT

Description:

Demo by Martha Janousek of Dashboard & Pipeline Profile / Julia & Dir Rpts. - 4102

Date: 1/5/2001

Time: 9:00 AM - 10:00 AM (Central Standard Time)

Chairperson: Outlook Migration Team

Detailed Description:');

INSERT INTO email([from],[to],subject,body) VALUES('diana.seifert@enron.com', 'mark.taylor@enron.com', 'Guest access Chile', 'Hello Mark,

Justin Boyd told me that your can help me with questions regarding Chile.

We got a request for guest access through MG.

The company is called Escondida and is a subsidiary of BHP Australia.

Please advise if I can set up a guest account or not.

F.Y.I.: MG is planning to put a "in w/h Chile" contract for Copper on-line as soon as Enron has done the due diligence for this country.

Thanks !

Best regards

Diana Seifert

EOL PCG');

INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuworkplace.com', 'mark.whitt@enron.com', '<<Concur Expense Document>> - 121001',

'The Approval status has changed on the following report:

Status last changed by: Barry L. Tycholiz

Expense Report Name: 121001

Report Total: \$198.98

Amount Due Employee: \$198.98

Amount Approved: \$198.98

Amount Paid: \$0.00

Approval Status: Approved

Payment Status: Pending

To review this expense report, click on the following link for Concur Expense.

<http://expense.ms.enron.com>');

INSERT INTO email([from],[to],subject,body) VALUES('kevin.hyatt@enron.com', '', 'Technical Support', 'Outside the U.S., please refer to the list below:

Australia:

1800 678-515

support@palm-au.com

Canada:

1905 305-6530

support@palm.com

New Zealand:

0800 446-398

support@palm-nz.com

U.K.:

0171 867 0108

eurosupport@palm.3com.com

Please refer to the Worldwide Customer Support card for a complete technical support contact list.');

INSERT INTO email([from],[to],subject,body) VALUES('geoff.storey@enron.com', 'dutch.quigley@enron.com', 'RE:', 'duke contact?')

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 10:14 AM

To: Storey, Geoff

Subject: RE:

bp corp Albert LaMore 281-366-4962

running the reports now

-----Original Message-----

From: Storey, Geoff

Sent: Wednesday, October 31, 2001 10:10 AM

To: Quigley, Dutch

Subject: RE:

give me a contact over there too

BP

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 9:42 AM

To: Storey, Geoff

Subject:

Coral Jeff Whitnah 713-767-5374

Relaint Steve McGinn 713-207-4000');

INSERT INTO email([from],[to],subject,body) VALUES('pete.davis@enron.com', 'pete.davis@enron.com', 'Start Date: 4/22/01; HourAhead hour: 3; <CODESITE>', 'Start Date: 4/22/01; HourAhead hour: 3; No ancillary schedules awarded.

Variances detected.

Variances detected in Load schedule.

LOG MESSAGES:

PARSING FILE -->> O:\Portland\WestDesk\California Scheduling\ISO Final Schedules\2001042203.txt

---- Load Schedule ----

\$\$\$ Variance found in table tblLoads.

Details: (Hour: 3 / Preferred:

1.92 / Final: 1.89)

TRANS_TYPE: FINAL

LOAD_ID: PGE4

MKT_TYPE: 2

TRANS_DATE: 4/22/01

SC_ID: EPMI

);

INSERT INTO email([from],[to],subject,body) VALUES('john.postlethwaite@enron.com', 'john.zufferli@enron.com', 'Reference', 'John, hope things are going well up there for you. The big day is almost here for you and Jessica. I was wondering if I could use your name as a job reference if need be. I am just trying to get everything in order just in case something happens.

John');

INSERT INTO email([from],[to],subject,body) VALUES('jeffrey.shankman@enron.com', 'lschiffm@jonesday.com', 'Re:', 'I saw you called on the cell this a.m. Sorry I missed you. (I was in the shower). I have had a shitty week--I suspect my silence (not only to you, but others) after our phone call is a result of the week. I'm seeing Glen at 11:15....talk to you');

INSERT INTO email([from],[to],subject,body) VALUES('litebytz@enron.com', ', 'Lite Bytz RSVP', 'This week's Lite Bytz presentation will feature the following TOOLZ speaker:

Richard McDougall

Solaris 8

Thursday, June 7, 2001

If you have not already signed up, please RSVP via email to litebytz@enron.com by the end of the day Tuesday, June 5, 2001.

*Remember: this is now a Brown Bag Event--so bring your lunch and we will provide cookies and drinks.

Click below for more details.

<http://home.enron.com:84/messaging/litebytztoolzprint.jpg>);

COMMIT;

}

} {}

```

#####
# Everything above just builds an interesting test database. The actual
# tests come after this comment.
#####

do_test fts1c-1.2 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark'
  }
} {6 17 25 38 40 42 73 74}
do_test fts1c-1.3 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'susan'
  }
} {24 40}
do_test fts1c-1.4 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark
susan'
  }
} {40}
do_test fts1c-1.5 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'susan mark'
  }
} {40}
do_test fts1c-1.6 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH "'mark susan'"
  }
} {}
do_test fts1c-1.7 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark -susan'
  }
} {6 17 25 38 42 73 74}
do_test fts1c-1.8 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH '-mark susan'
  }
} {24}
do_test fts1c-1.9 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark OR susan'
  }
} {6 17 24 25 38 40 42 73 74}

```

```

# Some simple tests of the automatic "offsets(email)" column. In the sample
# data set above, only one message, number 20, contains the words
# "gas" and "reminder" in both body and subject.
#
do_test fts1c-2.1 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE email MATCH 'gas reminder'
  }
} {20 {2 0 42 3 2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}
do_test fts1c-2.2 {
  execsql {

    SELECT rowid, offsets(email) FROM email
    WHERE email MATCH 'subject:gas reminder'
  }
} {20 {2 0 42 3 2 1 54 8 3 1 54 8}}
do_test fts1c-2.3 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE email MATCH 'body:gas reminder'
  }
} {20 {2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}
do_test fts1c-2.4 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE subject MATCH 'gas reminder'
  }
} {20 {2 0 42 3 2 1 54 8}}
do_test fts1c-2.5 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE body MATCH 'gas reminder'
  }
} {20 {3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}

# Document 32 contains 5 instances of the word "child". But only
# 3 of them are paired with "product". Make sure only those instances
# that match the phrase appear in the offsets(email) list.
#
do_test fts1c-3.1 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE body MATCH 'child product' AND +rowid=32
  }
} {32 {3 0 94 5 3 0 114 5 3 0 207
5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7 3 1 493 7}}
do_test fts1c-3.2 {

```



```

execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE body MATCH "'child product'"
}
} {32 {3 0 207 5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7}}

# Snippet generator tests
#
do_test fts1c-4.1 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'subject:gas reminder'
  }
} {{Alert Posted 10:00 AM November 20,2000: E-<b>GAS</b> Request <b>Reminder</b>}}
do_test fts1c-4.2 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'christmas candlelight'
  }
} {{<b>...</b> place.? What do you think about going here <b>Christmas</b>
eve?? They have an 11:00 a.m. service and a <b>candlelight</b> service at 5:00 p.m.,
among others. <b>...</b>}}

do_test fts1c-4.3 {
  execsql {
    SELECT snippet(email) FROM email
    WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <b>Deal</b> <b>Sheet</b> <b>...</b> intent
Review Enron
asset base for <b>potential</b> <b>reuse</b>/ licensing
Contract negotiations <b>...</b>}}
do_test fts1c-4.4 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
    WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <<<Deal>>> <<<Sheet>>> intent
Review Enron asset base for <<<potential>>> <<<reuse>>>/ licensing
Contract negotiations }}
do_test fts1c-4.5 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
    WHERE email MATCH 'first things'
  }
} {{Re: <<<First>>> Polish Deal! Congrats! <<<Things>>> seem to be building rapidly now on the }}
do_test fts1c-4.6 {
  execsql {

```

```

SELECT snippet(email) FROM email
WHERE email MATCH 'chris is here'
}
} {{<b>chris</b>.germany@enron.com <b>...</b> Sounds good to me. I bet this <b>is</b> next to the Warick??
Hotel. <b>...</b> place.? What do you think about going <b>here</b> Christmas
eve?? They have an 11:00 a.m. <b>...</b>}}
do_test fts1c-4.7 {
execsql {
SELECT
snippet(email) FROM email
WHERE email MATCH "'pursuant to'"
}
} {{Erin:

<b>Pursuant</b> <b>to</b> your request, attached are the Schedule to <b>...</b>}}
do_test fts1c-4.8 {
execsql {
SELECT snippet(email) FROM email
WHERE email MATCH 'ancillary load davis'
}
} {{pete.<b>davis</b>@enron.com <b>...</b> Start Date: 4/22/01; HourAhead hour: 3; No <b>ancillary</b>
schedules awarded.
Variances detected.
Variances detected in <b>Load</b> schedule.

LOG MESSAGES:

PARSING <b>...</b>}}

# Combinations of AND and OR operators:
#
do_test fts1c-5.1 {
execsql {
SELECT snippet(email) FROM email
WHERE email MATCH 'questar enron OR com'
}
} {{matt.smith@<b>enron</b>.<b>com</b> <b>...</b> six reports:

31 Keystone Receipts
15 <b>Questar</b> Pipeline
40 Rockies Production
22 West_2 <b>...</b>}}
do_test fts1c-5.2 {
execsql {
SELECT snippet(email) FROM email
WHERE email MATCH 'enron OR com questar'
}
} {{matt.smith@<b>enron</b>.<b>com</b> <b>...</b>

```

six reports:

31 Keystone Receipts
15 Questar Pipeline
40 Rockies Production
22 West_2 ...}}

finish_test

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/fts1c.test
No license file was found, but licenses were detected in source scan.

<html>

<head>

<title>SQLite Consortium Agreement</title>

</head>

<body bgcolor="white">

<h1 align="center">

SQLite Consortium Agreement

</h1>

<p>This SQLite Consortium Agreement ("Agreement") is made and entered into as of the ____ day of _____, 2007 ("Effective Date") by and between _____ (the "Company"), and Hipp, Wyrick & Company, Inc., a Georgia Corporation with headquarters at 6200 Maple Cove Lane, Charlotte, NC ("Hwaci").</p>

<p>WHEREAS, Hwaci is the developer of a serverless, embeddable, public domain SQL database engine available at http://www.sqlite.org/ ("SQLite"); and</p>

<p>WHEREAS, Company wishes to support the independent development of the SQLite database engine to insure the continuing reliability, vitality, and independence of SQLite, and in connection therewith, Company wishes to provide funds for ongoing research, development, and maintenance of the SQLite code base, operation of the SQLite website, protection and maintenance of the SQLite trademark, as well as for promotion of SQLite at conferences and trade shows; and</p>

<p>WHEREAS, Company wishes to receive benefits in the form of services from Hwaci in consideration for their support of SQLite; and

<p>WHEREAS, Company and Hwaci each wish SQLite to be supported and

maintained as an independent, community-driven project, and to ensure the SQLite development team remains independent.</p>

<p>NOW, THEREFORE, in consideration of the mutual promises contained herein, the parties agree as follows:</p>

<h2>1.0 Definitions</h2>

<h3>1.1 SQLite Developers</h3>

<p>The "SQLite Developers" are the employees or contractors of Hwaci engaged in the development of SQLite, including without limitation the SQLite Architect.</p>

<h3>1.2 SQLite Architect</h3>

<p>The "SQLite Architect" is the SQLite Developer with ultimate responsibility and authority over changes and maintenance of the SQLite code. The current SQLite Architect is the original designer and developer of SQLite, D. Richard Hipp. Hwaci may change the SQLite Architect from time to time upon approval by Company.</p>

<h3>1.3 Consortium Member</h3>

<p>A "Consortium Member" is a company or organization, including but not limited to Company, which has entered into an agreement with Hwaci which is substantially similar to this Agreement.</p></p>

<h2>2.0 Agreement</h2>

<h3>2.1 Responsibilities And Obligations Of SQLite Developers</h3>

<h4>2.1.1 General Support</h4>

<p>The SQLite Developers shall provide, without limit, timely and accurate answers, advice, and instruction in response to questions and comments from Company about SQLite submitted by email or by telephone at any time day or night.</p></p>

<h4>2.1.2 Debugging Support</h4>

The SQLite Developers shall at Company's request provide Company with direct assistance in debugging applications that are built upon or use SQLite. The combined time for Debugging Support and Custom Development for Company is limited to 330 hours per year.</p></p>

<h4>2.1.3 Custom Development</h4>

The SQLite Developers shall at the request of Company write new extensions or enhancements to SQLite according to Company's specifications. These extensions and enhancements may be proprietary to Company or open source or with the consent of both Company and the SQLite Architect may be folded into the public domain SQLite source tree. The time devoted to Custom Development for Company is limited 220 hours per year.

2.1.4 Custom Builds

The SQLite Developers shall at Company's request provide Company with specialized builds of SQLite according to Company's specifications.

2.1.5 Legacy Support

The SQLite Developers shall at Company's request provide support and bug-fix patches for any historical version of SQLite.

2.1.6 Custom Testing

The SQLite Developers shall at Company's request set up and run acceptance tests according Company's specifications that are specifically designed to exercise SQLite as configured and used by Company. These acceptance tests shall be run and shall pass prior to any release of SQLite.

2.1.7 Priority Bug Fixes

The SQLite Developers shall assign highest priority to fixing bugs in SQLite that are reported by Company or in which Company has expressed a specific interest.

2.1.8 Code Quality

The SQLite Developers shall at all times keep the SQLite source code well commented and documented and clearly structured and organized so that an experienced and competent programmer can understand it and support it after no more than a few months of study.

2.1.9 Backwards Compatibility

The SQLite Developers recognize that Company uses SQLite in mission-critical applications and therefore shall work diligently to ensure continuing bug-free correct operation and backwards compatibility with prior releases.

<h4>2.1.10

Test Coverage</h4>

<p>The SQLite Developers shall maintain the SQLite test suite such that no less than 95% source code coverage is provided.

</p>

<h4>2.1.11 Website</h4>

<p>The SQLite Developers shall maintain the SQLite website at

http://www.sqlite.org/

in good working order and all SQLite source code shall

be made freely available at such website.

</p>

<h3>2.2 Responsibilities And Obligations Of The SQLite Architect</h3>

<h4>2.2.1 Private Briefings</h4>

<p>The SQLite Architect shall, at the request of Company, provide Company with private notification and briefings of any new bugs or new features in SQLite that might effect Company's products.

</p>

<h4>2.2.2 Direction</h4>

<p>The SQLite Architect shall coordinate the activities of SQLite Developers and shall publish from time to time a roadmap of proposed future changes and enhancements to SQLite.

</p>

<h4>2.2.3 Oversight</h4>

<p>The SQLite Architect shall personally review all changes to the SQLite Source Code and take responsibility for the quality and correctness of those changes.

</p>

<h4>2.2.4 Continuity</h4>

<p>The initial SQLite Architect shall be the original developer of SQLite, D. Richard Hipp. The role of SQLite Architect shall not be assigned to another during the term of this Agreement except due to the disability of Dr. Hipp and with approval of Company.

</p>

<h3>2.3 Responsibilities And Obligations Of Hwaci</h3>

<h4>2.3.1 Employer</h4>

<p>Hwaci shall act as the employer of the SQLite Developers and

SQLite Architect and shall make all tax and legal filings and tax withholding required by employers. Hwaci shall provide Company with W-9 information upon request.

2.3.2 Responsible Party

All obligations of the SQLite Developers set forth in this agreement are deemed obligations of Hwaci. Hwaci shall recruit, employ, and supervise SQLite Developers in such a way that the responsibilities and obligations of the SQLite Developers set forth in this agreement are upheld.

2.3.3 Multiple Developers

Hwaci shall recruit and employ as many SQLite Developers for as many hours as can be reasonably achieved using the funds received from Consortium Members under this agreement. So that support for SQLite will not be interrupted by the disability or withdrawal of any one SQLite Developer, Hwaci will keep at least two knowledgeable and competent SQLite Developers on staff.

2.3.4 Mentorship

Hwaci shall work to encourage independent programmers from around the world to become familiar with SQLite internals so that there will be a pool of talent able to support SQLite in the future.

2.3.5 Audits

Hwaci shall keep and maintain complete and accurate records of the use of development funds provided by Company and shall allow Company, or its representative, a certified public accountant mutually acceptable to Hwaci and Company, during office hours and at reasonable intervals, no more than once every 12 months, to inspect and make extracts or copies of such records solely for the purpose of ascertaining Hwaci's compliance with the objectives and requirements of this agreement.

2.3.6 Disaster Planning

Hwaci shall maintain backup copies of all SQLite source files and documentation, current and historical, at at least two separate locations separated from each other and from the primary on-line SQLite repository by at least 400 kilometers.

<h4>2.3.7 Trademark</h4>

<p>Hwaci shall maintain ownership of the SQLite trademark and the sqlite.org domain name and shall purchase bandwidth and server space for the http://www.sqlite.org/ website.</p>

<h4>2.3.8 No Take-overs or Buy-outs</h4>

<p>Neither Hwaci nor the SQLite Architect shall relinquish development control of SQLite during the term of this Agreement, by acquisition or merger or by any other means, except with the consent of Company.</p>

<h4>2.3.9

New Consortium Members</h5>

<p>New Consortium Members may be accepted into the consortium from time to time under identical terms as this agreement, or under substantially similar terms that have been approved by existing Consortium Members.</p>

<h4>2.3.10 Adequate Staff</h4>

Hwaci shall recruit and employ a sufficient number of qualified SQLite Developers to easily cover all custom development, debugging, and general support service obligations for all Consortium Members while still providing ample time for the SQLite Developers to engage in general maintenance and extension of SQLite.</p>

<h4>2.3.11 Use Of Funds</h4>

<p>Hwaci shall use the funds provided hereunder solely for the development and maintenance of SQLite as set forth in this Agreement. Interest on funds received in advance and held in trust will be reinvested and used for the same purposes as the principal.</p>

<h3>2.4 Responsibilities And Obligations Of Company</h3>

<h4>2.4.1 Funding</h4>

<p>Company shall provide funding for the ongoing support and maintenance of SQLite as set forth in section 3.0 "Fees".</p>

<h4>2.4.2 Copyright Disclaimer</h4>

<p>Company acknowledges that SQLite source code and documentation published on the SQLite website is in the public domain and that nothing in this agreement shall change that fact.
</p>

<h2>3.0 Fees</h2>

<p>In consideration of the performance by Hwaci, the SQLite Developers, and the SQLite Architect of the obligations described herein, Company shall pay Hwaci at least US \$75,000 per year in advance either annually, quarterly, or monthly, at Company's discretion.</p>

<h2>4.0 Confidentiality</h2>

<h3>4.1 Definition of Confidential Information</h3>

<p>"Confidential Information" means any Company proprietary information, technical data, trade secrets or know-how, including, but not limited to, research, product plans, products, services, customers, customer lists, markets, software, developments, inventions, processes, formulas, technology, designs, drawings, engineering, hardware configuration information, marketing, finances or other business information disclosed by Company either directly or indirectly in writing, orally or by drawings or inspection of parts or equipment.</p>

<h3>4.2 Non-Use and Non-Disclosure.</h3>

<p>Hwaci shall not, during or subsequent to the term of this Agreement, use Company's Confidential Information for any purpose whatsoever other than the performance of the Services or disclose Company's Confidential Information to any third party. The parties acknowledge that Confidential Information will remain the sole property of Company. Hwaci shall take all reasonable precautions to prevent any unauthorized disclosure of Confidential Information including, but not limited to, having each employee or consultant of Hwaci, if any, with access to any Confidential Information, execute a nondisclosure agreement containing provisions in Company's favor substantially similar to this Agreement. Confidential Information does not include information that: (i) is known to Hwaci at the time of disclosure to Hwaci by Company as evidenced by written records of Hwaci; (ii) has become publicly known and made generally available through no wrongful act of Hwaci; or (iii) has been received by Hwaci from a third party who is

authorized to make such disclosure.</p>

<h4>4.2.1 Disclosure Required by Law</h4>

In the event any Confidential Information is required to be disclosed by Hwaci under the terms of a valid and effective subpoena or order issued by a court of competent jurisdiction, or by a demand or information request from an executive or administrative agency or other governmental authority, Hwaci shall, unless prohibited by the terms of a subpoena, order, or demand, promptly notify Company of the existence, terms and circumstances surrounding such demand or request, shall consult with Company on the advisability of

taking legally available steps to resist or narrow such demand or request, and, if disclosure of such Confidential Information is required, shall exercise its reasonable best efforts to narrow the scope of disclosure and obtain an order or other reliable assurance that confidential treatment will be accorded to such Confidential Information. To the extent that Hwaci is prohibited from notifying Company of a subpoena, order or demand, by the terms of same, Hwaci shall exercise its reasonable efforts to narrow the scope of disclosure.</p>

<h3>4.3 Return of Materials.</h3>

<p>Upon the termination of this Agreement, or upon Company's earlier request, Hwaci shall deliver to Company all of Company's property or Confidential Information that Hwaci may have in Hwaci's possession or control.</p>

<h2>5.0 Intellectual Property</h2>

<h3>5.1 No Assignment</h3>

<p>Company acknowledges that all copyrightable material, notes, records, drawings, designs, inventions, improvements, developments,

discoveries and trade secrets made, generated, conceived, or reduced to practice by Hwaci related to SQLite will remain the property of Hwaci. Nothing in this Agreement will be construed to transfer any intellectual property right of Hwaci to Company.</p>

<h3>5.2 Availability and Public Domain Dedication</h3>

<p>The SQLite Developers and Hwaci shall, subject to their discretion as to the quality and suitability of the SQLite source code and documentation

for public release, make the SQLite source code and documentation publicly available as downloadable files and make a public statement ceding all intellectual property rights, including but not limited to copyright and patent rights, in the SQLite source code and documentation to the public domain.

To the extent that the SQLite Developers and Hwaci elect not to release the SQLite source code and documentation publicly, they shall provide copies thereof to Company and hereby grants to Company, under all of the SQLite

Developers' and Hwaci's rights

including but not limited to copyright and patent rights, in and to the SQLite source code and documentation, perpetual, irrevocable, worldwide, non-exclusive, sublicenseable license to use, copy, prepare derivative works of, publicly perform and display the SQLite source code and documentation and derivative works thereof.</p>

<h3>5.3 Trademark</h3>

<p>Hwaci shall use the name "SQLite" only to apply to the publicly available project known by such name as of the Effective Date. Hwaci may in its discretion file such trademark applications or registrations as it deems appropriate to protect or record its rights therein, and may set such policies as it deems appropriate for licensing the use of the trademark.</p>

<h2>6.0 Representations And Warranties</h2>

<h3>6.1 Intellectual Property Clearances.</h3>

<p>Hwaci hereby represents and warrants that Hwaci shall enter into agreements with the SQLite Developers sufficient to enable Hwaci to undertake the obligations of Section 5.</p>

<h3>6.2 Disclaimer.</h3>

<p>THE WORK PRODUCT AND ALL MATERIAL PROVIDED BY HWACI AND COMPANY ARE PROVIDED "AS IS." NEITHER PARTY MAKES ANY REPRESENTATIONS OR WARRANTIES OF ANY KIND, WHETHER ORAL OR WRITTEN, WHETHER EXPRESS, IMPLIED, OR ARISING BY STATUTE,

CUSTOM, COURSE OF DEALING OR TRADE USAGE, WITH RESPECT TO THE SUBJECT MATTER HEREOF, IN CONNECTION WITH THIS AGREEMENT. EACH PARTY SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES OR CONDITIONS OF TITLE, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT.

7.0 Term And Termination

7.1 Term.

This Agreement will commence on the Effective Date and will continue until 12 months after the Effective Date. Thereafter, the parties may by mutual consent renew this Agreement subject to agreement on fees to be paid by Company for sponsorship for additional periods.

7.2 Termination.

If either party materially defaults in the performance of any of its material obligations hereunder and if any such default is not corrected within 30 days after notice in writing, then the non-defaulting party, at its option, may, in addition to any other remedies it may have, thereupon terminate this Agreement by giving written notice of termination to the defaulting party.

7.3 Survival.

Upon such termination all rights and duties of the parties toward each other will cease except: Sections 4 (Confidentiality), 5 (Intellectual Property), and 8 (Miscellaneous) will survive termination of this Agreement.

8. Miscellaneous

8.1 Nonassignment/Binding Agreement.

The parties acknowledge that the unique nature of Hwaci's services are substantial consideration for the parties' entering into this Agreement. Neither this Agreement nor any rights under this Agreement may be assigned or otherwise transferred by Hwaci, in whole or in part, whether voluntarily or by operation of law, without the prior written consent of Company, which consent will not be unreasonably withheld. Subject to the foregoing, this Agreement will be binding

upon and will inure to the benefit of the parties and their respective successors and assigns. Any assignment in violation of the foregoing will be null and void.</p>

<h3>8.2 Notices.</h3>

<p>Any notice required or permitted under the terms of this Agreement or required by law must be in writing and must be: (a) delivered in person; (b) sent by first class registered mail, or air mail, as appropriate; or (c) sent by overnight air courier, in each case properly posted and fully prepaid to the appropriate address set forth in the preamble to this Agreement. Either party may change its address for notice by notice to the other party given in accordance with this Section. Notices will be considered to have been given at the time of actual delivery in person, three business days after deposit in the mail as set forth above, or one day after delivery to an overnight air courier service.</p>

<h3>8.3 Waiver.</h3>

<p>Any waiver of the provisions of this Agreement or of a party's rights or remedies under this Agreement must be in writing to be effective. Failure, neglect, or delay by a party to enforce the provisions of this Agreement or its rights or remedies at any time, will not be construed as a waiver of such party's rights under this Agreement and will not in any way affect the validity of the whole or any part of this Agreement or prejudice such party's right to take subsequent action. No exercise or enforcement by either party of any right or remedy under this Agreement will preclude the enforcement by such party of any other right or remedy under this Agreement or that such party is entitled by law to enforce.</p>

<h3>8.4 Severability.</h3>

<p>If any term, condition, or provision in this Agreement is found to be invalid, unlawful or unenforceable to any extent, the parties shall endeavor in good faith to agree to such amendments that will preserve, as far as possible, the intentions expressed in this Agreement. If the parties fail to agree on such an amendment, such invalid term, condition or provision will be

severed from the remaining terms, conditions and provisions, which will continue to be valid and enforceable to the fullest extent permitted by law.</p>

<h3>8.5 Integration.</h3>

<p>This Agreement contains the entire agreement of the parties with respect to the subject matter of this Agreement and supersedes all previous communications, representations, understandings and agreements, either oral or written, between the parties with respect to said subject matter. This Agreement may not be amended, except by a writing signed by both parties.</p>

<h3>8.6 Counterparts.</h3>

<p>This Agreement may be executed in counterparts, each of which so executed will be deemed to be an original and such counterparts together will constitute one and the same agreement.</p>

<h3>8.7 Governing Law.</h3>

<p>This Agreement will be interpreted and construed in accordance with the laws of the State of North Carolina and the United States of America, without regard to conflict of law principles. All disputes arising out of this Agreement will be subject to the exclusive jurisdiction of the state and federal courts located in North Carolina, and each party hereby consents to the personal jurisdiction thereof.</p>

<h3>8.8 Independent Contractors.</h3>

<p>It is the intention of the parties that Hwaci is an independent contractor. Nothing in this Agreement will in any way be construed to constitute Hwaci or any of its employees as an agent, employee or representative of Company.</p>

<h2>9.0 Signatures</h2>

<p>The parties have executed this Agreement below to indicate their acceptance of its terms.</p>

<table width="100%" border="0">

<tr><td valign="top">

HWACI

By:<hr>
<p> </p>
Print Name:<hr>
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Title:<hr>
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COMPANY

By:<hr>
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Title:<hr>
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* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/consortium_agreement-20071201.html

No license file was found, but licenses were detected in source scan.

<p>Public domain</p>

The source code for SQLite is in the public domain. No claim of copyright

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/different.html

No license file was found, but licenses were detected in source scan.

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<p>FOR IMMEDIATE RELEASE:</p>

<h2 align="center">SQLite Consortium Launches With Mozilla And Symbian As Charter Members</h2>

<h3 align="center">Ensures independent technical direction for world's most deployed SQL database engine</h3>

<p>Charlotte, North Carolina - December 12, 2007 - The SQLite Consortium, a new membership association dedicated to maintaining SQLite as a fully open and independent product, was formally announced today. Mozilla and Symbian Ltd. have joined the SQLite Consortium as charter members.<p>

<p>SQLite is a compact, high efficiency, high reliability, embeddable SQL database engine. The source code to SQLite is in the public domain and is available with no associated fees. SQLite is the most deployed SQL database engine in the world and is currently used in a wide range of commercial software products and electronic devices from leading manufacturers.

SQLite is found today in many mobile phones, MP3 players, set-top boxes, and PCs.</p>

<p>The mission of the SQLite Consortium is to continue developing and enhancing SQLite as a product that anyone may use without paying royalties or licensing fees. Members of the SQLite Consortium provide funding to enable this mission and in return receive enterprise-level technical support. Technical control and direction of SQLite remains entirely with the SQLite developers.</p>

<p>Mozilla, developer of the popular open-source Firefox web browser, and Symbian, the market-leading open operating system for advanced data-enabled smartphones, both deploy the SQLite database engine in their products. As charter members of the Consortium, Mozilla and Symbian are ensuring the development and support of SQLite as a freely accessible and public domain software asset.</p>

<p>"SQLite has become a popular embedded database because it is lightweight, fast, and open source," said Michael Schroepfer,

Vice President of Engineering, Mozilla.

"As a charter member of the SQLite Consortium, Mozilla is excited to help ensure SQLite remains a vibrant and open technology, in line with our mission to promote choice and innovation on the Internet."</p>

<p>"The SQLite Consortium will help set the standards for database management which are essential in smartphone functionality and will also help create a pool of developers, highly-skilled in SQLite for future mobile phone development, " said Bruce Carney, Director, Developer Programmes & Services, Symbian.

"Our involvement with the SQL Consortium not only demonstrates Symbian's commitment to open standards in the industry, but as mobile phones become increasingly powerful and smartphones become increasingly popular, we are focused on ensuring that desktop developers, who move to the mobile space, have the easiest and most productive experience possible."</p>

<p>SQLite is a winner of the 2005 Google/O'Reilly Open Source Award. Additional information

regarding the SQLite Consortium is available at the SQLite website, <http://www.sqlite.org/>.</p>

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<p>About SQLite</p>

<p>SQLite is a software library that implements a self-contained, embeddable, serverless, zero-configuration, transactional SQL database engine. The code for SQLite is in the public domain and is free for any use, commercial or private. SQLite is currently found in countless software titles and electronic devices.</p>

<p>SQLite was originally developed and released 2000 by Dr. D. Richard Hipp. The code continues to be maintained and enhanced by an international team of developers under Hipp's direction.</p>

<p>
CONTACT INFORMATION:

SQLite Consortium

Dr. D. Richard Hipp

6200 Maple Cove Lane

Charlotte, NC 28269

Email: drh@sqlite.org

<http://www.sqlite.org/>

Tel: +1.704.948.4565
</p>

<p>About Mozilla</p>

<p>Mozilla is a global community dedicated to building free, open source products and technologies that improve the online experience for people everywhere. Mozilla works in the open with a highly disciplined, transparent and cooperative development process, under the umbrella of the non-profit Mozilla Foundation. As a wholly owned subsidiary, the Mozilla Corporation organizes the development and marketing of Mozilla products. This unique structure has enabled Mozilla to financially support and cultivate competitive, viable community innovation. For more information, visit www.mozilla.com.</p>

<p>CONTACT INFORMATION:

Mozilla Corporation

Jessica Waight

Tel: +1.415.345.4754

Email: jwaight@outcastpr.com
</p>

<p>About Symbian Limited</p>

<p>Symbian is a software licensing company that develops and licenses Symbian OS, the market-leading open operating system for advanced, data-enabled mobile phones known as smartphones.</p>

<p>Symbian licenses Symbian OS to the world's leading handset manufacturers

and has built close co-operative business relationships with leading companies across the mobile industry. During Q3 2007, 20.4 million Symbian smartphones were sold worldwide to over 250 major network operators, bringing the total number of Symbian smartphones shipped up to 30 September 2007 to 165 million.</p>

<p>Symbian has its headquarters in London, United Kingdom, with offices in the United States, United Kingdom, Asia (India, P.R. China, and Korea) and Japan. For more information, please visit www.symbian.com.</p>

<p>CONTACT INFORMATION:

Symbian Global Press Office

Karen Hamblen

+44 207 154 1707

press@symbian.com

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* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/pressrelease-20071212.html

No license file was found, but licenses were detected in source scan.

application is free to use the same database connection or the

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* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/capi3ref.html

No license file was found, but licenses were detected in source scan.

2012 May 21

#

The author disclaims copyright to this source code. In place of

a legal notice, here is a blessing:

#

May you do good and not evil.

May you find forgiveness for yourself and forgive others.

May you share freely, never taking more than you give.

#

NB: Portions of this file are extracted from open-source projects

covered by permissive licenses. Use of this file for testing is clearly

allowed. However, do not incorporate the text of this one file into

end-products without checking the licenses on the open-source projects

from which this code was extracted. This warning applies to this one

file only - not the bulk of the SQLite source code and tests.

#

#

```

# This file contains large and complex schemas obtained from open-source
# software projects. The schemas are parsed just to make sure that nothing
#
# breaks in the parser logic.
#
# These tests merely verify that the parse occurs without error.
# No attempt is made to verify correct operation of the resulting schema
# and statements.
#

set testdir [file dirname $argv0]
source $testdir/tester.tcl

# Schema and query extracted from Skrooge.org.
#
do_test fuzz-oss1-skrooge {
  db eval {
    CREATE TABLE parameters (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_uuid_parent
    TEXT NOT NULL DEFAULT "",t_name TEXT NOT NULL,t_value TEXT NOT NULL DEFAULT "",b_blob
    BLOB,d_lastmodifdate DATE NOT NULL DEFAULT CURRENT_TIMESTAMP,i_tmp INTEGER NOT NULL
    DEFAULT 0);
    CREATE TABLE doctransaction (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT
    NOT NULL,t_mode VARCHAR(1) DEFAULT 'U' CHECK (t_mode IN ('U', 'R')),d_date DATE NOT
    NULL,t_savestep VARCHAR(1) DEFAULT 'N' CHECK (t_savestep IN ('Y', 'N')),i_parent INTEGER,
    t_refreshviews VARCHAR(1) DEFAULT 'Y' CHECK (t_refreshviews IN ('Y', 'N')));
    CREATE TABLE doctransactionitem (id INTEGER NOT
    NULL PRIMARY KEY AUTOINCREMENT, rd_doctransaction_id INTEGER NOT NULL,i_object_id
    INTEGER NOT NULL,t_object_table TEXT NOT NULL,t_action VARCHAR(1) DEFAULT 'I' CHECK (t_action
    IN ('I', 'U', 'D')),t_sqlorder TEXT NOT NULL DEFAULT "");
    CREATE TABLE doctransactionmsg (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,
    rd_doctransaction_id INTEGER NOT NULL,t_message TEXT NOT NULL DEFAULT "",t_popup VARCHAR(1)
    DEFAULT 'Y' CHECK (t_popup IN ('Y', 'N')));
    CREATE TABLE unit(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT
    NULL,t_symbol TEXT NOT NULL DEFAULT "",t_country TEXT NOT NULL DEFAULT "",t_type VARCHAR(1)
    NOT NULL DEFAULT 'C' CHECK (t_type IN ('1', '2', 'C', 'S', 'I', 'O')),t_internet_code TEXT NOT NULL
    DEFAULT "",i_nbdecimal INT NOT NULL DEFAULT 2,rd_unit_id INTEGER NOT NULL DEFAULT 0, t_source
    TEXT NOT NULL DEFAULT "");
    CREATE TABLE unitvalue(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,rd_unit_id
    INTEGER NOT NULL,d_date DATE NOT NULL,f_quantity FLOAT NOT NULL CHECK (f_quantity>=0));
    CREATE
    TABLE bank (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT NULL
    DEFAULT "",t_bank_number TEXT NOT NULL DEFAULT "",t_icon TEXT NOT NULL DEFAULT "");
    CREATE TABLE interest(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,rd_account_id
    INTEGER NOT NULL,d_date DATE NOT NULL,f_rate FLOAT NOT NULL CHECK
    (f_rate>=0),t_income_value_date_mode VARCHAR(1) NOT NULL DEFAULT 'F' CHECK
    (t_income_value_date_mode IN ('F', '0', '1', '2', '3', '4', '5')),t_expenditure_value_date_mode VARCHAR(1) NOT
    NULL DEFAULT 'F' CHECK (t_expenditure_value_date_mode IN ('F', '0', '1', '2', '3', '4', '5')),t_base VARCHAR(3)
    NOT NULL DEFAULT '24' CHECK (t_base IN ('24', '360', '365')));
  }
}

```

```

CREATE TABLE operation(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,i_group_id
INTEGER NOT NULL DEFAULT 0,i_number INTEGER DEFAULT 0 CHECK (i_number>=0),d_date DATE
NOT NULL DEFAULT '0000-00-00',rd_account_id INTEGER NOT NULL,t_mode TEXT NOT NULL
DEFAULT "",r_payee_id INTEGER NOT NULL DEFAULT 0,t_comment TEXT
NOT NULL DEFAULT "",rc_unit_id INTEGER NOT NULL,t_status VARCHAR(1) NOT NULL DEFAULT 'N'
CHECK (t_status IN ('N', 'P', 'Y')),t_bookmarked VARCHAR(1) NOT NULL DEFAULT 'N' CHECK
(t_bookmarked IN ('Y', 'N')),t_imported VARCHAR(1) NOT NULL DEFAULT 'N' CHECK (t_imported IN ('Y',
'N', 'P', 'T')),t_template VARCHAR(1) NOT NULL DEFAULT 'N' CHECK (t_template IN ('Y', 'N')),t_import_id
TEXT NOT NULL DEFAULT "",i_tmp INTEGER NOT NULL DEFAULT 0,r_recurrentoperation_id INTEGER
NOT NULL DEFAULT 0);
CREATE TABLE operationbalance(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,f_balance
FLOAT NOT NULL DEFAULT 0,r_operation_id INTEGER NOT NULL);
CREATE TABLE refund (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT
NULL DEFAULT "",t_comment TEXT NOT NULL DEFAULT "",t_close VARCHAR(1) DEFAULT 'N' CHECK
(t_close IN ('Y', 'N')));
CREATE TABLE payee (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT
NULL DEFAULT "",t_address TEXT NOT NULL DEFAULT "", t_bookmarked VARCHAR(1) NOT NULL
DEFAULT 'N' CHECK (t_bookmarked IN ('Y', 'N')));
CREATE TABLE suboperation(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_comment
TEXT NOT NULL DEFAULT "",rd_operation_id INTEGER NOT NULL,r_category_id INTEGER NOT NULL
DEFAULT 0,f_value FLOAT NOT NULL DEFAULT 0.0,i_tmp INTEGER NOT NULL DEFAULT 0,r_refund_id
INTEGER NOT NULL DEFAULT 0, t_formula TEXT NOT NULL DEFAULT "");
CREATE TABLE rule (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_description TEXT
NOT NULL DEFAULT "",t_definition TEXT NOT NULL DEFAULT "",t_action_description TEXT NOT NULL
DEFAULT "",t_action_definition TEXT NOT NULL DEFAULT "",t_action_type VARCHAR(1) DEFAULT 'S'
CHECK (t_action_type IN ('S', 'U', 'A')),t_bookmarked VARCHAR(1) NOT NULL DEFAULT 'N' CHECK
(t_bookmarked IN ('Y', 'N')),f_sortorder FLOAT);
CREATE TABLE budget (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,rc_category_id
INTEGER NOT NULL DEFAULT 0,t_including_subcategories TEXT NOT NULL DEFAULT 'N' CHECK
(t_including_subcategories IN ('Y', 'N')),f_budgeted
FLOAT NOT NULL DEFAULT 0.0,f_budgeted_modified FLOAT NOT NULL DEFAULT 0.0,f_transferred
FLOAT NOT NULL DEFAULT 0.0,i_year INTEGER NOT NULL DEFAULT 2010,i_month INTEGER NOT
NULL DEFAULT 0 CHECK (i_month>=0 AND i_month<=12));
CREATE TABLE budgetcategory(id INTEGER NOT NULL DEFAULT 0,id_category INTEGER NOT NULL
DEFAULT 0);
CREATE TABLE budgetrule (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,rc_category_id
INTEGER NOT NULL DEFAULT 0,t_category_condition TEXT NOT NULL DEFAULT 'Y' CHECK
(t_category_condition IN ('Y', 'N')),t_year_condition TEXT NOT NULL DEFAULT 'Y' CHECK (t_year_condition
IN ('Y', 'N')),i_year INTEGER NOT NULL DEFAULT 2010,i_month INTEGER NOT NULL DEFAULT 0
CHECK (i_month>=0 AND i_month<=12),t_month_condition TEXT NOT NULL DEFAULT 'Y' CHECK
(t_month_condition IN ('Y', 'N')),i_condition INTEGER NOT NULL DEFAULT 0 CHECK (i_condition IN (-
1,0,1)),f_quantity FLOAT NOT NULL DEFAULT 0.0,t_absolute TEXT NOT NULL DEFAULT 'Y' CHECK
(t_absolute IN ('Y', 'N')),rc_category_id_target
INTEGER NOT NULL DEFAULT 0,t_category_target TEXT NOT NULL DEFAULT 'Y' CHECK
(t_category_target IN ('Y', 'N')),t_rule TEXT NOT NULL DEFAULT 'N' CHECK (t_rule IN ('N', 'C', 'Y'));
CREATE TABLE "recurrentoperation" (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,d_date
DATE NOT NULL DEFAULT '0000-00-00',rd_operation_id INTEGER NOT NULL,i_period_increment
INTEGER NOT NULL DEFAULT 1 CHECK (i_period_increment>=0),t_period_unit TEXT NOT NULL

```

```

DEFAULT 'M' CHECK (t_period_unit IN ('D', 'W', 'M', 'Y')),t_auto_write VARCHAR(1) DEFAULT 'Y' CHECK
(t_auto_write IN ('Y', 'N')),i_auto_write_days INTEGER NOT NULL DEFAULT 5 CHECK
(i_auto_write_days>=0),t_warn VARCHAR(1) DEFAULT 'Y' CHECK (t_warn IN ('Y', 'N')),i_warn_days
INTEGER NOT NULL DEFAULT 5 CHECK (i_warn_days>=0),t_times VARCHAR(1) DEFAULT 'N' CHECK
(t_times IN ('Y', 'N')),i_nb_times INTEGER NOT NULL DEFAULT 1 CHECK (i_nb_times>=0);
CREATE TABLE "category" (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT
NOT NULL DEFAULT " CHECK
(t_name NOT LIKE '% > %'),t_fullname TEXT,rd_category_id INT,t_bookmarked VARCHAR(1) NOT NULL
DEFAULT 'N' CHECK (t_bookmarked IN ('Y', 'N')));
CREATE TABLE "account"(id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT
NULL,t_number TEXT NOT NULL DEFAULT ",t_agency_number TEXT NOT NULL DEFAULT
",t_agency_address TEXT NOT NULL DEFAULT ",t_comment TEXT NOT NULL DEFAULT ",t_close
VARCHAR(1) DEFAULT 'N' CHECK (t_close IN ('Y', 'N')),t_type VARCHAR(1) NOT NULL DEFAULT 'C'
CHECK (t_type IN ('C', 'D', 'A', 'I', 'L', 'W', 'O')),t_bookmarked VARCHAR(1) NOT NULL DEFAULT 'N' CHECK
(t_bookmarked IN ('Y', 'N')),rd_bank_id INTEGER NOT NULL);
CREATE TABLE "node" (id INTEGER NOT NULL PRIMARY KEY AUTOINCREMENT,t_name TEXT NOT
NULL DEFAULT " CHECK (t_name NOT LIKE '% > %'),t_fullname TEXT,t_icon TEXT DEFAULT
",f_sortorder FLOAT,t_autostart VARCHAR(1) DEFAULT 'N' CHECK (t_autostart IN ('Y', 'N')),t_data
TEXT,rd_node_id INT CONSTRAINT fk_id REFERENCES node(id) ON DELETE CASCADE);
CREATE TABLE
vm_category_display_tmp(
id INT,
t_name TEXT,
t_fullname TEXT,
rd_category_id INT,
t_bookmarked TEXT,
i_NBOPERATIONS,
f_REALCURRENTAMOUNT
);
CREATE TABLE vm_budget_tmp(
id INT,
rc_category_id INT,
t_including_subcategories TEXT,
f_budgeted REAL,
f_budgeted_modified REAL,
f_transferred REAL,
i_year INT,
i_month INT,
t_CATEGORY,
t_PERIOD,
f_CURRENTAMOUNT,
t_RULES
);
CREATE INDEX idx_doctransaction_parent ON doctransaction (i_parent);
CREATE INDEX idx_doctransactionitem_i_object_id ON doctransactionitem (i_object_id);
CREATE INDEX idx_doctransactionitem_t_object_table ON doctransactionitem (t_object_table);
CREATE INDEX idx_doctransactionitem_t_action ON doctransactionitem (t_action);
CREATE INDEX idx_doctransactionitem_rd_doctransaction_id ON doctransactionitem (rd_doctransaction_id);

```

```

CREATE INDEX idx_doctransactionitem_optimization ON doctransactionitem (rd_doctransaction_id, i_object_id,
t_object_table, t_action, id);
CREATE INDEX idx_unit_unit_id
ON unitvalue(rd_unit_id);
CREATE INDEX idx_account_bank_id ON account(rd_bank_id);
CREATE INDEX idx_account_type ON account(t_type);
CREATE INDEX idx_category_category_id ON category(rd_category_id);
CREATE INDEX idx_category_t_fullname ON category(t_fullname);
CREATE INDEX idx_operation_account_id ON operation (rd_account_id);
CREATE INDEX idx_operation_tmp1_found_transfert ON operation (rc_unit_id, d_date);
CREATE INDEX idx_operation_grouped_operation_id ON operation (i_group_id);
CREATE INDEX idx_operation_i_number ON operation (i_number);
CREATE INDEX idx_operation_i_tmp ON operation (i_tmp);
CREATE INDEX idx_operation_rd_account_id ON operation (rd_account_id);
CREATE INDEX idx_operation_rc_unit_id ON operation (rc_unit_id);
CREATE INDEX idx_operation_t_status ON operation (t_status);
CREATE INDEX idx_operation_t_import_id ON operation (t_import_id);
CREATE INDEX idx_operation_t_template ON operation (t_template);
CREATE INDEX idx_operation_d_date ON operation (d_date);
CREATE
INDEX idx_operationbalance_operation_id ON operationbalance (r_operation_id);
CREATE INDEX idx_suboperation_operation_id ON suboperation (rd_operation_id);
CREATE INDEX idx_suboperation_i_tmp ON suboperation (i_tmp);
CREATE INDEX idx_suboperation_category_id ON suboperation (r_category_id);
CREATE INDEX idx_suboperation_refund_id_id ON suboperation (r_refund_id);
CREATE INDEX idx_recurrentoperation_rd_operation_id ON recurrentoperation (rd_operation_id);
CREATE INDEX idx_refund_close ON refund(t_close);
CREATE INDEX idx_interest_account_id ON interest (rd_account_id);
CREATE INDEX idx_rule_action_type ON rule(t_action_type);
CREATE INDEX idx_budget_category_id ON budget(rc_category_id);
CREATE INDEX idx_budgetcategory_id ON budgetcategory (id);
CREATE INDEX idx_budgetcategory_id_category ON budgetcategory (id_category);
CREATE UNIQUE INDEX uidx_parameters_uuid_parent_name ON parameters (t_uuid_parent, t_name);
CREATE UNIQUE INDEX uidx_node_parent_id_name ON node(t_name,rd_node_id);
CREATE
UNIQUE INDEX uidx_node_fullname ON node(t_fullname);
CREATE UNIQUE INDEX uidx_unit_name ON unit(t_name);
CREATE UNIQUE INDEX uidx_unit_symbol ON unit(t_symbol);
CREATE UNIQUE INDEX uidx_unitvalue ON unitvalue(d_date,rd_unit_id);
CREATE UNIQUE INDEX uidx_bank_name ON bank(t_name);
CREATE UNIQUE INDEX uidx_account_name ON account(t_name);
CREATE UNIQUE INDEX uidx_category_parent_id_name ON category(t_name,rd_category_id);
CREATE UNIQUE INDEX uidx_category_fullname ON category(t_fullname);
CREATE UNIQUE INDEX uidx_refund_name ON refund(t_name);
CREATE UNIQUE INDEX uidx_payee_name ON payee(t_name);
CREATE UNIQUE INDEX uidx_interest ON interest(d_date,rd_account_id);
CREATE UNIQUE INDEX uidx_budget ON budget(i_year,i_month, rc_category_id);
CREATE VIEW v_node AS SELECT * from node;

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CREATE VIEW v_node_displayname AS SELECT *, t_fullname AS t_displayname from node;
CREATE VIEW v_parameters_displayname AS SELECT *, t_name AS t_displayname from parameters;
CREATE TRIGGER fkdc_parameters_parameters_uuid
  BEFORE DELETE ON parameters FOR EACH ROW BEGIN   DELETE FROM parameters WHERE
parameters.t_uuid_parent=OLD.id||'-'||parameters'; END;
CREATE TRIGGER fkdc_node_parameters_uuid BEFORE DELETE ON node FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||node'; END;
CREATE TRIGGER cpt_node_fullname1 AFTER INSERT ON node BEGIN UPDATE node SET
t_fullname=CASE WHEN new.rd_node_id IS NULL OR new.rd_node_id="" OR new.rd_node_id=0 THEN
new.t_name ELSE (SELECT c.t_fullname from node c where c.id=new.rd_node_id)||' > '||new.t_name END
WHERE id=new.id;END;
CREATE TRIGGER cpt_node_fullname2 AFTER UPDATE OF t_name, rd_node_id ON node BEGIN UPDATE
node SET t_fullname=CASE WHEN new.rd_node_id IS NULL OR new.rd_node_id="" OR new.rd_node_id=0
THEN new.t_name ELSE (SELECT c.t_fullname from node c where c.id=new.rd_node_id)||' > '||new.t_name END
WHERE id=new.id;UPDATE node SET t_name=t_name WHERE rd_node_id=new.id;END;
CREATE TRIGGER fki_account_bank_rd_bank_id_id
  BEFORE INSERT ON account FOR EACH ROW BEGIN   SELECT RAISE(ABORT, 'Impossible d'ajouter un
objet (bank est utilis par account)
Nom de la contrainte: fki_account_bank_rd_bank_id_id') WHERE NEW.rd_bank_id!=0 AND
NEW.rd_bank_id!='' AND (SELECT id FROM bank WHERE id = NEW.rd_bank_id) IS NULL; END;
CREATE TRIGGER fku_account_bank_rd_bank_id_id BEFORE UPDATE ON account FOR EACH ROW
BEGIN   SELECT RAISE(ABORT, 'Impossible de modifier un objet (bank est utilis par account)
Nom de la contrainte: fku_account_bank_rd_bank_id_id') WHERE NEW.rd_bank_id!=0 AND
NEW.rd_bank_id!='' AND (SELECT id FROM bank WHERE id = NEW.rd_bank_id) IS NULL; END;
CREATE TRIGGER fkdc_bank_account_id_rd_bank_id BEFORE DELETE ON bank FOR EACH ROW BEGIN
DELETE FROM account WHERE account.rd_bank_id = OLD.id; END;
CREATE TRIGGER fki_budget_category_rc_category_id_id BEFORE INSERT ON budget FOR EACH ROW
BEGIN   SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (category est utilis par
budget)
Nom de la contrainte: fki_budget_category_rc_category_id_id') WHERE NEW.rc_category_id!=0 AND
NEW.rc_category_id!='' AND (SELECT id FROM category WHERE id = NEW.rc_category_id) IS NULL; END;
CREATE TRIGGER fku_budget_category_rc_category_id_id BEFORE UPDATE ON budget FOR EACH ROW
BEGIN   SELECT RAISE(ABORT, 'Impossible de modifier un objet (category est utilis par budget)
Nom de la contrainte: fku_budget_category_rc_category_id_id') WHERE NEW.rc_category_id!=0 AND
NEW.rc_category_id!='' AND (SELECT id FROM category WHERE id = NEW.rc_category_id) IS NULL; END;
CREATE TRIGGER fkd_budget_category_rc_category_id_id BEFORE DELETE ON category FOR EACH ROW
BEGIN   SELECT RAISE(ABORT, 'Impossible de dtruire un objet (category est utilis par budget)
Nom de la contrainte: fkd_budget_category_rc_category_id_id') WHERE (SELECT rc_category_id FROM
budget WHERE rc_category_id = OLD.id) IS NOT NULL; END;
CREATE TRIGGER fki_budgetrule_category_rc_category_id_id BEFORE
  INSERT ON budgetrule FOR EACH ROW BEGIN   SELECT RAISE(ABORT, 'Impossible d'ajouter un objet
(category est utilis par budgetrule)
Nom de la contrainte: fki_budgetrule_category_rc_category_id_id') WHERE NEW.rc_category_id!=0 AND
NEW.rc_category_id!='' AND (SELECT id FROM category WHERE id = NEW.rc_category_id) IS NULL; END;
CREATE TRIGGER fku_budgetrule_category_rc_category_id_id BEFORE UPDATE ON budgetrule FOR EACH
ROW BEGIN   SELECT RAISE(ABORT, 'Impossible de modifier un objet (category est utilis par budgetrule)
Nom de la contrainte: fku_budgetrule_category_rc_category_id_id') WHERE NEW.rc_category_id!=0 AND
NEW.rc_category_id!='' AND (SELECT id FROM category WHERE id = NEW.rc_category_id) IS NULL; END;

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CREATE TRIGGER fkd_budgetrule_category_rc_category_id_id BEFORE DELETE ON category FOR EACH
ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de dtruire un objet (category est utilis par budgetrule)
Nom de la contrainte: fkd_budgetrule_category_rc_category_id_id')
WHERE (SELECT rc_category_id FROM budgetrule WHERE rc_category_id = OLD.id) IS NOT NULL; END;
CREATE TRIGGER fki_budgetrule_category_rc_category_id_target_id BEFORE INSERT ON budgetrule FOR
EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (category est utilis par budgetrule)
Nom de la contrainte: fki_budgetrule_category_rc_category_id_target_id') WHERE
NEW.rc_category_id_target!=0 AND NEW.rc_category_id_target!=" AND (SELECT id FROM category WHERE
id = NEW.rc_category_id_target) IS NULL; END;
CREATE TRIGGER fku_budgetrule_category_rc_category_id_target_id BEFORE UPDATE ON budgetrule FOR
EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (category est utilis par
budgetrule)
Nom de la contrainte: fku_budgetrule_category_rc_category_id_target_id') WHERE
NEW.rc_category_id_target!=0 AND NEW.rc_category_id_target!=" AND (SELECT id FROM category WHERE
id = NEW.rc_category_id_target) IS NULL; END;
CREATE TRIGGER fkd_budgetrule_category_rc_category_id_target_id
BEFORE DELETE ON category FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de dtruire un
objet (category est utilis par budgetrule)
Nom de la contrainte: fkd_budgetrule_category_rc_category_id_target_id') WHERE (SELECT
rc_category_id_target FROM budgetrule WHERE rc_category_id_target = OLD.id) IS NOT NULL; END;
CREATE TRIGGER fki_category_category_rd_category_id_id BEFORE INSERT ON category FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (category est utilis par category)
Nom de la contrainte: fki_category_category_rd_category_id_id') WHERE NEW.rd_category_id!=0 AND
NEW.rd_category_id!=" AND (SELECT id FROM category WHERE id = NEW.rd_category_id) IS NULL; END;
CREATE TRIGGER fku_category_category_rd_category_id_id BEFORE UPDATE ON category FOR EACH
ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (category est utilis par category)
Nom de la contrainte: fku_category_category_rd_category_id_id')
WHERE NEW.rd_category_id!=0 AND NEW.rd_category_id!=" AND (SELECT id FROM category WHERE
id = NEW.rd_category_id) IS NULL; END;
CREATE TRIGGER fkdc_category_category_id_rd_category_id BEFORE DELETE ON category FOR EACH
ROW BEGIN  DELETE FROM category WHERE category.rd_category_id = OLD.id; END;
CREATE TRIGGER fki_doctransactionitem_doctransaction_rd_doctransaction_id_id BEFORE INSERT ON
doctransactionitem FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet
(doctransaction est utilis par doctransactionitem)
Nom de la contrainte: fki_doctransactionitem_doctransaction_rd_doctransaction_id_id') WHERE
NEW.rd_doctransaction_id!=0 AND NEW.rd_doctransaction_id!=" AND (SELECT id FROM doctransaction
WHERE id = NEW.rd_doctransaction_id) IS NULL; END;
CREATE TRIGGER fku_doctransactionitem_doctransaction_rd_doctransaction_id_id BEFORE UPDATE ON
doctransactionitem FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet
(doctransaction
est utilis par doctransactionitem)
Nom de la contrainte: fku_doctransactionitem_doctransaction_rd_doctransaction_id_id') WHERE
NEW.rd_doctransaction_id!=0 AND NEW.rd_doctransaction_id!=" AND (SELECT id FROM doctransaction
WHERE id = NEW.rd_doctransaction_id) IS NULL; END;
CREATE TRIGGER fkdc_doctransaction_doctransactionitem_id_rd_doctransaction_id BEFORE DELETE ON
doctransaction FOR EACH ROW BEGIN  DELETE FROM doctransactionitem WHERE
doctransactionitem.rd_doctransaction_id = OLD.id; END;
CREATE TRIGGER fki_doctransactionmsg_doctransaction_rd_doctransaction_id_id BEFORE INSERT ON

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doctransactionmsg FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d'ajouter un objet
(doctransaction est utilis par doctransactionmsg)
Nom de la contrainte: fki_doctransactionmsg_doctransaction_rd_doctransaction_id_id')  WHERE
NEW.rd_doctransaction_id!=0 AND NEW.rd_doctransaction_id!=" AND (SELECT id FROM doctransaction
WHERE id = NEW.rd_doctransaction_id) IS NULL; END;
CREATE
  TRIGGER fku_doctransactionmsg_doctransaction_rd_doctransaction_id_id BEFORE UPDATE ON
doctransactionmsg FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet
(doctransaction est utilis par doctransactionmsg)
Nom de la contrainte: fku_doctransactionmsg_doctransaction_rd_doctransaction_id_id')  WHERE
NEW.rd_doctransaction_id!=0 AND NEW.rd_doctransaction_id!=" AND (SELECT id FROM doctransaction
WHERE id = NEW.rd_doctransaction_id) IS NULL; END;
CREATE TRIGGER fkdc_doctransaction_doctransactionmsg_id_rd_doctransaction_id BEFORE DELETE ON
doctransaction FOR EACH ROW BEGIN  DELETE FROM doctransactionmsg WHERE
doctransactionmsg.rd_doctransaction_id = OLD.id; END;
CREATE TRIGGER fki_interest_account_rd_account_id_id BEFORE INSERT ON interest FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (account est utilis par interest)
Nom de la contrainte: fki_interest_account_rd_account_id_id')  WHERE NEW.rd_account_id!=0 AND
NEW.rd_account_id!="
AND (SELECT id FROM account WHERE id = NEW.rd_account_id) IS NULL; END;
CREATE TRIGGER fku_interest_account_rd_account_id_id BEFORE UPDATE ON interest FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (account est utilis par interest)
Nom de la contrainte: fku_interest_account_rd_account_id_id')  WHERE NEW.rd_account_id!=0 AND
NEW.rd_account_id!=" AND (SELECT id FROM account WHERE id = NEW.rd_account_id) IS NULL; END;
CREATE TRIGGER fkdc_account_interest_id_rd_account_id BEFORE DELETE ON account FOR EACH ROW
BEGIN  DELETE FROM interest WHERE interest.rd_account_id = OLD.id; END;
CREATE TRIGGER fki_node_node_rd_node_id_id BEFORE INSERT ON node FOR EACH ROW BEGIN
SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (node est utilis par node)
Nom de la contrainte: fki_node_node_rd_node_id_id')  WHERE NEW.rd_node_id!=0 AND NEW.rd_node_id!="
AND (SELECT id FROM node WHERE id = NEW.rd_node_id) IS NULL; END;
CREATE TRIGGER fku_node_node_rd_node_id_id
  BEFORE UPDATE ON node FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un
objet (node est utilis par node)
Nom de la contrainte: fku_node_node_rd_node_id_id')  WHERE NEW.rd_node_id!=0 AND
NEW.rd_node_id!=" AND (SELECT id FROM node WHERE id = NEW.rd_node_id) IS NULL; END;
CREATE TRIGGER fkdc_node_node_id_rd_node_id BEFORE DELETE ON node FOR EACH ROW BEGIN
DELETE FROM node WHERE node.rd_node_id = OLD.id; END;
CREATE TRIGGER fki_operation_account_rd_account_id_id BEFORE INSERT ON operation FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (account est utilis par operation)
Nom de la contrainte: fki_operation_account_rd_account_id_id')  WHERE NEW.rd_account_id!=0 AND
NEW.rd_account_id!=" AND (SELECT id FROM account WHERE id = NEW.rd_account_id) IS NULL; END;
CREATE TRIGGER fku_operation_account_rd_account_id_id BEFORE UPDATE ON operation FOR EACH
ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (account
est utilis par operation)
Nom de la contrainte: fku_operation_account_rd_account_id_id')  WHERE NEW.rd_account_id!=0 AND
NEW.rd_account_id!=" AND (SELECT id FROM account WHERE id = NEW.rd_account_id) IS NULL; END;
CREATE TRIGGER fkdc_account_operation_id_rd_account_id BEFORE DELETE ON account FOR EACH ROW
BEGIN  DELETE FROM operation WHERE operation.rd_account_id = OLD.id; END;

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CREATE TRIGGER fki_operation_payee_r_payee_id_id BEFORE INSERT ON operation FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (payee est utilis par operation)
Nom de la contrainte: fki_operation_payee_r_payee_id_id')  WHERE NEW.r_payee_id!=0 AND
NEW.r_payee_id!=" AND (SELECT id FROM payee WHERE id = NEW.r_payee_id) IS NULL; END;
CREATE TRIGGER fku_operation_payee_r_payee_id_id BEFORE UPDATE ON operation FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (payee est utilis par operation)
Nom de la contrainte: fku_operation_payee_r_payee_id_id')
WHERE NEW.r_payee_id!=0 AND NEW.r_payee_id!=" AND (SELECT id FROM payee WHERE id =
NEW.r_payee_id) IS NULL; END;
CREATE TRIGGER fkd_operation_payee_r_payee_id_id BEFORE DELETE ON payee FOR EACH ROW
BEGIN  UPDATE operation SET r_payee_id=0 WHERE r_payee_id=OLD.id; END;
CREATE TRIGGER fki_operation_unit_rc_unit_id_id BEFORE INSERT ON operation FOR EACH ROW BEGIN
SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (unit est utilis par operation)
Nom de la contrainte: fki_operation_unit_rc_unit_id_id')  WHERE NEW.rc_unit_id!=0 AND NEW.rc_unit_id!="
AND (SELECT id FROM unit WHERE id = NEW.rc_unit_id) IS NULL; END;
CREATE TRIGGER fku_operation_unit_rc_unit_id_id BEFORE UPDATE ON operation FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (unit est utilis par operation)
Nom de la contrainte: fku_operation_unit_rc_unit_id_id')  WHERE NEW.rc_unit_id!=0 AND
NEW.rc_unit_id!=" AND (SELECT id FROM unit WHERE id = NEW.rc_unit_id) IS NULL; END;
CREATE
TRIGGER fkd_operation_unit_rc_unit_id_id BEFORE DELETE ON unit FOR EACH ROW BEGIN  SELECT
RAISE(ABORT, 'Impossible de dtruire un objet (unit est utilis par operation)
Nom de la contrainte: fkd_operation_unit_rc_unit_id_id')  WHERE (SELECT rc_unit_id FROM operation
WHERE rc_unit_id = OLD.id) IS NOT NULL; END;
CREATE TRIGGER fki_operation_recurrentoperation_r_recurrentoperation_id_id BEFORE INSERT ON
operation FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (recurrentoperation
est utilis par operation)
Nom de la contrainte: fki_operation_recurrentoperation_r_recurrentoperation_id_id')  WHERE
NEW.r_recurrentoperation_id!=0 AND NEW.r_recurrentoperation_id!=" AND (SELECT id FROM
recurrentoperation WHERE id = NEW.r_recurrentoperation_id) IS NULL; END;
CREATE TRIGGER fku_operation_recurrentoperation_r_recurrentoperation_id_id BEFORE UPDATE ON
operation FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet
(recurrentoperation
est utilis par operation)
Nom de la contrainte: fku_operation_recurrentoperation_r_recurrentoperation_id_id')  WHERE
NEW.r_recurrentoperation_id!=0 AND NEW.r_recurrentoperation_id!=" AND (SELECT id FROM
recurrentoperation WHERE id = NEW.r_recurrentoperation_id) IS NULL; END;
CREATE TRIGGER fkd_operation_recurrentoperation_r_recurrentoperation_id_id BEFORE DELETE ON
recurrentoperation FOR EACH ROW BEGIN  UPDATE operation SET r_recurrentoperation_id=0 WHERE
r_recurrentoperation_id=OLD.id; END;
CREATE TRIGGER fki_operationbalance_operation_r_operation_id_id BEFORE INSERT ON operationbalance
FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (operation est utilis par
operationbalance)
Nom de la contrainte: fki_operationbalance_operation_r_operation_id_id')  WHERE NEW.r_operation_id!=0 AND
NEW.r_operation_id!=" AND (SELECT id FROM operation WHERE id = NEW.r_operation_id) IS NULL; END;
CREATE TRIGGER fku_operationbalance_operation_r_operation_id_id
BEFORE UPDATE ON operationbalance FOR EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de
modifier un objet (operation est utilis par operationbalance)

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Nom de la contrainte: fku_operationbalance_operation_r_operation_id_id') WHERE NEW.r_operation_id!=0
AND NEW.r_operation_id!=" AND (SELECT id FROM operation WHERE id = NEW.r_operation_id) IS NULL;
END;
CREATE TRIGGER fkd_operationbalance_operation_r_operation_id_id BEFORE DELETE ON operation FOR
EACH ROW BEGIN UPDATE operationbalance SET r_operation_id=0 WHERE r_operation_id=OLD.id; END;
CREATE TRIGGER fki_recurrentoperation_operation_rd_operation_id_id BEFORE INSERT ON
recurrentoperation FOR EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (operation
est utilis par recurrentoperation)
Nom de la contrainte: fki_recurrentoperation_operation_rd_operation_id_id') WHERE NEW.rd_operation_id!=0
AND NEW.rd_operation_id!=" AND (SELECT id FROM operation WHERE id = NEW.rd_operation_id) IS
NULL; END;
CREATE
TRIGGER fku_recurrentoperation_operation_rd_operation_id_id BEFORE UPDATE ON recurrentoperation FOR
EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible de modifier un objet (operation est utilis par
recurrentoperation)
Nom de la contrainte: fku_recurrentoperation_operation_rd_operation_id_id') WHERE
NEW.rd_operation_id!=0 AND NEW.rd_operation_id!=" AND (SELECT id FROM operation WHERE id =
NEW.rd_operation_id) IS NULL; END;
CREATE TRIGGER fkdc_operation_recurrentoperation_id_rd_operation_id BEFORE DELETE ON operation
FOR EACH ROW BEGIN DELETE FROM recurrentoperation WHERE recurrentoperation.rd_operation_id =
OLD.id; END;
CREATE TRIGGER fki_suboperation_operation_rd_operation_id_id BEFORE INSERT ON suboperation FOR
EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (operation est utilis par
suboperation)
Nom de la contrainte: fki_suboperation_operation_rd_operation_id_id') WHERE NEW.rd_operation_id!=0 AND
NEW.rd_operation_id!=" AND (SELECT
id FROM operation WHERE id = NEW.rd_operation_id) IS NULL; END;
CREATE TRIGGER fku_suboperation_operation_rd_operation_id_id BEFORE UPDATE ON suboperation FOR
EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible de modifier un objet (operation est utilis par
suboperation)
Nom de la contrainte: fku_suboperation_operation_rd_operation_id_id') WHERE NEW.rd_operation_id!=0
AND NEW.rd_operation_id!=" AND (SELECT id FROM operation WHERE id = NEW.rd_operation_id) IS
NULL; END;
CREATE TRIGGER fkdc_operation_suboperation_id_rd_operation_id BEFORE DELETE ON operation FOR
EACH ROW BEGIN DELETE FROM suboperation WHERE suboperation.rd_operation_id = OLD.id; END;
CREATE TRIGGER fki_suboperation_category_r_category_id_id BEFORE INSERT ON suboperation FOR
EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible d"ajouter un objet (category est utilis par
suboperation)
Nom de la contrainte: fki_suboperation_category_r_category_id_id') WHERE NEW.r_category_id!=0 AND
NEW.r_category_id!=" AND
(SELECT id FROM category WHERE id = NEW.r_category_id) IS NULL; END;
CREATE TRIGGER fku_suboperation_category_r_category_id_id BEFORE UPDATE ON suboperation FOR
EACH ROW BEGIN SELECT RAISE(ABORT, 'Impossible de modifier un objet (category est utilis par
suboperation)
Nom de la contrainte: fku_suboperation_category_r_category_id_id') WHERE NEW.r_category_id!=0 AND
NEW.r_category_id!=" AND (SELECT id FROM category WHERE id = NEW.r_category_id) IS NULL; END;
CREATE TRIGGER fkd_suboperation_category_r_category_id_id BEFORE DELETE ON category FOR EACH
ROW BEGIN UPDATE suboperation SET r_category_id=0 WHERE r_category_id=OLD.id; END;

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CREATE TRIGGER fki_suboperation_refund_r_refund_id_id BEFORE INSERT ON suboperation FOR EACH
ROW BEGIN  SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (refund est utilis par suboperation)
Nom de la contrainte: fki_suboperation_refund_r_refund_id_id')  WHERE NEW.r_refund_id!=0 AND
NEW.r_refund_id!=" AND (SELECT id FROM refund WHERE
id = NEW.r_refund_id) IS NULL; END;
CREATE TRIGGER fku_suboperation_refund_r_refund_id_id BEFORE UPDATE ON suboperation FOR EACH
ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (refund est utilis par suboperation)
Nom de la contrainte: fku_suboperation_refund_r_refund_id_id')  WHERE NEW.r_refund_id!=0 AND
NEW.r_refund_id!=" AND (SELECT id FROM refund WHERE id = NEW.r_refund_id) IS NULL; END;
CREATE TRIGGER fkd_suboperation_refund_r_refund_id_id BEFORE DELETE ON refund FOR EACH ROW
BEGIN  UPDATE suboperation SET r_refund_id=0 WHERE r_refund_id=OLD.id; END;
CREATE TRIGGER fki_unit_unit_rd_unit_id_id BEFORE INSERT ON unit FOR EACH ROW BEGIN  SELECT
RAISE(ABORT, 'Impossible d'ajouter un objet (unit est utilis par unit)
Nom de la contrainte: fki_unit_unit_rd_unit_id_id')  WHERE NEW.rd_unit_id!=0 AND NEW.rd_unit_id!=" AND
(SELECT id FROM unit WHERE id = NEW.rd_unit_id) IS NULL; END;
CREATE TRIGGER fku_unit_unit_rd_unit_id_id BEFORE UPDATE ON unit FOR
EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (unit est utilis par unit)
Nom de la contrainte: fku_unit_unit_rd_unit_id_id')  WHERE NEW.rd_unit_id!=0 AND NEW.rd_unit_id!="
AND (SELECT id FROM unit WHERE id = NEW.rd_unit_id) IS NULL; END;
CREATE TRIGGER fkdc_unit_unit_id_rd_unit_id BEFORE DELETE ON unit FOR EACH ROW BEGIN
DELETE FROM unit WHERE unit.rd_unit_id = OLD.id; END;
CREATE TRIGGER fki_unitvalue_unit_rd_unit_id_id BEFORE INSERT ON unitvalue FOR EACH ROW BEGIN
SELECT RAISE(ABORT, 'Impossible d'ajouter un objet (unit est utilis par unitvalue)
Nom de la contrainte: fki_unitvalue_unit_rd_unit_id_id')  WHERE NEW.rd_unit_id!=0 AND NEW.rd_unit_id!="
AND (SELECT id FROM unit WHERE id = NEW.rd_unit_id) IS NULL; END;
CREATE TRIGGER fku_unitvalue_unit_rd_unit_id_id BEFORE UPDATE ON unitvalue FOR EACH ROW
BEGIN  SELECT RAISE(ABORT, 'Impossible de modifier un objet (unit est utilis par unitvalue)
Nom de la contrainte: fku_unitvalue_unit_rd_unit_id_id')
WHERE NEW.rd_unit_id!=0 AND NEW.rd_unit_id!=" AND (SELECT id FROM unit WHERE id =
NEW.rd_unit_id) IS NULL; END;
CREATE TRIGGER fkdc_unit_unitvalue_id_rd_unit_id BEFORE DELETE ON unit FOR EACH ROW BEGIN
DELETE FROM unitvalue WHERE unitvalue.rd_unit_id = OLD.id; END;
CREATE TRIGGER fkd_vm_budget_tmp_category_rc_category_id_id BEFORE DELETE ON category FOR
EACH ROW BEGIN  SELECT RAISE(ABORT, 'Impossible de dtruire un objet (category est utilis par
vm_budget_tmp)
Nom de la contrainte: fkd_vm_budget_tmp_category_rc_category_id_id')  WHERE (SELECT rc_category_id
FROM vm_budget_tmp WHERE rc_category_id = OLD.id) IS NOT NULL; END;
CREATE TRIGGER fkdc_category_vm_category_display_tmp_id_rd_category_id BEFORE DELETE ON
category FOR EACH ROW BEGIN  DELETE FROM vm_category_display_tmp WHERE
vm_category_display_tmp.rd_category_id = OLD.id; END;
CREATE VIEW v_unit_displayname AS SELECT *, t_name||' ('||t_symbol||')' AS t_displayname FROM unit;
CREATE VIEW v_unit_tmp1
AS SELECT *,(SELECT count(*) FROM unitvalue s WHERE s.rd_unit_id=unit.id) AS i_NBVALUES, (CASE
WHEN unit.rd_unit_id=0 THEN " ELSE (SELECT (CASE WHEN s.t_symbol!=" THEN s.t_symbol ELSE
s.t_name END) FROM unit s WHERE s.id=unit.rd_unit_id) END) AS t_UNIT,(CASE unit.t_type WHEN '1' THEN
'Monnaie principale' WHEN '2' THEN 'Monnaie secondaire' WHEN 'C' THEN 'Monnaie' WHEN 'S' THEN 'Action'
WHEN 'T' THEN 'Indice' ELSE 'Objet' END) AS t_TYPENLS, (SELECT MIN(s.d_date) FROM unitvalue s
WHERE s.rd_unit_id=unit.id) AS d_MINDATE, (SELECT MAX(s.d_date) FROM unitvalue s WHERE

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s.rd_unit_id=unit.id) AS d_MAXDATE from unit;
CREATE VIEW v_unit_tmp2 AS SELECT *,CASE WHEN v_unit_tmp1.t_type='1' THEN 1 ELSE
IFNULL((SELECT s.f_quantity FROM unitvalue s WHERE s.rd_unit_id=v_unit_tmp1.id AND
s.d_date=v_unit_tmp1.d_MAXDATE),1) END AS f_LASTVALUE from v_unit_tmp1;
CREATE VIEW v_unit AS SELECT *,v_unit_tmp2.f_LASTVALUE*IFNULL((SELECT s2.f_LASTVALUE
FROM v_unit_tmp2 s2 WHERE s2.id=v_unit_tmp2.rd_unit_id)
, 1) AS f_CURRENTAMOUNT from v_unit_tmp2;
CREATE VIEW v_unitvalue_displayname AS SELECT *, (SELECT t_displayname FROM v_unit_displayname
WHERE unitvalue.rd_unit_id=v_unit_displayname.id)||' ||STRFTIME('%d/%m/%Y',d_date) AS t_displayname
FROM unitvalue;
CREATE VIEW v_unitvalue AS SELECT * FROM unitvalue;
CREATE VIEW v_suboperation AS SELECT * FROM suboperation;
CREATE VIEW v_operation_numbers AS SELECT DISTINCT i_number, rd_account_id FROM operation;
CREATE VIEW v_operation_next_numbers AS SELECT T1.i_number+1 AS i_number FROM
v_operation_numbers AS T1 LEFT OUTER JOIN v_operation_numbers T2 ON
T2.rd_account_id=T1.rd_account_id AND T2.i_number=T1.i_number+1 WHERE T1.i_number!=0 AND
(T2.i_number IS NULL) ORDER BY T1.i_number;
CREATE VIEW v_operation_tmp1 AS SELECT *,(SELECT t_name FROM payee s WHERE
s.id=operation.r_payee_id) AS t_PAYEE,(SELECT TOTAL(s.f_value) FROM suboperation s WHERE
s.rd_operation_id=operation.ID) AS f_QUANTITY,(SELECT count(*) FROM suboperation s WHERE
s.rd_operation_id=operation.ID)
AS i_NBSUBCATEGORY FROM operation;
CREATE VIEW v_operation AS SELECT *,(SELECT s.id FROM suboperation s WHERE
s.rd_operation_id=v_operation_tmp1.id AND ABS(s.f_value)=(SELECT MAX(ABS(s2.f_value)) FROM
suboperation s2 WHERE s2.rd_operation_id=v_operation_tmp1.id)) AS i_MOSTIMPSUBOP,((SELECT
s.f_CURRENTAMOUNT FROM v_unit s WHERE
s.id=v_operation_tmp1.rc_unit_id)*v_operation_tmp1.f_QUANTITY) AS f_CURRENTAMOUNT, (CASE WHEN
v_operation_tmp1.i_group_id<>0 AND EXISTS (SELECT 1 FROM account a WHERE
v_operation_tmp1.rd_account_id=a.id AND a.t_type<>'L') AND EXISTS (SELECT 1 FROM v_operation_tmp1
op2, account a WHERE op2.i_group_id=v_operation_tmp1.i_group_id AND op2.rd_account_id=a.id AND
a.t_type<>'L' AND op2.rc_unit_id=v_operation_tmp1.rc_unit_id AND op2.f_QUANTITY=-
v_operation_tmp1.f_QUANTITY) THEN 'Y' ELSE 'N' END) AS t_TRANSFER FROM v_operation_tmp1;
CREATE VIEW v_operation_displayname AS SELECT *, STRFTIME('%d/%m/%Y',d_date)||'
'||IFNULL(t_PAYEE,'')||' ||v_operation.f_CURRENTAMOUNT||'
'||((SELECT (CASE WHEN s.t_symbol!=' THEN s.t_symbol ELSE s.t_name END) FROM unit s WHERE
s.id=v_operation.rc_unit_id) AS t_displayname FROM v_operation;
CREATE VIEW v_operation_delete AS SELECT *, (CASE WHEN t_status='Y' THEN 'Vous n"tes pas autoris
dtruire cette operation car en tat rapproch' END) t_delete_message FROM operation;
CREATE VIEW v_account AS SELECT *,(SELECT MAX(s.d_date) FROM interest s WHERE
s.rd_account_id=account.id) AS d_MAXDATE, (SELECT TOTAL(s.f_CURRENTAMOUNT) FROM v_operation
s WHERE s.rd_account_id=account.id AND s.t_template='N') AS f_CURRENTAMOUNT FROM account;
CREATE VIEW v_account_delete AS SELECT *, (CASE WHEN EXISTS(SELECT 1 FROM operation WHERE
rd_account_id=account.id AND d_date<>'0000-00-00' AND t_template='N' AND t_status='Y') THEN 'Vous n"tes
pas autoris dtruire ce compte car il contient des operations rapproches' END) t_delete_message FROM account;
CREATE VIEW v_bank_displayname AS SELECT *,
t_name AS t_displayname FROM bank;
CREATE VIEW v_account_displayname AS SELECT *, (SELECT t_displayname FROM v_bank_displayname
WHERE account.rd_bank_id=v_bank_displayname.id)||'-'||t_name AS t_displayname FROM account;

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CREATE VIEW v_bank AS SELECT *,(SELECT TOTAL(s.f_CURRENTAMOUNT) FROM v_account s
WHERE s.rd_bank_id=bank.id) AS f_CURRENTAMOUNT FROM bank;
CREATE VIEW v_category_displayname AS SELECT *, t_fullname AS t_displayname FROM category;
CREATE VIEW v_category AS SELECT * FROM category;
CREATE VIEW v_recurrentoperation AS SELECT *,i_period_increment||' |(CASE t_period_unit WHEN 'Y'
THEN 'anne(s)' WHEN 'M' THEN 'mois' WHEN 'W' THEN 'semaine(s)' ELSE 'jour(s)' END) AS t_PERIODNLS
FROM recurrentoperation;
CREATE VIEW v_recurrentoperation_displayname AS SELECT *, STRFTIME('%d/%m/%Y',d_date)||
'|SUBSTR((SELECT t_displayname FROM v_operation_displayname WHERE
v_operation_displayname.id=v_recurrentoperation.rd_operation_id), 11) AS t_displayname FROM
v_recurrentoperation;
CREATE
VIEW v_unitvalue_display AS SELECT *,IFNULL((SELECT (CASE WHEN s.t_symbol!=" THEN s.t_symbol
ELSE s.t_name END) FROM unit s WHERE s.id=(SELECT s2.rd_unit_id FROM unit s2 WHERE
s2.id=unitvalue.rd_unit_id),") AS t_UNIT,STRFTIME('%Y-%m',unitvalue.d_date) AS
d_DATEMONTH,STRFTIME('%Y',unitvalue.d_date) AS d_DATEYEAR FROM unitvalue;
CREATE VIEW v_suboperation_display AS SELECT *,IFNULL((SELECT s.t_fullname FROM category s
WHERE s.id=v_suboperation.r_category_id,") AS t_CATEGORY, IFNULL((SELECT s.t_name FROM refund s
WHERE s.id=v_suboperation.r_refund_id,") AS t_REFUND, (CASE WHEN v_suboperation.f_value>=0 THEN
v_suboperation.f_value ELSE 0 END) AS f_VALUE_INCOME, (CASE WHEN v_suboperation.f_value<=0 THEN
v_suboperation.f_value ELSE 0 END) AS f_VALUE_EXPENSE FROM v_suboperation;
CREATE VIEW v_suboperation_displayname AS SELECT *, t_CATEGORY||' : '|f_value AS t_displayname
FROM v_suboperation_display;
CREATE VIEW v_operation_display_all AS SELECT *,(SELECT s.t_name FROM account s WHERE
s.id=v_operation.rd_account_id) AS t_ACCOUNT,(SELECT (CASE WHEN s.t_symbol!=" THEN s.t_symbol
ELSE s.t_name END) FROM unit s WHERE s.id=v_operation.rc_unit_id) AS t_UNIT,(SELECT s.t_CATEGORY
FROM v_suboperation_display s WHERE s.id=v_operation.i_MOSTIMPSUBOP) AS t_CATEGORY,(SELECT
s.t_REFUND FROM v_suboperation_display s WHERE s.id=v_operation.i_MOSTIMPSUBOP) AS
t_REFUND,(CASE WHEN v_operation.f_QUANTITY<0 THEN '-' WHEN v_operation.f_QUANTITY=0 THEN ''
ELSE '+' END) AS t_TYPEEXPENSE, (CASE WHEN v_operation.f_QUANTITY<=0 THEN 'dpense' ELSE
'Revenu' END) AS t_TYPEEXPENSENLS, STRFTIME('%Y-W%W',v_operation.d_date) AS
d_DATEWEEK,STRFTIME('%Y-%m',v_operation.d_date) AS
d_DATEMONTH,STRFTIME('%Y',v_operation.d_date)||'-Q'|(CASE WHEN
STRFTIME('%m',v_operation.d_date)<='03' THEN '1' WHEN STRFTIME('%m',v_operation.d_date)<='06' THEN
'2' WHEN STRFTIME('%m',v_operation.d_date)<='09' THEN '3' ELSE '4' END) AS d_DATEQUARTER,
STRFTIME('%Y',v_operation.d_date)||'-S'|(CASE WHEN STRFTIME('%m',v_operation.d_date)<='06'
THEN '1' ELSE '2' END) AS d_DATESEMESTER, STRFTIME('%Y',v_operation.d_date) AS d_DATEYEAR,
(SELECT count(*) FROM v_recurrentoperation s WHERE s.rd_operation_id=v_operation.id) AS
i_NBRECURRENT, (CASE WHEN v_operation.f_QUANTITY>=0 THEN v_operation.f_QUANTITY ELSE 0
END) AS f_QUANTITY_INCOME, (CASE WHEN v_operation.f_QUANTITY<=0 THEN
v_operation.f_QUANTITY ELSE 0 END) AS f_QUANTITY_EXPENSE, (SELECT o2.f_balance FROM
operationbalance o2 WHERE o2.r_operation_id=v_operation.id ) AS f_BALANCE, (CASE WHEN
v_operation.f_QUANTITY>=0 THEN v_operation.f_CURRENTAMOUNT ELSE 0 END) AS
f_CURRENTAMOUNT_INCOME, (CASE WHEN v_operation.f_QUANTITY<=0 THEN
v_operation.f_CURRENTAMOUNT ELSE 0 END) AS f_CURRENTAMOUNT_EXPENSE FROM v_operation;
CREATE VIEW v_operation_template_display AS SELECT * FROM v_operation_display_all WHERE
t_template='Y';
CREATE VIEW v_operation_display AS SELECT * FROM v_operation_display_all WHERE d_date!='0000-00-

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00' AND t_template='N';
CREATE VIEW v_unit_display
AS SELECT *,(SELECT TOTAL(o.f_QUANTITY) FROM v_operation_display o WHERE
o.rc_unit_id=v_unit.id) AS f_QUANTITYOWNED FROM v_unit;
CREATE VIEW v_account_display AS SELECT (CASE t_type WHEN 'C' THEN 'Courant' WHEN 'D' THEN
'Carte de crdit' WHEN 'A' THEN 'Actif' WHEN 'I' THEN 'Investissement' WHEN 'W' THEN 'Portefeuille' WHEN
'L' THEN 'Prt' WHEN 'O' THEN 'Autre' END) AS t_TYPENLS,bank.t_name AS t_BANK,bank.t_bank_number
AS t_BANK_NUMBER,bank.t_icon AS t_ICON,v_account.*(v_account.f_CURRENTAMOUNT/(SELECT
u.f_CURRENTAMOUNT FROM v_unit u, operation s WHERE u.id=s.rc_unit_id AND
s.rd_account_id=v_account.id AND s.d_date='0000-00-00')) AS f_QUANTITY, (SELECT (CASE WHEN
u.t_symbol!='' THEN u.t_symbol ELSE u.t_name END) FROM unit u, operation s WHERE u.id=s.rc_unit_id AND
s.rd_account_id=v_account.id AND s.d_date='0000-00-00') AS t_UNIT, (SELECT
TOTAL(s.f_CURRENTAMOUNT) FROM v_operation s WHERE s.rd_account_id=v_account.id AND
s.t_status!='N' AND s.t_template='N') AS f_CHECKED, (SELECT
TOTAL(s.f_CURRENTAMOUNT) FROM v_operation s WHERE s.rd_account_id=v_account.id AND
s.t_status='N' AND s.t_template='N') AS f_COMING_SOON, (SELECT TOTAL(s.f_CURRENTAMOUNT)
FROM v_operation s WHERE s.rd_account_id=v_account.id AND s.d_date<=date('now') AND s.t_template='N')
AS f_TODAYAMOUNT, (SELECT count(*) FROM v_operation_display s WHERE
s.rd_account_id=v_account.id) AS i_NBOPERATIONS, IFNULL((SELECT s.f_rate FROM interest s WHERE
s.rd_account_id=v_account.id AND s.d_date=v_account.d_MAXDATE),0) AS f_RATE FROM v_account, bank
WHERE bank.id=v_account.rd_bank_id;
CREATE VIEW v_operation_consolidated AS SELECT (SELECT s.t_TYPENLS FROM v_account_display s
WHERE s.id=op.rd_account_id) AS t_ACCOUNTTYPE,(SELECT u.t_TYPENLS FROM v_unit u WHERE
u.id=op.rc_unit_id) AS t_UNITTYPE,sop.id AS i_SUBOPID, sop.r_refund_id AS r_refund_id, (CASE WHEN
sop.t_comment='' THEN op.t_comment ELSE sop.t_comment END) AS t_REALCOMMENT, sop.t_CATEGORY
AS t_REALCATEGORY, sop.t_REFUND AS t_REALREFUND, sop.r_category_id
AS i_IDCATEGORY, (CASE WHEN sop.f_value<0 THEN '-' WHEN sop.f_value=0 THEN '' ELSE '+' END) AS
t_TYPEEXPENSE, (CASE WHEN sop.f_value<0 THEN 'Dpense' WHEN sop.f_value=0 THEN '' ELSE 'Revenu'
END) AS t_TYPEEXPENSENLS, sop.f_value AS f_REALQUANTITY, sop.f_VALUE_INCOME AS
f_REALQUANTITY_INCOME, sop.f_VALUE_EXPENSE AS f_REALQUANTITY_EXPENSE, ((SELECT
u.f_CURRENTAMOUNT FROM v_unit u WHERE u.id=op.rc_unit_id)*sop.f_value) AS
f_REALCURRENTAMOUNT, ((SELECT u.f_CURRENTAMOUNT FROM v_unit u WHERE
u.id=op.rc_unit_id)*sop.f_VALUE_INCOME) AS f_REALCURRENTAMOUNT_INCOME, ((SELECT
u.f_CURRENTAMOUNT FROM v_unit u WHERE u.id=op.rc_unit_id)*sop.f_VALUE_EXPENSE) AS
f_REALCURRENTAMOUNT_EXPENSE, op.* FROM v_operation_display_all AS op, v_suboperation_display
AS sop WHERE op.t_template='N' AND sop.rd_operation_id=op.ID;
CREATE VIEW v_operation_prop AS SELECT p.id AS i_PROPPID, p.t_name AS i_PROPPNAME, p.t_value AS
i_PROPVALUE, op.* FROM v_operation_consolidated AS op LEFT OUTER JOIN parameters AS p ON
p.t_uuid_parent=op.id||'-operation';
CREATE VIEW v_refund_delete AS SELECT *, (CASE WHEN EXISTS(SELECT 1 FROM
v_operation_consolidated WHERE r_refund_id=refund.id AND t_status='Y') THEN 'Vous n"tes pas autoris dtruire
ce suiveur car utilis par des oprations rapproches' END) t_delete_message FROM refund;
CREATE VIEW v_refund AS SELECT *, (SELECT TOTAL(o.f_REALCURRENTAMOUNT) FROM
v_operation_consolidated o WHERE o.r_refund_id=refund.id) AS f_CURRENTAMOUNT FROM refund;
CREATE VIEW v_refund_display AS SELECT *,(SELECT MIN(o.d_date) FROM v_operation_consolidated o
WHERE o.r_refund_id=v_refund.id) AS d_FIRSTDATE, (SELECT MAX(o.d_date) FROM
v_operation_consolidated o WHERE o.r_refund_id=v_refund.id) AS d_LASTDATE FROM v_refund;
CREATE VIEW v_refund_displayname AS SELECT *, t_name AS t_displayname FROM refund;

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CREATE VIEW v_payee_delete AS SELECT *, (CASE WHEN EXISTS(SELECT 1 FROM operation WHERE
r_payee_id=payee.id AND t_status='Y') THEN 'Vous n"tes pas autoris  dtruire
ce tiers car utilis par des operations rapproches' END) t_delete_message FROM payee;
CREATE VIEW v_payee AS SELECT *, (SELECT TOTAL(o.f_CURRENTAMOUNT) FROM v_operation o
WHERE o.r_payee_id=payee.id AND o.t_template='N') AS f_CURRENTAMOUNT FROM payee;
CREATE VIEW v_payee_display AS SELECT * FROM v_payee;
CREATE VIEW v_payee_displayname AS SELECT *, t_name AS t_displayname FROM payee;
CREATE VIEW v_category_delete AS SELECT *, (CASE WHEN EXISTS(SELECT 1 FROM
v_operation_consolidated WHERE (t_REALCATEGORY=category.t_fullname OR t_REALCATEGORY like
category.t_fullname||'%) AND t_status='Y') THEN 'Vous n"tes pas autoris  dtruire cette catgorie car utilise par des
operations rapproches' END) t_delete_message FROM category;
CREATE VIEW v_category_display_tmp AS SELECT *,(SELECT count(distinct(so.rd_operation_id)) FROM
operation o, suboperation so WHERE so.rd_operation_id=o.id AND so.r_category_id=v_category.ID AND
o.t_template='N') AS i_NBOPERATIONS, (SELECT TOTAL(o.f_REALCURRENTAMOUNT)
FROM v_operation_consolidated o WHERE o.i_IDCATEGORY=v_category.ID) AS
f_REALCURRENTAMOUNT FROM v_category;
CREATE VIEW v_category_display AS SELECT *,f_REALCURRENTAMOUNT+(SELECT
TOTAL(c.f_REALCURRENTAMOUNT) FROM vm_category_display_tmp c WHERE c.t_fullname LIKE
vm_category_display_tmp.t_fullname||' > %') AS f_SUMCURRENTAMOUNT, i_NBOPERATIONS+(SELECT
CAST(TOTAL(c.i_NBOPERATIONS) AS INTEGER) FROM vm_category_display_tmp c WHERE c.t_fullname
like vm_category_display_tmp.t_fullname||' > %') AS i_SUMNBOPERATIONS, (CASE WHEN t_bookmarked='Y'
THEN 'Y' WHEN EXISTS(SELECT 1 FROM category c WHERE c.t_bookmarked='Y' AND c.t_fullname like
vm_category_display_tmp.t_fullname||' > %') THEN 'C' ELSE 'N' END) AS t_HASBOOKMARKEDCHILD,
(CASE WHEN vm_category_display_tmp.f_REALCURRENTAMOUNT<0 THEN '-' WHEN
vm_category_display_tmp.f_REALCURRENTAMOUNT=0 THEN '' ELSE '+' END) AS
t_TYPEEXPENSE,(CASE WHEN vm_category_display_tmp.f_REALCURRENTAMOUNT<0 THEN 'dpense'
WHEN vm_category_display_tmp.f_REALCURRENTAMOUNT=0
THEN '' ELSE 'Revenu' END) AS t_TYPEEXPENSENLS FROM vm_category_display_tmp;
CREATE VIEW v_recurrentoperation_display AS SELECT rop.*, op.t_ACCOUNT, op.i_number, op.t_mode,
op.i_group_id, op.t_TRANSFER, op.t_PAYEE, op.t_comment, op.t_CATEGORY, op.t_status,
op.f_CURRENTAMOUNT FROM v_recurrentoperation rop, v_operation_display_all AS op WHERE
rop.rd_operation_id=op.ID;
CREATE VIEW v_rule AS SELECT *,(SELECT COUNT(1) FROM rule r WHERE
r.f_sortorder<=rule.f_sortorder) AS i_ORDER FROM rule;
CREATE VIEW v_rule_displayname AS SELECT *, t_definition AS t_displayname FROM rule;
CREATE VIEW v_interest AS SELECT *,(SELECT s.t_name FROM account s WHERE
s.id=interest.rd_account_id) AS t_ACCOUNT FROM interest;
CREATE VIEW v_interest_displayname AS SELECT *, STRFTIME('%d/%m/%Y',d_date)||' ||f_rate||%' AS
t_displayname FROM interest;
CREATE VIEW v_budgetrule AS SELECT *, IFNULL((SELECT s.t_fullname FROM category s WHERE
s.id=budgetrule.rc_category_id,") AS t_CATEGORYCONDITION,
IFNULL((SELECT s.t_fullname FROM category s WHERE s.id=budgetrule.rc_category_id_target,") AS
t_CATEGORY, (CASE WHEN budgetrule.i_condition=-1 THEN 'Ngatif' WHEN budgetrule.i_condition=1 THEN
'Positif' WHEN budgetrule.i_condition=0 THEN 'Tous' END) AS t_WHENNLS, f_quantity||((CASE WHEN
budgetrule.t_absolute='N' THEN '%' ELSE (SELECT t_symbol FROM unit WHERE t_type='1') END) AS
t_WHATNLS,(CASE WHEN budgetrule.t_rule='N' THEN 'Suivant' WHEN budgetrule.t_rule='C' THEN 'Courant'
WHEN budgetrule.t_rule='Y' THEN 'Anne' END) AS t_RULENLS FROM budgetrule;
CREATE VIEW v_budgetrule_display AS SELECT * FROM v_budgetrule;

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CREATE VIEW v_budgetrule_displayname AS SELECT *, t_WHENNLS||' ||t_WHATNLS||' ||t_RULENLS||'
||t_CATEGORY AS t_displayname FROM v_budgetrule;
CREATE VIEW v_budget_tmp AS SELECT *, IFNULL((SELECT s.t_fullname FROM category s WHERE
s.id=budget.rc_category_id,") AS t_CATEGORY, (i_year||(CASE WHEN i_month=0 THEN " WHEN i_month<10
THEN '-0'||i_month ELSE '-'||i_month
END)) AS t_PERIOD, (SELECT TOTAL(o.f_REALCURRENTAMOUNT) FROM v_operation_consolidated o
WHERE STRFTIME('%Y', o.d_date)=i_year AND (i_month=0 OR STRFTIME('%m', o.d_date)=i_month) AND
o.i_IDCATEGORY IN (SELECT b2.id_category FROM budgetcategory b2 WHERE b2.id=budget.id)) AS
f_CURRENTAMOUNT, (SELECT GROUP_CONCAT(v_budgetrule_displayname.t_displayname,',') FROM
v_budgetrule_displayname WHERE (v_budgetrule_displayname.t_year_condition='N' OR
budget.i_year=v_budgetrule_displayname.i_year) AND (v_budgetrule_displayname.t_month_condition='N' OR
budget.i_month=v_budgetrule_displayname.i_month) AND (v_budgetrule_displayname.t_category_condition='N'
OR budget.rc_category_id=v_budgetrule_displayname.rc_category_id) ORDER BY
v_budgetrule_displayname.t_absolute DESC, v_budgetrule_displayname.id) AS t_RULES FROM budget;
CREATE VIEW v_budget AS SELECT *, (f_CURRENTAMOUNT-f_budgeted_modified) AS
f_DELTABEFORETRANSFER, (f_CURRENTAMOUNT-f_budgeted_modified-f_transferred) AS f_DELTA
FROM v_budget_tmp;
CREATE
VIEW v_budget_display AS SELECT *, (f_CURRENTAMOUNT-f_budgeted_modified) AS
f_DELTABEFORETRANSFER, (f_CURRENTAMOUNT-f_budgeted_modified-f_transferred) AS f_DELTA
FROM vm_budget_tmp;
CREATE VIEW v_budget_displayname AS SELECT *, t_CATEGORY||' ||t_PERIOD||' ||f_budgeted_modified AS
t_displayname FROM v_budget;
CREATE TRIGGER fkdc_bank_parameters_uuid BEFORE DELETE ON bank FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'bank'; END;
CREATE TRIGGER fkdc_account_parameters_uuid BEFORE DELETE ON account FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'account'; END;
CREATE TRIGGER fkdc_unit_parameters_uuid BEFORE DELETE ON unit FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'unit'; END;
CREATE TRIGGER fkdc_unitvalue_parameters_uuid BEFORE DELETE ON unitvalue FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'unitvalue';
END;
CREATE TRIGGER fkdc_category_parameters_uuid BEFORE DELETE ON category FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'category'; END;
CREATE TRIGGER fkdc_operation_parameters_uuid BEFORE DELETE ON operation FOR EACH ROW
BEGIN DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'operation'; END;
CREATE TRIGGER fkdc_interest_parameters_uuid BEFORE DELETE ON interest FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'interest'; END;
CREATE TRIGGER fkdc_suboperation_parameters_uuid BEFORE DELETE ON suboperation FOR EACH ROW
BEGIN DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'suboperation'; END;
CREATE TRIGGER fkdc_refund_parameters_uuid BEFORE DELETE ON refund FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'refund'; END;
CREATE TRIGGER fkdc_payee_parameters_uuid BEFORE DELETE ON payee FOR EACH ROW BEGIN
DELETE
FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'payee'; END;
CREATE TRIGGER fkdc_recurrentoperation_parameters_uuid BEFORE DELETE ON recurrentoperation FOR
EACH ROW BEGIN DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'
||'recurrentoperation'; END;

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CREATE TRIGGER fkdc_rule_parameters_uuid BEFORE DELETE ON rule FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'rule'; END;
CREATE TRIGGER fkdc_budget_parameters_uuid BEFORE DELETE ON budget FOR EACH ROW BEGIN
DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'budget'; END;
CREATE TRIGGER fkdc_budgetrule_parameters_uuid BEFORE DELETE ON budgetrule FOR EACH ROW
BEGIN DELETE FROM parameters WHERE parameters.t_uuid_parent=OLD.id||'-'||'budgetrule'; END;
CREATE TRIGGER cpt_category_fullname1 AFTER INSERT ON category BEGIN UPDATE category SET
t_fullname=CASE WHEN rd_category_id IS NULL OR rd_category_id="" OR rd_category_id=0 THEN
new.t_name ELSE
(SELECT c.t_fullname FROM category c WHERE c.id=new.rd_category_id)||' > '||new.t_name END WHERE
id=new.id;END;
CREATE TRIGGER cpt_category_fullname2 AFTER UPDATE OF t_name, rd_category_id ON category BEGIN
UPDATE category SET t_fullname=CASE WHEN rd_category_id IS NULL OR rd_category_id="" OR
rd_category_id=0 THEN new.t_name ELSE (SELECT c.t_fullname FROM category c WHERE
c.id=new.rd_category_id)||' > '||new.t_name END WHERE id=new.id;UPDATE category SET t_name=t_name
WHERE rd_category_id=new.id;END;
CREATE TRIGGER fkdc_category_delete BEFORE DELETE ON category FOR EACH ROW BEGIN
UPDATE suboperation SET r_category_id=OLD.rd_category_id WHERE r_category_id=OLD.id; END;
explain
SELECT TOTAL(f_CURRENTAMOUNT), d_DATEMONTH
from v_operation_display
WHERE d_DATEMONTH IN ('2012-05', '2012-04')
group by d_DATEMONTH, t_TYPEEXPENSE;
}
} {/. * Goto .*/}

# The next test requires FTS4
ifcapable !fts3 {
finish_test
return
}

# Taken from the gnome-shell project
#
db
close
forcedelete test.db
sqlite3 db test.db
do_test fuzz-oss1-gnomeshell {
db eval {
CREATE TABLE Resource (ID INTEGER NOT NULL PRIMARY KEY, Uri TEXT NOT
NULL, UNIQUE (Uri));
CREATE VIRTUAL TABLE fts USING fts4;
CREATE TABLE "mfo:Action" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mfo:Enclosure" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:remoteLink" INTEGER, "mfo:remoteLink:graph" INTEGER,
"mfo:groupDefault" INTEGER, "mfo:groupDefault:graph" INTEGER,
"mfo:localLink" INTEGER, "mfo:localLink:graph" INTEGER, "mfo:optional"

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INTEGER, "mfo:optional:graph" INTEGER);
CREATE TABLE "mfo:FeedChannel" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:updatedAt" INTEGER, "mfo:updatedAt:graph" INTEGER,
"mfo:updatedAt:localDate" INTEGER, "mfo:updatedAt:localTime"
INTEGER, "mfo:unreadCount" INTEGER, "mfo:unreadCount:graph" INTEGER,
"mfo:totalCount" INTEGER, "mfo:totalCount:graph" INTEGER, "mfo:action"
INTEGER, "mfo:action:graph" INTEGER, "mfo:type" INTEGER,
"mfo:type:graph" INTEGER);
CREATE TABLE
"mfo:FeedElement" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:image" TEXT COLLATE NOCASE, "mfo:image:graph" INTEGER,
"mfo:feedSettings" INTEGER, "mfo:feedSettings:graph" INTEGER);
CREATE TABLE "mfo:FeedMessage" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:downloadedTime" INTEGER, "mfo:downloadedTime:graph" INTEGER,
"mfo:downloadedTime:localDate" INTEGER, "mfo:downloadedTime:localTime"
INTEGER);
CREATE TABLE "mfo:FeedMessage_mfo:enclosureList" (ID INTEGER NOT NULL,
"mfo:enclosureList" INTEGER NOT NULL, "mfo:enclosureList:graph"
INTEGER);
CREATE TABLE "mfo:FeedSettings" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:updateInterval" INTEGER, "mfo:updateInterval:graph" INTEGER,
"mfo:expiryInterval" INTEGER, "mfo:expiryInterval:graph" INTEGER,
"mfo:downloadPath" TEXT COLLATE NOCASE, "mfo:downloadPath:graph"
INTEGER, "mfo:downloadFlag" INTEGER, "mfo:downloadFlag:graph" INTEGER,
"mfo:maxSize" INTEGER, "mfo:maxSize:graph" INTEGER);
CREATE TABLE "mfo:FeedType" (ID INTEGER NOT NULL PRIMARY KEY,
"mfo:name" TEXT
COLLATE NOCASE, "mfo:name:graph" INTEGER);
CREATE TABLE "mlo:GeoBoundingBox" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:GeoBoundingBox_mlo:bbNorthWest" (ID INTEGER NOT
NULL, "mlo:bbNorthWest" INTEGER NOT NULL, "mlo:bbNorthWest:graph"
INTEGER);
CREATE TABLE "mlo:GeoBoundingBox_mlo:bbSouthEast" (ID INTEGER NOT
NULL, "mlo:bbSouthEast" INTEGER NOT NULL, "mlo:bbSouthEast:graph"
INTEGER);
CREATE TABLE "mlo:GeoLocation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:GeoLocation_mlo:asBoundingBox" (ID INTEGER NOT NULL,
"mlo:asBoundingBox" INTEGER NOT NULL, "mlo:asBoundingBox:graph"
INTEGER);
CREATE TABLE "mlo:GeoLocation_mlo:asGeoPoint" (ID INTEGER NOT NULL,
"mlo:asGeoPoint" INTEGER NOT NULL, "mlo:asGeoPoint:graph" INTEGER);
CREATE TABLE "mlo:GeoLocation_mlo:asPostalAddress" (ID INTEGER NOT
NULL, "mlo:asPostalAddress" INTEGER NOT NULL,
"mlo:asPostalAddress:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:GeoPoint_mlo:address" (ID
INTEGER NOT NULL,
"mlo:address" TEXT NOT NULL, "mlo:address:graph" INTEGER);

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CREATE TABLE "mlo:GeoPoint_mlo:altitude" (ID INTEGER NOT NULL,
"mlo:altitude" REAL NOT NULL, "mlo:altitude:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:city" (ID INTEGER NOT NULL, "mlo:city"
TEXT NOT NULL, "mlo:city:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:country" (ID INTEGER NOT NULL,
"mlo:country" TEXT NOT NULL, "mlo:country:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:latitude" (ID INTEGER NOT NULL,
"mlo:latitude" REAL NOT NULL, "mlo:latitude:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:longitude" (ID INTEGER NOT NULL,
"mlo:longitude" REAL NOT NULL, "mlo:longitude:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:state" (ID INTEGER NOT NULL,
"mlo:state" TEXT NOT NULL, "mlo:state:graph" INTEGER);
CREATE TABLE "mlo:GeoPoint_mlo:timestamp" (ID INTEGER NOT NULL,
"mlo:timestamp" INTEGER NOT NULL, "mlo:timestamp:graph" INTEGER,
"mlo:timestamp:localDate" INTEGER NOT NULL, "mlo:timestamp:localTime"
INTEGER
NOT NULL);
CREATE TABLE "mlo:GeoSphere" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:GeoSphere_mlo:radius" (ID INTEGER NOT NULL,
"mlo:radius" REAL NOT NULL, "mlo:radius:graph" INTEGER);
CREATE TABLE "mlo:Landmark" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:LandmarkCategory" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:LandmarkCategory_mlo:isRemovable" (ID INTEGER NOT
NULL, "mlo:isRemovable" INTEGER NOT NULL, "mlo:isRemovable:graph"
INTEGER);
CREATE TABLE "mlo:Landmark_mlo:belongsToCategory" (ID INTEGER NOT
NULL, "mlo:belongsToCategory" INTEGER NOT NULL,
"mlo:belongsToCategory:graph" INTEGER);
CREATE TABLE "mlo:Landmark_mlo:poiLocation" (ID INTEGER NOT NULL,
"mlo:poiLocation" INTEGER NOT NULL, "mlo:poiLocation:graph" INTEGER);
CREATE TABLE "mlo:LocationBoundingBox" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:LocationBoundingBox_mlo:boxEastLimit" (ID INTEGER
NOT NULL, "mlo:boxEastLimit" INTEGER NOT NULL,
"mlo:boxEastLimit:graph" INTEGER);
CREATE
TABLE "mlo:LocationBoundingBox_mlo:boxNorthLimit" (ID INTEGER
NOT NULL, "mlo:boxNorthLimit" INTEGER NOT NULL,
"mlo:boxNorthLimit:graph" INTEGER);
CREATE TABLE "mlo:LocationBoundingBox_mlo:boxSouthWestCorner" (ID
INTEGER NOT NULL, "mlo:boxSouthWestCorner" INTEGER NOT NULL,
"mlo:boxSouthWestCorner:graph" INTEGER);
CREATE TABLE "mlo:LocationBoundingBox_mlo:boxVerticalLimit" (ID
INTEGER NOT NULL, "mlo:boxVerticalLimit" INTEGER NOT NULL,
"mlo:boxVerticalLimit:graph" INTEGER);
CREATE TABLE "mlo:PointOfInterest" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:Route" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mlo:Route_mlo:endTime" (ID INTEGER NOT NULL,
"mlo:endTime" INTEGER NOT NULL, "mlo:endTime:graph" INTEGER,

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"mlo:endTime:localDate" INTEGER NOT NULL, "mlo:endTime:localTime"
INTEGER NOT NULL);
CREATE TABLE "mlo:Route_mlo:routeDetails" (ID INTEGER NOT NULL,
"mlo:routeDetails" TEXT NOT NULL, "mlo:routeDetails:graph" INTEGER);
CREATE TABLE "mlo:Route_mlo:startTime" (ID INTEGER NOT
NULL,
"mlo:startTime" INTEGER NOT NULL, "mlo:startTime:graph" INTEGER,
"mlo:startTime:localDate" INTEGER NOT NULL, "mlo:startTime:localTime"
INTEGER NOT NULL);
CREATE TABLE "mto:DownloadTransfer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mto:State" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mto:SyncTransfer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mto:Transfer" (ID INTEGER NOT NULL PRIMARY KEY,
"mto:transferState" INTEGER, "mto:transferState:graph" INTEGER,
"mto:method" INTEGER, "mto:method:graph" INTEGER, "mto:created"
INTEGER, "mto:created:graph" INTEGER, "mto:created:localDate" INTEGER,
"mto:created:localTime" INTEGER, "mto:account" TEXT COLLATE NOCASE,
"mto:account:graph" INTEGER, "mto:starter" INTEGER,
"mto:starter:graph" INTEGER, "mto:agent" INTEGER, "mto:agent:graph"
INTEGER);
CREATE TABLE "mto:TransferElement" (ID INTEGER NOT NULL PRIMARY KEY,
"mto:source" INTEGER, "mto:source:graph" INTEGER, "mto:destination"
INTEGER, "mto:destination:graph" INTEGER, "mto:startedTime"
INTEGER,
"mto:startedTime:graph" INTEGER, "mto:startedTime:localDate" INTEGER,
"mto:startedTime:localTime" INTEGER, "mto:completedTime" INTEGER,
"mto:completedTime:graph" INTEGER, "mto:completedTime:localDate"
INTEGER, "mto:completedTime:localTime" INTEGER, "mto:state" INTEGER,
"mto:state:graph" INTEGER);
CREATE TABLE "mto:TransferMethod" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mto:Transfer_mto:transferList" (ID INTEGER NOT NULL,
"mto:transferList" INTEGER NOT NULL, "mto:transferList:graph"
INTEGER);
CREATE TABLE "mto:Transfer_mto:transferPrivacyLevel" (ID INTEGER NOT
NULL, "mto:transferPrivacyLevel" TEXT NOT NULL,
"mto:transferPrivacyLevel:graph" INTEGER);
CREATE TABLE "mto:UploadTransfer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "mto:UploadTransfer_mto:transferCategory" (ID INTEGER NOT
NULL, "mto:transferCategory" TEXT NOT NULL,
"mto:transferCategory:graph" INTEGER);
CREATE TABLE "mtp:ScanType" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nao:Property"
(ID INTEGER NOT NULL PRIMARY KEY,
"nao:propertyName" TEXT COLLATE NOCASE, "nao:propertyName:graph"
INTEGER, "nao:propertyValue" TEXT COLLATE NOCASE,
"nao:propertyValue:graph" INTEGER);
CREATE TABLE "nao:Tag" (ID INTEGER NOT NULL PRIMARY KEY,
"nao:prefLabel" TEXT COLLATE NOCASE, "nao:prefLabel:graph" INTEGER,

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"nao:description" TEXT COLLATE NOCASE, "nao:description:graph"
INTEGER);
CREATE TABLE "nao:Tag_tracker:isDefaultTag" (ID INTEGER NOT NULL,
"tracker:isDefaultTag" INTEGER NOT NULL, "tracker:isDefaultTag:graph"
INTEGER);
CREATE TABLE "nao:Tag_tracker:tagRelatedTo" (ID INTEGER NOT NULL,
"tracker:tagRelatedTo" INTEGER NOT NULL, "tracker:tagRelatedTo:graph"
INTEGER);
CREATE TABLE "ncal:AccessClassification" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Alarm" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:repeat" INTEGER, "ncal:repeat:graph" INTEGER);
CREATE TABLE "ncal:AlarmAction" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Alarm_ncal:action" (ID INTEGER NOT NULL,
"ncal:action"
INTEGER NOT NULL, "ncal:action:graph" INTEGER);
CREATE TABLE "ncal:Attachment" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:attachmentUri" INTEGER, "ncal:attachmentUri:graph" INTEGER,
"ncal:fmttype" TEXT COLLATE NOCASE, "ncal:fmttype:graph" INTEGER,
"ncal:encoding" INTEGER, "ncal:encoding:graph" INTEGER,
"ncal:attachmentContent" TEXT COLLATE NOCASE,
"ncal:attachmentContent:graph" INTEGER);
CREATE TABLE "ncal:AttachmentEncoding" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Attendee" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:delegatedTo" INTEGER, "ncal:delegatedTo:graph" INTEGER,
"ncal:delegatedFrom" INTEGER, "ncal:delegatedFrom:graph" INTEGER,
"ncal:cutype" INTEGER, "ncal:cutype:graph" INTEGER, "ncal:member"
INTEGER, "ncal:member:graph" INTEGER, "ncal:role" INTEGER,
"ncal:role:graph" INTEGER, "ncal:rsvp" INTEGER, "ncal:rsvp:graph"
INTEGER, "ncal:partstat" INTEGER, "ncal:partstat:graph" INTEGER);
CREATE TABLE "ncal:AttendeeOrOrganizer" (ID INTEGER NOT NULL PRIMARY
KEY, "ncal:dir"
INTEGER, "ncal:dir:graph" INTEGER,
"ncal:involvedContact" INTEGER, "ncal:involvedContact:graph" INTEGER,
"ncal:sentBy" INTEGER, "ncal:sentBy:graph" INTEGER);
CREATE TABLE "ncal:AttendeeRole" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:BydayRulePart" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:BydayRulePart_ncal:bydayModifier" (ID INTEGER NOT
NULL, "ncal:bydayModifier" INTEGER NOT NULL,
"ncal:bydayModifier:graph" INTEGER);
CREATE TABLE "ncal:BydayRulePart_ncal:bydayWeekday" (ID INTEGER NOT
NULL, "ncal:bydayWeekday" INTEGER NOT NULL, "ncal:bydayWeekday:graph"
INTEGER);
CREATE TABLE "ncal:Calendar" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:method" TEXT COLLATE NOCASE, "ncal:method:graph" INTEGER,
"ncal:calscale" INTEGER, "ncal:calscale:graph" INTEGER, "ncal:prodid"
TEXT COLLATE NOCASE, "ncal:prodid:graph" INTEGER, "ncal:version" TEXT
COLLATE NOCASE, "ncal:version:graph" INTEGER);
CREATE TABLE "ncal:CalendarDataObject" (ID INTEGER NOT NULL PRIMARY KEY);

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CREATE TABLE
"ncal:CalendarScale" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:CalendarUserType" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Calendar_ncal:component" (ID INTEGER NOT NULL,
"ncal:component" INTEGER NOT NULL, "ncal:component:graph" INTEGER);
CREATE TABLE "ncal:Event" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:eventStatus" INTEGER, "ncal:eventStatus:graph" INTEGER,
"ncal:transp" INTEGER, "ncal:transp:graph" INTEGER);
CREATE TABLE "ncal:EventStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Freebusy" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:FreebusyPeriod" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:fbtype" INTEGER, "ncal:fbtype:graph" INTEGER);
CREATE TABLE "ncal:FreebusyType" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Freebusy_ncal:freebusy" (ID INTEGER NOT NULL,
"ncal:freebusy" INTEGER NOT NULL, "ncal:freebusy:graph" INTEGER);
CREATE TABLE "ncal:Journal" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:journalStatus" INTEGER, "ncal:journalStatus:graph"
INTEGER);
CREATE TABLE "ncal:JournalStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:NcalDateTime" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:ncalTimezone" INTEGER, "ncal:ncalTimezone:graph" INTEGER,
"ncal:date" INTEGER, "ncal:date:graph" INTEGER, "ncal:date:localDate"
INTEGER, "ncal:date:localTime" INTEGER, "ncal:dateTime" INTEGER,
"ncal:dateTime:graph" INTEGER, "ncal:dateTime:localDate" INTEGER,
"ncal:dateTime:localTime" INTEGER);
CREATE TABLE "ncal:NcalPeriod" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:periodBegin" INTEGER, "ncal:periodBegin:graph" INTEGER,
"ncal:periodBegin:localDate" INTEGER, "ncal:periodBegin:localTime"
INTEGER, "ncal:periodDuration" INTEGER, "ncal:periodDuration:graph"
INTEGER, "ncal:periodEnd" INTEGER, "ncal:periodEnd:graph" INTEGER,
"ncal:periodEnd:localDate" INTEGER, "ncal:periodEnd:localTime"
INTEGER);
CREATE TABLE "ncal:NcalTimeEntity" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Organizer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE
"ncal:ParticipationStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:RecurrenceFrequency" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:RecurrenceIdentifier" (ID INTEGER NOT NULL PRIMARY
KEY, "ncal:range" INTEGER, "ncal:range:graph" INTEGER,
"ncal:recurrenceIdDateTime" INTEGER, "ncal:recurrenceIdDateTime:graph"
INTEGER);
CREATE TABLE "ncal:RecurrenceIdentifierRange" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:RecurrenceRule" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:until" INTEGER, "ncal:until:graph" INTEGER,
"ncal:until:localDate" INTEGER, "ncal:until:localTime" INTEGER,
"ncal:wkst" INTEGER, "ncal:wkst:graph" INTEGER, "ncal:interval"
INTEGER, "ncal:interval:graph" INTEGER, "ncal:count" INTEGER,
"ncal:count:graph" INTEGER, "ncal:freq" INTEGER, "ncal:freq:graph"

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INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:byday" (ID INTEGER NOT NULL,
"ncal:byday" INTEGER NOT NULL, "ncal:byday:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:byhour" (ID INTEGER
NOT NULL,
"ncal:byhour" INTEGER NOT NULL, "ncal:byhour:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:byminute" (ID INTEGER NOT NULL,
"ncal:byminute" INTEGER NOT NULL, "ncal:byminute:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:bymonth" (ID INTEGER NOT NULL,
"ncal:bymonth" INTEGER NOT NULL, "ncal:bymonth:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:bymonthday" (ID INTEGER NOT
NULL, "ncal:bymonthday" INTEGER NOT NULL, "ncal:bymonthday:graph"
INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:bysecond" (ID INTEGER NOT NULL,
"ncal:bysecond" INTEGER NOT NULL, "ncal:bysecond:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:bysetpos" (ID INTEGER NOT NULL,
"ncal:bysetpos" INTEGER NOT NULL, "ncal:bysetpos:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:byweekno" (ID INTEGER NOT NULL,
"ncal:byweekno" INTEGER NOT NULL, "ncal:byweekno:graph" INTEGER);
CREATE TABLE "ncal:RecurrenceRule_ncal:byyearday" (ID INTEGER NOT
NULL, "ncal:byyearday" INTEGER NOT
NULL, "ncal:byyearday:graph"
INTEGER);
CREATE TABLE "ncal:RequestStatus" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:statusDescription" TEXT COLLATE NOCASE,
"ncal:statusDescription:graph" INTEGER, "ncal:returnStatus" TEXT
COLLATE NOCASE, "ncal:returnStatus:graph" INTEGER,
"ncal:requestStatusData" TEXT COLLATE NOCASE,
"ncal:requestStatusData:graph" INTEGER);
CREATE TABLE "ncal:TimeTransparency" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:Timezone" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:tzurl" INTEGER, "ncal:tzurl:graph" INTEGER, "ncal:standard"
INTEGER, "ncal:standard:graph" INTEGER, "ncal:daylight" INTEGER,
"ncal:daylight:graph" INTEGER, "ncal:tzid" TEXT COLLATE NOCASE,
"ncal:tzid:graph" INTEGER);
CREATE TABLE "ncal:TimezoneObservance" (ID INTEGER NOT NULL PRIMARY
KEY, "ncal:tzoffsetfrom" TEXT COLLATE NOCASE,
"ncal:tzoffsetfrom:graph" INTEGER, "ncal:tzoffsetto" TEXT COLLATE
NOCASE, "ncal:tzoffsetto:graph" INTEGER, "ncal:tzname" TEXT COLLATE
NOCASE, "ncal:tzname:graph" INTEGER);
CREATE
TABLE "ncal:Todo" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:percentComplete" INTEGER, "ncal:percentComplete:graph" INTEGER,
"ncal:completed" INTEGER, "ncal:completed:graph" INTEGER,
"ncal:completed:localDate" INTEGER, "ncal:completed:localTime"
INTEGER, "ncal:todoStatus" INTEGER, "ncal:todoStatus:graph" INTEGER,
"ncal:due" INTEGER, "ncal:due:graph" INTEGER);
CREATE TABLE "ncal:TodoStatus" (ID INTEGER NOT NULL PRIMARY KEY);

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CREATE TABLE "ncal:Trigger" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:related" INTEGER, "ncal:related:graph" INTEGER,
"ncal:triggerDateTime" INTEGER, "ncal:triggerDateTime:graph" INTEGER,
"ncal:triggerDateTime:localDate" INTEGER,
"ncal:triggerDateTime:localTime" INTEGER, "ncal:triggerDuration"
INTEGER, "ncal:triggerDuration:graph" INTEGER);
CREATE TABLE "ncal:TriggerRelation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "ncal:UnionParentClass" (ID INTEGER NOT NULL PRIMARY KEY,
"ncal:lastModified" INTEGER, "ncal:lastModified:graph" INTEGER,
"ncal:lastModified:localDate"
INTEGER, "ncal:lastModified:localTime"
INTEGER, "ncal:trigger" INTEGER, "ncal:trigger:graph" INTEGER,
"ncal:created" INTEGER, "ncal:created:graph" INTEGER,
"ncal:created:localDate" INTEGER, "ncal:created:localTime" INTEGER,
"ncal:url" INTEGER, "ncal:url:graph" INTEGER, "ncal:comment" TEXT
COLLATE NOCASE, "ncal:comment:graph" INTEGER, "ncal:summaryAltRep"
INTEGER, "ncal:summaryAltRep:graph" INTEGER, "ncal:priority" INTEGER,
"ncal:priority:graph" INTEGER, "ncal:location" TEXT COLLATE NOCASE,
"ncal:location:graph" INTEGER, "ncal:uid" TEXT COLLATE NOCASE,
"ncal:uid:graph" INTEGER, "ncal:requestStatus" INTEGER,
"ncal:requestStatus:graph" INTEGER, "ncal:recurrenceId" INTEGER,
"ncal:recurrenceId:graph" INTEGER, "ncal:dtstamp" INTEGER,
"ncal:dtstamp:graph" INTEGER, "ncal:dtstamp:localDate" INTEGER,
"ncal:dtstamp:localTime" INTEGER, "ncal:class" INTEGER,
"ncal:class:graph" INTEGER, "ncal:organizer" INTEGER,
"ncal:organizer:graph" INTEGER, "ncal:dtend" INTEGER,
"ncal:dtend:graph" INTEGER,
"ncal:summary" TEXT COLLATE NOCASE,
"ncal:summary:graph" INTEGER, "ncal:descriptionAltRep" INTEGER,
"ncal:descriptionAltRep:graph" INTEGER, "ncal:commentAltRep" INTEGER,
"ncal:commentAltRep:graph" INTEGER, "ncal:sequence" INTEGER,
"ncal:sequence:graph" INTEGER, "ncal:contact" TEXT COLLATE NOCASE,
"ncal:contact:graph" INTEGER, "ncal:contactAltRep" INTEGER,
"ncal:contactAltRep:graph" INTEGER, "ncal:locationAltRep" INTEGER,
"ncal:locationAltRep:graph" INTEGER, "ncal:geo" INTEGER,
"ncal:geo:graph" INTEGER, "ncal:resourcesAltRep" INTEGER,
"ncal:resourcesAltRep:graph" INTEGER, "ncal:dtstart" INTEGER,
"ncal:dtstart:graph" INTEGER, "ncal:description" TEXT COLLATE NOCASE,
"ncal:description:graph" INTEGER, "ncal:relatedToSibling" TEXT COLLATE
NOCASE, "ncal:relatedToSibling:graph" INTEGER, "ncal:duration"
INTEGER, "ncal:duration:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:attach" (ID INTEGER NOT NULL,
"ncal:attach" INTEGER NOT NULL, "ncal:attach:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:attende"
(ID INTEGER NOT
NULL, "ncal:attende" INTEGER NOT NULL, "ncal:attende:graph"
INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:categories" (ID INTEGER NOT

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NULL, "ncal:categories" TEXT NOT NULL, "ncal:categories:graph"
INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:exdate" (ID INTEGER NOT NULL,
"ncal:exdate" INTEGER NOT NULL, "ncal:exdate:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:extrule" (ID INTEGER NOT NULL,
"ncal:extrule" INTEGER NOT NULL, "ncal:extrule:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:hasAlarm" (ID INTEGER NOT
NULL, "ncal:hasAlarm" INTEGER NOT NULL, "ncal:hasAlarm:graph"
INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:ncalRelation" (ID INTEGER NOT
NULL, "ncal:ncalRelation" TEXT NOT NULL, "ncal:ncalRelation:graph"
INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:rdate" (ID INTEGER NOT NULL,
"ncal:rdate" INTEGER NOT NULL, "ncal:rdate:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:relatedToChild"
(ID INTEGER
NOT NULL, "ncal:relatedToChild" TEXT NOT NULL,
"ncal:relatedToChild:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:relatedToParent" (ID INTEGER
NOT NULL, "ncal:relatedToParent" TEXT NOT NULL,
"ncal:relatedToParent:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:resources" (ID INTEGER NOT
NULL, "ncal:resources" TEXT NOT NULL, "ncal:resources:graph" INTEGER);
CREATE TABLE "ncal:UnionParentClass_ncal:rrule" (ID INTEGER NOT NULL,
"ncal:rrule" INTEGER NOT NULL, "ncal:rrule:graph" INTEGER);
CREATE TABLE "ncal:Weekday" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:Affiliation" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:department" TEXT COLLATE NOCASE, "nco:department:graph" INTEGER,
"nco:org" INTEGER, "nco:org:graph" INTEGER, "nco:role" TEXT COLLATE
NOCASE, "nco:role:graph" INTEGER);
CREATE TABLE "nco:Affiliation_nco:title" (ID INTEGER NOT NULL,
"nco:title" TEXT NOT NULL, "nco:title:graph" INTEGER);
CREATE TABLE "nco:AuthorizationStatus" (ID INTEGER NOT
NULL PRIMARY KEY);
CREATE TABLE "nco:BbsNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:CarPhoneNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:CellPhoneNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:Contact" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:fullname" TEXT COLLATE NOCASE, "nco:fullname:graph" INTEGER,
"nco:key" INTEGER, "nco:key:graph" INTEGER, "nco:contactUID" TEXT
COLLATE NOCASE, "nco:contactUID:graph" INTEGER, "nco:contactLocalUID"
TEXT COLLATE NOCASE, "nco:contactLocalUID:graph" INTEGER,
"nco:hasLocation" INTEGER, "nco:hasLocation:graph" INTEGER,
"nco:nickname" TEXT COLLATE NOCASE, "nco:nickname:graph" INTEGER,
"nco:representative" INTEGER, "nco:representative:graph" INTEGER,
"nco:photo" INTEGER, "nco:photo:graph" INTEGER, "nco:birthDate"
INTEGER, "nco:birthDate:graph" INTEGER, "nco:birthDate:localDate"
INTEGER, "nco:birthDate:localTime" INTEGER, "nco:sound" INTEGER,

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"nco:sound:graph" INTEGER);
CREATE TABLE "nco:ContactGroup" (ID INTEGER
NOT NULL PRIMARY KEY,
"nco:contactGroupName" TEXT COLLATE NOCASE,
"nco:contactGroupName:graph" INTEGER);
CREATE TABLE "nco:ContactList" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:ContactListDataObject" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:ContactList_nco:containsContact" (ID INTEGER NOT
NULL, "nco:containsContact" INTEGER NOT NULL,
"nco:containsContact:graph" INTEGER);
CREATE TABLE "nco:ContactMedium" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:contactMediumComment" TEXT COLLATE NOCASE,
"nco:contactMediumComment:graph" INTEGER);
CREATE TABLE "nco:Contact_ncal:anniversary" (ID INTEGER NOT NULL,
"ncal:anniversary" INTEGER NOT NULL, "ncal:anniversary:graph"
INTEGER);
CREATE TABLE "nco:Contact_ncal:birthday" (ID INTEGER NOT NULL,
"ncal:birthday" INTEGER NOT NULL, "ncal:birthday:graph" INTEGER);
CREATE TABLE "nco:Contact_nco:belongsToGroup" (ID INTEGER NOT NULL,
"nco:belongsToGroup" INTEGER NOT NULL, "nco:belongsToGroup:graph"
INTEGER);
CREATE TABLE "nco:Contact_nco:note"
(ID INTEGER NOT NULL, "nco:note"
TEXT NOT NULL, "nco:note:graph" INTEGER);
CREATE TABLE "nco:Contact_scal:anniversary" (ID INTEGER NOT NULL,
"scal:anniversary" INTEGER NOT NULL, "scal:anniversary:graph"
INTEGER);
CREATE TABLE "nco:Contact_scal:birthday" (ID INTEGER NOT NULL,
"scal:birthday" INTEGER NOT NULL, "scal:birthday:graph" INTEGER);
CREATE TABLE "nco:DomesticDeliveryAddress" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:EmailAddress" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:emailAddress" TEXT COLLATE NOCASE UNIQUE,
"nco:emailAddress:graph" INTEGER);
CREATE TABLE "nco:FaxNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:Gender" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:IMAccount" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:imAccountAddress" INTEGER UNIQUE, "nco:imAccountAddress:graph"
INTEGER, "nco:imAccountType" TEXT COLLATE NOCASE,
"nco:imAccountType:graph" INTEGER, "nco:imDisplayName" TEXT COLLATE
NOCASE, "nco:imDisplayName:graph" INTEGER, "nco:imEnabled"
INTEGER,
"nco:imEnabled:graph" INTEGER);
CREATE TABLE "nco:IMAccount_nco:hasIMContact" (ID INTEGER NOT NULL,
"nco:hasIMContact" INTEGER NOT NULL, "nco:hasIMContact:graph"
INTEGER);
CREATE TABLE "nco:IMAddress" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:imID" TEXT COLLATE NOCASE, "nco:imID:graph" INTEGER,
"nco:imNickname" TEXT COLLATE NOCASE, "nco:imNickname:graph" INTEGER,

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"nco:imAvatar" INTEGER, "nco:imAvatar:graph" INTEGER, "nco:imProtocol"
TEXT COLLATE NOCASE, "nco:imProtocol:graph" INTEGER,
"nco:imStatusMessage" TEXT COLLATE NOCASE,
"nco:imStatusMessage:graph" INTEGER, "nco:imPresence" INTEGER,
"nco:imPresence:graph" INTEGER, "nco:presenceLastModified" INTEGER,
"nco:presenceLastModified:graph" INTEGER,
"nco:presenceLastModified:localDate" INTEGER,
"nco:presenceLastModified:localTime" INTEGER,
"nco:imAddressAuthStatusFrom" INTEGER,
"nco:imAddressAuthStatusFrom:graph" INTEGER,
"nco:imAddressAuthStatusTo" INTEGER, "nco:imAddressAuthStatusTo:graph"
INTEGER);
CREATE TABLE "nco:IMAddress_nco:imCapability"
(ID INTEGER NOT NULL,
"nco:imCapability" INTEGER NOT NULL, "nco:imCapability:graph"
INTEGER);
CREATE TABLE "nco:IMCapability" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:InternationalDeliveryAddress" (ID INTEGER NOT NULL
PRIMARY KEY);
CREATE TABLE "nco:IsdnNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:MessagingNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:ModemNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:OrganizationContact" (ID INTEGER NOT NULL PRIMARY
KEY, "nco:logo" INTEGER, "nco:logo:graph" INTEGER);
CREATE TABLE "nco:PagerNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:ParcelDeliveryAddress" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:PcsNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:PersonContact" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:nameFamily" TEXT COLLATE NOCASE, "nco:nameFamily:graph" INTEGER,
"nco:nameGiven" TEXT COLLATE NOCASE, "nco:nameGiven:graph" INTEGER,
"nco:nameAdditional"
TEXT COLLATE NOCASE, "nco:nameAdditional:graph"
INTEGER, "nco:nameHonorificSuffix" TEXT COLLATE NOCASE,
"nco:nameHonorificSuffix:graph" INTEGER, "nco:nameHonorificPrefix"
TEXT COLLATE NOCASE, "nco:nameHonorificPrefix:graph" INTEGER,
"nco:hobby" TEXT COLLATE NOCASE, "nco:hobby:graph" INTEGER,
"nco:gender" INTEGER, "nco:gender:graph" INTEGER);
CREATE TABLE "nco:PersonContact_nco:hasAffiliation" (ID INTEGER NOT
NULL, "nco:hasAffiliation" INTEGER NOT NULL,
"nco:hasAffiliation:graph" INTEGER);
CREATE TABLE "nco:PhoneNumber" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:phoneNumber" TEXT COLLATE NOCASE, "nco:phoneNumber:graph"
INTEGER);
CREATE TABLE "nco:PostalAddress" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:region" TEXT COLLATE NOCASE, "nco:region:graph" INTEGER,
"nco:country" TEXT COLLATE NOCASE, "nco:country:graph" INTEGER,
"nco:extendedAddress" TEXT COLLATE NOCASE,
"nco:extendedAddress:graph" INTEGER, "nco:addressLocation" INTEGER,

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"nco:addressLocation:graph" INTEGER, "nco:streetAddress"
TEXT COLLATE
NOCASE, "nco:streetAddress:graph" INTEGER, "nco:postalcode" TEXT
COLLATE NOCASE, "nco:postalcode:graph" INTEGER, "nco:locality" TEXT
COLLATE NOCASE, "nco:locality:graph" INTEGER, "nco:county" TEXT
COLLATE NOCASE, "nco:county:graph" INTEGER, "nco:district" TEXT
COLLATE NOCASE, "nco:district:graph" INTEGER, "nco:pobox" TEXT
COLLATE NOCASE, "nco:pobox:graph" INTEGER);
CREATE TABLE "nco:PresenceStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:Role" (ID INTEGER NOT NULL PRIMARY KEY, "nco:video"
INTEGER, "nco:video:graph" INTEGER);
CREATE TABLE "nco:Role_nco:blogUrl" (ID INTEGER NOT NULL,
"nco:blogUrl" INTEGER NOT NULL, "nco:blogUrl:graph" INTEGER);
CREATE TABLE "nco:Role_nco:foafUrl" (ID INTEGER NOT NULL,
"nco:foafUrl" INTEGER NOT NULL, "nco:foafUrl:graph" INTEGER);
CREATE TABLE "nco:Role_nco:hasContactMedium" (ID INTEGER NOT NULL,
"nco:hasContactMedium" INTEGER NOT NULL, "nco:hasContactMedium:graph"
INTEGER);
CREATE TABLE "nco:Role_nco:hasEmailAddress"
(ID INTEGER NOT NULL,
"nco:hasEmailAddress" INTEGER NOT NULL, "nco:hasEmailAddress:graph"
INTEGER);
CREATE TABLE "nco:Role_nco:hasIMAddress" (ID INTEGER NOT NULL,
"nco:hasIMAddress" INTEGER NOT NULL, "nco:hasIMAddress:graph"
INTEGER);
CREATE TABLE "nco:Role_nco:hasPhoneNumber" (ID INTEGER NOT NULL,
"nco:hasPhoneNumber" INTEGER NOT NULL, "nco:hasPhoneNumber:graph"
INTEGER);
CREATE TABLE "nco:Role_nco:hasPostalAddress" (ID INTEGER NOT NULL,
"nco:hasPostalAddress" INTEGER NOT NULL, "nco:hasPostalAddress:graph"
INTEGER);
CREATE TABLE "nco:Role_nco:url" (ID INTEGER NOT NULL, "nco:url"
INTEGER NOT NULL, "nco:url:graph" INTEGER);
CREATE TABLE "nco:Role_nco:websiteUrl" (ID INTEGER NOT NULL,
"nco:websiteUrl" INTEGER NOT NULL, "nco:websiteUrl:graph" INTEGER);
CREATE TABLE "nco:VideoTelephoneNumber" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nco:VoicePhoneNumber" (ID INTEGER NOT NULL PRIMARY KEY,
"nco:voiceMail" INTEGER, "nco:voiceMail:graph" INTEGER);
CREATE TABLE "nfo:Application" (ID INTEGER
NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Archive" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:uncompressedSize" INTEGER, "nfo:uncompressedSize:graph" INTEGER);
CREATE TABLE "nfo:ArchiveItem" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:isPasswordProtected" INTEGER, "nfo:isPasswordProtected:graph"
INTEGER);
CREATE TABLE "nfo:Attachment" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Audio" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:channels" INTEGER, "nfo:channels:graph" INTEGER,

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"nfo:sideChannels" INTEGER, "nfo:sideChannels:graph" INTEGER,
"nfo:lfeChannels" INTEGER, "nfo:lfeChannels:graph" INTEGER,
"nfo:sampleCount" INTEGER, "nfo:sampleCount:graph" INTEGER,
"nfo:bitsPerSample" INTEGER, "nfo:bitsPerSample:graph" INTEGER,
"nfo:frontChannels" INTEGER, "nfo:frontChannels:graph" INTEGER,
"nfo:sampleRate" REAL, "nfo:sampleRate:graph" INTEGER,
"nfo:averageAudioBitrate" REAL, "nfo:averageAudioBitrate:graph"
INTEGER, "nfo:rearChannels" INTEGER, "nfo:rearChannels:graph" INTEGER,
"nfo:gain" INTEGER,
"nfo:gain:graph" INTEGER, "nfo:peakGain" INTEGER,
"nfo:peakGain:graph" INTEGER, "nfo:audioOffset" REAL,
"nfo:audioOffset:graph" INTEGER);
CREATE TABLE "nfo:Bookmark" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:bookmarks" INTEGER, "nfo:bookmarks:graph" INTEGER,
"nfo:characterPosition" INTEGER, "nfo:characterPosition:graph"
INTEGER, "nfo:pageNumber" INTEGER, "nfo:pageNumber:graph" INTEGER,
"nfo:streamPosition" INTEGER, "nfo:streamPosition:graph" INTEGER,
"nfo:streamDuration" INTEGER, "nfo:streamDuration:graph" INTEGER);
CREATE TABLE "nfo:BookmarkFolder" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:BookmarkFolder_nfo:containsBookmark" (ID INTEGER NOT
NULL, "nfo:containsBookmark" INTEGER NOT NULL,
"nfo:containsBookmark:graph" INTEGER);
CREATE TABLE "nfo:BookmarkFolder_nfo:containsBookmarkFolder" (ID
INTEGER NOT NULL, "nfo:containsBookmarkFolder" INTEGER NOT NULL,
"nfo:containsBookmarkFolder:graph" INTEGER);
CREATE TABLE "nfo:CompressionType" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE
"nfo:Cursor" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:DataContainer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:DeletedResource" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:originalLocation" TEXT COLLATE NOCASE,
"nfo:originalLocation:graph" INTEGER, "nfo:deletionDate" INTEGER,
"nfo:deletionDate:graph" INTEGER, "nfo:deletionDate:localDate"
INTEGER, "nfo:deletionDate:localTime" INTEGER);
CREATE TABLE "nfo:Document" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:tableOfContents" TEXT COLLATE NOCASE,
"nfo:tableOfContents:graph" INTEGER);
CREATE TABLE "nfo:EmbeddedFileDataObject" (ID INTEGER NOT NULL PRIMARY
KEY, "nfo:encoding" TEXT COLLATE NOCASE, "nfo:encoding:graph"
INTEGER);
CREATE TABLE "nfo:Equipment" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:manufacturer" TEXT COLLATE NOCASE, "nfo:manufacturer:graph"
INTEGER, "nfo:model" TEXT COLLATE NOCASE, "nfo:model:graph" INTEGER,
"nfo:equipmentSoftware" TEXT COLLATE NOCASE,
"nfo:equipmentSoftware:graph" INTEGER);
CREATE TABLE "nfo:Executable"
(ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:FileDataObject" (ID INTEGER NOT NULL PRIMARY KEY,

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"nfo:fileLastAccessed" INTEGER, "nfo:fileLastAccessed:graph" INTEGER,
"nfo:fileLastAccessed:localDate" INTEGER,
"nfo:fileLastAccessed:localTime" INTEGER, "nfo:fileCreated" INTEGER,
"nfo:fileCreated:graph" INTEGER, "nfo:fileCreated:localDate" INTEGER,
"nfo:fileCreated:localTime" INTEGER, "nfo:fileSize" INTEGER,
"nfo:fileSize:graph" INTEGER, "nfo:permissions" TEXT COLLATE NOCASE,
"nfo:permissions:graph" INTEGER, "nfo:fileName" TEXT COLLATE NOCASE,
"nfo:fileName:graph" INTEGER, "nfo:hashCode" INTEGER,
"nfo:hashCode:graph" INTEGER, "nfo:fileOwner" INTEGER,
"nfo:fileOwner:graph" INTEGER, "nfo:fileLastModified" INTEGER,
"nfo:fileLastModified:graph" INTEGER, "nfo:fileLastModified:localDate"
INTEGER, "nfo:fileLastModified:localTime" INTEGER);
CREATE TABLE "nfo:FileHash" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:hashValue" TEXT COLLATE NOCASE, "nfo:hashValue:graph" INTEGER,
"nfo:hashAlgorithm"
TEXT COLLATE NOCASE, "nfo:hashAlgorithm:graph"
INTEGER);
CREATE TABLE "nfo:Filesystem" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:FilesystemImage" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Folder" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Font" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:fontFamily" TEXT COLLATE NOCASE, "nfo:fontFamily:graph" INTEGER,
"nfo:foundry" INTEGER, "nfo:foundry:graph" INTEGER);
CREATE TABLE "nfo:HardDiskPartition" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:HelpDocument" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:HtmlDocument" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Icon" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Image" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:verticalResolution" INTEGER, "nfo:verticalResolution:graph"
INTEGER, "nfo:horizontalResolution" INTEGER,
"nfo:horizontalResolution:graph" INTEGER, "nfo:orientation" INTEGER,
"nfo:orientation:graph" INTEGER);
CREATE TABLE "nfo:Image_nfo:depicts"
(ID INTEGER NOT NULL,
"nfo:depicts" INTEGER NOT NULL, "nfo:depicts:graph" INTEGER);
CREATE TABLE "nfo:Image_nfo:hasRegionOfInterest" (ID INTEGER NOT NULL,
"nfo:hasRegionOfInterest" INTEGER NOT NULL,
"nfo:hasRegionOfInterest:graph" INTEGER);
CREATE TABLE "nfo:Media" (ID INTEGER NOT NULL PRIMARY KEY, "nfo:count"
INTEGER, "nfo:count:graph" INTEGER, "nfo:duration" INTEGER,
"nfo:duration:graph" INTEGER, "nfo:compressionType" INTEGER,
"nfo:compressionType:graph" INTEGER, "nfo:hasMediaStream" INTEGER,
"nfo:hasMediaStream:graph" INTEGER, "nfo:bitDepth" INTEGER,
"nfo:bitDepth:graph" INTEGER, "nfo:codec" TEXT COLLATE NOCASE,
"nfo:codec:graph" INTEGER, "nfo:encodedBy" TEXT COLLATE NOCASE,
"nfo:encodedBy:graph" INTEGER, "nfo:bitrateType" TEXT COLLATE NOCASE,
"nfo:bitrateType:graph" INTEGER, "nfo:averageBitrate" REAL,
"nfo:averageBitrate:graph" INTEGER, "nfo:genre" TEXT COLLATE NOCASE,

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"nfo:genre:graph" INTEGER, "nfo:equipment" INTEGER,
"nfo:equipment:graph" INTEGER, "nfo:lastPlayedPosition"
INTEGER,
"nfo:lastPlayedPosition:graph" INTEGER, "nmm:genre" TEXT COLLATE
NOCASE, "nmm:genre:graph" INTEGER, "nmm:skipCounter" INTEGER,
"nmm:skipCounter:graph" INTEGER, "nmm:dlnaProfile" TEXT COLLATE
NOCASE, "nmm:dlnaProfile:graph" INTEGER, "nmm:dlnaMime" TEXT COLLATE
NOCASE, "nmm:dlnaMime:graph" INTEGER, "nmm:uPnPShared" INTEGER,
"nmm:uPnPShared:graph" INTEGER, "mtp:credits" TEXT COLLATE NOCASE,
"mtp:credits:graph" INTEGER, "mtp:creator" TEXT COLLATE NOCASE,
"mtp:creator:graph" INTEGER);
CREATE TABLE "nfo:MediaFileListEntry" (ID INTEGER NOT NULL PRIMARY
KEY, "nfo:listPosition" REAL, "nfo:listPosition:graph" INTEGER,
"nfo:entryUrl" TEXT COLLATE NOCASE, "nfo:entryUrl:graph" INTEGER);
CREATE TABLE "nfo:MediaList" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:entryCounter" INTEGER, "nfo:entryCounter:graph" INTEGER,
"nfo:listDuration" INTEGER, "nfo:listDuration:graph" INTEGER);
CREATE TABLE "nfo:MediaList_nfo:hasMediaFileListEntry" (ID INTEGER NOT
NULL, "nfo:hasMediaFileListEntry" INTEGER NOT
NULL,
"nfo:hasMediaFileListEntry:graph" INTEGER);
CREATE TABLE "nfo:MediaList_nfo:mediaListEntry" (ID INTEGER NOT NULL,
"nfo:mediaListEntry" INTEGER NOT NULL, "nfo:mediaListEntry:graph"
INTEGER);
CREATE TABLE "nfo:MediaStream" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Media_mtp:hidden" (ID INTEGER NOT NULL, "mtp:hidden"
INTEGER NOT NULL, "mtp:hidden:graph" INTEGER);
CREATE TABLE "nfo:Media_nmm:alternativeMedia" (ID INTEGER NOT NULL,
"nmm:alternativeMedia" INTEGER NOT NULL, "nmm:alternativeMedia:graph"
INTEGER);
CREATE TABLE "nfo:MindMap" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Note" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:OperatingSystem" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Orientation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:PaginatedTextDocument" (ID INTEGER NOT NULL PRIMARY
KEY, "nfo:pageCount" INTEGER, "nfo:pageCount:graph" INTEGER);
CREATE TABLE "nfo:PlainTextDocument" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE
"nfo:Presentation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:RasterImage" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:RegionOfInterest" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:regionOfInterestX" REAL, "nfo:regionOfInterestX:graph" INTEGER,
"nfo:regionOfInterestY" REAL, "nfo:regionOfInterestY:graph" INTEGER,
"nfo:regionOfInterestWidth" REAL, "nfo:regionOfInterestWidth:graph"
INTEGER, "nfo:regionOfInterestHeight" REAL,
"nfo:regionOfInterestHeight:graph" INTEGER, "nfo:regionOfInterestType"
INTEGER, "nfo:regionOfInterestType:graph" INTEGER, "nfo:roiRefersTo"
INTEGER, "nfo:roiRefersTo:graph" INTEGER);

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CREATE TABLE "nfo:RegionOfInterestContent" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:RemoteDataObject" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:RemotePortAddress" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Software" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:conflicts" INTEGER, "nfo:conflicts:graph" INTEGER,
"nfo:supercedes" INTEGER, "nfo:supercedes:graph"
INTEGER,
"nfo:softwareIcon" INTEGER, "nfo:softwareIcon:graph" INTEGER,
"nfo:softwareCmdLine" TEXT COLLATE NOCASE,
"nfo:softwareCmdLine:graph" INTEGER);
CREATE TABLE "nfo:SoftwareApplication" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:SoftwareCategory" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:softwareCategoryIcon" INTEGER, "nfo:softwareCategoryIcon:graph"
INTEGER);
CREATE TABLE "nfo:SoftwareItem" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:SoftwareService" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:SourceCode" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:commentCharacterCount" INTEGER, "nfo:commentCharacterCount:graph"
INTEGER, "nfo:programmingLanguage" TEXT COLLATE NOCASE,
"nfo:programmingLanguage:graph" INTEGER, "nfo:definesClass" TEXT
COLLATE NOCASE, "nfo:definesClass:graph" INTEGER,
"nfo:definesFunction" TEXT COLLATE NOCASE,
"nfo:definesFunction:graph" INTEGER, "nfo:definesGlobalVariable" TEXT
COLLATE NOCASE, "nfo:definesGlobalVariable:graph" INTEGER);
CREATE
TABLE "nfo:Spreadsheet" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:TextDocument" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:wordCount" INTEGER, "nfo:wordCount:graph" INTEGER,
"nfo:lineCount" INTEGER, "nfo:lineCount:graph" INTEGER,
"nfo:characterCount" INTEGER, "nfo:characterCount:graph" INTEGER);
CREATE TABLE "nfo:Trash" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:VectorImage" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nfo:Video" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:frameRate" REAL, "nfo:frameRate:graph" INTEGER, "nfo:frameCount"
INTEGER, "nfo:frameCount:graph" INTEGER, "nfo:averageVideoBitrate"
REAL, "nfo:averageVideoBitrate:graph" INTEGER);
CREATE TABLE "nfo:Visual" (ID INTEGER NOT NULL PRIMARY KEY,
"nie:contentCreated" INTEGER, "nie:contentCreated:graph" INTEGER,
"nie:contentCreated:localDate" INTEGER, "nie:contentCreated:localTime"
INTEGER, "nfo:aspectRatio" REAL, "nfo:aspectRatio:graph" INTEGER,
"nfo:heading" REAL, "nfo:heading:graph" INTEGER, "nfo:tilt"
REAL,
"nfo:tilt:graph" INTEGER, "nfo:interlaceMode" INTEGER,
"nfo:interlaceMode:graph" INTEGER, "nfo:height" INTEGER,
"nfo:height:graph" INTEGER, "nfo:width" INTEGER, "nfo:width:graph"
INTEGER, "nfo:colorDepth" INTEGER, "nfo:colorDepth:graph" INTEGER);
CREATE TABLE "nfo:WebHistory" (ID INTEGER NOT NULL PRIMARY KEY,
"nfo:domain" TEXT COLLATE NOCASE, "nfo:domain:graph" INTEGER,

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"nfo:uri" TEXT COLLATE NOCASE, "nfo:uri:graph" INTEGER);
CREATE TABLE "nfo:Website" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nid3:ID3Audio" (ID INTEGER NOT NULL PRIMARY KEY,
"nid3:title" TEXT COLLATE NOCASE, "nid3:title:graph" INTEGER,
"nid3:albumTitle" TEXT COLLATE NOCASE, "nid3:albumTitle:graph"
INTEGER, "nid3:contentType" TEXT COLLATE NOCASE,
"nid3:contentType:graph" INTEGER, "nid3:length" INTEGER,
"nid3:length:graph" INTEGER, "nid3:recordingYear" INTEGER,
"nid3:recordingYear:graph" INTEGER, "nid3:trackNumber" TEXT COLLATE
NOCASE, "nid3:trackNumber:graph" INTEGER, "nid3:partOfSet" TEXT
COLLATE
NOCASE, "nid3:partOfSet:graph" INTEGER, "nid3:comments" TEXT
COLLATE NOCASE, "nid3:comments:graph" INTEGER);
CREATE TABLE "nid3:ID3Audio_nid3:leadArtist" (ID INTEGER NOT NULL,
"nid3:leadArtist" INTEGER NOT NULL, "nid3:leadArtist:graph" INTEGER);
CREATE TABLE "nie:DataObject" (ID INTEGER NOT NULL PRIMARY KEY,
"nie:url" TEXT COLLATE NOCASE UNIQUE, "nie:url:graph" INTEGER,
"nie:byteSize" INTEGER, "nie:byteSize:graph" INTEGER,
"nie:interpretedAs" INTEGER, "nie:interpretedAs:graph" INTEGER,
"nie:lastRefreshed" INTEGER, "nie:lastRefreshed:graph" INTEGER,
"nie:lastRefreshed:localDate" INTEGER, "nie:lastRefreshed:localTime"
INTEGER, "nie:created" INTEGER, "nie:created:graph" INTEGER,
"nie:created:localDate" INTEGER, "nie:created:localTime" INTEGER,
"nfo:belongsToContainer" INTEGER, "nfo:belongsToContainer:graph"
INTEGER, "tracker:available" INTEGER, "tracker:available:graph"
INTEGER);
CREATE TABLE "nie:DataObject_nie:dataSource" (ID INTEGER NOT NULL,
"nie:dataSource" INTEGER NOT NULL, "nie:dataSource:graph"
INTEGER);
CREATE TABLE "nie:DataObject_nie:isPartOf" (ID INTEGER NOT NULL,
"nie:isPartOf" INTEGER NOT NULL, "nie:isPartOf:graph" INTEGER);
CREATE TABLE "nie:DataSource" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nie:InformationElement" (ID INTEGER NOT NULL PRIMARY
KEY, "nie:title" TEXT COLLATE NOCASE, "nie:title:graph" INTEGER,
"nie:contentLastModified" INTEGER, "nie:contentLastModified:graph"
INTEGER, "nie:contentLastModified:localDate" INTEGER,
"nie:contentLastModified:localTime" INTEGER, "nie:subject" TEXT
COLLATE NOCASE, "nie:subject:graph" INTEGER, "nie:mimeType" TEXT
COLLATE NOCASE, "nie:mimeType:graph" INTEGER, "nie:language" TEXT
COLLATE NOCASE, "nie:language:graph" INTEGER, "nie:plainTextContent"
TEXT COLLATE NOCASE, "nie:plainTextContent:graph" INTEGER,
"nie:legal" TEXT COLLATE NOCASE, "nie:legal:graph" INTEGER,
"nie:generator" TEXT COLLATE NOCASE, "nie:generator:graph" INTEGER,
"nie:description" TEXT COLLATE NOCASE, "nie:description:graph"
INTEGER, "nie:disclaimer"
TEXT COLLATE NOCASE, "nie:disclaimer:graph"
INTEGER, "nie:depends" INTEGER, "nie:depends:graph" INTEGER,
"nie:links" INTEGER, "nie:links:graph" INTEGER, "nie:copyright" TEXT

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COLLATE NOCASE, "nie:copyright:graph" INTEGER, "nie:comment" TEXT
COLLATE NOCASE, "nie:comment:graph" INTEGER, "nie:isStoredAs"
INTEGER, "nie:isStoredAs:graph" INTEGER, "nie:version" TEXT COLLATE
NOCASE, "nie:version:graph" INTEGER, "nie:contentCreated" INTEGER,
"nie:contentCreated:graph" INTEGER, "nie:contentCreated:localDate"
INTEGER, "nie:contentCreated:localTime" INTEGER, "nie:contentAccessed"
INTEGER, "nie:contentAccessed:graph" INTEGER,
"nie:contentAccessed:localDate" INTEGER,
"nie:contentAccessed:localTime" INTEGER, "nie:license" TEXT COLLATE
NOCASE, "nie:license:graph" INTEGER, "nie:identifier" TEXT COLLATE
NOCASE, "nie:identifier:graph" INTEGER, "nie:licenseType" TEXT
COLLATE NOCASE, "nie:licenseType:graph" INTEGER, "nie:characterSet"
TEXT COLLATE NOCASE, "nie:characterSet:graph" INTEGER,
"nie:contentSize"
INTEGER, "nie:contentSize:graph" INTEGER,
"nie:rootElementOf" INTEGER, "nie:rootElementOf:graph" INTEGER,
"nie:usageCounter" INTEGER, "nie:usageCounter:graph" INTEGER,
"nco:publisher" INTEGER, "nco:publisher:graph" INTEGER,
"nfo:isContentEncrypted" INTEGER, "nfo:isContentEncrypted:graph"
INTEGER, "slo:location" INTEGER, "slo:location:graph" INTEGER,
"nfo:isBootable" INTEGER, "nfo:isBootable:graph" INTEGER, "osinfo:id"
TEXT COLLATE NOCASE, "osinfo:id:graph" INTEGER, "osinfo:mediaId" TEXT
COLLATE NOCASE, "osinfo:mediaId:graph" INTEGER);
CREATE TABLE "nie:InformationElement_mlo:location" (ID INTEGER NOT
NULL, "mlo:location" INTEGER NOT NULL, "mlo:location:graph" INTEGER);
CREATE TABLE "nie:InformationElement_nao:hasProperty" (ID INTEGER NOT
NULL, "nao:hasProperty" INTEGER NOT NULL, "nao:hasProperty:graph"
INTEGER);
CREATE TABLE "nie:InformationElement_nco:contributor" (ID INTEGER NOT
NULL, "nco:contributor" INTEGER NOT NULL, "nco:contributor:graph"
INTEGER);
CREATE TABLE "nie:InformationElement_nco:creator"
(ID INTEGER NOT
NULL, "nco:creator" INTEGER NOT NULL, "nco:creator:graph" INTEGER);
CREATE TABLE "nie:InformationElement_nie:hasLogicalPart" (ID INTEGER
NOT NULL, "nie:hasLogicalPart" INTEGER NOT NULL,
"nie:hasLogicalPart:graph" INTEGER);
CREATE TABLE "nie:InformationElement_nie:hasPart" (ID INTEGER NOT
NULL, "nie:hasPart" INTEGER NOT NULL, "nie:hasPart:graph" INTEGER);
CREATE TABLE "nie:InformationElement_nie:informationElementDate" (ID
INTEGER NOT NULL, "nie:informationElementDate" INTEGER NOT NULL,
"nie:informationElementDate:graph" INTEGER,
"nie:informationElementDate:localDate" INTEGER NOT NULL,
"nie:informationElementDate:localTime" INTEGER NOT NULL);
CREATE TABLE "nie:InformationElement_nie:isLogicalPartOf" (ID INTEGER
NOT NULL, "nie:isLogicalPartOf" INTEGER NOT NULL,
"nie:isLogicalPartOf:graph" INTEGER);
CREATE TABLE "nie:InformationElement_nie:keyword" (ID INTEGER NOT

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NULL, "nie:keyword" TEXT NOT NULL, "nie:keyword:graph" INTEGER);
CREATE TABLE
  "nie:InformationElement_nie:relatedTo" (ID INTEGER NOT
NULL, "nie:relatedTo" INTEGER NOT NULL, "nie:relatedTo:graph"
INTEGER);
CREATE TABLE "nmm:AnalogRadio" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:modulation" INTEGER, "nmm:modulation:graph" INTEGER,
"nmm:frequency" INTEGER, "nmm:frequency:graph" INTEGER);
CREATE TABLE "nmm:Artist" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:artistName" TEXT COLLATE NOCASE, "nmm:artistName:graph"
INTEGER);
CREATE TABLE "nmm:DigitalRadio" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:streamingBitrate" INTEGER, "nmm:streamingBitrate:graph" INTEGER,
"nmm:encoding" TEXT COLLATE NOCASE, "nmm:encoding:graph" INTEGER,
"nmm:protocol" TEXT COLLATE NOCASE, "nmm:protocol:graph" INTEGER);
CREATE TABLE "nmm:Flash" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmm:ImageList" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmm:MeteringMode" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmm:MusicAlbum" (ID INTEGER NOT NULL PRIMARY KEY,
"nie:title" TEXT COLLATE NOCASE, "nie:title:graph"
INTEGER,
"nmm:albumTrackCount" INTEGER, "nmm:albumTrackCount:graph" INTEGER,
"nmm:albumTitle" TEXT COLLATE NOCASE, "nmm:albumTitle:graph" INTEGER,
"nmm:albumDuration" INTEGER, "nmm:albumDuration:graph" INTEGER,
"nmm:albumGain" INTEGER, "nmm:albumGain:graph" INTEGER,
"nmm:albumPeakGain" INTEGER, "nmm:albumPeakGain:graph" INTEGER);
CREATE TABLE "nmm:MusicAlbumDisc" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:albumDiscAlbum" INTEGER, "nmm:albumDiscAlbum:graph" INTEGER,
"nmm:musicCDIdentifier" TEXT COLLATE NOCASE,
"nmm:musicCDIdentifier:graph" INTEGER, "nmm:setNumber" INTEGER,
"nmm:setNumber:graph" INTEGER);
CREATE TABLE "nmm:MusicAlbum_nmm:albumArtist" (ID INTEGER NOT NULL,
"nmm:albumArtist" INTEGER NOT NULL, "nmm:albumArtist:graph" INTEGER);
CREATE TABLE "nmm:MusicPiece" (ID INTEGER NOT NULL PRIMARY KEY,
"nie:title" TEXT COLLATE NOCASE, "nie:title:graph" INTEGER,
"nmm:musicAlbum" INTEGER, "nmm:musicAlbum:graph" INTEGER,
"nmm:musicAlbumDisc" INTEGER, "nmm:musicAlbumDisc:graph" INTEGER,
"nmm:beatsPerMinute"
INTEGER, "nmm:beatsPerMinute:graph" INTEGER,
"nmm:performer" INTEGER, "nmm:performer:graph" INTEGER, "nmm:composer"
INTEGER, "nmm:composer:graph" INTEGER, "nmm:lyricist" INTEGER,
"nmm:lyricist:graph" INTEGER, "nmm:trackNumber" INTEGER,
"nmm:trackNumber:graph" INTEGER,
"nmm:internationalStandardRecordingCode" TEXT COLLATE NOCASE,
"nmm:internationalStandardRecordingCode:graph" INTEGER);
CREATE TABLE "nmm:MusicPiece_nmm:lyrics" (ID INTEGER NOT NULL,
"nmm:lyrics" INTEGER NOT NULL, "nmm:lyrics:graph" INTEGER);
CREATE TABLE "nmm:Photo" (ID INTEGER NOT NULL PRIMARY KEY,

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"nmm:exposureTime" REAL, "nmm:exposureTime:graph" INTEGER, "nmm:flash"
INTEGER, "nmm:flash:graph" INTEGER, "nmm:fnumber" REAL,
"nmm:fnumber:graph" INTEGER, "nmm:focalLength" REAL,
"nmm:focalLength:graph" INTEGER, "nmm:isoSpeed" REAL,
"nmm:isoSpeed:graph" INTEGER, "nmm:meteringMode" INTEGER,
"nmm:meteringMode:graph" INTEGER, "nmm:whiteBalance" INTEGER,
"nmm:whiteBalance:graph" INTEGER, "nmm:isCropped"
INTEGER,
"nmm:isCropped:graph" INTEGER, "nmm:isColorCorrected" INTEGER,
"nmm:isColorCorrected:graph" INTEGER);
CREATE TABLE "nmm:Playlist" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmm:RadioModulation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmm:RadioStation" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:radioIcon" INTEGER, "nmm:radioIcon:graph" INTEGER, "nmm:radioPTY"
INTEGER, "nmm:radioPTY:graph" INTEGER);
CREATE TABLE "nmm:RadioStation_nmm:carrier" (ID INTEGER NOT NULL,
"nmm:carrier" INTEGER NOT NULL, "nmm:carrier:graph" INTEGER);
CREATE TABLE "nmm:SynchronizedText" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:isForHearingImpaired" INTEGER, "nmm:isForHearingImpaired:graph"
INTEGER);
CREATE TABLE "nmm:Video" (ID INTEGER NOT NULL PRIMARY KEY,
"nmm:videoAlbum" INTEGER, "nmm:videoAlbum:graph" INTEGER,
"nmm:isSeries" INTEGER, "nmm:isSeries:graph" INTEGER, "nmm:season"
INTEGER, "nmm:season:graph" INTEGER, "nmm:episodeNumber" INTEGER,
"nmm:episodeNumber:graph" INTEGER, "nmm:runTime"
INTEGER,
"nmm:runTime:graph" INTEGER, "nmm:synopsis" TEXT COLLATE NOCASE,
"nmm:synopsis:graph" INTEGER, "nmm:MPAARating" TEXT COLLATE NOCASE,
"nmm:MPAARating:graph" INTEGER, "nmm:category" TEXT COLLATE NOCASE,
"nmm:category:graph" INTEGER, "nmm:producedBy" INTEGER,
"nmm:producedBy:graph" INTEGER, "nmm:hasSubtitle" INTEGER,
"nmm:hasSubtitle:graph" INTEGER, "nmm:isContentEncrypted" INTEGER,
"nmm:isContentEncrypted:graph" INTEGER, "mtp:fourCC" TEXT COLLATE
NOCASE, "mtp:fourCC:graph" INTEGER, "mtp:waveformat" TEXT COLLATE
NOCASE, "mtp:waveformat:graph" INTEGER);
CREATE TABLE "nmm:Video_mtp:scantype" (ID INTEGER NOT NULL,
"mtp:scantype" INTEGER NOT NULL, "mtp:scantype:graph" INTEGER);
CREATE TABLE "nmm:Video_nmm:director" (ID INTEGER NOT NULL,
"nmm:director" INTEGER NOT NULL, "nmm:director:graph" INTEGER);
CREATE TABLE "nmm:Video_nmm:leadActor" (ID INTEGER NOT NULL,
"nmm:leadActor" INTEGER NOT NULL, "nmm:leadActor:graph" INTEGER);
CREATE TABLE "nmm:Video_nmm:subtitle" (ID INTEGER NOT NULL,
"nmm:subtitle"
INTEGER NOT NULL, "nmm:subtitle:graph" INTEGER);
CREATE TABLE "nmm:WhiteBalance" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:Attachment" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:Call" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:sentDate" INTEGER, "nmo:sentDate:graph" INTEGER,

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"nmo:sentDate:localDate" INTEGER, "nmo:sentDate:localTime" INTEGER,
"nmo:duration" INTEGER, "nmo:duration:graph" INTEGER);
CREATE TABLE "nmo:CommunicationChannel" (ID INTEGER NOT NULL PRIMARY
KEY, "nmo:lastMessageDate" INTEGER, "nmo:lastMessageDate:graph"
INTEGER, "nmo:lastMessageDate:localDate" INTEGER,
"nmo:lastMessageDate:localTime" INTEGER,
"nmo:lastSuccessfulMessageDate" INTEGER,
"nmo:lastSuccessfulMessageDate:graph" INTEGER,
"nmo:lastSuccessfulMessageDate:localDate" INTEGER,
"nmo:lastSuccessfulMessageDate:localTime" INTEGER);
CREATE TABLE "nmo:CommunicationChannel_nmo:hasParticipant" (ID INTEGER
NOT NULL, "nmo:hasParticipant" INTEGER NOT NULL,
"nmo:hasParticipant:graph" INTEGER);
CREATE
TABLE "nmo:Conversation" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:DeliveryStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:Email" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:hasContent" INTEGER, "nmo:hasContent:graph" INTEGER,
"nmo:isFlagged" INTEGER, "nmo:isFlagged:graph" INTEGER, "nmo:isRecent"
INTEGER, "nmo:isRecent:graph" INTEGER, "nmo:status" TEXT COLLATE
NOCASE, "nmo:status:graph" INTEGER, "nmo:responseType" TEXT COLLATE
NOCASE, "nmo:responseType:graph" INTEGER);
CREATE TABLE "nmo:Email_nmo:contentMimeType" (ID INTEGER NOT NULL,
"nmo:contentMimeType" TEXT NOT NULL, "nmo:contentMimeType:graph"
INTEGER);
CREATE TABLE "nmo:IMMessage" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:MMSMessage" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:mmsHasContent" INTEGER, "nmo:mmsHasContent:graph" INTEGER);
CREATE TABLE "nmo:MailAccount" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:accountName" TEXT COLLATE NOCASE, "nmo:accountName:graph"
INTEGER, "nmo:accountDisplayName"
TEXT COLLATE NOCASE,
"nmo:accountDisplayName:graph" INTEGER, "nmo:fromAddress" INTEGER,
"nmo:fromAddress:graph" INTEGER, "nmo:signature" TEXT COLLATE NOCASE,
"nmo:signature:graph" INTEGER);
CREATE TABLE "nmo:MailFolder" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:folderName" TEXT COLLATE NOCASE, "nmo:folderName:graph" INTEGER,
"nmo:serverCount" INTEGER, "nmo:serverCount:graph" INTEGER,
"nmo:serverUnreadCount" INTEGER, "nmo:serverUnreadCount:graph"
INTEGER);
CREATE TABLE "nmo:MailboxDataObject" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:Message" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:sentDate" INTEGER, "nmo:sentDate:graph" INTEGER,
"nmo:sentDate:localDate" INTEGER, "nmo:sentDate:localTime" INTEGER,
"nmo:from" INTEGER, "nmo:from:graph" INTEGER, "nmo:isAnswered"
INTEGER, "nmo:isAnswered:graph" INTEGER, "nmo:isDeleted" INTEGER,
"nmo:isDeleted:graph" INTEGER, "nmo:isDraft" INTEGER,
"nmo:isDraft:graph" INTEGER, "nmo:isRead" INTEGER, "nmo:isRead:graph"

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INTEGER, "nmo:isSent" INTEGER, "nmo:isSent:graph"
INTEGER,
"nmo:isEmergency" INTEGER, "nmo:isEmergency:graph" INTEGER,
"nmo:htmlMessageContent" TEXT COLLATE NOCASE,
"nmo:htmlMessageContent:graph" INTEGER, "nmo:messageId" TEXT COLLATE
NOCASE, "nmo:messageId:graph" INTEGER, "nmo:messageSubject" TEXT
COLLATE NOCASE, "nmo:messageSubject:graph" INTEGER,
"nmo:receivedDate" INTEGER, "nmo:receivedDate:graph" INTEGER,
"nmo:receivedDate:localDate" INTEGER, "nmo:receivedDate:localTime"
INTEGER, "nmo:replyTo" INTEGER, "nmo:replyTo:graph" INTEGER,
"nmo:sender" INTEGER, "nmo:sender:graph" INTEGER, "nmo:conversation"
INTEGER, "nmo:conversation:graph" INTEGER, "nmo:communicationChannel"
INTEGER, "nmo:communicationChannel:graph" INTEGER,
"nmo:deliveryStatus" INTEGER, "nmo:deliveryStatus:graph" INTEGER,
"nmo:reportDelivery" INTEGER, "nmo:reportDelivery:graph" INTEGER,
"nmo:sentWithReportRead" INTEGER, "nmo:sentWithReportRead:graph"
INTEGER, "nmo:reportReadStatus" INTEGER, "nmo:reportReadStatus:graph"
INTEGER, "nmo:mustAnswerReportRead" INTEGER,
"nmo:mustAnswerReportRead:graph"
INTEGER, "nmo:mmsId" TEXT COLLATE
NOCASE, "nmo:mmsId:graph" INTEGER);
CREATE TABLE "nmo:MessageHeader" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:headerName" TEXT COLLATE NOCASE, "nmo:headerName:graph" INTEGER,
"nmo:headerValue" TEXT COLLATE NOCASE, "nmo:headerValue:graph"
INTEGER);
CREATE TABLE "nmo:Message_nmo:bcc" (ID INTEGER NOT NULL, "nmo:bcc"
INTEGER NOT NULL, "nmo:bcc:graph" INTEGER);
CREATE TABLE "nmo:Message_nmo:cc" (ID INTEGER NOT NULL, "nmo:cc"
INTEGER NOT NULL, "nmo:cc:graph" INTEGER);
CREATE TABLE "nmo:Message_nmo:hasAttachment" (ID INTEGER NOT NULL,
"nmo:hasAttachment" INTEGER NOT NULL, "nmo:hasAttachment:graph"
INTEGER);
CREATE TABLE "nmo:Message_nmo:inReplyTo" (ID INTEGER NOT NULL,
"nmo:inReplyTo" INTEGER NOT NULL, "nmo:inReplyTo:graph" INTEGER);
CREATE TABLE "nmo:Message_nmo:messageHeader" (ID INTEGER NOT NULL,
"nmo:messageHeader" INTEGER NOT NULL, "nmo:messageHeader:graph"
INTEGER);
CREATE TABLE "nmo:Message_nmo:recipient" (ID INTEGER
NOT NULL,
"nmo:recipient" INTEGER NOT NULL, "nmo:recipient:graph" INTEGER);
CREATE TABLE "nmo:Message_nmo:references" (ID INTEGER NOT NULL,
"nmo:references" INTEGER NOT NULL, "nmo:references:graph" INTEGER);
CREATE TABLE "nmo:Message_nmo:to" (ID INTEGER NOT NULL, "nmo:to"
INTEGER NOT NULL, "nmo:to:graph" INTEGER);
CREATE TABLE "nmo:MimePart" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:charSet" TEXT COLLATE NOCASE, "nmo:charSet:graph" INTEGER,
"nmo:contentId" TEXT COLLATE NOCASE, "nmo:contentId:graph" INTEGER,
"nmo:contentTransferEncoding" TEXT COLLATE NOCASE,

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"nmo:contentTransferEncoding:graph" INTEGER, "nmo:contentDescription"
TEXT COLLATE NOCASE, "nmo:contentDescription:graph" INTEGER,
"nmo:contentDisposition" TEXT COLLATE NOCASE,
"nmo:contentDisposition:graph" INTEGER);
CREATE TABLE "nmo:MimePart_nmo:mimeHeader" (ID INTEGER NOT NULL,
"nmo:mimeHeader" INTEGER NOT NULL, "nmo:mimeHeader:graph" INTEGER);
CREATE TABLE "nmo:Multipart" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:Multipart_nmo:partBoundary"
(ID INTEGER NOT NULL,
"nmo:partBoundary" TEXT NOT NULL, "nmo:partBoundary:graph" INTEGER);
CREATE TABLE "nmo:PermanentChannel" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:PhoneMessage" (ID INTEGER NOT NULL PRIMARY KEY,
"nmo:fromVCard" INTEGER, "nmo:fromVCard:graph" INTEGER, "nmo:encoding"
TEXT COLLATE NOCASE, "nmo:encoding:graph" INTEGER,
"nmo:phoneMessageId" INTEGER, "nmo:phoneMessageId:graph" INTEGER,
"nmo:validityPeriod" INTEGER, "nmo:validityPeriod:graph" INTEGER);
CREATE TABLE "nmo:PhoneMessageFolder" (ID INTEGER NOT NULL PRIMARY
KEY, "nmo:phoneMessageFolderId" TEXT COLLATE NOCASE,
"nmo:phoneMessageFolderId:graph" INTEGER);
CREATE TABLE "nmo:PhoneMessageFolder_nmo:containsPhoneMessage" (ID
INTEGER NOT NULL, "nmo:containsPhoneMessage" INTEGER NOT NULL,
"nmo:containsPhoneMessage:graph" INTEGER);
CREATE TABLE "nmo:PhoneMessageFolder_nmo:containsPhoneMessageFolder"
(ID INTEGER NOT NULL, "nmo:containsPhoneMessageFolder" INTEGER NOT
NULL, "nmo:containsPhoneMessageFolder:graph"
INTEGER);
CREATE TABLE "nmo:PhoneMessage_nmo:toVCard" (ID INTEGER NOT NULL,
"nmo:toVCard" INTEGER NOT NULL, "nmo:toVCard:graph" INTEGER);
CREATE TABLE "nmo:ReportReadStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:SMSMessage" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:TransientChannel" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nmo:VOIPCall" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "nrl:InverseFunctionalProperty" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "osinfo:Installer" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "poi:ObjectOfInterest" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "rdf:Property" (ID INTEGER NOT NULL PRIMARY KEY,
"rdfs:domain" INTEGER, "rdfs:domain:graph" INTEGER, "rdfs:range"
INTEGER, "rdfs:range:graph" INTEGER, "tracker:indexed" INTEGER,
"tracker:indexed:graph" INTEGER, "tracker:secondaryIndex" INTEGER,
"tracker:secondaryIndex:graph" INTEGER, "tracker:fulltextIndexed"
INTEGER, "tracker:fulltextIndexed:graph"
INTEGER,
"tracker:fulltextNoLimit" INTEGER, "tracker:fulltextNoLimit:graph"
INTEGER, "tracker:transient" INTEGER, "tracker:transient:graph"
INTEGER, "tracker:weight" INTEGER, "tracker:weight:graph" INTEGER,
"tracker:defaultValue" TEXT COLLATE NOCASE,
"tracker:defaultValue:graph" INTEGER, "nrl:maxCardinality" INTEGER,
"nrl:maxCardinality:graph" INTEGER, "tracker:writeback" INTEGER,

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"tracker:writeback:graph" INTEGER, "tracker:forceJournal" INTEGER,
"tracker:forceJournal:graph" INTEGER);
CREATE TABLE "rdf:Property_rdfs:subPropertyOf" (ID INTEGER NOT NULL,
"rdfs:subPropertyOf" INTEGER NOT NULL, "rdfs:subPropertyOf:graph"
INTEGER);
CREATE TABLE "rdfs:Class" (ID INTEGER NOT NULL PRIMARY KEY,
"tracker:notify" INTEGER, "tracker:notify:graph" INTEGER);
CREATE TABLE "rdfs:Class_rdfs:subClassOf" (ID INTEGER NOT NULL,
"rdfs:subClassOf" INTEGER NOT NULL, "rdfs:subClassOf:graph" INTEGER);
CREATE TABLE "rdfs:Class_tracker:domainIndex" (ID INTEGER NOT NULL,
"tracker:domainIndex" INTEGER
NOT NULL, "tracker:domainIndex:graph"
INTEGER);
CREATE TABLE "rdfs:Literal" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "rdfs:Resource" (ID INTEGER NOT NULL PRIMARY KEY,
Available INTEGER NOT NULL, "rdfs:comment" TEXT COLLATE NOCASE,
"rdfs:comment:graph" INTEGER, "rdfs:label" TEXT COLLATE NOCASE,
"rdfs:label:graph" INTEGER, "tracker:added" INTEGER,
"tracker:added:graph" INTEGER, "tracker:added:localDate" INTEGER,
"tracker:added:localTime" INTEGER, "tracker:modified" INTEGER,
"tracker:modified:graph" INTEGER, "tracker:damaged" INTEGER,
"tracker:damaged:graph" INTEGER, "dc:title" TEXT COLLATE NOCASE,
"dc:title:graph" INTEGER, "dc:creator" TEXT COLLATE NOCASE,
"dc:creator:graph" INTEGER, "dc:subject" TEXT COLLATE NOCASE,
"dc:subject:graph" INTEGER, "dc:description" TEXT COLLATE NOCASE,
"dc:description:graph" INTEGER, "dc:publisher" TEXT COLLATE NOCASE,
"dc:publisher:graph" INTEGER, "dc:type" TEXT COLLATE NOCASE,
"dc:type:graph" INTEGER, "dc:format" TEXT COLLATE NOCASE,
"dc:format:graph"
INTEGER, "dc:identifier" TEXT COLLATE NOCASE,
"dc:identifier:graph" INTEGER, "dc:language" TEXT COLLATE NOCASE,
"dc:language:graph" INTEGER, "dc:coverage" TEXT COLLATE NOCASE,
"dc:coverage:graph" INTEGER, "dc:rights" TEXT COLLATE NOCASE,
"dc:rights:graph" INTEGER, "nao:identifier" TEXT COLLATE NOCASE,
"nao:identifier:graph" INTEGER, "nao:numericRating" REAL,
"nao:numericRating:graph" INTEGER, "nao:lastModified" INTEGER,
"nao:lastModified:graph" INTEGER, "nao:lastModified:localDate"
INTEGER, "nao:lastModified:localTime" INTEGER);
CREATE TABLE "rdfs:Resource_dc:contributor" (ID INTEGER NOT NULL,
"dc:contributor" TEXT NOT NULL, "dc:contributor:graph" INTEGER);
CREATE TABLE "rdfs:Resource_dc:date" (ID INTEGER NOT NULL, "dc:date"
INTEGER NOT NULL, "dc:date:graph" INTEGER, "dc:date:localDate" INTEGER
NOT NULL, "dc:date:localTime" INTEGER NOT NULL);
CREATE TABLE "rdfs:Resource_dc:relation" (ID INTEGER NOT NULL,
"dc:relation" TEXT NOT NULL, "dc:relation:graph" INTEGER);
CREATE TABLE "rdfs:Resource_dc:source"
(ID INTEGER NOT NULL,
"dc:source" INTEGER NOT NULL, "dc:source:graph" INTEGER);

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CREATE TABLE "rdfs:Resource_ao:deprecated" (ID INTEGER NOT NULL,
"ao:deprecated" INTEGER NOT NULL, "ao:deprecated:graph" INTEGER);
CREATE TABLE "rdfs:Resource_ao:hasTag" (ID INTEGER NOT NULL,
"ao:hasTag" INTEGER NOT NULL, "ao:hasTag:graph" INTEGER);
CREATE TABLE "rdfs:Resource_ao:isRelated" (ID INTEGER NOT NULL,
"ao:isRelated" INTEGER NOT NULL, "ao:isRelated:graph" INTEGER);
CREATE TABLE "rdfs:Resource_rdf:type" (ID INTEGER NOT NULL, "rdf:type"
INTEGER NOT NULL, "rdf:type:graph" INTEGER);
CREATE TABLE "scal:AccessLevel" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:AttendanceStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:Attendee" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:attendanceStatus" INTEGER, "scal:attendanceStatus:graph"
INTEGER, "scal:attendeeRole" INTEGER, "scal:attendeeRole:graph"
INTEGER, "scal:attendeeContact" INTEGER, "scal:attendeeContact:graph"
INTEGER,
"scal:rsvp" INTEGER, "scal:rsvp:graph" INTEGER,
"scal:calendarUserType" INTEGER, "scal:calendarUserType:graph"
INTEGER);
CREATE TABLE "scal:AttendeeRole" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:Attendee_scal:delegated-from" (ID INTEGER NOT NULL,
"scal:delegated-from" INTEGER NOT NULL, "scal:delegated-from:graph"
INTEGER);
CREATE TABLE "scal:Attendee_scal:delegated-to" (ID INTEGER NOT NULL,
"scal:delegated-to" INTEGER NOT NULL, "scal:delegated-to:graph"
INTEGER);
CREATE TABLE "scal:Attendee_scal:member" (ID INTEGER NOT NULL,
"scal:member" INTEGER NOT NULL, "scal:member:graph" INTEGER);
CREATE TABLE "scal:Attendee_scal:sent-by" (ID INTEGER NOT NULL,
"scal:sent-by" INTEGER NOT NULL, "scal:sent-by:graph" INTEGER);
CREATE TABLE "scal:Calendar" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:CalendarAlarm" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:alarmOffset" INTEGER, "scal:alarmOffset:graph" INTEGER);
CREATE TABLE "scal:CalendarAlarm_scal:alarmAttendee" (ID INTEGER
NOT
NULL, "scal:alarmAttendee" INTEGER NOT NULL,
"scal:alarmAttendee:graph" INTEGER);
CREATE TABLE "scal:CalendarItem" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:textLocation" INTEGER, "scal:textLocation:graph" INTEGER,
"scal:resources" TEXT COLLATE NOCASE, "scal:resources:graph" INTEGER,
"scal:transparency" INTEGER, "scal:transparency:graph" INTEGER,
"scal:calendarItemAlarm" INTEGER, "scal:calendarItemAlarm:graph"
INTEGER, "scal:start" INTEGER, "scal:start:graph" INTEGER, "scal:end"
INTEGER, "scal:end:graph" INTEGER, "scal:isAllDay" INTEGER,
"scal:isAllDay:graph" INTEGER, "scal:priority" INTEGER,
"scal:priority:graph" INTEGER, "scal:rdate" INTEGER,
"scal:rdate:graph" INTEGER, "scal:exceptionRDate" INTEGER,
"scal:exceptionRDate:graph" INTEGER);
CREATE TABLE "scal:CalendarItem_scal:access" (ID INTEGER NOT NULL,

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"scal:access" INTEGER NOT NULL, "scal:access:graph" INTEGER);
CREATE TABLE "scal:CalendarItem_scal:attachment" (ID INTEGER NOT NULL,
"scal:attachment" INTEGER NOT NULL, "scal:attachment:graph"
INTEGER);
CREATE TABLE "scal:CalendarItem_scal:attendee" (ID INTEGER NOT NULL,
"scal:attendee" INTEGER NOT NULL, "scal:attendee:graph" INTEGER);
CREATE TABLE "scal:CalendarItem_scal:belongsToCalendar" (ID INTEGER
NOT NULL, "scal:belongsToCalendar" INTEGER NOT NULL,
"scal:belongsToCalendar:graph" INTEGER);
CREATE TABLE "scal:CalendarItem_scal:contact" (ID INTEGER NOT NULL,
"scal:contact" INTEGER NOT NULL, "scal:contact:graph" INTEGER);
CREATE TABLE "scal:CalendarItem_scal:rrule" (ID INTEGER NOT NULL,
"scal:rrule" INTEGER NOT NULL, "scal:rrule:graph" INTEGER);
CREATE TABLE "scal:CalendarUserType" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:Event" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:eventStatus" INTEGER, "scal:eventStatus:graph" INTEGER);
CREATE TABLE "scal:EventStatus" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:Journal" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:journalStatus" INTEGER, "scal:journalStatus:graph" INTEGER);
CREATE TABLE "scal:JournalStatus"
(ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:RSVPValues" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "scal:RecurrenceRule" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:recurrencePattern" TEXT COLLATE NOCASE,
"scal:recurrencePattern:graph" INTEGER, "scal:recurrenceStartDate"
INTEGER, "scal:recurrenceStartDate:graph" INTEGER, "scal:exception"
INTEGER, "scal:exception:graph" INTEGER);
CREATE TABLE "scal:TimePoint" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:dateTime" INTEGER, "scal:dateTime:graph" INTEGER,
"scal:dateTime:localDate" INTEGER, "scal:dateTime:localTime" INTEGER,
"scal:TimeZone" TEXT COLLATE NOCASE, "scal:TimeZone:graph" INTEGER);
CREATE TABLE "scal:Todo" (ID INTEGER NOT NULL PRIMARY KEY,
"scal:todoStatus" INTEGER, "scal:todoStatus:graph" INTEGER, "scal:due"
INTEGER, "scal:due:graph" INTEGER, "scal:completed" INTEGER,
"scal:completed:graph" INTEGER, "scal:percentComplete" INTEGER,
"scal:percentComplete:graph" INTEGER);
CREATE TABLE "scal:TodoStatus" (ID INTEGER NOT
NULL PRIMARY KEY);
CREATE TABLE "scal:TransparencyValues" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "slo:GeoLocation" (ID INTEGER NOT NULL PRIMARY KEY,
"slo:latitude" REAL, "slo:latitude:graph" INTEGER, "slo:longitude"
REAL, "slo:longitude:graph" INTEGER, "slo:verticalAccuracy" REAL,
"slo:verticalAccuracy:graph" INTEGER, "slo:horizontalAccuracy" REAL,
"slo:horizontalAccuracy:graph" INTEGER, "slo:altitude" REAL,
"slo:altitude:graph" INTEGER, "slo:boundingLatitudeMin" REAL,
"slo:boundingLatitudeMin:graph" INTEGER, "slo:boundingLatitudeMax"
REAL, "slo:boundingLatitudeMax:graph" INTEGER,
"slo:boundingLongitudeMin" REAL, "slo:boundingLongitudeMin:graph"

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INTEGER, "slo:boundingLongitudeMax" REAL,
"slo:boundingLongitudeMax:graph" INTEGER, "slo:radius" REAL,
"slo:radius:graph" INTEGER, "slo:timestamp" INTEGER,
"slo:timestamp:graph" INTEGER, "slo:timestamp:localDate" INTEGER,
"slo:timestamp:localTime" INTEGER, "slo:postalAddress" INTEGER,
"slo:postalAddress:graph" INTEGER);
CREATE TABLE
"slo:Landmark" (ID INTEGER NOT NULL PRIMARY KEY,
"slo:iconUrl" INTEGER, "slo:iconUrl:graph" INTEGER);
CREATE TABLE "slo:LandmarkCategory" (ID INTEGER NOT NULL PRIMARY KEY,
"slo:isRemovable" INTEGER, "slo:isRemovable:graph" INTEGER,
"slo:categoryIconUrl" INTEGER, "slo:categoryIconUrl:graph" INTEGER);
CREATE TABLE "slo:Landmark_slo:belongsToCategory" (ID INTEGER NOT
NULL, "slo:belongsToCategory" INTEGER NOT NULL,
"slo:belongsToCategory:graph" INTEGER);
CREATE TABLE "slo:Landmark_slo:hasContact" (ID INTEGER NOT NULL,
"slo:hasContact" INTEGER NOT NULL, "slo:hasContact:graph" INTEGER);
CREATE TABLE "slo:Route" (ID INTEGER NOT NULL PRIMARY KEY,
"slo:startTime" INTEGER, "slo:startTime:graph" INTEGER,
"slo:startTime:localDate" INTEGER, "slo:startTime:localTime" INTEGER,
"slo:endTime" INTEGER, "slo:endTime:graph" INTEGER,
"slo:endTime:localDate" INTEGER, "slo:endTime:localTime" INTEGER);
CREATE TABLE "slo:Route_slo:routeDetails" (ID INTEGER NOT NULL,
"slo:routeDetails" TEXT NOT NULL, "slo:routeDetails:graph"
INTEGER);
CREATE TABLE "tracker:Namespace" (ID INTEGER NOT NULL PRIMARY KEY,
"tracker:prefix" TEXT COLLATE NOCASE, "tracker:prefix:graph"
INTEGER);
CREATE TABLE "tracker:Ontology" (ID INTEGER NOT NULL PRIMARY KEY);
CREATE TABLE "tracker:Volume" (ID INTEGER NOT NULL PRIMARY KEY,
"tracker:isMounted" INTEGER, "tracker:isMounted:graph" INTEGER,
"tracker:unmountDate" INTEGER, "tracker:unmountDate:graph" INTEGER,
"tracker:unmountDate:localDate" INTEGER,
"tracker:unmountDate:localTime" INTEGER, "tracker:mountPoint" INTEGER,
"tracker:mountPoint:graph" INTEGER, "tracker:isRemovable" INTEGER,
"tracker:isRemovable:graph" INTEGER, "tracker:isOptical" INTEGER,
"tracker:isOptical:graph" INTEGER);
CREATE UNIQUE INDEX "mfo:FeedMessage_mfo:enclosureList_ID_ID" ON
"mfo:FeedMessage_mfo:enclosureList" (ID, "mfo:enclosureList");
CREATE UNIQUE INDEX "mlo:GeoBoundingBox_mlo:bbNorthWest_ID_ID" ON
"mlo:GeoBoundingBox_mlo:bbNorthWest" (ID, "mlo:bbNorthWest");
CREATE UNIQUE INDEX "mlo:GeoBoundingBox_mlo:bbSouthEast_ID_ID"
ON
"mlo:GeoBoundingBox_mlo:bbSouthEast" (ID, "mlo:bbSouthEast");
CREATE INDEX "mlo:GeoLocation_mlo:asBoundingBox_ID" ON
"mlo:GeoLocation_mlo:asBoundingBox" (ID);
CREATE UNIQUE INDEX "mlo:GeoLocation_mlo:asBoundingBox_ID_ID" ON
"mlo:GeoLocation_mlo:asBoundingBox" ("mlo:asBoundingBox", ID);

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CREATE INDEX "mlo:GeoLocation_mlo:asGeoPoint_ID" ON
"mlo:GeoLocation_mlo:asGeoPoint" (ID);
CREATE UNIQUE INDEX "mlo:GeoLocation_mlo:asGeoPoint_ID_ID" ON
"mlo:GeoLocation_mlo:asGeoPoint" ("mlo:asGeoPoint", ID);
CREATE INDEX "mlo:GeoLocation_mlo:asPostalAddress_ID" ON
"mlo:GeoLocation_mlo:asPostalAddress" (ID);
CREATE UNIQUE INDEX "mlo:GeoLocation_mlo:asPostalAddress_ID_ID" ON
"mlo:GeoLocation_mlo:asPostalAddress" ("mlo:asPostalAddress", ID);
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:address_ID_ID" ON
"mlo:GeoPoint_mlo:address" (ID, "mlo:address");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:altitude_ID_ID" ON
"mlo:GeoPoint_mlo:altitude" (ID, "mlo:altitude");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:city_ID_ID"
ON
"mlo:GeoPoint_mlo:city" (ID, "mlo:city");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:country_ID_ID" ON
"mlo:GeoPoint_mlo:country" (ID, "mlo:country");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:latitude_ID_ID" ON
"mlo:GeoPoint_mlo:latitude" (ID, "mlo:latitude");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:longitude_ID_ID" ON
"mlo:GeoPoint_mlo:longitude" (ID, "mlo:longitude");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:state_ID_ID" ON
"mlo:GeoPoint_mlo:state" (ID, "mlo:state");
CREATE UNIQUE INDEX "mlo:GeoPoint_mlo:timestamp_ID_ID" ON
"mlo:GeoPoint_mlo:timestamp" (ID, "mlo:timestamp");
CREATE UNIQUE INDEX "mlo:GeoSphere_mlo:radius_ID_ID" ON
"mlo:GeoSphere_mlo:radius" (ID, "mlo:radius");
CREATE UNIQUE INDEX "mlo:LandmarkCategory_mlo:isRemovable_ID_ID" ON
"mlo:LandmarkCategory_mlo:isRemovable" (ID, "mlo:isRemovable");
CREATE UNIQUE INDEX "mlo:Landmark_mlo:belongsToCategory_ID_ID" ON
"mlo:Landmark_mlo:belongsToCategory" (ID, "mlo:belongsToCategory");
CREATE UNIQUE INDEX "mlo:Landmark_mlo:poiLocation_ID_ID"
ON
"mlo:Landmark_mlo:poiLocation" (ID, "mlo:poiLocation");
CREATE UNIQUE INDEX "mlo:LocationBoundingBox_mlo:boxEastLimit_ID_ID"
ON "mlo:LocationBoundingBox_mlo:boxEastLimit" (ID,
"mlo:boxEastLimit");
CREATE UNIQUE INDEX "mlo:LocationBoundingBox_mlo:boxNorthLimit_ID_ID"
ON "mlo:LocationBoundingBox_mlo:boxNorthLimit" (ID,
"mlo:boxNorthLimit");
CREATE UNIQUE INDEX
"mlo:LocationBoundingBox_mlo:boxSouthWestCorner_ID_ID" ON
"mlo:LocationBoundingBox_mlo:boxSouthWestCorner" (ID,
"mlo:boxSouthWestCorner");
CREATE UNIQUE INDEX
"mlo:LocationBoundingBox_mlo:boxVerticalLimit_ID_ID" ON
"mlo:LocationBoundingBox_mlo:boxVerticalLimit" (ID,
"mlo:boxVerticalLimit");

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CREATE UNIQUE INDEX "mlo:Route_mlo:endTime_ID_ID" ON
"mlo:Route_mlo:endTime" (ID, "mlo:endTime");
CREATE UNIQUE INDEX "mlo:Route_mlo:routeDetails_ID_ID" ON
"mlo:Route_mlo:routeDetails" (ID, "mlo:routeDetails");
CREATE UNIQUE INDEX "mlo:Route_mlo:startTime_ID_ID" ON
"mlo:Route_mlo:startTime" (ID, "mlo:startTime");
CREATE
UNIQUE INDEX "mto:Transfer_mto:transferList_ID_ID" ON
"mto:Transfer_mto:transferList" (ID, "mto:transferList");
CREATE UNIQUE INDEX "mto:Transfer_mto:transferPrivacyLevel_ID_ID" ON
"mto:Transfer_mto:transferPrivacyLevel" (ID,
"mto:transferPrivacyLevel");
CREATE UNIQUE INDEX "mto:UploadTransfer_mto:transferCategory_ID_ID" ON
"mto:UploadTransfer_mto:transferCategory" (ID,
"mto:transferCategory");
CREATE UNIQUE INDEX "nao:Tag_tracker:isDefaultTag_ID_ID" ON
"nao:Tag_tracker:isDefaultTag" (ID, "tracker:isDefaultTag");
CREATE UNIQUE INDEX "nao:Tag_tracker:tagRelatedTo_ID_ID" ON
"nao:Tag_tracker:tagRelatedTo" (ID, "tracker:tagRelatedTo");
CREATE UNIQUE INDEX "ncal:Alarm_ncal:action_ID_ID" ON
"ncal:Alarm_ncal:action" (ID, "ncal:action");
CREATE UNIQUE INDEX "ncal:BydayRulePart_ncal:bydayModifier_ID_ID" ON
"ncal:BydayRulePart_ncal:bydayModifier" (ID, "ncal:bydayModifier");
CREATE UNIQUE INDEX "ncal:BydayRulePart_ncal:bydayWeekday_ID_ID" ON
"ncal:BydayRulePart_ncal:bydayWeekday" (ID, "ncal:bydayWeekday");
CREATE
UNIQUE INDEX "ncal:Calendar_ncal:component_ID_ID" ON
"ncal:Calendar_ncal:component" (ID, "ncal:component");
CREATE UNIQUE INDEX "ncal:Freebusy_ncal:freebusy_ID_ID" ON
"ncal:Freebusy_ncal:freebusy" (ID, "ncal:freebusy");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:byday_ID_ID" ON
"ncal:RecurrenceRule_ncal:byday" (ID, "ncal:byday");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:byhour_ID_ID" ON
"ncal:RecurrenceRule_ncal:byhour" (ID, "ncal:byhour");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:byminute_ID_ID" ON
"ncal:RecurrenceRule_ncal:byminute" (ID, "ncal:byminute");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:bymonth_ID_ID" ON
"ncal:RecurrenceRule_ncal:bymonth" (ID, "ncal:bymonth");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:bymonthday_ID_ID" ON
"ncal:RecurrenceRule_ncal:bymonthday" (ID, "ncal:bymonthday");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:bysecond_ID_ID" ON
"ncal:RecurrenceRule_ncal:bysecond" (ID, "ncal:bysecond");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:bysetpos_ID_ID"
ON
"ncal:RecurrenceRule_ncal:bysetpos" (ID, "ncal:bysetpos");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:byweekno_ID_ID" ON
"ncal:RecurrenceRule_ncal:byweekno" (ID, "ncal:byweekno");
CREATE UNIQUE INDEX "ncal:RecurrenceRule_ncal:byyearday_ID_ID" ON

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"ncal:RecurrenceRule_ncal:byyearday" (ID, "ncal:byyearday");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:attach_ID_ID" ON
"ncal:UnionParentClass_ncal:attach" (ID, "ncal:attach");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:attendee_ID_ID" ON
"ncal:UnionParentClass_ncal:attendee" (ID, "ncal:attendee");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:categories_ID_ID" ON
"ncal:UnionParentClass_ncal:categories" (ID, "ncal:categories");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:exdate_ID_ID" ON
"ncal:UnionParentClass_ncal:exdate" (ID, "ncal:exdate");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:exrule_ID_ID" ON
"ncal:UnionParentClass_ncal:exrule" (ID, "ncal:exrule");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:hasAlarm_ID_ID"
ON
"ncal:UnionParentClass_ncal:hasAlarm" (ID, "ncal:hasAlarm");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:ncalRelation_ID_ID" ON
"ncal:UnionParentClass_ncal:ncalRelation" (ID, "ncal:ncalRelation");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:rdate_ID_ID" ON
"ncal:UnionParentClass_ncal:rdate" (ID, "ncal:rdate");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:relatedToChild_ID_ID"
ON "ncal:UnionParentClass_ncal:relatedToChild" (ID,
"ncal:relatedToChild");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:relatedToParent_ID_ID"
ON "ncal:UnionParentClass_ncal:relatedToParent" (ID,
"ncal:relatedToParent");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:resources_ID_ID" ON
"ncal:UnionParentClass_ncal:resources" (ID, "ncal:resources");
CREATE UNIQUE INDEX "ncal:UnionParentClass_ncal:rrule_ID_ID" ON
"ncal:UnionParentClass_ncal:rrule" (ID, "ncal:rrule");
CREATE UNIQUE INDEX "nco:Affiliation_nco:title_ID_ID" ON
"nco:Affiliation_nco:title" (ID, "nco:title");
CREATE
UNIQUE INDEX "nco:ContactList_nco:containsContact_ID_ID" ON
"nco:ContactList_nco:containsContact" (ID, "nco:containsContact");
CREATE UNIQUE INDEX "nco:Contact_ncal:anniversary_ID_ID" ON
"nco:Contact_ncal:anniversary" (ID, "ncal:anniversary");
CREATE UNIQUE INDEX "nco:Contact_ncal:birthday_ID_ID" ON
"nco:Contact_ncal:birthday" (ID, "ncal:birthday");
CREATE UNIQUE INDEX "nco:Contact_nco:belongsToGroup_ID_ID" ON
"nco:Contact_nco:belongsToGroup" (ID, "nco:belongsToGroup");
CREATE UNIQUE INDEX "nco:Contact_nco:note_ID_ID" ON
"nco:Contact_nco:note" (ID, "nco:note");
CREATE UNIQUE INDEX "nco:Contact_scal:anniversary_ID_ID" ON
"nco:Contact_scal:anniversary" (ID, "scal:anniversary");
CREATE UNIQUE INDEX "nco:Contact_scal:birthday_ID_ID" ON
"nco:Contact_scal:birthday" (ID, "scal:birthday");
CREATE UNIQUE INDEX "nco:IMAccount_nco:hasIMContact_ID_ID" ON
"nco:IMAccount_nco:hasIMContact" (ID, "nco:hasIMContact");
CREATE UNIQUE INDEX "nco:IMAddress_nco:imCapability_ID_ID" ON

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"nco:IMAddress_nco:imCapability"
(ID, "nco:imCapability");
CREATE UNIQUE INDEX "nco:PersonContact_nco:hasAffiliation_ID_ID" ON
"nco:PersonContact_nco:hasAffiliation" (ID, "nco:hasAffiliation");
CREATE INDEX "nco:PersonContact_nco:nameFamily" ON "nco:PersonContact"
("nco:nameFamily");
CREATE INDEX "nco:PhoneNumber_nco:phoneNumber" ON "nco:PhoneNumber"
("nco:phoneNumber");
CREATE UNIQUE INDEX "nco:Role_nco:blogUrl_ID_ID" ON
"nco:Role_nco:blogUrl" (ID, "nco:blogUrl");
CREATE UNIQUE INDEX "nco:Role_nco:foafUrl_ID_ID" ON
"nco:Role_nco:foafUrl" (ID, "nco:foafUrl");
CREATE UNIQUE INDEX "nco:Role_nco:hasContactMedium_ID_ID" ON
"nco:Role_nco:hasContactMedium" (ID, "nco:hasContactMedium");
CREATE INDEX "nco:Role_nco:hasEmailAddress_ID" ON
"nco:Role_nco:hasEmailAddress" (ID);
CREATE UNIQUE INDEX "nco:Role_nco:hasEmailAddress_ID_ID" ON
"nco:Role_nco:hasEmailAddress" ("nco:hasEmailAddress", ID);
CREATE UNIQUE INDEX "nco:Role_nco:hasIMAddress_ID_ID" ON
"nco:Role_nco:hasIMAddress" (ID, "nco:hasIMAddress");
CREATE
UNIQUE INDEX "nco:Role_nco:hasPhoneNumber_ID_ID" ON
"nco:Role_nco:hasPhoneNumber" (ID, "nco:hasPhoneNumber");
CREATE INDEX "nco:Role_nco:hasPostalAddress_ID" ON
"nco:Role_nco:hasPostalAddress" (ID);
CREATE UNIQUE INDEX "nco:Role_nco:hasPostalAddress_ID_ID" ON
"nco:Role_nco:hasPostalAddress" ("nco:hasPostalAddress", ID);
CREATE UNIQUE INDEX "nco:Role_nco:url_ID_ID" ON "nco:Role_nco:url"
(ID, "nco:url");
CREATE UNIQUE INDEX "nco:Role_nco:websiteUrl_ID_ID" ON
"nco:Role_nco:websiteUrl" (ID, "nco:websiteUrl");
CREATE UNIQUE INDEX
"nfo:BookmarkFolder_nfo:containsBookmarkFolder_ID_ID" ON
"nfo:BookmarkFolder_nfo:containsBookmarkFolder" (ID,
"nfo:containsBookmarkFolder");
CREATE UNIQUE INDEX "nfo:BookmarkFolder_nfo:containsBookmark_ID_ID" ON
"nfo:BookmarkFolder_nfo:containsBookmark" (ID,
"nfo:containsBookmark");
CREATE INDEX "nfo:FileDataObject_nfo:fileLastModified" ON
"nfo:FileDataObject" ("nfo:fileLastModified");
CREATE UNIQUE INDEX "nfo:Image_nfo:depicts_ID_ID" ON
"nfo:Image_nfo:depicts"
(ID, "nfo:depicts");
CREATE UNIQUE INDEX "nfo:Image_nfo:hasRegionOfInterest_ID_ID" ON
"nfo:Image_nfo:hasRegionOfInterest" (ID, "nfo:hasRegionOfInterest");
CREATE UNIQUE INDEX "nfo:MediaList_nfo:hasMediaFileListEntry_ID_ID" ON
"nfo:MediaList_nfo:hasMediaFileListEntry" (ID,
"nfo:hasMediaFileListEntry");

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CREATE UNIQUE INDEX "nfo:MediaList_nfo:mediaListEntry_ID_ID" ON
"nfo:MediaList_nfo:mediaListEntry" (ID, "nfo:mediaListEntry");
CREATE UNIQUE INDEX "nfo:Media_mtp:hidden_ID_ID" ON
"nfo:Media_mtp:hidden" (ID, "mtp:hidden");
CREATE UNIQUE INDEX "nfo:Media_nmm:alternativeMedia_ID_ID" ON
"nfo:Media_nmm:alternativeMedia" (ID, "nmm:alternativeMedia");
CREATE INDEX "nfo:Visual_nie:contentCreated" ON "nfo:Visual"
("nie:contentCreated");
CREATE UNIQUE INDEX "nid3:ID3Audio_nid3:leadArtist_ID_ID" ON
"nid3:ID3Audio_nid3:leadArtist" (ID, "nid3:leadArtist");
CREATE UNIQUE INDEX "nie:DataObject_nie:dataSource_ID_ID" ON
"nie:DataObject_nie:dataSource" (ID, "nie:dataSource");
CREATE UNIQUE INDEX "nie:DataObject_nie:isPartOf_ID_ID"
ON
"nie:DataObject_nie:isPartOf" (ID, "nie:isPartOf");
CREATE INDEX "nie:DataObject_nie:url" ON "nie:DataObject" ("nie:url");
CREATE INDEX "nie:InformationElement_mlo:location_ID" ON
"nie:InformationElement_mlo:location" (ID);
CREATE UNIQUE INDEX "nie:InformationElement_mlo:location_ID_ID" ON
"nie:InformationElement_mlo:location" ("mlo:location", ID);
CREATE UNIQUE INDEX "nie:InformationElement_nao:hasProperty_ID_ID" ON
"nie:InformationElement_nao:hasProperty" (ID, "nao:hasProperty");
CREATE UNIQUE INDEX "nie:InformationElement_nco:contributor_ID_ID" ON
"nie:InformationElement_nco:contributor" (ID, "nco:contributor");
CREATE UNIQUE INDEX "nie:InformationElement_nco:creator_ID_ID" ON
"nie:InformationElement_nco:creator" (ID, "nco:creator");
CREATE UNIQUE INDEX "nie:InformationElement_nie:hasLogicalPart_ID_ID"
ON "nie:InformationElement_nie:hasLogicalPart" (ID,
"nie:hasLogicalPart");
CREATE UNIQUE INDEX "nie:InformationElement_nie:hasPart_ID_ID" ON
"nie:InformationElement_nie:hasPart"
(ID, "nie:hasPart");
CREATE UNIQUE INDEX
"nie:InformationElement_nie:informationElementDate_ID_ID" ON
"nie:InformationElement_nie:informationElementDate" (ID,
"nie:informationElementDate");
CREATE UNIQUE INDEX "nie:InformationElement_nie:isLogicalPartOf_ID_ID"
ON "nie:InformationElement_nie:isLogicalPartOf" (ID,
"nie:isLogicalPartOf");
CREATE UNIQUE INDEX "nie:InformationElement_nie:keyword_ID_ID" ON
"nie:InformationElement_nie:keyword" (ID, "nie:keyword");
CREATE UNIQUE INDEX "nie:InformationElement_nie:relatedTo_ID_ID" ON
"nie:InformationElement_nie:relatedTo" (ID, "nie:relatedTo");
CREATE INDEX "nie:InformationElement_slo:location" ON
"nie:InformationElement" ("slo:location");
CREATE INDEX "nmm:Artist_nmm:artistName" ON "nmm:Artist" ("nmm:artistName");
CREATE INDEX "nmm:MusicAlbum_nie:title" ON "nmm:MusicAlbum" ("nie:title");
CREATE UNIQUE INDEX "nmm:MusicAlbum_nmm:albumArtist_ID_ID" ON

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"nmm:MusicAlbum_nmm:albumArtist" (ID, "nmm:albumArtist");
CREATE INDEX
"nmm:MusicPiece_nie:title" ON "nmm:MusicPiece" ("nie:title");
CREATE UNIQUE INDEX "nmm:MusicPiece_nmm:lyrics_ID_ID" ON
"nmm:MusicPiece_nmm:lyrics" (ID, "nmm:lyrics");
CREATE INDEX "nmm:MusicPiece_nmm:musicAlbum" ON "nmm:MusicPiece"
("nmm:musicAlbum");
CREATE INDEX "nmm:MusicPiece_nmm:performer" ON "nmm:MusicPiece"
("nmm:performer");
CREATE UNIQUE INDEX "nmm:RadioStation_nmm:carrier_ID_ID" ON
"nmm:RadioStation_nmm:carrier" (ID, "nmm:carrier");
CREATE UNIQUE INDEX "nmm:Video_mtp:scantype_ID_ID" ON
"nmm:Video_mtp:scantype" (ID, "mtp:scantype");
CREATE UNIQUE INDEX "nmm:Video_nmm:director_ID_ID" ON
"nmm:Video_nmm:director" (ID, "nmm:director");
CREATE UNIQUE INDEX "nmm:Video_nmm:leadActor_ID_ID" ON
"nmm:Video_nmm:leadActor" (ID, "nmm:leadActor");
CREATE UNIQUE INDEX "nmm:Video_nmm:subtitle_ID_ID" ON
"nmm:Video_nmm:subtitle" (ID, "nmm:subtitle");
CREATE INDEX "nmo:Call_nmo:sentDate" ON "nmo:Call" ("nmo:sentDate");
CREATE INDEX "nmo:CommunicationChannel_nmo:hasParticipant_ID" ON
"nmo:CommunicationChannel_nmo:hasParticipant"
(ID);
CREATE UNIQUE INDEX
"nmo:CommunicationChannel_nmo:hasParticipant_ID_ID" ON
"nmo:CommunicationChannel_nmo:hasParticipant" ("nmo:hasParticipant",
ID);
CREATE INDEX "nmo:CommunicationChannel_nmo:lastMessageDate" ON
"nmo:CommunicationChannel" ("nmo:lastMessageDate");
CREATE UNIQUE INDEX "nmo:Email_nmo:contentMimeType_ID_ID" ON
"nmo:Email_nmo:contentMimeType" (ID, "nmo:contentMimeType");
CREATE UNIQUE INDEX "nmo:Message_nmo:bcc_ID_ID" ON
"nmo:Message_nmo:bcc" (ID, "nmo:bcc");
CREATE UNIQUE INDEX "nmo:Message_nmo:cc_ID_ID" ON "nmo:Message_nmo:cc"
(ID, "nmo:cc");
CREATE INDEX "nmo:Message_nmo:communicationChannel" ON "nmo:Message"
("nmo:communicationChannel", "nmo:receivedDate");
CREATE INDEX "nmo:Message_nmo:conversation" ON "nmo:Message"
("nmo:conversation");
CREATE INDEX "nmo:Message_nmo:from" ON "nmo:Message" ("nmo:from");
CREATE UNIQUE INDEX "nmo:Message_nmo:hasAttachment_ID_ID" ON
"nmo:Message_nmo:hasAttachment" (ID, "nmo:hasAttachment");
CREATE
UNIQUE INDEX "nmo:Message_nmo:inReplyTo_ID_ID" ON
"nmo:Message_nmo:inReplyTo" (ID, "nmo:inReplyTo");
CREATE UNIQUE INDEX "nmo:Message_nmo:messageHeader_ID_ID" ON
"nmo:Message_nmo:messageHeader" (ID, "nmo:messageHeader");
CREATE UNIQUE INDEX "nmo:Message_nmo:recipient_ID_ID" ON

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"nmo:Message_nmo:recipient" (ID, "nmo:recipient");
CREATE UNIQUE INDEX "nmo:Message_nmo:references_ID_ID" ON
"nmo:Message_nmo:references" (ID, "nmo:references");
CREATE INDEX "nmo:Message_nmo:sender" ON "nmo:Message" ("nmo:sender");
CREATE INDEX "nmo:Message_nmo:sentDate" ON "nmo:Message" ("nmo:sentDate");
CREATE INDEX "nmo:Message_nmo:to_ID" ON "nmo:Message_nmo:to" (ID);
CREATE UNIQUE INDEX "nmo:Message_nmo:to_ID_ID" ON "nmo:Message_nmo:to"
("nmo:to", ID);
CREATE UNIQUE INDEX "nmo:MimePart_nmo:mimeHeader_ID_ID" ON
"nmo:MimePart_nmo:mimeHeader" (ID, "nmo:mimeHeader");
CREATE UNIQUE INDEX "nmo:Multipart_nmo:partBoundary_ID_ID" ON
"nmo:Multipart_nmo:partBoundary" (ID, "nmo:partBoundary");
CREATE UNIQUE INDEX
"nmo:PhoneMessageFolder_nmo:containsPhoneMessageFolder_ID_ID"
ON
"nmo:PhoneMessageFolder_nmo:containsPhoneMessageFolder" (ID,
"nmo:containsPhoneMessageFolder");
CREATE UNIQUE INDEX
"nmo:PhoneMessageFolder_nmo:containsPhoneMessage_ID_ID" ON
"nmo:PhoneMessageFolder_nmo:containsPhoneMessage" (ID,
"nmo:containsPhoneMessage");
CREATE UNIQUE INDEX "nmo:PhoneMessage_nmo:toVCard_ID_ID" ON
"nmo:PhoneMessage_nmo:toVCard" (ID, "nmo:toVCard");
CREATE UNIQUE INDEX "rdf:Property_rdfs:subPropertyOf_ID_ID" ON
"rdf:Property_rdfs:subPropertyOf" (ID, "rdfs:subPropertyOf");
CREATE UNIQUE INDEX "rdfs:Class_rdfs:subClassOf_ID_ID" ON
"rdfs:Class_rdfs:subClassOf" (ID, "rdfs:subClassOf");
CREATE UNIQUE INDEX "rdfs:Class_tracker:domainIndex_ID_ID" ON
"rdfs:Class_tracker:domainIndex" (ID, "tracker:domainIndex");
CREATE UNIQUE INDEX "rdfs:Resource_dc:contributor_ID_ID" ON
"rdfs:Resource_dc:contributor" (ID, "dc:contributor");
CREATE UNIQUE INDEX "rdfs:Resource_dc:date_ID_ID" ON
"rdfs:Resource_dc:date" (ID, "dc:date");
CREATE
UNIQUE INDEX "rdfs:Resource_dc:relation_ID_ID" ON
"rdfs:Resource_dc:relation" (ID, "dc:relation");
CREATE UNIQUE INDEX "rdfs:Resource_dc:source_ID_ID" ON
"rdfs:Resource_dc:source" (ID, "dc:source");
CREATE UNIQUE INDEX "rdfs:Resource_nao:deprecated_ID_ID" ON
"rdfs:Resource_nao:deprecated" (ID, "nao:deprecated");
CREATE INDEX "rdfs:Resource_nao:hasTag_ID_ID" ON "rdfs:Resource_nao:hasTag" (ID);
CREATE UNIQUE INDEX "rdfs:Resource_nao:hasTag_ID_ID" ON
"rdfs:Resource_nao:hasTag" ("nao:hasTag", ID);
CREATE UNIQUE INDEX "rdfs:Resource_nao:isRelated_ID_ID" ON
"rdfs:Resource_nao:isRelated" (ID, "nao:isRelated");
CREATE UNIQUE INDEX "rdfs:Resource_rdf:type_ID_ID" ON
"rdfs:Resource_rdf:type" (ID, "rdf:type");
CREATE INDEX "rdfs:Resource_tracker:added" ON "rdfs:Resource" ("tracker:added");

```

```

CREATE UNIQUE INDEX "scal:Attendee_scal:delegated-from_ID_ID" ON
"scal:Attendee_scal:delegated-from" (ID, "scal:delegated-from");
CREATE UNIQUE INDEX "scal:Attendee_scal:delegated-to_ID_ID" ON
"scal:Attendee_scal:delegated-to"
(ID, "scal:delegated-to");
CREATE UNIQUE INDEX "scal:Attendee_scal:member_ID_ID" ON
"scal:Attendee_scal:member" (ID, "scal:member");
CREATE UNIQUE INDEX "scal:Attendee_scal:sent-by_ID_ID" ON
"scal:Attendee_scal:sent-by" (ID, "scal:sent-by");
CREATE UNIQUE INDEX "scal:CalendarAlarm_scal:alarmAttendee_ID_ID" ON
"scal:CalendarAlarm_scal:alarmAttendee" (ID, "scal:alarmAttendee");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:access_ID_ID" ON
"scal:CalendarItem_scal:access" (ID, "scal:access");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:attachment_ID_ID" ON
"scal:CalendarItem_scal:attachment" (ID, "scal:attachment");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:attendee_ID_ID" ON
"scal:CalendarItem_scal:attendee" (ID, "scal:attendee");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:belongsToCalendar_ID_ID"
ON "scal:CalendarItem_scal:belongsToCalendar" (ID,
"scal:belongsToCalendar");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:contact_ID_ID" ON
"scal:CalendarItem_scal:contact"
(ID, "scal:contact");
CREATE UNIQUE INDEX "scal:CalendarItem_scal:rrule_ID_ID" ON
"scal:CalendarItem_scal:rrule" (ID, "scal:rrule");
CREATE INDEX "slo:GeoLocation_slo:postalAddress" ON "slo:GeoLocation"
("slo:postalAddress");
CREATE UNIQUE INDEX "slo:Landmark_slo:belongsToCategory_ID_ID" ON
"slo:Landmark_slo:belongsToCategory" (ID, "slo:belongsToCategory");
CREATE UNIQUE INDEX "slo:Landmark_slo:hasContact_ID_ID" ON
"slo:Landmark_slo:hasContact" (ID, "slo:hasContact");
CREATE UNIQUE INDEX "slo:Route_slo:routeDetails_ID_ID" ON
"slo:Route_slo:routeDetails" (ID, "slo:routeDetails");

```

```

EXPLAIN SELECT "1_u", (SELECT "nco:fullname" FROM "nco:Contact" WHERE
ID = "1_u") COLLATE NOCASE, (SELECT "nco:nameFamily" FROM
"nco:PersonContact" WHERE ID = "1_u") COLLATE NOCASE, (SELECT
"nco:nameGiven" FROM "nco:PersonContact" WHERE ID = "1_u")
COLLATE NOCASE, (SELECT "nco:nameAdditional" FROM
"nco:PersonContact" WHERE ID = "1_u") COLLATE NOCASE, (SELECT
"nco:nameHonorificPrefix" FROM "nco:PersonContact"
WHERE ID =
"1_u") COLLATE NOCASE, (SELECT "nco:nameHonorificSuffix" FROM
"nco:PersonContact" WHERE ID = "1_u") COLLATE NOCASE, (SELECT
"nco:nickname" FROM "nco:Contact" WHERE ID = "1_u") COLLATE
NOCASE, strftime("%s", (SELECT "nco:birthDate" FROM
"nco:Contact" WHERE ID = "1_u")), (SELECT "nie:url" FROM
"nie:DataObject" WHERE ID = (SELECT "nco:photo" FROM

```

```

"nco:Contact" WHERE ID = "1_u")) COLLATE NOCASE, (SELECT
GROUP_CONCAT("2_u"||? COLLATE NOCASE||COALESCE((SELECT
"nco:imProtocol" FROM "nco:IMAddress" WHERE ID = "3_u") COLLATE
NOCASE, ? COLLATE NOCASE)||? COLLATE NOCASE||COALESCE((SELECT
"nco:imID" FROM "nco:IMAddress" WHERE ID = "3_u") COLLATE
NOCASE, ? COLLATE NOCASE)||? COLLATE NOCASE||COALESCE((SELECT
"nco:imNickname" FROM "nco:IMAddress" WHERE ID = "3_u") COLLATE
NOCASE, ? COLLATE NOCASE), '\n') FROM (SELECT
"nco:PersonContact_nco:hasAffiliation2"."nco:hasAffiliation" AS
"2_u", "nco:Role_nco:hasIMAddress3"."nco:hasIMAddress" AS
"3_u" FROM "nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation2",
"nco:Role_nco:hasIMAddress"
AS "nco:Role_nco:hasIMAddress3" WHERE
"1_u" = "nco:PersonContact_nco:hasAffiliation2"."ID" AND
"nco:PersonContact_nco:hasAffiliation2"."nco:hasAffiliation" =
"nco:Role_nco:hasIMAddress3"."ID"), (SELECT
GROUP_CONCAT("2_u"||? COLLATE NOCASE||(SELECT "nco:phoneNumber"
FROM "nco:PhoneNumber" WHERE ID = "4_u") COLLATE NOCASE, '\n')
FROM (SELECT "nco:PersonContact_nco:hasAffiliation4"."nco:hasAffiliation"
AS "2_u", "nco:Role_nco:hasPhoneNumber5"."nco:hasPhoneNumber" AS
"4_u" FROM "nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation4",
"nco:Role_nco:hasPhoneNumber" AS "nco:Role_nco:hasPhoneNumber5"
WHERE "1_u" = "nco:PersonContact_nco:hasAffiliation4"."ID" AND
"nco:PersonContact_nco:hasAffiliation4"."nco:hasAffiliation" =
"nco:Role_nco:hasPhoneNumber5"."ID"), (SELECT
GROUP_CONCAT("2_u"||? COLLATE NOCASE||(SELECT "nco:emailAddress"
FROM "nco:EmailAddress" WHERE ID = "5_u") COLLATE NOCASE, ',')
FROM
(SELECT "nco:PersonContact_nco:hasAffiliation6"."nco:hasAffiliation"
AS "2_u", "nco:Role_nco:hasEmailAddress7"."nco:hasEmailAddress"
AS "5_u" FROM "nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation6",
"nco:Role_nco:hasEmailAddress" AS "nco:Role_nco:hasEmailAddress7"
WHERE "1_u" = "nco:PersonContact_nco:hasAffiliation6"."ID" AND
"nco:PersonContact_nco:hasAffiliation6"."nco:hasAffiliation" =
"nco:Role_nco:hasEmailAddress7"."ID"), (SELECT
GROUP_CONCAT("2_u"||? COLLATE NOCASE||COALESCE((SELECT
GROUP_CONCAT((SELECT Uri FROM Resource WHERE ID =
"nco:blogUrl"),',') FROM "nco:Role_nco:blogUrl" WHERE ID =
"2_u"), ? COLLATE NOCASE)||? COLLATE NOCASE||COALESCE((SELECT
GROUP_CONCAT((SELECT Uri FROM Resource WHERE ID =
"nco:websiteUrl"),',') FROM "nco:Role_nco:websiteUrl" WHERE ID =
"2_u"), ? COLLATE NOCASE)||? COLLATE NOCASE||COALESCE((SELECT
GROUP_CONCAT((SELECT Uri FROM Resource WHERE ID = "nco:url"),',')
FROM "nco:Role_nco:url" WHERE ID = "2_u"), ? COLLATE NOCASE),
\n')

```

```

FROM (SELECT
"nco:PersonContact_nco:hasAffiliation8"."nco:hasAffiliation" AS
"2_u" FROM "nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation8" WHERE "1_u" =
"nco:PersonContact_nco:hasAffiliation8"."ID"), (SELECT
GROUP_CONCAT("6_u", ',') FROM (SELECT
"rdfs:Resource_nao:hasTag9"."nao:hasTag" AS "6_u" FROM
"rdfs:Resource_nao:hasTag" AS "rdfs:Resource_nao:hasTag9" WHERE
"1_u" = "rdfs:Resource_nao:hasTag9"."ID"), (SELECT Uri FROM
Resource WHERE ID = "1_u"), (SELECT GROUP_CONCAT("2_u"||? COLLATE
NOCASE||COALESCE((SELECT "nco:role" FROM "nco:Affiliation" WHERE
ID = "2_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT "nco:department" FROM "nco:Affiliation"
WHERE ID = "2_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT GROUP_CONCAT("nco:title",',') FROM
"nco:Affiliation_nco:title" WHERE ID = "2_u"), ? COLLATE NOCASE),
\n') FROM (SELECT
"nco:PersonContact_nco:hasAffiliation10"."nco:hasAffiliation" AS
"2_u" FROM
"nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation10" WHERE "1_u" =
"nco:PersonContact_nco:hasAffiliation10"."ID"), (SELECT
GROUP_CONCAT("nco:note",',') FROM "nco:Contact_nco:note" WHERE ID
= "1_u"), (SELECT "nco:gender" FROM "nco:PersonContact" WHERE ID
= "1_u"), (SELECT GROUP_CONCAT("2_u"||? COLLATE
NOCASE||COALESCE((SELECT "nco:pobox" FROM "nco:PostalAddress"
WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT "nco:district" FROM "nco:PostalAddress"
WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT "nco:county" FROM "nco:PostalAddress"
WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT "nco:locality" FROM "nco:PostalAddress"
WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE NOCASE)||? COLLATE
NOCASE||COALESCE((SELECT "nco:postalcode" FROM
"nco:PostalAddress" WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE
NOCASE)||? COLLATE NOCASE||COALESCE((SELECT "nco:streetAddress"
FROM
"nco:PostalAddress" WHERE ID = "7_u") COLLATE NOCASE, ?
COLLATE NOCASE)||? COLLATE NOCASE||COALESCE((SELECT Uri FROM
Resource WHERE ID = (SELECT "nco:addressLocation" FROM
"nco:PostalAddress" WHERE ID = "7_u")), ? COLLATE NOCASE)||?
COLLATE NOCASE||COALESCE((SELECT "nco:extendedAddress" FROM
"nco:PostalAddress" WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE
NOCASE)||? COLLATE NOCASE||COALESCE((SELECT "nco:country" FROM
"nco:PostalAddress" WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE
NOCASE)||? COLLATE NOCASE||COALESCE((SELECT "nco:region" FROM
"nco:PostalAddress" WHERE ID = "7_u") COLLATE NOCASE, ? COLLATE
NOCASE), \n') FROM (SELECT

```

```

"nco:PersonContact_nco:hasAffiliation11"."nco:hasAffiliation" AS
"2_u", "nco:Role_nco:hasPostalAddress12"."nco:hasPostalAddress"
AS "7_u" FROM "nco:PersonContact_nco:hasAffiliation" AS
"nco:PersonContact_nco:hasAffiliation11",
"nco:Role_nco:hasPostalAddress" AS
"nco:Role_nco:hasPostalAddress12" WHERE "1_u" =
"nco:PersonContact_nco:hasAffiliation11"."ID"
AND
"nco:PersonContact_nco:hasAffiliation11"."nco:hasAffiliation" =
"nco:Role_nco:hasPostalAddress12"."ID"), (SELECT
GROUP_CONCAT("10_u" COLLATE NOCASE, ',') FROM (SELECT
"nie:InformationElement_nao:hasProperty13"."nao:hasProperty" AS
"8_u", "nao:Property14"."nao:propertyName" AS "9_u",
"nao:Property14"."nao:propertyValue" AS "10_u" FROM
"nie:InformationElement_nao:hasProperty" AS
"nie:InformationElement_nao:hasProperty13", "nao:Property" AS
"nao:Property14" WHERE "1_u" =
"nie:InformationElement_nao:hasProperty13"."ID" AND
"nie:InformationElement_nao:hasProperty13"."nao:hasProperty" =
"nao:Property14"."ID" AND "9_u" IS NOT NULL AND "10_u" IS NOT
NULL AND ("9_u" COLLATE NOCASE = ? COLLATE NOCASE))) FROM (SELECT
"nco:PersonContact1"."ID" AS "1_u" FROM "nco:PersonContact" AS
"nco:PersonContact1") ORDER BY "1_u";
}
} {/. * Goto .*/}

```

finish_test

Found in path(s):

```

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rIW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/fuzz-oss1.test

```

No license file was found, but licenses were detected in source scan.

2.31 0

1.23 0

1.0 0

Found in path(s):

```

* %%Version

```

No license file was found, but licenses were detected in source scan.

```

# 2001 September 15

```

```

#

```

```

# The author disclaims copyright to this source code. In place of

```

```

# a legal notice, here is a blessing:

```

```

#

```

```

# May you do good and not evil.

```

```

# May you find forgiveness for yourself and forgive others.
# May you share freely, never taking more than you give.
#
#*****
# This file implements regression tests for SQLite library. The
# focus of this file is testing built-in functions.
#

set testdir [file dirname $argv0]
source $testdir/tester.tcl

# Create a table to work with.
#
do_test func-0.0 {
execsql {CREATE TABLE tbl1(t1 text)}
foreach word {this program is free software} {
  execsql "INSERT INTO tbl1 VALUES('$word')"
}
execsql {SELECT t1 FROM tbl1 ORDER BY t1}
} {free is program software this}
do_test func-0.1 {
execsql {
  CREATE TABLE t2(a);
  INSERT INTO t2 VALUES(1);
  INSERT INTO t2 VALUES(NULL);
  INSERT INTO t2 VALUES(345);
  INSERT INTO t2 VALUES(NULL);
  INSERT INTO t2 VALUES(67890);
  SELECT * FROM t2;
}
} {1 {} 345 {} 67890}

# Check out the length() function
#
do_test func-1.0 {
execsql {SELECT length(t1) FROM tbl1 ORDER BY t1}
} {4 2 7 8 4}
do_test func-1.1 {
set r [catch {execsql {SELECT length(*) FROM tbl1 ORDER BY t1}} msg]
lappend r $msg
} {1 {wrong number of arguments to function length()}}
do_test func-1.2 {
set r [catch {execsql {SELECT length(t1,5) FROM tbl1 ORDER BY t1}} msg]
lappend r $msg
} {1 {wrong number of arguments to function length()}}
do_test func-1.3 {
execsql {SELECT length(t1), count(*) FROM tbl1 GROUP BY length(t1)
ORDER BY length(t1)}
}

```



```

} {2 1 4 2 7 1 8 1}
do_test func-1.4 {
  execsql {SELECT coalesce(length(a),-1) FROM t2}
} {1 -1 3 -1 5}

# Check out the substr() function
#
do_test func-2.0 {
  execsql {SELECT substr(t1,1,2) FROM tbl1 ORDER BY t1}
} {fr is pr so th}
do_test func-2.1 {
  execsql {SELECT substr(t1,2,1)
  FROM tbl1 ORDER BY t1}
} {r s r o h}
do_test func-2.2 {
  execsql {SELECT substr(t1,3,3) FROM tbl1 ORDER BY t1}
} {ee {} ogr ftw is}
do_test func-2.3 {
  execsql {SELECT substr(t1,-1,1) FROM tbl1 ORDER BY t1}
} {e s m e s}
do_test func-2.4 {
  execsql {SELECT substr(t1,-1,2) FROM tbl1 ORDER BY t1}
} {e s m e s}
do_test func-2.5 {
  execsql {SELECT substr(t1,-2,1) FROM tbl1 ORDER BY t1}
} {e i a r i}
do_test func-2.6 {
  execsql {SELECT substr(t1,-2,2) FROM tbl1 ORDER BY t1}
} {ee is am re is}
do_test func-2.7 {
  execsql {SELECT substr(t1,-4,2) FROM tbl1 ORDER BY t1}
} {fr {} gr wa th}
do_test func-2.8 {
  execsql {SELECT t1 FROM tbl1 ORDER BY substr(t1,2,20)}
} {this software free program is}
do_test func-2.9 {
  execsql {SELECT substr(a,1,1) FROM t2}
} {1 {} 3 {} 6}
do_test func-2.10 {
  execsql {SELECT substr(a,2,2) FROM t2}
} {{} {} 45 {} 78}

# Only do the following tests if TCL has UTF-8 capabilities
#
if {"\u1234"!="u1234"} {

# Put some UTF-8 characters in the database
#

```

```

do_test
func-3.0 {
execsql {DELETE FROM tbl1}
foreach word "contains UTF-8 characters hi\u1234ho" {
  execsql "INSERT INTO tbl1 VALUES('$word')"
}
execsql {SELECT t1 FROM tbl1 ORDER BY t1}
} "UTF-8 characters contains hi\u1234ho"
do_test func-3.1 {
execsql {SELECT length(t1) FROM tbl1 ORDER BY t1}
} {5 10 8 5}
do_test func-3.2 {
execsql {SELECT substr(t1,1,2) FROM tbl1 ORDER BY t1}
} {UT ch co hi}
do_test func-3.3 {
execsql {SELECT substr(t1,1,3) FROM tbl1 ORDER BY t1}
} "UTF cha con hi\u1234"
do_test func-3.4 {
execsql {SELECT substr(t1,2,2) FROM tbl1 ORDER BY t1}
} "TF ha on i\u1234"
do_test func-3.5 {
execsql {SELECT substr(t1,2,3) FROM tbl1 ORDER BY t1}
} "TF- har ont i\u1234h"
do_test func-3.6 {
execsql {SELECT substr(t1,3,2) FROM tbl1 ORDER BY t1}
} "F- ar nt \u1234h"
do_test func-3.7 {
execsql {SELECT substr(t1,4,2) FROM tbl1 ORDER BY t1}
} "-8 ra ta ho"
do_test func-3.8 {
execsql {SELECT substr(t1,-1,1) FROM tbl1 ORDER BY t1}
} "8 s s o"
do_test
func-3.9 {
execsql {SELECT substr(t1,-3,2) FROM tbl1 ORDER BY t1}
} "F- er in \u1234h"
do_test func-3.10 {
execsql {SELECT substr(t1,-4,3) FROM tbl1 ORDER BY t1}
} "TF- ter ain i\u1234h"
do_test func-3.99 {
execsql {DELETE FROM tbl1}
foreach word {this program is free software} {
  execsql "INSERT INTO tbl1 VALUES('$word')"
}
execsql {SELECT t1 FROM tbl1}
} {this program is free software}

} ;# End \u1234!=u1234

```

```

# Test the abs() and round() functions.
#
ifcapable !floatingpoint {
do_test func-4.1 {
execsql {
CREATE TABLE t1(a,b,c);
INSERT INTO t1 VALUES(1,2,3);
INSERT INTO t1 VALUES(2,12345678901234,-1234567890);
INSERT INTO t1 VALUES(3,-2,-5);
}
catchsql {SELECT abs(a,b) FROM t1}
} {1 {wrong number of arguments to function abs()}}
}
ifcapable floatingpoint {
do_test func-4.1 {
execsql {
CREATE TABLE t1(a,b,c);
INSERT INTO t1 VALUES(1,2,3);
INSERT INTO t1 VALUES(2,1.2345678901234,-12345.67890);
INSERT
INTO t1 VALUES(3,-2,-5);
}
catchsql {SELECT abs(a,b) FROM t1}
} {1 {wrong number of arguments to function abs()}}
}
do_test func-4.2 {
catchsql {SELECT abs() FROM t1}
} {1 {wrong number of arguments to function abs()}}
ifcapable floatingpoint {
do_test func-4.3 {
catchsql {SELECT abs(b) FROM t1 ORDER BY a}
} {0 {2 1.2345678901234 2}}
do_test func-4.4 {
catchsql {SELECT abs(c) FROM t1 ORDER BY a}
} {0 {3 12345.6789 5}}
}
ifcapable !floatingpoint {
if {[working_64bit_int]} {
do_test func-4.3 {
catchsql {SELECT abs(b) FROM t1 ORDER BY a}
} {0 {2 12345678901234 2}}
}
do_test func-4.4 {
catchsql {SELECT abs(c) FROM t1 ORDER BY a}
} {0 {3 1234567890 5}}
}
do_test func-4.4.1 {

```

```

execsql {SELECT abs(a) FROM t2}
} {1 {} 345 {} 67890}
do_test func-4.4.2 {
  execsql {SELECT abs(t1) FROM tbl1}
} {0.0 0.0 0.0 0.0 0.0}

ifcapable floatingpoint {
  do_test func-4.5 {
    catchsql {SELECT round(a,b,c) FROM t1}
  } {1 {wrong number of arguments to function
round()}}
  do_test func-4.6 {
    catchsql {SELECT round(b,2) FROM t1 ORDER BY b}
  } {0 {-2.0 1.23 2.0}}
  do_test func-4.7 {
    catchsql {SELECT round(b,0) FROM t1 ORDER BY a}
  } {0 {2.0 1.0 -2.0}}
  do_test func-4.8 {
    catchsql {SELECT round(c) FROM t1 ORDER BY a}
  } {0 {3.0 -12346.0 -5.0}}
  do_test func-4.9 {
    catchsql {SELECT round(c,a) FROM t1 ORDER BY a}
  } {0 {3.0 -12345.68 -5.0}}
  do_test func-4.10 {
    catchsql {SELECT 'x' || round(c,a) || 'y' FROM t1 ORDER BY a}
  } {0 {x3.0y x-12345.68y x-5.0y}}
  do_test func-4.11 {
    catchsql {SELECT round() FROM t1 ORDER BY a}
  } {1 {wrong number of arguments to function round()}}
  do_test func-4.12 {
    execsql {SELECT coalesce(round(a,2),'nil') FROM t2}
  } {1.0 nil 345.0 nil 67890.0}
  do_test func-4.13 {
    execsql {SELECT round(t1,2) FROM tbl1}
  } {0.0 0.0 0.0 0.0 0.0}
  do_test func-4.14 {
    execsql {SELECT typeof(round(5.1,1));}
  } {real}
  do_test func-4.15 {
    execsql {SELECT typeof(round(5.1));}
  } {real}
  do_test func-4.16 {
    catchsql {SELECT round(b,2.0) FROM t1 ORDER BY b}
  } {0 {-2.0 1.23 2.0}}
  # Verify some values reported on the mailing list.
  # Some of these fail on MSVC builds with 64-bit
  # long doubles, but not on GCC builds with 80-bit
  # long doubles.

```

```

for {set i 1} {$i<999} {incr i} {
  set x1 [expr 40222.5 + $i]
  set x2 [expr 40223.0 + $i]
  do_test func-4.17.$i {
    execsql {SELECT round($x1);}
  } $x2
}
for {set i 1} {$i<999} {incr i} {
  set x1 [expr 40222.05 + $i]
  set x2 [expr 40222.10 + $i]
  do_test func-4.18.$i {
    execsql {SELECT round($x1,1);}
  } $x2
}
do_test func-4.20 {
  execsql {SELECT round(40223.4999999999);}
} {40223.0}
do_test func-4.21 {
  execsql {SELECT round(40224.4999999999);}
} {40224.0}
do_test func-4.22 {
  execsql {SELECT round(40225.4999999999);}
} {40225.0}
for {set i 1} {$i<10} {incr i} {
  do_test func-4.23.$i {
    execsql {SELECT round(40223.4999999999,$i);}
  } {40223.5}
  do_test func-4.24.$i {
    execsql {SELECT round(40224.4999999999,$i);}
  } {40224.5}
  do_test func-4.25.$i {
    execsql {SELECT round(40225.4999999999,$i);}
  } {40225.5}
}
for {set i 10} {$i<32} {incr i} {
  do_test func-4.26.$i {
    execsql {SELECT round(40223.4999999999,$i);}
  } {40223.4999999999}
  do_test func-4.27.$i {
    execsql {SELECT round(40224.4999999999,$i);}
  } {40224.4999999999}
  do_test func-4.28.$i {
    execsql {SELECT round(40225.4999999999,$i);}
  } {40225.4999999999}
}
do_test func-4.29 {
  execsql {SELECT round(1234567890.5);}
}

```

```

} {1234567891.0}
do_test func-4.30 {
  execsql {SELECT round(12345678901.5);}
} {12345678902.0}
do_test func-4.31 {
  execsql {SELECT round(123456789012.5);}
} {123456789013.0}
do_test func-4.32 {
  execsql {SELECT round(1234567890123.5);}
} {1234567890124.0}
do_test func-4.33 {
  execsql {SELECT round(12345678901234.5);}
} {12345678901235.0}
do_test func-4.34
{
  execsql {SELECT round(1234567890123.35,1);}
} {1234567890123.4}
do_test func-4.35 {
  execsql {SELECT round(1234567890123.445,2);}
} {1234567890123.45}
do_test func-4.36 {
  execsql {SELECT round(9999999999999.5);}
} {9999999999999.0}
do_test func-4.37 {
  execsql {SELECT round(99999999999.55,1);}
} {99999999999.6}
do_test func-4.38 {
  execsql {SELECT round(99999999999.556,2);}
} {99999999999.56}
}

# Test the upper() and lower() functions
#
do_test func-5.1 {
  execsql {SELECT upper(t1) FROM tbl1}
} {THIS PROGRAM IS FREE SOFTWARE}
do_test func-5.2 {
  execsql {SELECT lower(upper(t1)) FROM tbl1}
} {this program is free software}
do_test func-5.3 {
  execsql {SELECT upper(a), lower(a) FROM t2}
} {1 1 {} {} 345 345 {} {} 67890 67890}
ifcapable !icu {
  do_test func-5.4 {
    catchsql {SELECT upper(a,5) FROM t2}
  } {1 {wrong number of arguments to function upper()}}
}
do_test func-5.5 {

```

```

catchsql {SELECT upper(*) FROM t2}
} {1 {wrong number
of arguments to function upper()}}

# Test the coalesce() and nullif() functions
#
do_test func-6.1 {
execsql {SELECT coalesce(a,'xyz') FROM t2}
} {1 xyz 345 xyz 67890}
do_test func-6.2 {
execsql {SELECT coalesce(upper(a),'nil') FROM t2}
} {1 nil 345 nil 67890}
do_test func-6.3 {
execsql {SELECT coalesce(nullif(1,1),'nil')}
} {nil}
do_test func-6.4 {
execsql {SELECT coalesce(nullif(1,2),'nil')}
} {1}
do_test func-6.5 {
execsql {SELECT coalesce(nullif(1,NULL),'nil')}
} {1}

# Test the last_insert_rowid() function
#
do_test func-7.1 {
execsql {SELECT last_insert_rowid()}
} [db last_insert_rowid]

# Tests for aggregate functions and how they handle NULLs.
#
ifcapable floatingpoint {
do_test func-8.1 {
ifcapable explain {
execsql {EXPLAIN SELECT sum(a) FROM t2;}
}
execsql {
SELECT sum(a), count(a), round(avg(a),2), min(a), max(a), count(*) FROM t2;
}
} {68236 3 22745.33 1 67890 5}
}
ifcapable !floatingpoint {
do_test func-8.1 {
ifcapable
explain {
execsql {EXPLAIN SELECT sum(a) FROM t2;}
}
execsql {

```

```

SELECT sum(a), count(a), avg(a), min(a), max(a), count(*) FROM t2;
}
} {68236 3 22745.0 1 67890 5}
}
do_test func-8.2 {
execsql {
SELECT max('z+'||a||'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ') FROM t2;
}
} {z+67890abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ}

ifcapable tempdb {
do_test func-8.3 {
execsql {
CREATE TEMP TABLE t3 AS SELECT a FROM t2 ORDER BY a DESC;
SELECT min('z+'||a||'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ') FROM t3;
}
} {z+1abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ}
} else {
do_test func-8.3 {
execsql {
CREATE TABLE t3 AS SELECT a FROM t2 ORDER BY a DESC;
SELECT min('z+'||a||'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ') FROM t3;
}
} {z+1abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ}
}
do_test func-8.4 {
execsql {
SELECT max('z+'||a||'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ') FROM t3;
}
} {z+67890abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ}

ifcapable
compound {
do_test func-8.5 {
execsql {
SELECT sum(x) FROM (SELECT '9223372036' || '854775807' AS x
UNION ALL SELECT -9223372036854775807)
}
} {0}
do_test func-8.6 {
execsql {
SELECT typeof(sum(x)) FROM (SELECT '9223372036' || '854775807' AS x
UNION ALL SELECT -9223372036854775807)
}
} {integer}
do_test func-8.7 {
execsql {
SELECT typeof(sum(x)) FROM (SELECT '9223372036' || '854775808' AS x
UNION ALL SELECT -9223372036854775807)
}
}

```



```

    }
  } {real}
ifcapable floatingpoint {
do_test func-8.8 {
  execsql {
    SELECT sum(x)>0.0 FROM (SELECT '9223372036' || '854775808' AS x
      UNION ALL SELECT -922337203685000000)
  }
} {1}
}
ifcapable !floatingpoint {
do_test func-8.8 {
  execsql {
    SELECT sum(x)>0 FROM (SELECT '9223372036' || '854775808' AS x
      UNION ALL SELECT
-922337203685000000)
  }
} {1}
}
}

```

How do you test the random() function in a meaningful, deterministic way?

#

```

do_test func-9.1 {
  execsql {
    SELECT random() is not null;
  }
} {1}
do_test func-9.2 {
  execsql {
    SELECT typeof(random());
  }
} {integer}
do_test func-9.3 {
  execsql {
    SELECT randblob(32) is not null;
  }
} {1}
do_test func-9.4 {
  execsql {
    SELECT typeof(randblob(32));
  }
} {blob}
do_test func-9.5 {
  execsql {
    SELECT length(randblob(32)), length(randblob(-5)),
      length(randblob(2000))
  }
}

```

```

} {32 1 2000}

# The "hex()" function was added in order to be able to render blobs
# generated by randblob(). So this seems like a good place to test
# hex().
#
ifcapable bloblit {
do_test func-9.10 {
    execsql {SELECT hex(x'00112233445566778899aAbBcCdDeEfF')}
} {00112233445566778899AABBCCDDEEFF}
}
set encoding [db one {PRAGMA encoding}]
if {$encoding=="UTF-16le"} {
do_test func-9.11-utf16le {
    execsql {SELECT hex(replace('abcdefg','ef','12'))}
} {6100620063006400310032006700}
do_test func-9.12-utf16le {
    execsql {SELECT hex(replace('abcdefg','', '12'))}
} {6100620063006400650066006700}
do_test func-9.13-utf16le {
    execsql {SELECT hex(replace('abcdefg','a','aaa'))}
} {61006100610061006100620063006400650066006700}
} elseif {$encoding=="UTF-8"} {
do_test func-9.11-utf8 {
    execsql {SELECT hex(replace('abcdefg','ef','12'))}
} {61626364313267}
do_test func-9.12-utf8 {
    execsql {SELECT hex(replace('abcdefg','', '12'))}
} {61626364656667}
do_test func-9.13-utf8 {
    execsql {SELECT hex(replace('abcdefg','a','aaa'))}
} {616161616161626364656667}
}

# Use the "sqlite_register_test_function" TCL command which is part of
# the text fixture in order to verify correct operation of some of
# the user-defined SQL function APIs that are not used by the built-in
# functions.
#
set ::DB [sqlite3_connection_pointer db]
sqlite_register_test_function $::DB testfunc
do_test func-10.1
{
catchsql {
    SELECT testfunc(NULL,NULL);
}
} {1 {first argument should be one of: int int64 string double null value}}
do_test func-10.2 {

```

```

execsql {
  SELECT testfunc(
    'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
    'int', 1234
  );
}
} {1234}
do_test func-10.3 {
  execsql {
    SELECT testfunc(
      'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
      'string', NULL
    );
  }
} {{}}

ifcapable floatingpoint {
  do_test func-10.4 {
    execsql {
      SELECT testfunc(
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'double', 1.234
      );
    }
  } {1.234}
  do_test func-10.5 {
    execsql {
      SELECT testfunc(
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'int', 1234,
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'string', NULL,
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'double',
1.234,
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'int', 1234,
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'string', NULL,
        'string', 'abcdefghijklmnopqrstuvwxyABCDEFGHIJKLMNOPQRSTUVWXYZ',
        'double', 1.234
      );
    }
  } {1.234}
}

# Test the built-in sqlite_version(*) SQL function.
#

```

```

do_test func-11.1 {
    execsql {
        SELECT sqlite_version(*)
    }
} [sqlite3 -version]

# Test that destructors passed to sqlite3 by calls to sqlite3_result_text()
# etc. are called. These tests use two special user-defined functions
# (implemented in func.c) only available in test builds.
#
# Function test_destructor() takes one argument and returns a copy of the
# text form of that argument. A destructor is associated with the return
# value. Function test_destructor_count() returns the number of outstanding
# destructor calls for values returned by test_destructor().
#
if {[db eval {PRAGMA encoding}]==="UTF-8"} {
    do_test func-12.1-utf8 {
        execsql {
            SELECT test_destructor('hello world'), test_destructor_count();
        }
    } {{hello world} 1}
} else {
    ifcapable {utf16} {
        do_test func-12.1-utf16 {
            execsql {
                SELECT test_destructor16('hello world'), test_destructor_count();
            }
        } {{hello world} 1}
    }
}
do_test func-12.2 {
    execsql {
        SELECT test_destructor_count();
    }
} {0}
do_test func-12.3 {
    execsql {
        SELECT test_destructor('hello')||' world'
    }
} {{hello world}}
do_test func-12.4 {
    execsql {
        SELECT test_destructor_count();
    }
} {0}
do_test func-12.5 {
    execsql {
        CREATE TABLE t4(x);

```

```

INSERT INTO t4 VALUES(test_destructor('hello'));
INSERT INTO t4 VALUES(test_destructor('world'));
SELECT min(test_destructor(x)), max(test_destructor(x)) FROM t4;
}
} {hello world}
do_test func-12.6 {
execsql {
SELECT test_destructor_count();
}
} {0}
do_test func-12.7 {
execsql {
DROP TABLE t4;
}
} {}

```

Test that
the auxdata API for scalar functions works. This test uses
a special user-defined function only available in test builds,
test_auxdata(). Function test_auxdata() takes any number of arguments.

```

do_test func-13.1 {
execsql {
SELECT test_auxdata('hello world');
}
} {0}

do_test func-13.2 {
execsql {
CREATE TABLE t4(a, b);
INSERT INTO t4 VALUES('abc', 'def');
INSERT INTO t4 VALUES('ghi', 'jkl');
}
} {}

do_test func-13.3 {
execsql {
SELECT test_auxdata('hello world') FROM t4;
}
} {0 1}

do_test func-13.4 {
execsql {
SELECT test_auxdata('hello world', 123) FROM t4;
}
} {{0 0} {1 1}}

do_test func-13.5 {
execsql {
SELECT test_auxdata('hello world', a) FROM t4;
}
}

```

```

} {{0 0} {1 0}}
do_test func-13.6 {
execsql {
    SELECT test_auxdata('hello'||'world', a) FROM t4;
}
} {{0 0} {1 0}}

# Test that auxiliary data is preserved between calls for SQL variables.
do_test func-13.7 {
set DB [sqlite3_connection_pointer db]
set sql "SELECT test_auxdata(
?, a ) FROM t4;"
set STMT [sqlite3_prepare $DB $sql -1 TAIL]
sqlite3_bind_text $STMT 1 hello\000 -1
set res [list]
while { "SQLITE_ROW"==[sqlite3_step $STMT] } {
    lappend res [sqlite3_column_text $STMT 0]
}
lappend res [sqlite3_finalize $STMT]
} {{0 0} {1 0} SQLITE_OK}

# Make sure that a function with a very long name is rejected
do_test func-14.1 {
catch {
    db function [string repeat X 254] {return "hello"}
}
} {0}
do_test func-14.2 {
catch {
    db function [string repeat X 256] {return "hello"}
}
} {1}

do_test func-15.1 {
catchsql {select test_error(NULL)}
} {1 {}}
do_test func-15.2 {
catchsql {select test_error('this is the error message')}
} {1 {this is the error message}}
do_test func-15.3 {
catchsql {select test_error('this is the error message',12)}
} {1 {this is the error message}}
do_test func-15.4 {
db errorcode
} {12}

# Test the quote function for BLOB and NULL values.
do_test func-16.1 {

```

```

execsql {
    CREATE TABLE tbl2(a, b);
}
set STMT [sqlite3_prepare $::DB "INSERT INTO tbl2 VALUES(?, ?)" -1 TAIL]
sqlite3_bind_blob $::STMT 1 abc 3
sqlite3_step $::STMT
sqlite3_finalize $::STMT
execsql {
    SELECT quote(a), quote(b) FROM tbl2;
}
} {X'616263' NULL}

```

Correctly handle function error messages that include %. Ticket #1354

#

```

do_test func-17.1 {
    proc testfunc1 args {error "Error %d with %s percents %p"}
    db function testfunc1 ::testfunc1
    catchesql {
        SELECT testfunc1(1,2,3);
    }
} {1 {Error %d with %s percents %p}}

```

The SUM function should return integer results when all inputs are integer.

#

```

do_test func-18.1 {
    execsql {
        CREATE TABLE t5(x);
        INSERT INTO t5 VALUES(1);
        INSERT INTO t5 VALUES(-99);
        INSERT INTO t5 VALUES(10000);
        SELECT sum(x) FROM t5;
    }
} {9902}

```

ifcapable floatingpoint {

```

do_test func-18.2 {
    execsql {
        INSERT INTO t5 VALUES(0.0);
        SELECT sum(x) FROM t5;
    }
} {9902.0}
}

```

The sum of nothing is NULL. But the sum of all NULLs is NULL.

#

#

The TOTAL of nothing is 0.0.

#

```

do_test func-18.3 {

```

```

execsql {
  DELETE FROM t5;
  SELECT sum(x), total(x) FROM t5;
}
} {{} 0.0}
do_test func-18.4 {
  execsql {
    INSERT INTO t5 VALUES(NULL);
    SELECT sum(x), total(x) FROM t5
  }
} {{} 0.0}
do_test func-18.5 {
  execsql {
    INSERT INTO t5 VALUES(NULL);
    SELECT sum(x), total(x) FROM t5
  }
} {{} 0.0}
do_test func-18.6 {
  execsql {
    INSERT INTO t5 VALUES(123);
    SELECT sum(x), total(x) FROM t5
  }
} {123 123.0}

# Ticket #1664, #1669, #1670, #1674: An integer overflow on SUM causes
# an error. The non-standard TOTAL() function continues to give a helpful
# result.
#
do_test func-18.10 {
  execsql {
    CREATE TABLE t6(x INTEGER);
    INSERT INTO t6 VALUES(1);
    INSERT INTO t6 VALUES(1<<62);
    SELECT sum(x) - ((1<<62)+1) from t6;
  }
} 0
do_test func-18.11 {
  execsql {
    SELECT typeof(sum(x)) FROM t6
  }
} integer
ifcapable floatingpoint {
  do_test func-18.12 {
    catchsql {
      INSERT INTO t6 VALUES(1<<62);
      SELECT sum(x) - ((1<<62)*2.0+1) from t6;
    }
  } {1 {integer overflow}}
}

```



```

do_test func-18.13 {
  execsql {
    SELECT total(x) - ((1<<62)*2.0+1) FROM t6
  }
} 0.0
}
ifcapable !floatingpoint {
do_test func-18.12 {
  catchsql {
    INSERT INTO t6 VALUES(1<<62);
    SELECT sum(x) - ((1<<62)*2+1) from t6;
  }
} {1 {integer overflow}}
do_test func-18.13 {
  execsql {
    SELECT total(x) - ((1<<62)*2+1) FROM t6
  }
} 0.0
}
if {[working_64bit_int]} {
do_test func-18.14 {
  execsql {
    SELECT sum(-9223372036854775805);
  }
} -9223372036854775805
}
ifcapable compound&&subquery {

do_test func-18.15 {
  catchsql {
    SELECT sum(x) FROM
      (SELECT 9223372036854775807 AS x UNION ALL
      SELECT 10 AS x);
  }
} {1 {integer overflow}}
if {[working_64bit_int]} {
do_test func-18.16 {
  catchsql {
    SELECT sum(x) FROM
      (SELECT 9223372036854775807 AS x UNION ALL
      SELECT -10 AS x);
  }
} {0 9223372036854775797}
do_test func-18.17 {
  catchsql {
    SELECT sum(x) FROM
      (SELECT -9223372036854775807 AS x UNION ALL
      SELECT 10 AS x);
  }
}
}

```

```

    }
  } {0 -9223372036854775797}
}
do_test func-18.18 {
  catchsql {
    SELECT sum(x) FROM
      (SELECT -9223372036854775807 AS x UNION ALL
       SELECT -10 AS x);
  }
} {1 {integer overflow}}
do_test func-18.19 {
  catchsql {
    SELECT sum(x) FROM (SELECT 9 AS x UNION ALL SELECT -10 AS x);
  }
} {0 -1}
do_test func-18.20 {
  catchsql {
    SELECT sum(x) FROM (SELECT -9 AS x UNION ALL SELECT 10 AS x);
  }
} {0 1}
do_test func-18.21 {
  catchsql {
    SELECT sum(x) FROM (SELECT -10 AS x UNION ALL SELECT 9 AS x);
  }
} {0 -1}
do_test func-18.22 {
  catchsql {
    SELECT sum(x) FROM (SELECT 10 AS x UNION ALL SELECT -9 AS x);
  }
} {0 1}

};# ifcapable compound&&subquery

# Integer overflow on abs()
#
if {[working_64bit_int]} {
  do_test func-18.31 {
    catchsql {
      SELECT abs(-9223372036854775807);
    }
  } {0 9223372036854775807}
}
do_test
func-18.32 {
  catchsql {
    SELECT abs(-9223372036854775807-1);
  }
} {1 {integer overflow}}

```

The MATCH function exists but is only a stub and always throws an error.

#

```
do_test func-19.1 {
  execsql {
    SELECT match(a,b) FROM t1 WHERE 0;
  }
} {}
do_test func-19.2 {
  catchsql {
    SELECT 'abc' MATCH 'xyz';
  }
} {1 {unable to use function MATCH in the requested context}}
do_test func-19.3 {
  catchsql {
    SELECT 'abc' NOT MATCH 'xyz';
  }
} {1 {unable to use function MATCH in the requested context}}
do_test func-19.4 {
  catchsql {
    SELECT match(1,2,3);
  }
} {1 {wrong number of arguments to function match()}}
```

Soundex tests.

#

```
if {[catch {db eval {SELECT soundex('hello')}}]} {
  set i 0
  foreach {name sdx} {
    euler      E460
    EULER      E460
    Euler      E460
    ellery     E460
    gauss      G200
    ghosh      G200
    hilbert    H416
    Heilbronn  H416
    knuth      K530
    kant       K530
    Lloyd      L300
    LADD
    L300
    Lukasiewicz L222
    Lissajous  L222
    A          A000
    12345     ?000
  } {
    incr i
  }
}
```

```

do_test func-20.$i {
    execsql {SELECT soundex($name)}
} $sdx
}
}

# Tests of the REPLACE function.
#
do_test func-21.1 {
catchsql {
    SELECT replace(1,2);
}
} {1 {wrong number of arguments to function replace()}}
do_test func-21.2 {
catchsql {
    SELECT replace(1,2,3,4);
}
} {1 {wrong number of arguments to function replace()}}
do_test func-21.3 {
execsql {
    SELECT typeof(replace("This is the main test string", NULL, "ALT"));
}
} {null}
do_test func-21.4 {
execsql {
    SELECT typeof(replace(NULL, "main", "ALT"));
}
} {null}
do_test func-21.5 {
execsql {
    SELECT typeof(replace("This is the main test string", "main", NULL));
}
} {null}
do_test func-21.6 {
execsql {
    SELECT replace("This is the main test string", "main", "ALT");
}
} {{This is the ALT test string}}
do_test func-21.7 {
execsql {
    SELECT replace("This is the
main test string", "main", "larger-main");
}
} {{This is the larger-main test string}}
do_test func-21.8 {
execsql {
    SELECT replace("aaaaaaa", "a", "0123456789");
}
}

```

```
} {0123456789012345678901234567890123456789012345678901234567890123456789}
```

```
ifcapable tclvar {  
do_test func-21.9 {  
    # Attempt to exploit a buffer-overflow that at one time existed  
    # in the REPLACE function.  
    set ::str "[string repeat A 29998]CC[string repeat A 35537]"  
    set ::rep [string repeat B 65536]  
    execsql {  
        SELECT LENGTH(REPLACE($::str, 'C', $::rep));  
    }  
} [expr 29998 + 2*65536 + 35537]  
}
```

```
# Tests for the TRIM, LTRIM and RTRIM functions.
```

```
#
```

```
do_test func-22.1 {  
    catchsql {SELECT trim(1,2,3)}  
} {1 {wrong number of arguments to function trim()}}  
do_test func-22.2 {  
    catchsql {SELECT ltrim(1,2,3)}  
} {1 {wrong number of arguments to function ltrim()}}  
do_test func-22.3 {  
    catchsql {SELECT rtrim(1,2,3)}  
} {1 {wrong number of arguments to function rtrim()}}  
do_test func-22.4 {
```

```
    execsql {SELECT trim(' hi ');}  
} {hi}  
do_test func-22.5 {  
    execsql {SELECT ltrim(' hi ');}  
} {{hi }}  
do_test func-22.6 {  
    execsql {SELECT rtrim(' hi ');}  
} {{ hi }}  
do_test func-22.7 {  
    execsql {SELECT trim(' hi ','xyz');}  
} {{ hi }}  
do_test func-22.8 {  
    execsql {SELECT ltrim(' hi ','xyz');}  
} {{ hi }}  
do_test func-22.9 {  
    execsql {SELECT rtrim(' hi ','xyz');}  
} {{ hi }}  
do_test func-22.10 {  
    execsql {SELECT trim('xyxzy hi zzy','xyz');}  
} {{ hi }}  
do_test func-22.11 {
```

```

execsql {SELECT ltrim('xyxzy hi zzy','xyz');}
} {{ hi zzy}}
do_test func-22.12 {
execsql {SELECT rtrim('xyxzy hi zzy','xyz');}
} {{xyxzy hi }}
do_test func-22.13 {
execsql {SELECT trim(' hi ');}
} {{ hi }}
if {[db one {PRAGMA encoding}]=="UTF-8"} {
do_test func-22.14 {
execsql {SELECT hex(trim(x'c280e1bfbff48fbfbf6869',x'6162e1bfbfc280'))}
} {F48FBFBF6869}
do_test func-22.15 {
execsql {SELECT hex(trim(x'6869c280e1bfbff48fbfbf61',

x'6162e1bfbfc280f48fbfbf'))}
} {6869}
do_test func-22.16 {
execsql {SELECT hex(trim(x'ceb1ceb2ceb3',x'ceb1'));}
} {CEB2CEB3}
}
do_test func-22.20 {
execsql {SELECT typeof(trim(NULL));}
} {null}
do_test func-22.21 {
execsql {SELECT typeof(trim(NULL,'xyz'));}
} {null}
do_test func-22.22 {
execsql {SELECT typeof(trim('hello',NULL));}
} {null}

# This is to test the deprecated sqlite3_aggregate_count() API.
#
ifcapable deprecated {
do_test func-23.1 {
sqlite3_create_aggregate db
execsql {
SELECT legacy_count() FROM t6;
}
} {3}
}

# The group_concat() function.
#
do_test func-24.1 {
execsql {
SELECT group_concat(t1) FROM tbl1
}
}

```

```

} {this,program,is,free,software}
do_test func-24.2 {
execsql {
    SELECT group_concat(t1,'') FROM tbl1
}
} {{this program is free software}}
do_test func-24.3 {
execsql {
    SELECT group_concat(t1,' || rowid || ') FROM tbl1
}
} {{this 2 program 3 is 4 free 5 software}}
do_test func-24.4 {
execsql {
    SELECT group_concat(NULL,t1) FROM tbl1
}
} {{{}}
do_test func-24.5 {
execsql {
    SELECT group_concat(t1,NULL) FROM tbl1
}
} {thisprogramisfreesoftware}
do_test func-24.6 {
execsql {
    SELECT 'BEGIN-||group_concat(t1) FROM tbl1
}
} {BEGIN-this,program,is,free,software}

# Ticket #3179: Make sure aggregate functions can take many arguments.
# None of the built-in aggregates do this, so use the md5sum() from the
# test extensions.
#
unset -nocomplain midargs
set midargs {}
unset -nocomplain midres
set midres {}
unset -nocomplain result
for {set i 1} {$i<[sqlite3_limit db SQLITE_LIMIT_FUNCTION_ARG -1]} {incr i} {
    append midargs './$i'
    append midres /$i
    set result [md5 \
        "this${midres}program${midres}is${midres}free${midres}software${midres}"]
    set sql "SELECT md5sum(t1$midargs) FROM tbl1"
    do_test func-24.7.$i {
        db eval $::sql
    } $result
}

```

```

# Ticket #3806. If the initial string in a group_concat is an empty

```

```

# string, the separator that follows should still
be present.
#
do_test func-24.8 {
execsql {
    SELECT group_concat(CASE t1 WHEN 'this' THEN " ELSE t1 END) FROM tbl1
}
} {,program,is,free,software}
do_test func-24.9 {
execsql {
    SELECT group_concat(CASE WHEN t1!='software' THEN " ELSE t1 END) FROM tbl1
}
} {,,,,software}

# Ticket #3923. Initial empty strings have a separator. But initial
# NULLs do not.
#
do_test func-24.10 {
execsql {
    SELECT group_concat(CASE t1 WHEN 'this' THEN null ELSE t1 END) FROM tbl1
}
} {program,is,free,software}
do_test func-24.11 {
execsql {
    SELECT group_concat(CASE WHEN t1!='software' THEN null ELSE t1 END) FROM tbl1
}
} {software}
do_test func-24.12 {
execsql {
    SELECT group_concat(CASE t1 WHEN 'this' THEN "
                        WHEN 'program' THEN null ELSE t1 END) FROM tbl1
}
} {,is,free,software}

# Use the test_isolation function to make sure that type conversions
# on function arguments do not effect subsequent arguments.
#
do_test func-25.1 {
execsql
{SELECT test_isolation(t1,t1) FROM tbl1}
} {this program is free software}

# Try to misuse the sqlite3_create_function() interface. Verify that
# errors are returned.
#
do_test func-26.1 {
abuse_create_function db

```



```

} {}

# The previous test (func-26.1) registered a function with a very long
# function name that takes many arguments and always returns NULL. Verify
# that this function works correctly.
#
do_test func-26.2 {
  set a {}
  for {set i 1} {$i<=::$SQLITE_MAX_FUNCTION_ARG} {incr i} {
    lappend a $i
  }
  db eval "
    SELECT
nullx_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_12345678
9_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_1
23456789_123456789_123456789_123456789_123456789_123456789_123456789([join $a ,]);
"
  } {} {}
do_test func-26.3 {
  set a {}
  for {set i 1} {$i<=::$SQLITE_MAX_FUNCTION_ARG+1} {incr i} {
    lappend a $i
  }
  catchsql "
    SELECT
nullx_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_12345678
9_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_1
23456789_123456789_123456789_123456789_123456789_123456789_123456789([join
$a ,]);
"
  } {1 {too many arguments on function
nullx_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_12345678
9_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_1
23456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789}}
do_test func-26.4 {
  set a {}
  for {set i 1} {$i<=::$SQLITE_MAX_FUNCTION_ARG-1} {incr i} {
    lappend a $i
  }
  catchsql "
    SELECT
nullx_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_12345678
9_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_1
23456789_123456789_123456789_123456789_123456789_123456789_123456789([join $a ,]);
"
  } {1 {wrong number of arguments to function
nullx_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_12345678
9_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_123456789_1

```



```

the length() and typeof() functions do not actually load
# the content of their argument.
#
do_test func-29.1 {
  db eval {
    CREATE TABLE t29(id INTEGER PRIMARY KEY, x, y);
    INSERT INTO t29 VALUES(1, 2, 3), (2, NULL, 4), (3, 4.5, 5);
    INSERT INTO t29 VALUES(4, randomblob(1000000), 6);
    INSERT INTO t29 VALUES(5, "hello", 7);
  }
  db close
  sqlite3 db test.db
  sqlite3_db_status db CACHE_MISS 1
  db eval {SELECT typeof(x), length(x), typeof(y) FROM t29 ORDER BY id}
} {integer 1 integer null { } integer real 3 integer blob 1000000 integer text 5 integer}
do_test func-29.2 {
  set x [lindex [sqlite3_db_status db CACHE_MISS 1] 1]
  if {$x<5} {set x 1}
  set x
} {1}
do_test func-29.3 {
  db close
  sqlite3 db test.db
  sqlite3_db_status db CACHE_MISS 1
  db eval {SELECT typeof(+x) FROM t29 ORDER BY id}
} {integer null real blob text}
if {[permutation] != "mmap"} {
  do_test func-29.4 {
    set x [lindex [sqlite3_db_status db CACHE_MISS 1] 1]
    if {$x>100} {set x many}
    set
  x
} {many}
}
do_test func-29.5 {
  db close
  sqlite3 db test.db
  sqlite3_db_status db CACHE_MISS 1
  db eval {SELECT sum(length(x)) FROM t29}
} {1000009}
do_test func-29.6 {
  set x [lindex [sqlite3_db_status db CACHE_MISS 1] 1]
  if {$x<5} {set x 1}
  set x
} {1}

do_execsql_test func-30.1 {SELECT unicode('$');} 36
do_execsql_test func-30.2 [subst {SELECT unicode('\u00A2');}] 162

```

```
do_execsql_test func-30.3 [subst {SELECT unicode('\u20AC');}] 8364
do_execsql_test func-30.4 {SELECT char(36,162,8364);} [subst {$\u00A2\u20AC}]
```

```
for {set i 1} {$i<0xd800} {incr i 13} {
do_execsql_test func-30.5.$i {SELECT unicode(char($i))} $i
}
for {set i 57344} {$i<=0xffff} {incr i 17} {
if {$i==0xfeff} continue
do_execsql_test func-30.5.$i {SELECT unicode(char($i))} $i
}
for {set i 65536} {$i<=0x10ffff} {incr i 139} {
do_execsql_test func-30.5.$i {SELECT unicode(char($i))} $i
}
```

finish_test

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/func.test
No license file was found, but licenses were detected in source scan.
```

<h3>Proprietary SQLite Extensions</h3>

public domain. But there also exist
proprietary, licensed extensions to SQLite, written and maintained
You are welcomed to use SQLite in closed source, proprietary, and/or

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/support.html
No license file was found, but licenses were detected in source scan.
```

Suppose the demo_data.boundary field holds some proprietary data description

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/rtree.html
No license file was found, but licenses were detected in source scan.
```

SQLite is in the public domain. This document describes what that means

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/docs.html
No license file was found, but licenses were detected in source scan.
```

/*

** CAPI3REF: Configuration Options

** KEYWORDS: {configuration option}

**

** These constants are the available integer configuration options that
 ** can be passed as the first argument to the [sqlite3_config()] interface.
 **

** New configuration options may be added in future releases of SQLite.
 ** Existing configuration options might be discontinued. Applications
 ** should check the return code from [sqlite3_config()] to make sure that
 ** the call worked. The [sqlite3_config()] interface will return a
 ** non-zero [error code] if a discontinued or unsupported configuration option
 ** is invoked.
 **

** <dl>

** [[SQLITE_CONFIG_SINGLETHREAD]] <dt>SQLITE_CONFIG_SINGLETHREAD</dt>
 ** <dd>There are no arguments to this option. ^This option sets the
 ** [threading mode] to Single-thread. In other words, it disables
 ** all mutexing and puts SQLite into a mode where it can only be used
 ** by a single thread. ^If SQLite
 is compiled with
 ** the [SQLITE_THREADSAFE | SQLITE_THREADSAFE=0] compile-time option then
 ** it is not possible to change the [threading mode] from its default
 ** value of Single-thread and so [sqlite3_config()] will return
 ** [SQLITE_ERROR] if called with the SQLITE_CONFIG_SINGLETHREAD
 ** configuration option.</dd>
 **

** [[SQLITE_CONFIG_MULTITHREAD]] <dt>SQLITE_CONFIG_MULTITHREAD</dt>
 ** <dd>There are no arguments to this option. ^This option sets the
 ** [threading mode] to Multi-thread. In other words, it disables
 ** mutexing on [database connection] and [prepared statement] objects.
 ** The application is responsible for serializing access to
 ** [database connections] and [prepared statements]. But other mutexes
 ** are enabled so that SQLite will be safe to use in a multi-threaded
 ** environment as long as no two threads attempt to use the same
 ** [database connection] at the same time. ^If SQLite is compiled with
 ** the [SQLITE_THREADSAFE | SQLITE_THREADSAFE=0] compile-time option
 then
 ** it is not possible to set the Multi-thread [threading mode] and
 ** [sqlite3_config()] will return [SQLITE_ERROR] if called with the
 ** SQLITE_CONFIG_MULTITHREAD configuration option.</dd>
 **

** [[SQLITE_CONFIG_SERIALIZED]] <dt>SQLITE_CONFIG_SERIALIZED</dt>
 ** <dd>There are no arguments to this option. ^This option sets the
 ** [threading mode] to Serialized. In other words, this option enables
 ** all mutexes including the recursive
 ** mutexes on [database connection] and [prepared statement] objects.
 ** In this mode (which is the default when SQLite is compiled with
 ** [SQLITE_THREADSAFE=1]) the SQLite library will itself serialize access
 ** to [database connections] and [prepared statements] so that the
 ** application is free to use the same [database connection] or the

** same [prepared statement] in different threads at the same time.
 ** ^If SQLite is compiled with
 ** the [SQLITE_THREADSAFE | SQLITE_THREADSAFE=0] compile-time option then
 ** it is not possible to set the
 Serialized [threading mode] and
 ** [sqlite3_config()] will return [SQLITE_ERROR] if called with the
 ** SQLITE_CONFIG_SERIALIZED configuration option.</dd>
 **
 ** [[SQLITE_CONFIG_MALLOC]] <dt>SQLITE_CONFIG_MALLOC</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to an
 ** instance of the [sqlite3_mem_methods] structure. The argument specifies
 ** alternative low-level memory allocation routines to be used in place of
 ** the memory allocation routines built into SQLite.)^ ^SQLite makes
 ** its own private copy of the content of the [sqlite3_mem_methods] structure
 ** before the [sqlite3_config()] call returns.</dd>
 **
 ** [[SQLITE_CONFIG_GETMALLOC]] <dt>SQLITE_CONFIG_GETMALLOC</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to an
 ** instance of the [sqlite3_mem_methods] structure. The [sqlite3_mem_methods]
 ** structure is filled with the currently defined memory allocation routines.)^
 ** This option can be used to overload the default memory allocation
 **
 routines with a wrapper that simulations memory allocation failure or
 ** tracks memory usage, for example. </dd>
 **
 ** [[SQLITE_CONFIG_MEMSTATUS]] <dt>SQLITE_CONFIG_MEMSTATUS</dt>
 ** <dd> ^This option takes single argument of type int, interpreted as a
 ** boolean, which enables or disables the collection of memory allocation
 ** statistics. ^(When memory allocation statistics are disabled, the
 ** following SQLite interfaces become non-operational:
 **
 ** [sqlite3_memory_used()]
 ** [sqlite3_memory_highwater()]
 ** [sqlite3_soft_heap_limit64()]
 ** [sqlite3_status()]
 **)^
 ** ^Memory allocation statistics are enabled by default unless SQLite is
 ** compiled with [SQLITE_DEFAULT_MEMSTATUS]=0 in which case memory
 ** allocation statistics are disabled by default.
 ** </dd>
 **
 ** [[SQLITE_CONFIG_SCRATCH]] <dt>SQLITE_CONFIG_SCRATCH</dt>
 ** <dd> ^This option specifies a static memory buffer that SQLite can use for
 ** scratch memory. There are three
 arguments: A pointer an 8-byte
 ** aligned memory buffer from which the scratch allocations will be
 ** drawn, the size of each scratch allocation (sz),
 ** and the maximum number of scratch allocations (N). The sz

** argument must be a multiple of 16.
 ** The first argument must be a pointer to an 8-byte aligned buffer
 ** of at least sz*N bytes of memory.
 ** ^SQLite will use no more than two scratch buffers per thread. So
 ** N should be set to twice the expected maximum number of threads.
 ** ^SQLite will never require a scratch buffer that is more than 6
 ** times the database page size. ^If SQLite needs needs additional
 ** scratch memory beyond what is provided by this configuration option, then
 ** [sqlite3_malloc()] will be used to obtain the memory needed.</dd>
 **
 ** [[SQLITE_CONFIG_PAGECACHE]] <dt>SQLITE_CONFIG_PAGECACHE</dt>
 ** <dd> ^This option specifies a static memory buffer that SQLite can use for
 ** the database page cache with the default page cache implementation.
 ** This
 configuration should not be used if an application-define page
 ** cache implementation is loaded using the SQLITE_CONFIG_PCACHE2 option.
 ** There are three arguments to this option: A pointer to 8-byte aligned
 ** memory, the size of each page buffer (sz), and the number of pages (N).
 ** The sz argument should be the size of the largest database page
 ** (a power of two between 512 and 32768) plus a little extra for each
 ** page header. ^The page header size is 20 to 40 bytes depending on
 ** the host architecture. ^It is harmless, apart from the wasted memory,
 ** to make sz a little too large. The first
 ** argument should point to an allocation of at least sz*N bytes of memory.
 ** ^SQLite will use the memory provided by the first argument to satisfy its
 ** memory needs for the first N pages that it adds to cache. ^If additional
 ** page cache memory is needed beyond what is provided by this option, then
 ** SQLite goes to [sqlite3_malloc()] for the additional storage space.
 ** The pointer
 in the first argument must
 ** be aligned to an 8-byte boundary or subsequent behavior of SQLite
 ** will be undefined.</dd>
 **
 ** [[SQLITE_CONFIG_HEAP]] <dt>SQLITE_CONFIG_HEAP</dt>
 ** <dd> ^This option specifies a static memory buffer that SQLite will use
 ** for all of its dynamic memory allocation needs beyond those provided
 ** for by [SQLITE_CONFIG_SCRATCH] and [SQLITE_CONFIG_PAGECACHE].
 ** There are three arguments: An 8-byte aligned pointer to the memory,
 ** the number of bytes in the memory buffer, and the minimum allocation size.
 ** ^If the first pointer (the memory pointer) is NULL, then SQLite reverts
 ** to using its default memory allocator (the system malloc() implementation),
 ** undoing any prior invocation of [SQLITE_CONFIG_MALLOC]. ^If the
 ** memory pointer is not NULL and either [SQLITE_ENABLE_MEMSYS3] or
 ** [SQLITE_ENABLE_MEMSYS5] are defined, then the alternative memory
 ** allocator is engaged to handle all of SQLites memory allocation needs.
 ** The first pointer
 (the memory pointer) must be aligned to an 8-byte
 ** boundary or subsequent behavior of SQLite will be undefined.

** The minimum allocation size is capped at 2**12. Reasonable values
 ** for the minimum allocation size are 2**5 through 2**8.</dd>
 **

** [[SQLITE_CONFIG_MUTEX]] <dt>SQLITE_CONFIG_MUTEX</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to an
 ** instance of the [sqlite3_mutex_methods] structure. The argument specifies
 ** alternative low-level mutex routines to be used in place
 ** the mutex routines built into SQLite.)^ ^SQLite makes a copy of the
 ** content of the [sqlite3_mutex_methods] structure before the call to
 ** [sqlite3_config()] returns. ^If SQLite is compiled with
 ** the [SQLITE_THREADSAFE | SQLITE_THREADSAFE=0] compile-time option then
 ** the entire mutexing subsystem is omitted from the build and hence calls to
 ** [sqlite3_config()] with the SQLITE_CONFIG_MUTEX configuration option will
 ** return [SQLITE_ERROR].</dd>
 **

** [[SQLITE_CONFIG_GETMUTEX]]
 <dt>SQLITE_CONFIG_GETMUTEX</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to an
 ** instance of the [sqlite3_mutex_methods] structure. The
 ** [sqlite3_mutex_methods]
 ** structure is filled with the currently defined mutex routines.)^
 ** This option can be used to overload the default mutex allocation
 ** routines with a wrapper used to track mutex usage for performance
 ** profiling or testing, for example. ^If SQLite is compiled with
 ** the [SQLITE_THREADSAFE | SQLITE_THREADSAFE=0] compile-time option then
 ** the entire mutexing subsystem is omitted from the build and hence calls to
 ** [sqlite3_config()] with the SQLITE_CONFIG_GETMUTEX configuration option will
 ** return [SQLITE_ERROR].</dd>
 **

** [[SQLITE_CONFIG_LOOKASIDE]] <dt>SQLITE_CONFIG_LOOKASIDE</dt>
 ** <dd> ^(This option takes two arguments that determine the default
 ** memory allocation for the lookaside memory allocator on each
 ** [database connection]. The first argument is the
 ** size of each
 lookaside buffer slot and the second is the number of
 ** slots allocated to each database connection.)^ ^This option sets the
 ** <i>default</i> lookaside size. The [SQLITE_DBCONFIG_LOOKASIDE]
 ** verb to [sqlite3_db_config()] can be used to change the lookaside
 ** configuration on individual connections.)^ </dd>
 **

** [[SQLITE_CONFIG_PCACHE2]] <dt>SQLITE_CONFIG_PCACHE2</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to
 ** an [sqlite3_pcache_methods2] object. This object specifies the interface
 ** to a custom page cache implementation.)^ ^SQLite makes a copy of the
 ** object and uses it for page cache memory allocations.</dd>
 **

** [[SQLITE_CONFIG_GETPCACHE2]] <dt>SQLITE_CONFIG_GETPCACHE2</dt>
 ** <dd> ^(This option takes a single argument which is a pointer to an

** [sqlite3_pcache_methods2] object. SQLite copies of the current
 ** page cache implementation into that object.)^ </dd>
 **
 ** [[SQLITE_CONFIG_LOG]] <dt>SQLITE_CONFIG_LOG</dt>
 ** <dd> The SQLITE_CONFIG_LOG
 option is used to configure the SQLite
 ** global [error log].
 ** (^The SQLITE_CONFIG_LOG option takes two arguments: a pointer to a
 ** function with a call signature of void*(*)(void*,int,const char*),
 ** and a pointer to void. ^If the function pointer is not NULL, it is
 ** invoked by [sqlite3_log()] to process each logging event. ^If the
 ** function pointer is NULL, the [sqlite3_log()] interface becomes a no-op.
 ** ^The void pointer that is the second argument to SQLITE_CONFIG_LOG is
 ** passed through as the first parameter to the application-defined logger
 ** function whenever that function is invoked. ^The second parameter to
 ** the logger function is a copy of the first parameter to the corresponding
 ** [sqlite3_log()] call and is intended to be a [result code] or an
 ** [extended result code]. ^The third parameter passed to the logger is
 ** log message after formatting via [sqlite3_snprintf()].
 ** The SQLite logging interface is not reentrant; the logger function
 ** supplied
 by the application must not invoke any SQLite interface.
 ** In a multi-threaded application, the application-defined logger
 ** function must be threadsafe. </dd>
 **
 ** [[SQLITE_CONFIG_URI]] <dt>SQLITE_CONFIG_URI
 ** <dd> This option takes a single argument of type int. If non-zero, then
 ** URI handling is globally enabled. If the parameter is zero, then URI handling
 ** is globally disabled. If URI handling is globally enabled, all filenames
 ** passed to [sqlite3_open()], [sqlite3_open_v2()], [sqlite3_open16()] or
 ** specified as part of [ATTACH] commands are interpreted as URIs, regardless
 ** of whether or not the [SQLITE_OPEN_URI] flag is set when the database
 ** connection is opened. If it is globally disabled, filenames are
 ** only interpreted as URIs if the SQLITE_OPEN_URI flag is set when the
 ** database connection is opened. By default, URI handling is globally
 ** disabled. The default value may be changed by compiling with the
 ** [SQLITE_USE_URI] symbol defined.
 **
 ** [[SQLITE_CONFIG_COVERING_INDEX_SCAN]]
 <dt>SQLITE_CONFIG_COVERING_INDEX_SCAN
 ** <dd> This option takes a single integer argument which is interpreted as
 ** a boolean in order to enable or disable the use of covering indices for
 ** full table scans in the query optimizer. The default setting is determined
 ** by the [SQLITE_ALLOW_COVERING_INDEX_SCAN] compile-time option, or is "on"
 ** if that compile-time option is omitted.
 ** The ability to disable the use of covering indices for full table scans
 ** is because some incorrectly coded legacy applications might malfunction
 ** malfunction when the optimization is enabled. Providing the ability to

```

** disable the optimization allows the older, buggy application code to work
** without change even with newer versions of SQLite.
**
** [[SQLITE_CONFIG_PCACHE]] [[SQLITE_CONFIG_GETPCACHE]]
** <dt>SQLITE_CONFIG_PCACHE and SQLITE_CONFIG_GETPCACHE
** <dd> These options are obsolete and should not be used by new code.
** They are retained for backwards compatibility
but are now no-ops.
** </dd>
**
** [[SQLITE_CONFIG_SQLLOG]]
** <dt>SQLITE_CONFIG_SQLLOG
** <dd>This option is only available if sqlite is compiled with the
** [SQLITE_ENABLE_SQLLOG] pre-processor macro defined. The first argument should
** be a pointer to a function of type void(*)(void*,sqlite3*,const char*, int).
** The second should be of type (void*). The callback is invoked by the library
** in three separate circumstances, identified by the value passed as the
** fourth parameter. If the fourth parameter is 0, then the database connection
** passed as the second argument has just been opened. The third argument
** points to a buffer containing the name of the main database file. If the
** fourth parameter is 1, then the SQL statement that the third parameter
** points to has just been executed. Or, if the fourth parameter is 2, then
** the connection being passed as the second parameter is being closed. The
** third parameter is passed NULL in this case. An example of
using this
** configuration option can be seen in the "test_sqllog.c" source file in
** the canonical SQLite source tree.</dd>
**
** [[SQLITE_CONFIG_MMAP_SIZE]]
** <dt>SQLITE_CONFIG_MMAP_SIZE
** <dd>SQLITE_CONFIG_MMAP_SIZE takes two 64-bit integer (sqlite3_int64) values
** that are the default mmap size limit (the default setting for
** [PRAGMA mmap_size]) and the maximum allowed mmap size limit.
** The default setting can be overridden by each database connection using
** either the [PRAGMA mmap_size] command, or by using the
** [SQLITE_FCNTL_MMAP_SIZE] file control. The maximum allowed mmap size
** cannot be changed at run-time. Nor may the maximum allowed mmap size
** exceed the compile-time maximum mmap size set by the
** [SQLITE_MAX_MMAP_SIZE] compile-time option.
** If either argument to this option is negative, then that argument is
** changed to its compile-time default.
** </dd>
** </dl>
*/

```

Found in path(s):

```

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
rlW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/src/sqlite.h.in

```

No license file was found, but licenses were detected in source scan.

```
# 2006 September 14
#
# The author disclaims copyright to this source code. In place of
# a legal notice, here is a blessing:
#
# May you do good and not evil.
# May you find forgiveness for yourself and forgive others.
# May you share freely, never taking more than you give.
#
#*****
# This file implements regression tests for SQLite library. The
# focus of this script is testing the FTS3 module.
#
# $Id: fts3ac.test,v 1.1 2007/08/20 17:38:42 shess Exp $
#

set testdir [file dirname $argv0]
source $testdir/tester.tcl

# If SQLITE_ENABLE_FTS3 is defined, omit this file.
ifcapable !fts3 {
    finish_test
    return
}

# Create a table of sample email data. The data comes from email
# archives of Enron executives that was published as part of the
# litigation against that company.
#
do_test fts3ac-1.1 {
    db eval {
        CREATE VIRTUAL TABLE email
        USING fts3([from],[to],subject,body);
        BEGIN TRANSACTION;
        INSERT INTO email([from],[to],subject,body) VALUES('savita.puthigai@enron.com', 'traders.eol@enron.com,
        traders.eol@enron.com', 'EnronOnline- Change to Autohedge', 'Effective Monday, October 22, 2001 the following
        changes will be made to the Autohedge functionality on EnronOnline.

The volume on the hedge will now respect the minimum volume and volume increment settings on the parent
product. See rules below:

? If the transaction volume on the child is less than half of the parent's minimum volume no hedge will occur.
? If the transaction volume on the child is more than half the parent's minimum volume but less than half the volume
increment on the parent, the hedge will volume will be the parent's minimum volume.
? For all other volumes, the same rounding rules will apply based on the volume increment on the parent product.
```

Please see example below:

Parent's Settings:

Minimum: 5000

Increment: 1000

Volume on Autohedge

transaction Volume Hedged

1 - 2499 0

2500 - 5499 5000

5500 - 6499 6000');

INSERT INTO email([from],[to],subject,body) VALUES('dana.davis@enron.com', 'laynie.east@enron.com, lisa.king@enron.com, lisa.best@enron.com,', 'Leaving Early', 'FYI:

If it's ok with everyone's needs, I would like to leave @4pm. If you think you will need my assistance past the 4 o'clock hour just let me know; I'll be more than willing to stay.');

INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuere workplace.com', 'louise.kitchen@enron.com', '<<Concur Expense Document>> - CC02.06.02', 'The following expense report is ready for approval:

Employee Name: Christopher F. Calger

Status last changed by: Mollie E. Gustafson Ms

Expense Report Name: CC02.06.02

Report Total: \$3,972.93

Amount Due Employee: \$3,972.93

To approve this expense report, click on the following link for Concur Expense.

<http://expense.ms.enron.com>');

INSERT INTO email([from],[to],subject,body)

VALUES('jeff.duff@enron.com', 'julie.johnson@enron.com', 'Work request', 'Julie,

Could you print off the current work request report by 1:30 today?

Gentlemen,

I'd like to review this today at 1:30 in our office. Also, could you provide me with your activity reports so I can have Julie enter this information.

JD');

INSERT INTO email([from],[to],subject,body) VALUES('v.weldon@enron.com', 'gary.l.carrier@usa.dupont.com, scott.joyce@bankofamerica.com', 'Enron News', 'This could turn into something big....

<http://biz.yahoo.com/rf/010129/n29305829.html>');

INSERT INTO email([from],[to],subject,body) VALUES('mark.haedicke@enron.com', 'paul.simons@enron.com', 'Re: First Polish Deal!', 'Congrats! Things seem to be building rapidly now on the Continent. Mark');

INSERT INTO email([from],[to],subject,body) VALUES('e.carter@enron.com', 't..robinson@enron.com', 'FW: Producers Newsletter 9-24-2001', '

The producer lumber pricing sheet.

-----Original Message-----

From: Johnson, Jay

Sent: Tuesday, October 16, 2001 3:42 PM

To: Carter, Karen E.

Subject: FW: Producers Newsletter 9-24-2001

-----Original Message-----

From: Daigre, Sergai

Sent: Friday, September 21, 2001 8:33 PM

Subject: Producers Newsletter 9-24-2001

');

INSERT INTO email([from],[to],subject,body) VALUES('david.delainey@enron.com', 'kenneth.lay@enron.com', 'Greater Houston Partnership', 'Ken, in response to the letter from Mr Miguel San Juan, my suggestion would be to offer up the Falcon for their use; however, given the tight time frame and your recent visit with Mr. Fox that it would be difficult for either you or me to participate.

I spoke to Max and he agrees with this approach.

I hope this meets with your approval.

Regards

Delainey');

INSERT INTO email([from],[to],subject,body) VALUES('lachandra.fenceroy@enron.com', 'lindy.donoho@enron.com', 'FW: Bus Applications Meeting Follow Up', 'Lindy,

Here is the original memo we discussed earlier. Please provide any information that you may have.

Your cooperation is greatly appreciated.

Thanks,

lachandra.fenceroy@enron.com

713.853.3884

877.498.3401 Pager

-----Original Message-----

From: Bisbee, Joanne

Sent: Wednesday, September 26, 2001 7:50 AM

To: Fenceroy, LaChandra

Subject: FW: Bus Applications Meeting Follow Up

Lachandra, Please get with David Duff today and see what this is about. Who are our TW accounting business

users?

-----Original Message-----

From: Koh, Wendy
Sent: Tuesday, September 25, 2001 2:41 PM
To: Bisbee, Joanne
Subject: Bus Applications Meeting Follow Up

Lisa brought up a TW change effective Nov 1. It involves eliminating a turnback surcharge. I have no other information, but you might check with the business folks for any system changes required.

Wendy');

INSERT INTO email([from],[to],subject,body) VALUES('danny.mccarty@enron.com', 'fran.fagan@enron.com', 'RE: worksheets', 'Fran,

If Julie's merit needs to be lump sum, just move it over to that column. Also, send me Eric Gadd's sheets as well. Thanks.

Dan

-----Original Message-----

From: Fagan, Fran
Sent: Thursday, December 20, 2001 11:10 AM
To: McCarty, Danny
Subject: worksheets

As discussed, attached are your sheets for bonus and merit.

Thanks,

Fran Fagan
Sr. HR Rep
713.853.5219

<< File: McCartyMerit.xls >> << File: mccartyBonusCommercial_UnP.xls >>

);

INSERT INTO email([from],[to],subject,body) VALUES('bert.meyers@enron.com', 'shift.dl-portland@enron.com', 'OCTOBER SCHEDULE', 'TEAM,

PLEASE SEND ME ANY REQUESTS THAT YOU HAVE FOR OCTOBER. SO FAR I HAVE THEM FOR LEAF. I WOULD LIKE TO HAVE IT DONE BY THE 15TH OF THE MONTH. ANY QUESTIONS PLEASE GIVE ME A CALL.

BERT');

INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com', 'john.arnold@enron.com', 'bilal.bajwa@enron.com, john.griffith@enron.com,', 'TRV Notification: (NG - PROPT P/L - 09/27/2001)', 'The report named: NG - PROPT P/L <[---

Open Source Used In Cisco Unified Computing System - Manager 4.3.4 1510](http://trv.corp.enron.com/linkFromExcel.asp?report_cd=11&report_name=NG+-+PROPT+P/L&category_cd=5&category_name=FINANCIAL&toc_hide=1&sTV1=5&TV1Exp=Y¤t_efct_d</p></div><div data-bbox=)

ate=09/27/2001>,
published as of 09/27/2001 is now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('patrice.mims@enron.com', 'calvin.eakins@enron.com',
'Re: Small business supply assistance', 'Hi Calvin

I spoke with Rickey (boy, is he long-winded!!). Gave him the name of our credit guy, Russell Diamond.

Thank for your help!');

INSERT INTO email([from],[to],subject,body) VALUES('legal <.hall@enron.com>', 'stephanie.panus@enron.com',
'Termination update', 'City of Vernon and Salt River Project terminated their contracts. I will fax these notices to you.');

INSERT INTO email([from],[to],subject,body) VALUES('d..steffes@enron.com', 'richard.shapiro@enron.com',
'EES / ENA Government Affairs Staffing & Outside Services', 'Rick --

Here is the information on staffing and outside services. Call if you need anything else.

Jim

');

INSERT INTO email([from],[to],subject,body)
VALUES('gelliott@industrialinfo.com', 'pcopello@industrialinfo.com', 'ECAAR (Gavin), WSCC (Diablo Canyon),
& NPCC (Seabrook)', 'Dear Power Outage Database Customer,
Attached you will find an excel document. The outages contained within are forced or rescheduled outages. Your daily delivery will still contain these outages.

In addition to the two excel documents, there is a dbf file that is formatted like your daily deliveries you receive nightly. This will enable you to load the data into your regular database. Any questions please let me know. Thanks.

Greg Elliott

IIR, Inc.

713-783-5147 x 3481

outages@industrialinfo.com

THE INFORMATION CONTAINED IN THIS E-MAIL IS LEGALLY PRIVILEGED AND CONFIDENTIAL INFORMATION INTENDED ONLY FOR THE USE OF THE INDIVIDUAL OR ENTITY NAMED ABOVE. YOU ARE HEREBY NOTIFIED THAT ANY DISSEMINATION, DISTRIBUTION, OR COPY OF THIS E-MAIL TO UNAUTHORIZED ENTITIES IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE DELETE

IT.

- OUTAGE.dbf

- 111201R.xls

- 111201.xls ');

INSERT INTO email([from],[to],subject,body) VALUES('enron.announcements@enron.com',
'all_ena_egm_eim@enron.com', 'EWS Brown Bag', 'MARK YOUR LUNCH CALENDARS NOW !

You are invited to attend the EWS Brown Bag Lunch Series

Featuring: RAY BOWEN, COO

Topic: Enron Industrial Markets

Thursday, March 15, 2001
11:30 am - 12:30 pm
EB 5 C2

You bring your lunch, Limited Seating
We provide drinks and dessert. RSVP x 3-9610');
INSERT INTO email([from],[to],subject,body) VALUES('chris.germany@enron.com',
'ingrid.immer@williams.com', 'Re: About St Pauls', 'Sounds good to me. I bet this is next to the Warick?? Hotel.

"Immer, Ingrid" <Ingrid.Immer@Williams.com> on 12/21/2000 11:48:47 AM
To: ""chris.germany@enron.com"" <chris.germany@enron.com>
cc:
Subject: About St Pauls

<<About St Pauls.url>>
?
?http://www.stpaulshouston.org/about.html

Chris,

I like the looks of this place.? What do you think about going
here Christmas
eve?? They have an 11:00 a.m. service and a candlelight service at 5:00 p.m.,
among others.

Let me know.?? ii

- About St Pauls.url

);
INSERT INTO email([from],[to],subject,body) VALUES('nas@cpuc.ca.gov', 'skatz@sempratrading.com,
kmccea@sablau.com, thompson@wrightlaw.com,', 'Reply Brief filed July 31, 2000', '- CPUC01-#76371-v1-
Revised_Reply_Brief__Due_today_7_31_.doc');
INSERT INTO email([from],[to],subject,body) VALUES('gascontrol@agresources.com', 'dscott4@enron.com,
lcampbel@enron.com', 'Alert Posted 10:00 AM November 20,2000: E-GAS Request Reminder', 'Alert Posted 10:00
AM November 20,2000: E-GAS Request Reminder
As discussed in the Winter Operations Meeting on Sept.29,2000,
E-Gas(Emergency Gas) will not be offered this winter as a service from AGLC.
Marketers and Poolers can receive gas via Peaking and IBSS nominations(daisy

chain) from other marketers up to the 6 p.m. Same Day 2 nomination cycle.

');

INSERT INTO email([from],[to],subject,body) VALUES('dutch.quigley@enron.com',
'rwoolkwitz@powermerchants.com', '',

Here is a goody for you');

INSERT INTO email([from],[to],subject,body) VALUES('ryan.o"rourke@enron.com', 'k..allen@enron.com,
randy.bhatia@enron.com, frank.ermis@enron.com,', 'TRV Notification: (West VaR - 11/07/2001)', 'The report
named: West VaR

<http://trv.corp.enron.com/linkFromExcel.asp?report_cd=36&report_name=West+VaR&category_cd=2&category_name=WEST&toc_hide=1&sTV1=2&TV1Exp=Y¤t_efct_date=11/07/2001>, published as of 11/07/2001 is
now available for viewing on the website.');

INSERT INTO email([from],[to],subject,body) VALUES('mjones7@txu.com', 'cstone1@txu.com,
ggreen2@txu.com, timpowell@txu.com,', 'Enron / HPL Actuals for July 10, 2000', 'Teco Tap 10.000 / Enron ;
110.000 / HPL IFERC

LS HPL LSK IC 30.000 / Enron

');

INSERT INTO email([from],[to],subject,body) VALUES('susan.pereira@enron.com', 'kkw816@aol.com', 'soccer
practice', 'Kathy-

Is it safe to assume that practice is cancelled
for tonight??

Susan Pereira');

INSERT INTO email([from],[to],subject,body) VALUES('mark.whitt@enron.com', 'barry.tycholiz@enron.com',
'Huber Internal Memo', 'Please look at this. I didn"t know how deep to go with the desk. Do you think this works.

');

INSERT INTO email([from],[to],subject,body) VALUES('m..forney@enron.com', 'george.phillips@enron.com', '',
'George,

Give me a call and we will further discuss opportunities on the 13st floor.

Thanks,

JMForney

3-7160');

INSERT INTO email([from],[to],subject,body) VALUES('brad.mckay@enron.com', 'angusmcka@aol.com', 'Re: (no
subject)', 'not yet');

INSERT INTO email([from],[to],subject,body) VALUES('adam.bayer@enron.com', 'jonathan.mckay@enron.com',
'FW: Curve Fetch File', 'Here is the curve fetch file sent to me. It has plenty of points in it. If you give me a list of
which ones you need we may be able to construct a secondary worksheet to vlookup the values.

adam

35227

-----Original Message-----

From: Royed, Jeff

Sent: Tuesday,
September 25, 2001 11:37 AM
To: Bayer, Adam
Subject: Curve Fetch File

Let me know if it works. It may be required to have a certain version of Oracle for it to work properly.

Jeff Royed
Enron
Energy Operations
Phone: 713-853-5295');
INSERT INTO email([from],[to],subject,body) VALUES('matt.smith@enron.com', 'yan.wang@enron.com', 'Report
Formats', 'Yan,

The merged reports look great. I believe the only orientation changes are to
"unmerge" the following six reports:

31 Keystone Receipts
15 Questar Pipeline
40 Rockies Production
22 West_2
23 West_3
25 CIG_WIC

The orientation of the individual reports should be correct. Thanks.

Mat

PS. Just a reminder to add the "*" by the title of calculated points.);
INSERT INTO email([from],[to],subject,body) VALUES('michelle.lokay@enron.com', 'jimboman@bigfoot.com',
'Egyptian Festival', '----- Forwarded by Michelle Lokay/ET&S/Enron on 09/07/2000
10:08 AM -----

"Karkour, Randa" <Randa.Karkour@COMPAQ.com>
on 09/07/2000 09:01:04 AM
To: ""Agheb (E-mail)" <Agheb@aol.com>, "Leila Mankarious (E-mail)"
<Leila_Mankarious@mhhs.org>, ""Marymankarious (E-mail)"
<marymankarious@aol.com>, "Michelle lokay (E-mail)" <mlokay@enron.com>, "Ramy
Mankarious (E-mail)" <Mankarious@aol.com>
cc:

Subject: Egyptian Festival

<<Egyptian Festival.url>>

<http://www.egyptianfestival.com/>

- Egyptian Festival.url

');

INSERT INTO email([from],[to],subject,body) VALUES('errol.mclaughlin@enron.com',
'sherry.dawson@enron.com', 'Urgent!!! --- New EAST books', 'This has to be done.....')

Thanks

----- Forwarded by Errol McLaughlin/Corp/Enron on 12/20/2000

08:39 AM -----

From: William Kelly @ ECT

12/20/2000 08:31 AM

To: Kam Keiser/HOU/ECT@ECT, Darron C Giron/HOU/ECT@ECT, David
Baumbach/HOU/ECT@ECT, Errol McLaughlin/Corp/Enron@ENRON

cc: Kimat Singla/HOU/ECT@ECT, Kulvinder Fowler/NA/Enron@ENRON,

Kyle R

Lilly/HOU/ECT@ECT, Jeff Royed/Corp/Enron@ENRON, Alejandra

Chavez/NA/Enron@ENRON, Crystal Hyde/HOU/ECT@ECT

Subject: New EAST books

We have new book names in TAGG for our intramonth portfolios and it is extremely important that any deal booked to the East is communicated quickly to someone on my team. I know it will take some time for the new names to sink in and I do not want us to miss any positions or P&L.

Thanks for your help on this.

New:

Scott Neal : East Northeast

Dick Jenkins: East Marketeast

WK

');

INSERT INTO email([from],[to],subject,body) VALUES('david.forster@enron.com', 'eol.wide@enron.com',
'Change to Stack Manager', 'Effective immediately, there is a change to the Stack Manager which will
affect any Inactive Child.

An inactive Child with links to Parent products will not have their calculated prices updated until the Child product is Activated.

When the Child Product is activated, the price will be recalculated and updated BEFORE

it is displayed on the web.

This means that if you are inputting a basis price on a Child product, you will not see the final, calculated price until you Activate the product, at which time the customer will also see it.

If you have any questions, please contact the Help Desk on:

Americas: 713 853 4357

Europe: + 44 (0) 20 7783 7783

Asia/Australia: +61 2 9229 2300

Dave');

INSERT INTO email([from],[to],subject,body) VALUES('vince.kaminski@enron.com', 'jhh1@email.msn.com', 'Re: Light reading - see pieces beginning on page 7', 'John,

I saw it. Very interesting.

Vince

"John H Herbert" <jhh1@email.msn.com> on 07/28/2000 08:38:08 AM

To: "Vince J Kaminski" <Vince_J_Kaminski@enron.com>

cc:

Subject: Light reading - see pieces beginning on page 7

Cheers and have a nice weekend,

JHHerbert

- gd000728.pdf

');

INSERT INTO email([from],[to],subject,body) VALUES('matthew.lenhart@enron.com', 'mmmarcanel@equiva.com', 'RE:', 'i will try to line up a pig for you ');

INSERT INTO

email([from],[to],subject,body) VALUES('jae.black@enron.com', 'claudette.harvey@enron.com, chaun.roberts@enron.com, judy.martinez@enron.com,', 'Disaster Recovery Equipment', 'As a reminder...there are

several pieces of equipment that are set up on the 30th Floor, as well as on our floor, for the Disaster Recovery Team. PLEASE DO NOT TAKE, BORROW OR USE this equipment. Should you need to use another computer system, other than yours, or make conference calls please work with your Assistant to help find or set up equipment for you to use.

Thanks for your understanding in this matter.

T.Jae Black

East Power Trading

Assistant to Kevin Presto

off. 713-853-5800

fax 713-646-8272

cell 713-539-4760);

INSERT INTO email([from],[to],subject,body) VALUES('eric.bass@enron.com', 'dale.neuner@enron.com', '5 X 24', 'Dale,

Have you heard anything more on the 5 X 24s? We would like to get this product out ASAP.

Thanks,

Eric);

INSERT INTO email([from],[to],subject,body) VALUES('messenger@smartreminders.com', 'm..tholt@enron.com', '10% Coupon - PrintPal Printer Cartridges - 100% Guaranteed', '[IMAGE] [IMAGE][IMAGE][IMAGE]

Dear SmartReminders Member,

[IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE] [IMAGE]

We respect your privacy and are a Certified Participant of the BBBOnLine Privacy Program. To be removed from future offers,click here.

SmartReminders.com is a permission based service. To unsubscribe click here . ');

INSERT INTO email([from],[to],subject,body) VALUES('benjamin.rogers@enron.com', 'mark.bernstein@enron.com', ', 'The guy you are talking about left CIN under a "cloud of suspicion" sort of speak. He was the one who got into several bad deals and PPA"s in California for CIN, thus he left on a bad note. Let me know if you need more detail than that, I felt this was the type of info you were looking for. Thanks!

Ben');

INSERT INTO email([from],[to],subject,body)

VALUES('enron_update@concuworkplace.com', 'michelle.cash@enron.com', 'Expense Report Receipts Not Received', 'Employee Name: Michelle Cash

Report Name: Houston Cellular 8-11-01

Report Date: 12/13/01

Report ID: 594D37C9ED2111D5B452

Submitted On: 12/13/01

You are only allowed 2 reports with receipts outstanding. Your expense reports will not be paid until you meet this requirement.);

INSERT INTO email([from],[to],subject,body) VALUES('susan.mara@enron.com', 'ray.alvarez@enron.com, mark.palmer@enron.com, karen.denne@enron.com,', 'CAISO Emergency Motion -- to discontinue market-based rates for', 'FYI. the latest broadside against the generators.

Sue Mara

Enron Corp.

Tel: (415) 782-7802

Fax:(415) 782-7854

----- Forwarded by Susan J Mara/NA/Enron on 06/08/2001 12:24 PM -----

"Milner, Marcie" <MMilner@coral-energy.com> 06/08/2001 11:13 AM To: ""smara@enron.com"" <smara@enron.com> cc: Subject: CAISO Emergency Motion

Sue, did you see this emergency motion the CAISO filed today? Apparently they are requesting that FERC discontinue market-based rates immediately and grant refunds plus interest on the difference between cost-based rates and market revenues received back to May 2000. They are requesting the commission act within 14 days. Have you heard anything about what they are doing?

Marcie

<http://www.caiso.com/docs/2001/06/08/200106081005526469.pdf>

');

INSERT INTO email([from],[to],subject,body) VALUES('fletcher.sturm@enron.com', 'eloy.escobar@enron.com',

'Re: General Brinks Position Meeting', 'Eloy,

Who is General Brinks?

Fletch');

INSERT INTO email([from],[to],subject,body) VALUES('nailia.dindarova@enron.com',
'richard.shapiro@enron.com', 'Documents for Mark Frevert (on EU developments and lessons from', 'Rick,

Here are the documents that Peter has prepared for Mark Frevert.

Nailia

----- Forwarded by Nailia Dindarova/LON/ECT on 25/06/2001
16:36 -----

Nailia Dindarova

25/06/2001

15:36

To: Michael Brown/Enron@EUEnronXGate

cc: Ross Sankey/Enron@EUEnronXGate, Eric Shaw/ENRON@EUEnronXGate, Peter
Styles/LON/ECT@ECT

Subject: Documents for Mark Frevert (on EU developments and lessons from
California)

Michael,

These are the documents that Peter promised to give to you for Mark Frevert.
He has now handed them to him in person but asked me to transmit them
electronically to you, as well as Eric and Ross.

Nailia

');

INSERT INTO email([from],[to],subject,body) VALUES('peggy.a.kostial@accenture.com',
'dave.samuels@enron.com', 'EOL-Accenture Deal Sheet', 'Dave -

Attached are our comments and suggested changes. Please call to review.

On the time line for completion, we have four critical steps to complete:

Finalize market analysis to refine business case, specifically
projected revenue stream

Complete counterparty surveying, including targeting 3 CPs for letters

of intent
Review Enron asset base for potential reuse/ licensing
Contract
negotiations

Joe will come back to us with an updated time line, but it is my expectation that we are still on the same schedule (we just begun week three) with possibly a week or so slippage.....contract negotiations will probably be the critical path.

We will send our cut at the actual time line here shortly. Thanks,

Peggy

(See attached file: accenture-dealpoints v2.doc)

- accenture-dealpoints v2.doc ');

INSERT INTO email([from],[to],subject,body) VALUES('thomas.martin@enron.com', 'thomas.martin@enron.com', 'Re: Guadalupe Power Partners LP', '----- Forwarded by Thomas A Martin/HOU/ECT on 03/20/2001 03:49 PM -----

Thomas A Martin

10/11/2000 03:55 PM

To: Patrick Wade/HOU/ECT@ECT

cc:

Subject: Re: Guadalupe Power Partners LP

The deal is physically served at Oasis Waha or Oasis Katy and is priced at either HSC, Waha or Katytailgate GD at buyers option three days prior to NYMEX close.

');

INSERT INTO email([from],[to],subject,body)

VALUES('judy.townsend@enron.com', 'dan.junek@enron.com, chris.germany@enron.com', 'Columbia Distribution"s Capacity Available for Release - Sum', '----- Forwarded by Judy Townsend/HOU/ECT on 03/09/2001 11:04 AM -----

agoddard@nsource.com on 03/08/2001 09:16:57 AM

To: " - *Koch, Kent" <kkoch@nsource.com>, " - *Millar, Debra" <dmillar@nsource.com>, " - *Burke, Lynn" <lburke@nsource.com>

cc: " - *Heckathorn, Tom" <theckathorn@nsource.com>

Subject: Columbia Distribution"s Capacity Available for Release - Sum

Attached is Columbia Distribution"s notice of capacity available for release

for
the summer of 2001 (Apr. 2001 through Oct. 2001).

Please note that the deadline for bids is 3:00pm EST on March 20, 2001.

If you have any questions, feel free to contact any of the representatives
listed
at the bottom of the attachment.

Aaron Goddard

- 2001Summer.doc

);

INSERT INTO

email([from],[to],subject,body) VALUES('rhonda.denton@enron.com', 'tim.belden@enron.com,
dana.davis@enron.com, genia.fitzgerald@enron.com,', 'Split Rock Energy LLC', 'We have received the executed
EEI contract from this CP dated 12/12/2000.

Copies will be distributed to Legal and Credit.);

INSERT INTO email([from],[to],subject,body) VALUES('kerrymcelroy@dwt.com', 'jack.speer@alcoa.com,
crow@millernash.com, michaelearly@earthlink.net,', 'Oral Argument Request', ' - Oral Argument Request.doc');

INSERT INTO email([from],[to],subject,body) VALUES('mike.carson@enron.com', 'rlmichaelis@hormel.com', ",

'Did you come in town this wk end..... My new number at our house is :

713-668-3712..... my cell # is 281-381-7332

the kid');

INSERT INTO email([from],[to],subject,body) VALUES('cooper.richey@enron.com', 'trycooper@hotmail.com',
'FW: Contact Info', '

-----Original Message-----

From: Punja, Karim

Sent: Thursday, December 13, 2001 2:35 PM

To: Richey, Cooper

Subject: Contact Info

Cooper,

Its

been a real pleasure working with you (even though it was for only a small amount of time)

I hope we can stay in touch.

Home# 234-0249

email: kpunja@hotmail.com

Take Care,

Karim.

);

INSERT INTO email([from],[to],subject,body) VALUES('bjm30@earthlink.net', 'mcguinn.k@enron.com, mcguinn.ian@enron.com, mcguinn.stephen@enron.com,', 'email address change', 'Hello all.

I haven't talked to many of you via email recently but I do want to give you my new address for your email file:

bjm30@earthlink.net

I hope all is well.

Brian McGuinn);

INSERT INTO email([from],[to],subject,body) VALUES('shelley.corman@enron.com', 'steve.hotte@enron.com', 'Flat Panels', 'Can you please advise what is going on with the flat panels that we had planned to distribute to our gas logistics team. It was in the budget and we had the okay, but now I'm hearing there is some hold-up & the units are stored on 44.

Shelley);

INSERT INTO email([from],[to],subject,body) VALUES('sara.davidson@enron.com', 'john.schwartzenburg@enron.com, scott.dieball@enron.com, recipients@enron.com,', '2001 Enron Law Conference (Distribution List 2)', ' Enron Law Conference

San Antonio, Texas May 2-4, 2001 Westin Riverwalk

See attached memo for more details!!

? Registration for the law conference this year will be handled through an Online RSVP Form on the Enron Law Conference Website at <http://lawconference.corp.enron.com>. The website is still under construction and will not be available until Thursday, March 15, 2001.

? We will send you another e-mail to confirm when the Law Conference Website is operational.

? Please complete the Online RSVP Form as soon as it is available and submit it no later than Friday, March 30th.

);

INSERT INTO email([from],[to],subject,body) VALUES('tori.kuykendall@enron.com', 'heath.b.taylor@accenture.com', 'Re:', 'hey - thats funny about john - he definitely remembers him - i'll call pat and let him know - we are

coming on saturday - i just havent had a chance to
call you guys back -- looking forward to it -- i probably need the
directions again though');

INSERT INTO email([from],[to],subject,body) VALUES('darron.giron@enron.com', 'bryce.baxter@enron.com',
'Re: Feedback for Audrey Cook', 'Bryce,

I'll get it done today.

DG 3-9573

From: Bryce Baxter 06/12/2000 07:15 PM

To: Darron C Giron/HOU/ECT@ECT

cc:

Subject: Feedback for Audrey Cook

You were identified as a reviewer for Audrey Cook. If possible, could you
complete her feedback by end of business Wednesday? It will really help me
in the PRC process to have your input. Thanks.

);

INSERT INTO email([from],[to],subject,body) VALUES('casey.evans@enron.com', 'stephanie.sever@enron.com',
'Gas EOL ID', 'Stephanie,

In conjunction with the recent movement of several power traders, they are changing the names of their gas books as
well. The names of the new gas books and traders are as follows:

PWR-NG-LT-SPP:

Mike Carson

PWR-NG-LT-SERC: Jeff King

If you need to know their power desk to map their ID to their gas books, those desks are as follows:

EPMI-LT-SPP: Mike Carson

EPMI-LT-SERC: Jeff King

I will be in training this afternoon, but will be back when class is over. Let me know if you have any questions.

Thanks for your help!

Casey');

INSERT INTO email([from],[to],subject,body) VALUES('darrell.schoolcraft@enron.com',
'david.roensch@enron.com, kimberly.watson@enron.com, michelle.lokay@enron.com,', 'Postings', 'Please see the
attached.

ds

');

INSERT INTO email([from],[to],subject,body) VALUES('mcominsky@aol.com', 'cpatman@bracepatt.com, james_derrick@enron.com', 'Jurisprudence Luncheon', 'Carrin & Jim --

It was an honor and a pleasure to meet both of you yesterday. I know we will have fun working together on this very special event.

Jeff left the jurisprudence luncheon lists for me before he left on vacation.

I wasn't sure whether he transmitted them to you as well. Would you please advise me if you would like them sent to you? I can email the MS Excel files or I can fax the hard copies to you. Please advise what is most convenient.

I plan to be in town through the holidays and can be reached by phone, email, or cell phone at any time. My cell phone number is 713/705-4829.

Thanks again for your interest in the ADL's work. Martin.

Martin B. Cominsky
Director, Southwest Region
Anti-Defamation League
713/627-3490, ext. 122
713/627-2011 (fax)
MCominsky@aol.com');

INSERT INTO email([from],[to],subject,body) VALUES('phillip.love@enron.com', 'todagost@utmb.edu, gbsonnta@utmb.edu', 'New President', 'I had a little bird put a word in my ear. Is there any possibility for Ben Raimier to be Bush's secretary of HHS? Just curious about that infamous UTMB rumor mill. Hope things are well, happy holidays.

PL');

INSERT INTO email([from],[to],subject,body) VALUES('marie.heard@enron.com', 'ehamilton@fna.com', 'ISDA Master Agreement',

'Erin:

Pursuant to your request, attached are the Schedule to the ISDA Master Agreement, together with Paragraph 13 to the ISDA Credit Support Annex. Please let me know if you need anything else. We look forward to hearing your comments.

Marie

Marie Heard
Senior Legal Specialist

Enron North America Corp.
Phone: (713) 853-3907
Fax: (713) 646-3490
marie.heard@enron.com

);
INSERT INTO email([from],[to],subject,body) VALUES('andrea.ring@enron.com', 'beverly.beaty@enron.com',
'Re: Tennessee Buy - Louis Dreyfus', 'Beverly - once again thanks so much for your help on this.

);
INSERT INTO email([from],[to],subject,body) VALUES('karolyn.criado@enron.com', 'j..bonin@enron.com,
felicia.case@enron.com, b..clapp@enron.com,', 'Price List week of Oct. 8-9, 2001', '
Please contact me if you have any questions regarding last weeks prices.

Thank you,
Karolyn Criado
3-9441

);
INSERT INTO email([from],[to],subject,body)
VALUES('kevin.presto@enron.com', 'edward.baughman@enron.com, billy.braddock@enron.com', 'Associated',
'Please begin working on filling our Associated short position in 02. I would like to take this risk off the books.

In addition, please find out what a buy-out of VEPCO would cost us. With Rogers transitioning to run our retail risk management, I would like to clean up our customer positions.

We also need to continue to explore a JEA buy-out.

Thanks.);
INSERT INTO email([from],[to],subject,body) VALUES('stacy.dickson@enron.com', 'gregg.penman@enron.com',
'RE: Constellation TC 5-7-01', 'Gregg,

I am at home with a sick baby. (Lots of fun!) I will call you about this tomorrow.

Stacy');
INSERT INTO email([from],[to],subject,body) VALUES('joe.quenet@enron.com', 'dfincher@utilicorp.com', ", 'hey
big guy.....check this out.....

w ww.gorelieberman-2000.com/");
INSERT INTO email([from],[to],subject,body) VALUES('k..allen@enron.com', 'jacquestc@aol.com', ",
'Jacques,

I sent you a fax of Kevin Kolb's comments on the release. The payoff on the note would be \$36,248 (\$36090(principal) + \$158 (accrued interest)).

This is assuming we wrap this up on Tuesday.

Please email to confirm that their changes are ok so I can set up a meeting on Tuesday to reach closure.

Phillip');

INSERT INTO email([from],[to],subject,body) VALUES('kourtney.nelson@enron.com',
'mike.swerzbin@enron.com', 'Adjusted L/R Balance', 'Mike,

I placed the adjusted L/R Balance on the Enronwest site. It is under the "Staff/Kourtney Nelson". There are two links:

- 1) "Adj L_R" is the same data/format from the weekly strategy meeting.
- 2) "New Gen 2001_2002" link has all of the supply side info that is used to calculate the L/R balance
-Please note the Data Flag column, a value of "3" indicates the project was cancelled, on hold, etc and is not included in the calc.

Both of these sheets are interactive Excel spreadsheets and thus you can play around with the data as you please. Also, James Bruce is working to get his gen report on the web. That will help with your access to information on new gen.

Please let me know if you have any questions or feedback,

Kourtney

Kourtney Nelson

Fundamental Analysis

Enron North America

(503) 464-8280

kourtney.nelson@enron.com');

INSERT INTO email([from],[to],subject,body) VALUES('d..thomas@enron.com', 'naveed.ahmed@enron.com',
'FW: Current Enron TCC Portfolio', '

-----Original Message-----

From: Grace, Rebecca M.

Sent: Monday, December 17, 2001 9:44 AM

To: Thomas, Paul D.

Cc: Cashion, Jim; Allen, Thresa A.; May, Tom

Subject: RE: Current Enron TCC Portfolio

Paul,

I reviewed NY's list. I agree with all of their contracts numbers and mw amounts.

Call if you have any more questions.

Rebecca

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:08 AM
To: Grace, Rebecca M.
Subject: FW: Current Enron TCC Portfolio

<< File: enrontccs.xls >>

Rebecca,
Let me know if
you see any differences.

Paul
X 3-0403

-----Original Message-----

From: Thomas, Paul D.
Sent: Monday, December 17, 2001 9:04 AM
To: Ahmed, Naveed
Subject: FW: Current Enron TCC Portfolio

-----Original Message-----

From: Thomas, Paul D.
Sent: Thursday, December 13, 2001 10:01 AM
To: Baughman, Edward D.
Subject: Current Enron TCC Portfolio

);
INSERT INTO email([from],[to],subject,body) VALUES('stephanie.panus@enron.com',
'william.bradford@enron.com, debbie.brackett@enron.com,', 'Coastal Merchant Energy/El Paso Merchant Energy',
'Coastal Merchant Energy, L.P. merged with and into El Paso Merchant Energy,
L.P., effective February 1, 2001, with the surviving entity being El Paso
Merchant Energy, L.P. We currently have ISDA Master Agreements with both
counterparties. Please see the attached memo regarding the existing Masters
and let us know which agreement should be terminated.

Thanks,
Stephanie

);
INSERT INTO email([from],[to],subject,body) VALUES('kam.keiser@enron.com',

'c..kenne@enron.com', 'RE: What about this too???' ,'

-----Original Message-----

From: Kenne, Dawn C.
Sent: Wednesday, February 06, 2002 11:50 AM
To: Keiser, Kam
Subject: What about this too???

<< File: Netco Trader Matrix.xls >>

');

INSERT INTO email([from],[to],subject,body) VALUES('chris.meyer@enron.com', 'joe.parks@enron.com', 'Centana', 'Talked to Chip. We do need Cash Committe approval given the netting feature of your deal, which means Batch Funding Request. Please update per my previous e-mail and forward.

Thanks

chris

x31666');

INSERT INTO email([from],[to],subject,body) VALUES('debra.perlingiere@enron.com', 'jworman@academyofhealth.com', ', 'Have a great weekend! Happy Fathers Day!

Debra Perlingiere

Enron North America Corp.

1400 Smith Street, EB 3885

Houston, Texas 77002

dperlin@enron.com

Phone 713-853-7658

Fax 713-646-3490');

INSERT INTO email([from],[to],subject,body) VALUES('outlook.team@enron.com', ', 'Demo by Martha Janousek of Dashboard & Pipeline

Profile / Julia &', 'CALENDAR ENTRY: APPOINTMENT

Description:

Demo by Martha Janousek of Dashboard & Pipeline Profile / Julia & Dir Rpts. - 4102

Date: 1/5/2001

Time: 9:00 AM - 10:00 AM (Central Standard Time)

Chairperson: Outlook Migration Team

Detailed Description:');

INSERT INTO email([from],[to],subject,body) VALUES('diana.seifert@enron.com', 'mark.taylor@enron.com', 'Guest access Chile', 'Hello Mark,

Justin Boyd told me that your can help me with questions regarding Chile.

We got a request for guest access through MG.

The company is called Escondida and is a subsidiary of BHP Australia.

Please advise if I can set up a guest account or not.

F.Y.I.: MG is planning to put a "in w/h Chile" contract for Copper on-line as soon as Enron has done the due diligence for this country.

Thanks !

Best regards

Diana Seifert

EOL PCG');

INSERT INTO email([from],[to],subject,body) VALUES('enron_update@concuere workplace.com', 'mark.whitt@enron.com', '<<Concur Expense Document>> - 121001',

'The Approval status has changed on the following report:

Status last changed by: Barry L. Tycholiz

Expense Report Name: 121001

Report Total: \$198.98

Amount Due Employee: \$198.98

Amount Approved: \$198.98

Amount Paid: \$0.00

Approval Status: Approved

Payment Status: Pending

To review this expense report, click on the following link for Concur Expense.

<http://expense.ms.enron.com>');

INSERT INTO email([from],[to],subject,body) VALUES('kevin.hyatt@enron.com', '', 'Technical Support', 'Outside the U.S., please refer to the list below:

Australia:

1800 678-515

support@palm-au.com

Canada:

1905 305-6530

support@palm.com

New Zealand:

0800 446-398

support@palm-nz.com

U.K.:

0171 867 0108

eurosupport@palm.3com.com

Please refer to the Worldwide Customer Support card for a complete technical support contact list.');

INSERT INTO email([from],[to],subject,body) VALUES('geoff.storey@enron.com', 'dutch.quigley@enron.com', 'RE:', 'duke contact?')

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 10:14 AM

To: Storey, Geoff

Subject: RE:

bp corp Albert LaMore 281-366-4962

running the reports now

-----Original Message-----

From: Storey, Geoff

Sent: Wednesday, October 31, 2001 10:10 AM

To: Quigley, Dutch

Subject: RE:

give me a contact over there too

BP

-----Original Message-----

From: Quigley, Dutch

Sent: Wednesday, October 31, 2001 9:42 AM

To: Storey, Geoff

Subject:

Coral Jeff Whitnah 713-767-5374

Relaint Steve McGinn 713-207-4000);

INSERT INTO email([from],[to],subject,body) VALUES('pete.davis@enron.com', 'pete.davis@enron.com', 'Start Date: 4/22/01; HourAhead hour: 3; <CODESITE>', 'Start Date: 4/22/01; HourAhead hour: 3; No ancillary schedules awarded.

Variances detected.

Variances detected in Load schedule.

LOG MESSAGES:

PARSING FILE -->> O:\Portland\WestDesk\California Scheduling\ISO Final Schedules\2001042203.txt

---- Load Schedule ----

\$\$\$ Variance found in table tblLoads.

Details: (Hour: 3 / Preferred:

1.92 / Final: 1.89)
TRANS_TYPE: FINAL
LOAD_ID: PGE4
MKT_TYPE: 2
TRANS_DATE: 4/22/01
SC_ID: EPMI

```
);  
INSERT INTO email([from],[to],subject,body) VALUES('john.postlethwaite@enron.com',  
'john.zufferli@enron.com', 'Reference', 'John, hope things are going well up there for you. The big day is almost  
here for you and Jessica. I was wondering if I could use your name as a job reference if need be. I am just trying to  
get everything in order just in case something happens.
```

```
John');  
INSERT INTO email([from],[to],subject,body) VALUES('jeffrey.shankman@enron.com',  
'lschiffm@jonesday.com', 'Re:', 'I saw you called on the cell this a.m. Sorry I missed you. (I was in the  
shower). I have had a shitty week--I suspect my silence (not only to you,  
but others) after our phone call is a result of the week. I'm seeing Glen at  
11:15....talk to you');  
INSERT INTO email([from],[to],subject,body) VALUES('litebytz@enron.com', ', 'Lite Bytz RSVP', '  
This week's Lite Bytz presentation  
will feature the following TOOLZ speaker:
```

Richard McDougall
Solaris 8
Thursday, June 7, 2001

If you have not already signed up, please RSVP via email to litebytz@enron.com by the end of the day Tuesday, June 5, 2001.

*Remember: this is now a Brown Bag Event--so bring your lunch and we will provide cookies and drinks.

Click below for more details.

<http://home.enron.com:84/messaging/litebytztoolzprint.jpg>);

```
COMMIT;  
}  
} {}
```

```
#####  
# Everything above just builds an interesting test database. The actual  
# tests come after this comment.  
#####
```

```
do_test fts3ac-1.2 {  
  execsql {  
    SELECT rowid FROM email WHERE email MATCH 'mark'  
  }  
}
```

```

} {6 17 25 38 40 42 73 74}
do_test fts3ac-1.3 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'susan'
  }
} {24 40}
do_test fts3ac-1.4 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH
'mark susan'
  }
} {40}
do_test fts3ac-1.5 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'susan mark'
  }
} {40}
do_test fts3ac-1.6 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH "'mark susan'"
  }
} {}
do_test fts3ac-1.7 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark -susan'
  }
} {6 17 25 38 42 73 74}
do_test fts3ac-1.8 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH '-mark susan'
  }
} {24}
do_test fts3ac-1.9 {
  execsql {
    SELECT rowid FROM email WHERE email MATCH 'mark OR susan'
  }
} {6 17 24 25 38 40 42 73 74}

# Some simple tests of the automatic "offsets(email)" column. In the sample
# data set above, only one message, number 20, contains the words
# "gas" and "reminder" in both body and subject.
#
do_test fts3ac-2.1 {
  execsql {
    SELECT rowid, offsets(email) FROM email
    WHERE email MATCH 'gas reminder'
  }
} {20 {2 0 42 3 2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}

```

```

do_test fts3ac-2.2 {

execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE email MATCH 'subject:gas reminder'
}
} {20 {2 0 42 3 2 1 54 8 3 1 54 8}}

do_test fts3ac-2.3 {
execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE email MATCH 'body:gas reminder'
}
} {20 {2 1 54 8 3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}

do_test fts3ac-2.4 {
execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE subject MATCH 'gas reminder'
}
} {20 {2 0 42 3 2 1 54 8}}

do_test fts3ac-2.5 {
execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE body MATCH 'gas reminder'
}
} {20 {3 0 42 3 3 1 54 8 3 0 129 3 3 0 143 3 3 0 240 3}}

# Document 32 contains 5 instances of the world "child". But only
# 3 of them are paired with "product". Make sure only those instances
# that match the phrase appear in the offsets(email) list.
#
do_test fts3ac-3.1 {
execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE body MATCH 'child product' AND +rowid=32
}
} {32 {3 0 94
5 3 0 114 5 3 0 207 5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7 3 1 493 7}}

do_test fts3ac-3.2 {
execsql {
  SELECT rowid, offsets(email) FROM email
  WHERE body MATCH "'child product'"
}
} {32 {3 0 207 5 3 1 213 7 3 0 245 5 3 1 251 7 3 0 409 5 3 1 415 7}}

# Snippet generator tests
#
do_test fts3ac-4.1 {
execsql {

```

```

SELECT snippet(email) FROM email
  WHERE email MATCH 'subject:gas reminder'
}
} {{Alert Posted 10:00 AM November 20,2000: E-<b>GAS</b> Request <b>Reminder</b>}}
do_test fts3ac-4.2 {
  execsql {
    SELECT snippet(email) FROM email
      WHERE email MATCH 'christmas candlelight'
  }
} {{<b>...</b>here <b>Christmas</b>
eve?? They have an 11:00 a.m. service and a <b>candlelight</b> service<b>...</b>}}

do_test fts3ac-4.3 {
  execsql {
    SELECT snippet(email) FROM email
      WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <b>Deal</b> <b>Sheet</b><b>...</b>asset base for <b>potential</b> <b>reuse</b>/ licensing
  Contract negotiations<b>...</b>}}
do_test
fts3ac-4.4 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
      WHERE email MATCH 'deal sheet potential reuse'
  }
} {{EOL-Accenture <<<Deal>>> <<<Sheet>>> asset base for <<<potential>>> <<<reuse>>>/ licensing
  Contract negotiations }}
do_test fts3ac-4.5 {
  execsql {
    SELECT snippet(email,'<<<','>>>',') FROM email
      WHERE email MATCH 'first things'
  }
} {{Re: <<<First>>> Polish Deal! Congrats! <<<Things>>> seem to be building rapidly now }}
do_test fts3ac-4.6 {
  execsql {
    SELECT snippet(email) FROM email
      WHERE email MATCH 'chris is here'
  }
} {{<b>...</b><b>chris</b>.germany@enron.com" <<b>chris</b><b>...</b>bet this <b>is</b> next
to<b>...</b>about going <b>here</b> Christmas
eve<b>...</b>}}
do_test fts3ac-4.7 {
  execsql {
    SELECT snippet(email) FROM email
      WHERE email MATCH "'pursuant to'"
  }
} {{Erin:

```

```

<b>Pursuant</b> <b>to</b> your request, attached are the Schedule to the ISDA Master Agreement,
together<b>...</b>}}
do_test
fts3ac-4.8 {
execsql {
  SELECT snippet(email) FROM email
  WHERE email MATCH 'ancillary load davis'
}
} {{pete.<b>davis</b>@enron.com<b>...</b>3; No <b>ancillary</b> schedules awarded<b>...</b>detected in
<b>Load</b> schedule.

```

```
LOG<b>...</b>}}
```

```
# Combinations of AND and OR operators:
```

```

#
do_test fts3ac-5.1 {
execsql {
  SELECT snippet(email) FROM email
  WHERE email MATCH 'questar enron OR com'
}
} {{matt.smith@<b>enron</b>.<b>com</b><b>...</b>31 Keystone Receipts
15 <b>Questar</b> Pipeline
40 Rockies<b>...</b>}}

```

```

do_test fts3ac-5.2 {
execsql {
  SELECT snippet(email) FROM email
  WHERE email MATCH 'enron OR com questar'
}
} {{matt.smith@<b>enron</b>.<b>com</b><b>...</b>31 Keystone Receipts
15 <b>Questar</b> Pipeline
40 Rockies<b>...</b>}}

```

```
#-----
```

```
# Test a problem reported on the mailing list.
```

```

#
do_test fts3ac-6.1 {
execsql {
  CREATE VIRTUAL TABLE ft USING
fts3(one, two);
  INSERT INTO ft VALUES(", 'foo');
  INSERT INTO ft VALUES('foo', 'foo');
  SELECT offsets(ft) FROM ft WHERE ft MATCH 'foo';
}
} {{1 0 0 3} {0 0 0 3 1 0 0 3}}
do_test fts3ac-6.2 {
execsql {
  DELETE FROM ft WHERE one = 'foo';

```

```
SELECT offsets(ft) FROM ft WHERE ft MATCH 'foo';
}
} {{1 0 0 3}}
```

finish_test

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/fts3ac.test
No license file was found, but licenses were detected in source scan.
```

Sources are in the public domain.

Rather than using fopen() to write XML or some proprietary format into

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/features.html
No license file was found, but licenses were detected in source scan.
```

```
%define name sqlite
%define version SQLITE_VERSION
%define release 1
```

Name: % {name}

Summary: SQLite is a C library that implements an embeddable SQL database engine

Version: % {version}

Release: % {release}

Source: % {name}-% {version}.tar.gz

Group: System/Libraries

URL: <http://www.sqlite.org/>

License: Public Domain

BuildRoot: % {_tmppath}/% {name}-% {version}-root

%description

SQLite is a software library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine.

Programs that link with the SQLite library can have SQL database access without running a separate RDBMS process. The distribution comes with a standalone command-line access program (sqlite) that can be used to administer an SQLite database and which serves as an example of how to use the SQLite library.

%package -n % {name}-devel

Summary: Header files and libraries for developing apps which will use sqlite

Group: Development/C

Requires:

% {name} = % {version}-% {release}


```

%description -n %{name}-devel
The sqlite-devel package contains the header files and libraries needed
to develop programs that use the SQLite database library.

%prep
%setup -q -n %{name}

%build
CFLAGS="%optflags -DNDEBUG=1" CXXFLAGS="%optflags -DNDEBUG=1" ./configure --prefix=%{_prefix}

make
make doc

%install
install -d $RPM_BUILD_ROOT/%{_prefix}
install -d $RPM_BUILD_ROOT/%{_prefix}/bin
install -d $RPM_BUILD_ROOT/%{_prefix}/include
install -d $RPM_BUILD_ROOT/%{_prefix}/lib
make install prefix=$RPM_BUILD_ROOT/%{_prefix}

%post -p /sbin/ldconfig

%postun -p /sbin/ldconfig

%clean
rm -fr $RPM_BUILD_ROOT

%files
%defattr(-, root, root)
%{_libdir}/*.so*
%{_bindir}/*

%files -n %{name}-devel
%defattr(-, root, root)
%{_libdir}/pkgconfig/sqlite3.pc
%{_libdir}/*.a
%{_libdir}/*.la
%{_includedir}/*
%doc doc/*

Found in path(s):
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/spec.template
No license file was found, but licenses were detected in source scan.

other proprietary or non-standard VFSEs.

Found in path(s):

```

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/uri.html

No license file was found, but licenses were detected in source scan.

SQLite is open source, and is available in the public domain

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/books.html

No license file was found, but licenses were detected in source scan.

/*

* This code implements the MD5 message-digest algorithm.

* The algorithm is due to Ron Rivest. This code was

* written by Colin Plumb in 1993, no copyright is claimed.

* This code is in the public domain; do with it what you wish.

*

* Equivalent code is available from RSA Data Security, Inc.

* This code has been tested against that, and is equivalent,

* except that you don't need to include two pages of legalese

* with every copy.

*

* To compute the message digest of a chunk of bytes, declare an

* MD5Context structure, pass it to MD5Init, call MD5Update as

* needed on buffers full of bytes, and then call MD5Final, which

* will fill a supplied 16-byte array with the digest.

*/

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/src/tclsqlite.c

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/threadtest3.c

No license file was found, but licenses were detected in source scan.

public domain.</p>

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/index.html

No license file was found, but licenses were detected in source scan.

without a shared lock, other processes are free to modify the database

Found in path(s):

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-rlW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/atomiccommit.html

No license file was found, but licenses were detected in source scan.

```
)print dup( )cv$ print
```

Found in path(s):

```
* {cv$ $error/errname get(Error
```

No license file was found, but licenses were detected in source scan.

<p>SQLite itself is in the public domain and can be used for any purpose. But TH3 is proprietary and requires a license.

Found in path(s):

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-riW3nghG/sqlite-doc-3071700.zip-cosi-expand-archive-BpvZZdxh/sqlite-doc-3071700/th3.html
```

No license file was found, but licenses were detected in source scan.

```
/*
```

```
** 2004 May 22
```

```
**
```

```
** The author disclaims copyright to this source code. In place of  
** a legal notice, here is a blessing:
```

```
**
```

```
** May you do good and not evil.
```

```
** May you find forgiveness for yourself and forgive others.
```

```
** May you share freely, never taking more than you give.
```

```
**
```

```
*****
```

```
**
```

```
** This file contains the VFS implementation for unix-like operating systems  
** include Linux, MacOSX, *BSD, QNX, VxWorks, AIX, HPUX, and others.
```

```
**
```

```
** There are actually several different VFS implementations in this file.  
** The differences are in the way that file locking is done. The default  
** implementation uses Posix Advisory Locks. Alternative implementations  
** use flock(), dot-files, various proprietary locking schemas, or simply  
** skip locking all together.
```

```
**
```

```
** This source file is organized into divisions where the logic for various
```

```
**
```

```
subfunctions is contained within the appropriate division. PLEASE
```

```
** KEEP THE STRUCTURE OF THIS FILE INTACT. New code should be placed  
** in the correct division and should be clearly labeled.
```

```
**
```

```
** The layout of divisions is as follows:
```

```
**
```

```
** * General-purpose declarations and utility functions.
```

```
** * Unique file ID logic used by VxWorks.
```

```
** * Various locking primitive implementations (all except proxy locking):
```

```

** + for Posix Advisory Locks
** + for no-op locks
** + for dot-file locks
** + for flock() locking
** + for named semaphore locks (VxWorks only)
** + for AFP filesystem locks (MacOSX only)
** * sqlite3_file methods not associated with locking.
** * Definitions of sqlite3_io_methods objects for all locking
** methods plus "finder" functions for each locking method.
** * sqlite3_vfs method implementations.
** * Locking primitives for the proxy uber-locking-method. (MacOSX only)
** * Definitions of sqlite3_vfs objects
for all locking methods
** plus implementations of sqlite3_os_init() and sqlite3_os_end().
*/

```

Found in path(s):

```

* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/src/os_unix.c
No license file was found, but licenses were detected in source scan.

```

```
{string currentfile exch readstring pop}executeonly def
```

Found in path(s):

```

* /
No license file was found, but licenses were detected in source scan.

```

```
# 2006 October 1
```

```

#
# The author disclaims copyright to this source code. In place of
# a legal notice, here is a blessing:
#
# May you do good and not evil.
# May you find forgiveness for yourself and forgive others.
# May you share freely, never taking more than you give.
#

```

```
*****
```

```

# This file implements regression tests for SQLite library. The
# focus of this script is testing the FTS1 module, and in particular
# the Porter stemmer.
#

```

```

# $Id: fts1porter.test,v 1.5 2006/10/03 19:37:37 drh Exp $
#

```

```

set testdir [file dirname $argv0]
source $testdir/tester.tcl

```

```
# If SQLITE_ENABLE_FTS1 is defined, omit this file.
```

```

ifcapable !fts1 {
  finish_test
  return
}

# Test data for the Porter stemmer. The first word of each line
# is the input. The second word is the desired output.
#
# This test data is taken from http://www.tartarus.org/martin/PorterStemmer/
#
# There is no claim of copyright made on that page, but you should
# probably contact the author (Martin Porter - the inventor of the
# Porter Stemmer algorithm) if you want to use this test data in a
# commercial product of some kind. The stemmer code in FTS1 is a
# complete rewrite from scratch based on the algorithm specification
# and does not contain any code under copyright.
#
set porter_test_data {
  a          a
  aaron      aaron
  abaissiez  abaissiez
  abandon    abandon
  abandoned  abandon
  abase      abas
  abash      abash
  abate      abat
  abated     abat
  abatement  abat
  abatements abat
  abates     abat
  abbess     abbess
  abbey      abbei
  abbeys     abbei
  abbominable  abbomin
  abbot      abbot
  abbots     abbot
  abbreviated
  abbrevi
  abed      ab
  abel      abel
  aberga    aberga
  abergavenny  abergavenni
  abet      abet
  abetting  abet
  abhominable  abhomin
  abhor     abhor
  abhorr    abhorr
  abhorred  abhor

```

abhorring	abhor
abhors	abhor
abhorson	abhorson
abide	abid
abides	abid
abilities	abil
ability	abil
abject	abject
abjectly	abjectli
abjects	abject
abjur	abjur
abjure	abjur
able	abl
abler	abler
aboard	aboard
abode	abod
aboded	abod
abodements	abod
aboding	abod
abominable	abomin
abominably	abomin
abominations	
abomin	
abortive	abort
abortives	abort
abound	abound
abounding	abound
about	about
above	abov
abr	abr
abraham	abraham
abram	abram
abreast	abreast
abridg	abridg
abridge	abridg
abridged	abridg
abridgment	abridg
abroach	abroach
abroad	abroad
abrogate	abrog
abrook	abrook
abrupt	abrupt
abruption	abrupt
abruptly	abruptli
absence	absenc
absent	absent
absey	absei
absolute	absolut

absolutely	absolut
absolv	absolv
absolver	absolv
abstains	abstain
abstemious	abstemi
abstinence	abstin
abstract	abstract
absurd	absurd
absyrtus	absyrtu
abundance	abund
abundant	abund
abundantly	abundantli
abus	abu
abuse	abus
abused	abus
abuser	abus
abuses	abus
abusing	abus
abutting	abut
aby	abi
abysm	abysm
ac	ac
academe	academ
academes	academ
accent	accent
accents	accent
accept	accept
acceptable	accept
acceptance	accept
accepted	accept
accepts	accept
access	access
accessary	accessari
accessible	access
accidence	accid
accident	accid
accidental	accident
accidentally	
accident	
accidents	accid
accite	accit
accited	accit
accites	accit
acclamations	acclam
accommodate	accommod
accommodated	accommod
accommodation	accommod
accommodations	accommod

accommodo	accommodo
accompanied	accompani
accompany	accompani
accompanying	accompani
accomplices	accomplic
accomplish	accomplish
accomplished	accomplish
accomplishing	accomplish
accomplishment	accomplish
accompt	accompt
accord	accord
accordant	accord
accorded	accord
accordeth	accordeth
according	accord
accordingly	accordingli
accords	accord
accost	accost
accosted	accost
account	account
accountant	
account	
accounted	account
accounts	account
accoutred	accoutr
accoutrement	accoutr
accoutrements	accoutr
accrue	accru
accumulate	accumul
accumulated	accumul
accumulation	accumul
accurs	accur
accursed	accurs
accurst	accurst
accus	accu
accusation	accus
accusations	accus
accusative	accus
accusativo	accusativo
accuse	accus
accused	accus
accuser	accus
accusers	accus
accuses	accus
accuseth	accuseth
accusing	accus
accustom	accustom
accustomed	accustom

ace	ac
acerb	acerb
ache	ach
acheron	acheron
aches	
ach	
achiev	achiev
achieve	achiev
achieved	achiev
achievement	achiev
achievements	achiev
achiever	achiev
achieves	achiev
achieving	achiev
achilles	achil
aching	ach
achitophel	achitophel
acknowledg	acknowledg
acknowledge	acknowledg
acknowledged	acknowledg
acknowledgment	acknowledg
acknown	acknown
acold	acold
aconitum	aconitum
acordo	acordo
acorn	acorn
acquaint	acquaint
acquaintance	acquaint
acquainted	acquaint
acquaints	acquaint
acquir	acquir
acquire	acquir
acquisition	acquisit
acquit	acquit
acquittance	acquitt
acquittances	acquitt
acquitted	
acquit	
acre	acr
acres	acr
across	across
act	act
actaeon	actaeon
acted	act
acting	act
action	action
actions	action
actium	actium

active	activ
actively	activ
activity	activ
actor	actor
actors	actor
acts	act
actual	actual
acture	actur
acute	acut
acutely	acut
ad	ad
adage	adag
adallas	adalla
adam	adam
adamant	adam
add	add
added	ad
adder	adder
adders	adder
addeth	addeth
addict	addict
addicted	addict
addiction	addict
adding	ad
addition	addit
additions	addit
addle	addl
address	address
addressing	address
addrest	addrest
adds	add
adhere	adher
adheres	adher
adieu	adieu
adieux	adieu
adjacent	adjac
adjoin	adjoin
adjoining	adjoin
adjourn	adjourn
adjudg	adjudg
adjudged	adjudg
adjunct	adjunct
administer	administ
administration	administr
admir	admir
admirable	admir
admiral	admir
admiration	admir

admire	admir
admired	admir
admirer	admir
admiring	admir
admiringly	admiringli
admission	
admiss	
admit	admit
admits	admit
admittance	admitt
admitted	admit
admitting	admit
admonish	admonish
admonishing	admonish
admonishment	admonish
admonishments	admonish
admonition	admonit
ado	ado
adonis	adoni
adopt	adopt
adopted	adopt
adoptedly	adoptedli
adoption	adopt
adoptious	adopti
adopts	adopt
ador	ador
adoration	ador
adorations	ador
adore	ador
adorer	ador
adores	ador
adorest	adorest
adoreth	adoreth
adoring	ador
adorn	adorn
adorned	adorn
adornings	adorn
adornment	adorn
adorns	
adorn	
adown	adown
adramadio	adramadio
adrian	adrian
adriana	adriana
adriano	adriano
adriatic	adriat
adsum	adsum
adulation	adul

adulterate	adulter
adulterates	adulter
adulterers	adulter
adulteress	adulteress
adulteries	adulteri
adulterous	adulter
adultery	adulteri
adultress	adultress
advanc	advanc
advance	advanc
advanced	advanc
advancement	advanc
advancements	advanc
advances	advanc
advancing	advanc
advantage	advantag
advantageable	advantag
advantaged	advantag
advantageous	advantag
advantages	advantag
advantaging	advantag
advent	
advent	
adventur	adventur
adventure	adventur
adventures	adventur
adventuring	adventur
adventurous	adventur
adventurously	adventur
adversaries	adversari
adversary	adversari
adverse	advers
adversely	advers
adversities	advers
adversity	advers
advertis	adverti
advertise	advertis
advertised	advertis
advertisement	advertis
advertising	advertis
advice	advic
advis	advi
advise	advis
advised	advis
advisedly	advisedli
advises	advis
advisings	advis
advocate	advoc

advocation	advoc
aeacida	aeacida
aeacides	aeacid
aedile	aedil
aediles	aedil
aegeon	
aegeon	
aegion	aegion
aegles	aegl
aemelia	aemelia
aemilia	aemilia
aemilius	aemiliu
aeneas	aenea
aeolus	aeolu
aer	aer
aerial	aerial
aery	aeri
aesculapius	aesculapiu
aeson	aeson
aesop	aesop
aetna	aetna
afar	afar
afear	afear
afeard	afeard
affability	affabl
affable	affabl
affair	affair
affaire	affair
affairs	affair
affect	affect
affectation	affect
affectations	affect
affected	affect
affectedly	affectedli
affecteth	affecteth
affecting	affect
affection	affect
affectionate	
affection	
affectionately	affection
affections	affect
affects	affect
affeer	affeer
affianc	affianc
affiance	affianc
affianced	affianc
affied	affi
affin	affin

affined	affin
affinity	affin
affirm	affirm
affirmation	affirm
affirmatives	affirm
afflict	afflict
afflicted	afflict
affliction	afflict
afflictions	afflict
afflicts	afflict
afford	afford
affordeth	affordeth
affords	afford
affray	affrai
affright	affright
affrighted	affright
affrights	affright
affront	affront
affronted	affront
affy	affi
afield	afield
afire	
	afir
afloat	afloat
afoot	afoot
afore	afor
aforehand	aforehand
aforesaid	aforesaid
afraid	afraid
afresh	afresh
afric	afric
africa	africa
african	african
afront	afront
after	after
afternoon	afternoon
afterward	afterward
afterwards	afterward
ag	ag
again	again
against	against
agamemmon	agamemmon
agamemnon	agamemnon
agate	agat
agaz	agaz
age	ag
aged	ag
agenor	agenor

agent	agent
agents	agent
ages	ag
aggravate	aggrav
aggrief	aggrief
agile	
agil	
agincourt	agincourt
agitation	agit
aglet	aglet
agnize	agniz
ago	ago
agone	agon
agony	agoni
agree	agre
agreed	agre
agreeing	agre
agreement	agreement
agrees	agre
agrippa	agrippa
aground	aground
ague	agu
aguecheek	aguecheek
agued	agu
agueface	aguefac
agues	agu
ah	ah
aha	aha
ahungry	ahungri
ai	ai
aialvolio	aialvolio
aiaria	aiaria
aid	aid
aidance	aidanc
aidant	aidant
aided	aid
aiding	aid
aidless	aidless
aids	aid
ail	ail
aim	aim
aimed	aim
aimest	aimest
aiming	aim
aims	aim
ainsi	ainsi
aio	aio
air	air

aired	air
airless	airless
airs	air
airy	airi
ajax	ajax
akilling	akil
al	al
alabaster	alabast
alack	alack
alacrity	alacr
alarbus	alarbu
alarm	alarm
alarms	alarm
alarum	alarum
alarums	alarum
alas	ala
alb	alb
alban	alban
albans	alban
albany	albani
albeit	albeit
albion	albion
alchemist	alchemist
alchemy	
alchemi	
alcibiades	alcibiad
alcides	alcid
alder	alder
alderman	alderman
aldermen	aldermen
ale	al
alecto	alecto
alehouse	alehous
alehouses	alehous
alencon	alencon
alengon	alengon
aleppo	aleppo
ales	al
alewife	alewif
alexander	alexand
alexanders	alexand
alexandria	alexandria
alexandrian	alexandrian
alexas	alexa
alias	alia
alice	alic
alien	alien
aliena	aliena

alight	alight
alighted	alight
alights	alight
aliis	ali
alike	alik
alisander	alisand
alive	aliv
all	all
alla	alla
allay	allai
allayed	allai
allaying	allai
allayment	allay
allayments	allay
allays	allai
allegation	alleg
allegations	alleg
allege	alleg
alleged	alleg
allegiance	allegi
allegiant	allegi
alley	allei
alleys	allei
allhallowmas	allhallowma
alliance	allianc
allicholy	allicholi
allied	alli
allies	alli
alligant	allig
alligator	allig
allons	allon
allot	allot
allots	allot
allotted	allot
allottery	allotteri
allow	allow
allowance	allow
allowed	allow
allowing	allow
allows	
allow	
allur	allur
allure	allur
allurement	allur
alluring	allur
allusion	allus
ally	alli
alycholly	alycholli

almain	almain
almanac	almanac
almanack	almanack
almanacs	almanac
almighty	almighti
almond	almond
almost	almost
alms	alm
almsman	almsman
aloes	alo
aloft	aloft
alone	alon
along	along
alonso	alonso
aloof	aloof
aloud	aloud
alphabet	alphabet
alphabetical	alphabet
alphonso	alphonso
alps	alp
already	alreadi
also	also
alt	alt
altar	altar
altars	
	altar
alter	alter
alteration	alter
altered	alter
alters	alter
althaea	althaea
although	although
altitude	altitud
altogether	altogeth
alton	alton
always	alwai
am	am
amaimon	amaimon
amain	amain
amaking	amak
amamon	amamon
amaz	amaz
amaze	amaz
amazed	amaz
amazedly	amazedli
amazedness	amazed
amazement	amaz

amazes	amaz
amazeth	amazeth
amazing	amaz
amazon	amazon
amazonian	amazonian
amazons	amazon
ambassador	ambassador
ambassadors	ambassador
amber	
amber	
ambiguides	ambiguid
ambiguities	ambigu
ambiguous	ambigu
ambition	ambit
ambitions	ambit
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amnipotent	amnipot
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ample	ampl
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author	author
authorities	author
authority	author
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authorizing	author
authors	author
autolycus	autolycu
autre	autr
autumn	autumn
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bachelors	bachelor
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backwardly	backwardli
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bacons	bacon
bad	bad
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ballads	ballad
ballast	ballast
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balsam	balsam
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banbury	banburi
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bandied	bandi
banding	band
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banditti	banditti
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banes	bane
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barbarous	barbar

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barbason	barbason
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barber	barber
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barricado	barricado

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bedclothes	bedcloth
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behalf	behalf

behalfs	behalf
behav	behav
behaved	behav
behavedst	behavedst
behavior	behavior
behaviors	behavior
behaviour	behaviour
behaviours	behaviour
behead	behead
beheaded	behead
beheld	beheld
behest	behest
behests	behest
behind	behind
behold	behold
beholder	behold
beholders	behold
beholdest	beholdest
beholding	behold
beholds	behold
behoof	behoof
behooffull	behoofful
behooves	behoov
behove	behov
behoves	behov
behowls	behowl
being	be
bel	bel
belarius	belariu
belch	belch
belching	belch
beldam	beldam
beldame	beldam
beldams	beldam
belee	bele
belgia	belgia
belie	beli
belied	beli
belief	belief
beliest	beliest
believ	believ
believe	believ
believed	believ
believes	believ
believest	believest
believing	
believ	
belike	belik

bell	bell
bellario	bellario
belle	bell
bellied	belli
bellies	belli
bellman	bellman
bellona	bellona
bellow	bellow
bellowed	bellow
bellowing	bellow
bellows	bellow
bells	bell
belly	belli
bellyful	belly
belman	belman
belmont	belmont
belock	belock
belong	belong
belonging	belong
belongings	belong
belongs	belong
belov	belov
beloved	belov
beloving	belov
below	below
belt	belt
belzebub	belzebub
bemadding	bemad
bemet	bemet
bemete	bemet
bemoan	bemoan
bemoaned	bemoan
bemock	bemock
bemoil	bemoil
bemonster	bemonst
ben	ben
bench	bench
bencher	bencher
benches	bench
bend	bend
bended	bend
bending	bend
bends	bend
bene	bene
beneath	beneath
benedicite	benedicit
benedick	benedick
benediction	benedict

benedictus	benedictu
benefactors	benefactor
benefice	benefic
beneficial	benefici
benefit	benefit
benefited	benefit
benefits	benefit
benetted	benet
benevolence	benevol
benevolences	benevol
benied	beni
benison	benison
bennet	bennet
bent	bent
bentii	bentii
bentivolii	bentivolii
bents	bent
benumbed	benumb
benvolio	benvolio
bepaint	bepaint
bepray	beprai
bequeath	bequeath
bequeathed	bequeath
bequeathing	bequeath
bequest	bequest
ber	ber
berard	berard
berattle	berattl
beray	berai
bere	bere
bereave	bereav
bereaved	bereav
bereaves	bereav
bereft	bereft
bergamo	bergamo
bergomask	bergomask
berhym	berhym
berhyme	berhym
berkeley	berkelei
bermoother	bermoother
bernardo	bernardo
berod	berod
berowne	berown
berri	
berri	
berries	berri
berrord	berrord
berry	berri

bertram	bertram
berwick	berwick
bescreeen	bescreeen
beseech	beseech
beseeched	beseech
beseechers	beseech
beseeching	beseech
beseek	beseek
beseem	beseem
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beseems	beseem
beset	beset
beshrew	beshrew
beside	besid
besides	besid
besieg	besieg
besiege	besieg
besieged	besieg
beslubber	beslubb
besmear	besmear
besmeared	besmear
besmirch	besmirch
besom	besom
besort	besort
besotted	besot
bspake	bspak
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bespeak	
bspice	bspic
bspoke	bspok
bspotted	bspot
bess	bess
bessy	bessi
best	best
bestained	bestain
bested	best
bestial	bestial
bestir	bestir
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bestow	bestow
bestowed	bestow
bestowing	bestow
bestows	bestow
bestraught	bestraught
bestrew	bestrew
bestrid	bestrid
bestride	bestrid

bestrides	bestrid
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betake	betak
beteem	beteem
bethink	bethink
bethought	bethought
bethrothed	bethroth
bethump	bethump
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betide	betid
betideth	betideth
betime	
betim	
betimes	betim
betoken	betoken
betook	betook
betossed	betoss
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betrayed	betrai
betraying	betrai
betrays	betrai
betrim	betrim
betroth	betroth
betrothed	betroth
betroths	betroth
bett	bett
betted	bet
better	better
bettered	better
bettering	better
betters	better
betting	bet
bettre	bettr
between	between
betwixt	betwixt
bevel	bevel
beverage	beverag
bevis	bevi
bevy	bevi
bewail	bewail
bewailed	bewail
bewailing	bewail
bewails	bewail
beware	bewar
bewasted	
bewast	
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bewept	bewept

bewet	bewet
bewhored	bewhor
bewitch	bewitch
bewitched	bewitch
bewitchment	bewitch
bewray	bewrai
beyond	beyond
bezonian	bezonian
bezonians	bezonian
bianca	bianca
bianco	bianco
bias	bia
bibble	bibbl
bickerings	bicker
bid	bid
bidden	bidden
bidding	bid
biddings	bid
bidly	bidli
bide	bide
bides	bide
biding	bide
bids	bid
bien	bien
bier	bier
bifold	bifold
big	big
bigamy	bigami
biggen	biggen
bigger	bigger
bigness	big
bigot	bigot
bilberry	bilberri
bilbo	bilbo
bilboes	bilbo
bilbow	bilbow
bill	bill
billeted	billet
billets	billet
billiards	billiard
billing	bill
billow	billow
billows	billow
bills	bill
bin	bin
bind	bind
bindeth	bindeth

binding	bind
binds	bind
biondello	biondello
birch	birch
bird	bird
birding	bird
birdlime	birdlim
birds	bird
birnam	birnam
birth	birth
birthday	birthdai
birthdom	birthdom
birthplace	birthplac
birthright	birthright
birthrights	birthright
births	birth
bis	bi
biscuit	biscuit
bishop	bishop
bishops	bishop
bisson	bisson
bit	bit
bitch	bitch
bite	bite
biter	biter
bites	bite
biting	bite
bits	bit
bitt	bitt
bitten	bitten
bitter	bitter
bitterest	bitterest
bitterly	bitterli
bitterness	bitter
blab	blab
blabb	blabb
blabbing	blab
blabs	blab
black	black
blackamoor	blackamoor
blackamoors	blackamoor
blackberries	blackberri
blackberry	blackberri
blacker	blacker
blackest	blackest
blackfriars	blackfriar
blackheath	blackheath

blackmere	blackmer
blackness	black
blacks	black
bladder	bladder
bladders	bladder
blade	blade
bladed	blade
blades	blade
blains	blain
blam	blam
blame	blame
blamed	blame
blameful	blame
blameless	blameless
blames	blame
blanc	blanc
blanca	blanca
blanch	blanch
blank	blank
blanket	blanket
blanks	blank
blaspheme	blasphem
blaspheming	blasphem
blasphemous	blasphem
blasphemy	blasphemi
blast	blast
blasted	blast
blasting	blast
blastments	blastment
blasts	blast
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blaze	blaze
blazes	blaze
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blazoning	blazon
bleach	bleach
bleaching	bleach
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bleared	blear
bleat	bleat
bleated	bleat
bleats	bleat
bled	bled
bleed	bleed
bleedest	bleedest

bleedeth	bleedeth
bleeding	bleed
bleeds	bleed
blemish	blemish
blemishes	blemish
blench	blench
blenches	blench
blend	blend
blended	blend
blent	blent
bless	bless
blessed	bless
blessedly	
blessedly	
blessedness	blessed
blesses	bless
blesseth	blesseth
blessing	bless
blessings	bless
blest	blest
blew	blew
blind	blind
blinded	blind
blindfold	blindfold
blinding	blind
blindly	blindli
blindness	blind
blinds	blind
blink	blink
blinking	blink
bliss	bliss
blist	blist
blister	blister
blisters	blister
blithe	blith
blithild	blithild
bloat	bloat
block	block
blockish	blockish
blocks	block
blois	bloi
blood	blood
blooded	blood
bloodhound	bloodhound
bloodied	bloodi
bloodier	bloodier
bloodiest	bloodiest

bloodily	bloodily
bloodless	bloodless
bloods	blood
bloodshed	bloodsh
bloodshedding	bloodshed
bloodstained	bloodstain
bloody	bloodi
bloom	bloom
blooms	bloom
blossom	blossom
blossoming	blossom
blossoms	blossom
blot	blot
blots	blot
blotted	blot
blotting	blot
blount	blount
blow	blow
blowed	blow
blowers	blower
blowest	blowest
blowing	blow
blown	blown
blows	blow
blowse	blows
blubb	blubb
blubber	blubber
blubbering	blubber
blue	blue
bluecaps	
bluecap	
bluest	bluest
blunt	blunt
blunted	blunt
blunter	blunter
bluntest	bluntest
blunting	blunt
bluntly	bluntli
bluntness	blunt
blunts	blunt
blur	blur
blurr	blurr
blurs	blur
blush	blush
blushes	blush
blushest	blushest
blushing	blush
blust	blust

bluster	bluster
blusterer	bluster
blusters	bluster
bo	bo
boar	boar
board	board
boarded	board
boarding	board
boards	board
boarish	boarish
boars	boar
boast	boast
boasted	boast
boastful	boast
boasting	
boast	
boasts	boast
boat	boat
boats	boat
boatswain	boatswain
bob	bob
bob	bob
boblibindo	boblibindo
bobtail	bobtail
bocchus	bocchu
bode	bode
boded	bode
bodements	bodement
bodes	bode
bodg	bodg
bodied	bodi
bodies	bodi
bodiless	bodiless
bodily	bodili
boding	bode
bodkin	bodkin
body	bodi
bodykins	bodykin
bog	bog
boggle	boggl
boggler	boggler
bogs	bog
bohemia	bohemia
bohemian	bohemian
bohun	bohun
boil	boil
boiling	boil

boils	boil
boist	boist
boisterous	boister
boisterously	boister
boitier	boitier
bold	bold
bolden	bolden
bolder	bolder
boldest	boldest
boldly	boldli
boldness	bold
bolds	bold
bolingbroke	bolingbrok
bolster	bolster
bolt	bolt
bolted	bolt
bolter	bolter
bolters	bolter
bolting	bolt
bolts	bolt
bombard	bombard
bombards	bombard
bombast	bombast
bon	bon
bona	bona
bond	bond
bondage	bondag
bonded	bond
bondmaid	bondmaid
bondman	bondman
bondmen	bondmen
bonds	
bond	
bondslave	bondslav
bone	bone
boneless	boneless
bones	bone
bonfire	bonfir
bonfires	bonfir
bonjour	bonjour
bonne	bonn
bonnet	bonnet
bonneted	bonnet
bonny	bonni
bonos	bono
bonto	bonto
bonville	bonvil
bood	bood

book	book
bookish	bookish
books	book
boon	boon
boor	boor
boorish	boorish
boors	boor
boot	boot
booted	boot
booties	booti
bootless	bootless
boots	boot
booty	booti
bor	bor
bora	bora
borachio	borachio
bordeaux	
bordeaux	
border	border
bordered	border
borderers	border
borders	border
bore	bore
boreas	borea
bores	bore
boring	bore
born	born
borne	born
borough	borough
boroughs	borough
borrow	borrow
borrowed	borrow
borrower	borrow
borrowing	borrow
borrows	borrow
bosko	bosko
boskos	bosko
bosky	boski
bosom	bosom
bosoms	bosom
boson	boson
boss	boss
bosworth	bosworth
botch	botch
botcher	botcher
botches	botch
botchy	botchi
both	both

bots	bot
bottle	
bottl	
bottled	bottl
bottles	bottl
bottom	bottom
bottomless	bottomless
bottoms	bottom
bouciqualt	bouciqualt
bouge	boug
bough	bough
boughs	bough
bought	bought
bounce	bounc
bouncing	bounc
bound	bound
bounded	bound
bounden	bounden
boundeth	boundeth
bounding	bound
boundless	boundless
bounds	bound
bounteous	bounteou
bounteously	bounteous
bounties	bounti
bountiful	bounti
bountifully	bountifulli
bounty	bounti
bourbier	bourbier
bourbon	bourbon
bourchier	bourchier
bourdeaux	bourdeaux
ourn	ourn
bout	
bout	
bouts	bout
bove	bove
bow	bow
bowcase	bowcas
bowed	bow
bowels	bowel
bower	bower
bowing	bow
bowl	bowl
bowler	bowler
bowling	bowl
bowls	bowl
bows	bow

bowsprit	bowsprit
bowstring	bowstr
box	box
boxes	box
boy	boi
boyet	boyet
boyish	boyish
boys	boi
brabant	brabant
brabantio	brabantio
brabble	brabbl
brabbler	brabbler
brac	brac
brace	brace
bracelet	bracelet
bracelets	bracelet
brach	brach
bracy	braci
brag	
brag	
bragg	bragg
braggardism	braggard
braggards	braggard
braggart	braggart
braggarts	braggart
bragged	brag
bragging	brag
bragless	bragless
brags	brag
braid	braid
braided	braid
brain	brain
brained	brain
brainford	brainford
brainish	brainish
brainless	brainless
brains	brain
brainsick	brainsick
brainsickly	brainsickli
brake	brake
brakenbury	brakenburi
brakes	brake
brambles	brambl
bran	bran
branch	branch
branches	branch
branchless	branchless
brand	brand

branded	brand
brandish	brandish
brandon	
brandon	
brands	brand
bras	bra
brass	brass
brassy	brassi
brat	brat
brats	brat
brav	brav
brave	brave
braved	brave
bravely	brave
braver	braver
bravery	braveri
braves	brave
bravest	bravest
braving	brave
brawl	brawl
brawler	brawler
brawling	brawl
brawls	brawl
brawn	brawn
brawns	brawn
bray	brai
braying	brai
braz	braz
brazen	brazen
brazier	brazier
breach	breach
breaches	breach
bread	bread
breadth	breadth
break	break
breaker	
breaker	
breakfast	breakfast
breaking	break
breaks	break
breast	breast
breasted	breast
breasting	breast
breastplate	breastplat
breasts	breast
breath	breath
breathe	breath
breathed	breath

breather	breather
breathers	breather
breathes	breath
breathest	breathest
breathing	breath
breathless	breathless
breaths	breath
brecknock	brecknock
bred	bred
breech	breech
breeches	breech
breeching	breech
breed	breed
breeder	breeder
breeders	breeder
breeding	breed
breeds	breed
breese	brees
breeze	breez
breff	breff
bretagne	bretagn
brethen	brethen
bretheren	bretheren
brethren	brethren
brevis	brevi
brevity	breviti
brew	brew
brewage	brewag
brewer	brewer
brewers	brewer
brewing	brew
brews	brew
briareus	briareu
briars	briar
brib	brib
bribe	bribe
briber	briber
bribes	bribe
brick	brick
bricklayer	bricklay
bricks	brick
bridal	bridal
bride	bride
bridegroom	bridegroom
bridegrooms	bridegroom
brides	bride
bridge	bridg
bridgenorth	bridgenorth

bridges	bridg
bridget	bridget
bridle	bridl
bridled	bridl
brief	brief
briefe	briefe
briefest	briefest
briefly	briefli
briefness	brief
brier	brier
briers	brier
brigandine	brigandin
bright	bright
brighten	brighten
brightest	brightest
brightly	brightli
brightness	bright
brim	brim
brimful	brim
brims	brim
brimstone	brimston
brinded	brind
brine	brine
bring	bring
bringer	bringer
bringeth	bringeth
bringing	bring
bringings	bring
brings	bring
brinish	brinish
brink	brink
brisk	brisk
brisky	briski
bristle	
	bristl
bristled	bristl
bristly	bristli
bristol	bristol
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britain	britain
britann	britann
britannes	britann
british	british
briton	briton
britons	briton
brittany	brittani
brittle	brittl
broach	broach

broached	broach
broad	broad
broader	broader
broadsides	broadsid
brocas	broca
brock	brock
brogues	brogu
broil	broil
broiling	broil
broils	broil
broke	broke
broken	broken
brokenly	brokenli
broker	broker
brokers	broker
brokes	broke
broking	broke
brooch	
brooch	
brooches	brooch
brood	brood
brooded	brood
brooding	brood
brook	brook
brooks	brook
broom	broom
broomstaff	broomstaff
broth	broth
brothel	brothel
brother	brother
brotherhood	brotherhood
brotherhoods	brotherhood
brotherly	brotherli
brothers	brother
broths	broth
brought	brought
brow	brow
brown	brown
browner	browner
brownist	brownist
browny	browni
brows	brow
browse	brows
browsing	brows
bruise	brui
bruise	bruise
bruised	bruise
bruises	bruise

bruising	bruis
bruit	
bruit	
bruted	bruit
brundusium	brundusium
brunt	brunt
brush	brush
brushes	brush
brute	brute
brutish	brutish
brutus	brutu
bubble	bubbl
bubbles	bubbl
bubbling	bubbl
bubukles	bubukl
buck	buck
bucket	bucket
buckets	bucket
bucking	buck
buckingham	buckingham
buckle	buckl
buckled	buckl
buckler	buckler
bucklers	buckler
bucklersbury	bucklersburi
buckles	buckl
buckram	buckram
bucks	buck
bud	bud
budded	bud
budding	bud
budge	budg
budger	budger
budget	budget
buds	
bud	
buff	buff
buffet	buffet
buffeting	buffet
buffets	buffet
bug	bug
bugbear	bugbear
bugle	bugl
bugs	bug
build	build
builded	build
buildeth	buildeth
building	build

buildings	build
builds	build
built	built
bulk	bulk
bulks	bulk
bull	bull
bullcalf	bullcalf
bullen	bullen
bullens	bullen
bullet	bullet
bullets	bullet
bullocks	bullock
bulls	bull
bully	bulli
bulmer	bulmer
bulwark	bulwark
bulwarks	bulwark
bum	bum
bumbast	bumbast
bump	bump
bumper	bumper
bums	bum
bunch	bunch
bunches	bunch
bundle	bundl
bung	bung
bunghole	bunghol
bungle	bungl
bunting	bunt
buoy	buoi
bur	bur
burbolt	burbolt
burd	burd
burden	burden
burdened	burden
burdening	burden
burdenous	burden
burdens	burden
burgh	burgh
burgher	burgher
burghers	burgher
burglary	burglari
burgomasters	burgomast
burgonet	burgonet
burgundy	burgundi
burial	burial
buried	huri

burier	burier
buriest	buriest
burly	burli
burn	
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burned	burn
burnet	burnet
burneth	burneth
burning	burn
burnish	burnish
burns	burn
burnt	burnt
burr	burr
burrows	burrow
burs	bur
burst	burst
bursting	burst
bursts	burst
burthen	burthen
burthens	burthen
burton	burton
bury	huri
burying	huri
bush	bush
bushels	bushel
bushes	bush
bushy	bushi
busied	busi
busily	busili
business	busin
business	busi
businesses	busi
buskin	buskin
busky	buski
buss	buss
busses	buss
bussing	buss
bustle	bustl
bustling	bustl
busy	busi
but	but
butcheed	butche
butcher	butcher
butchered	butcher
butcheries	butcheri
butcherly	butcherli
butchers	butcher

butchery	butcheri
butler	butler
butt	butt
butter	butter
battered	butter
butterflies	butterfli
butterfly	butterfli
butterwoman	butterwoman
buttery	butteri
buttock	buttock
buttocks	buttock
button	button
buttonhole	buttonhol
buttons	button
buttress	buttress
buttry	buttri
butts	butt
buxom	buxom
buy	bui
buyer	buyer
buying	bui
buys	bui
buzz	buzz
buzzard	buzzard
buzzards	buzzard
buzzers	buzzer
buzzing	buzz
by	by
bye	bye
byzantium	byzantium
c	c
ca	ca
cabbage	cabbag
cabileros	cabilero
cabin	cabin
cabins	cabin
cable	cabl
cables	cabl
cackling	cackl
cacodemon	cacodemon
caddis	caddi
caddisses	caddiss
cade	cade
cadence	cadenc
cadent	cadent
caes	cade
cadmus	cadmu
caduceus	caduceu

cadwal	cadwal
cadwallader	cadwallad
caelius	caeliu
caelo	caelo
caesar	caesar
caesarion	caesarion
caesars	caesar
cage	cage
caged	cage
cagion	cagion
cain	cain
caithness	caith
caitiff	caitiff
caitiffs	caitiff
caius	caiu
cak	cak
cake	cake
cakes	cake
calaber	calab
calais	calai
calamities	calam
calamity	calam
calchas	calcha
calculate	calcul
calen	calen
calendar	calendar
calendars	calendar
calf	calf
caliban	caliban
calibans	caliban
calipolis	calipoli
cality	caliti
caliver	caliv
call	call
callat	callat
called	call
callet	
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christian	christian
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christmas	christma
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christopher	christoph
christophero	christophero
chronicle	chronicl
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churchman	churchman
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churtyard	churtyard
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cloquence	cloquenc
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clothes	cloth
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clothing	cloth
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clownish	clownish
clowns	clown
cloy	cloi
cloyed	cloi
cloying	cloi
cloyless	cloyless
cloyment	cloyment
cloys	cloi
club	club
clubs	club
cluck	cluck
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clust	clust
clusters	cluster
clutch	clutch
clyster	clyster
cneius	cneiu
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coachmakers	coachmak
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coactive	coactiv
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coarsely	coars
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cobbler	cobbler
cobham	cobham
cobloaf	cobloaf

cobweb	cobweb
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cock	cock
cockatrice	cockatric
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cockpit	cockpit
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coesar	coesar
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cogscomb	cogscomb
cohabitants	cohabit
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com	com
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combated	combat
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comedian	comedian
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comfit	comfit
comfits	comfit
comfort	comfort
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comforter	comfort
comforting	comfort
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comforts	comfort
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comical	comic
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corruption	corrupt
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fatally	fatal
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fickle	fickl
fickleness	fickl
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fiction	fiction
fiddle	fiddl
fiddler	fiddler
fiddlestick	fiddlestick
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fin	fin
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finch	finch
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finisher	finish
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fire	fire
firebrand	firebrand
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firmly	firml
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firstlings	firstl
fish	fish
fisher	fisher
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flaminius	flaminiu
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follower	follow
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following	follow
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footsteps	footstep
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fordoes	fordo
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forefather	forefath
forefathers	forefath
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forehand	forehand
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forenoon	forenoon
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foreward	foreward
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forewarned	forewarn
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forfeiters	forfeit
forfeiting	forfeit
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forgetful	forget
forgetfulness	forget
forgetive	forget
forgets	forget
forgetting	forget
forgive	forgiv
forgiven	forgiven
forgiveness	forgiv
forgo	forgo
forgoing	forgo
forgone	forgon
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forgotten	forgotten
fork	fork
forked	fork
forks	fork
forlorn	forlorn
form	form
formal	formal
formally	formal
formed	form
former	former
formerly	formerli
formless	formless
forms	form
fornication	fornic
fornications	fornic
fornicatress	fornicatress
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forsake	forsak
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forsaketh	forsaketh
forslow	forslow
forsook	forsook
forsooth	forsooth
forspent	forspent
forspoke	forspok
forswear	forswear
forswearing	forswear
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fort	fort
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forth	forth
forthcoming	forthcom
forthlight	forthlight
forthright	forthright
forthwith	forthwith
fortification	fortif
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fortinbras	fortinbra
fortitude	fortitud
fortnight	fortnight
fortress	fortress
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fortunate	fortun
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forward	forward
forty	forti
forum	forum
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forwards	forward
forwearied	forweari
fosset	fosset
fost	fost
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fostered	foster
fought	fought
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foul	foul
fouler	fouler
foulest	foulest
fouly	foulli
foulness	foul
found	found
foundation	foundat
foundations	foundat
founded	found
founder	founder

fount	fount
fountain	fountain
fountains	fountain
founts	fount
four	four
fourscore	fourscore
fourteen	fourteen
fourth	fourth
foutra	foutra
fowl	fowl
fowler	fowler
fowling	fowl
fowls	
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fox	fox
foxes	fox
foxship	foxship
fracted	fract
fraction	fraction
fractions	fraction
fragile	fragil
fragment	fragment
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fragrant	fragrant
frail	frail
frailer	frailer
frailties	frailti
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francisco	francisco
frank	frank

franker	franker
frankfort	frankfort
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frankly	frankli
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frantic	frantic
franticly	franticli
frateretto	frateretto
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freelier	freelier
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freeman	freeman
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frees	free
freestone	freeston
freetown	freetown
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freezing	freez
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french	french
frenchman	frenchman
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frenzy	frenzi
frequent	frequent
frequents	frequent
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freshes	fresh
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frightful	fright
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frippery	fripper
frisk	frisk
fritters	fritter
frivolous	frivol
fro	fro
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frog	frog
frogmore	frogmor
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frollic	frollic
from	from
front	front
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frontlet	frontlet
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frosty	frosti
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froward	froward
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frowning	frown
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frugal	frugal
fruit	fruit
fruiterer	fruiter
fruitful	fruit
fruitfully	fruitfulli
fruitfulness	fruit
fruition	fruition
fruitless	fruitless
fruits	fruit
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fubb	fubb
fuel	fuel
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full	full
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fullness	full
fully	fulli
fulness	ful
fulsome	fulsom
fulvia	fulvia
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fun	fun
function	function
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fundamental	fundament
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furies	furi
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furtherer	further
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gainsaid	gainsaid
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ganymede	ganymed
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gaolers	gaoler
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gap	gap
gape	gape
gapes	gape
gaping	gape
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garb	garb
garbage	garbag
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gard	gard
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garners	garner
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garrison	garrison
garrisons	garrison
gart	gart
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general	gener
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generative	gener
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genitive	genit
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genoa	genoa
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gens	gen
gent	gent
gentilhomme	gentilhomm
gentility	gentil
gentle	gentl
gentlefolks	gentlefolk
gentleman	gentleman
gentlemanlike	gentlemanlik
gentlemen	gentlemen
gentleness	gentl
gentler	gentler
gentles	gentl
gentlest	gentlest
gentlewoman	gentlewoman
gentlewomen	gentlewomen
gently	gentli
gentry	gentri
george	georg
gerard	gerard
germaines	germain
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german	german
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germans	german
germany	germani
gertrude	gertrud
gest	gest
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gesture	gestur
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get	get
getrude	getrud
gets	get
getter	getter
getting	get
ghastly	ghastli
ghost	ghost
ghosted	ghost
ghostly	ghostli
ghosts	ghost
gi	gi
giant	giant
giantess	giantess
giantlike	giantlik
giants	giant
gib	gib
gibber	gibber

gibbet	gibbet
gibbets	gibbet
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giddily	giddili
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gift	gift
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giglets	giglet
giglot	giglot
gilbert	gilbert
gild	gild
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gilding	gild
gilliams	gilliam
gillian	gillian
gills	gill
gillyvors	gillyvor
gilt	gilt
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gimmers	gimmer
gin	gin
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ginger	ginger
gingerbread	gingerbread
gingerly	gingerli
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gins	gin
gioucestershire	gioucestershir
gipes	gipe
gipsies	gipsi
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girl	girl
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give	give
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giver	giver
givers	giver
gives	give
givest	givest
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giving	give
givings	give
glad	glad
gladded	glad
gladding	glad
gladly	gladli
gladness	glad
glamis	glami
glanc	glanc
glance	glanc
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glancing	glanc
glanders	glander
glansdale	glansdal
glare	glare
glares	glare
glass	glass
glasses	glass
glassy	glassi
glaz	glaz
glazed	glaze
gleams	gleam
glean	glean
gleaned	glean
gleaning	glean
gleeful	gleeful
gleek	gleek
gleeking	gleek
gleeks	gleek
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glendower	glendow
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glide	glide
glided	glide
glides	glide
glideth	glideth
gliding	glide

glimmer	glimmer
glimmering	glimmer
glimmers	glimmer
glimpse	glimps
glimpsed	glimps
glist	glist
glistening	glisten
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glistering	glisten
glisters	glisten
glitt	glitt
glittering	glitter
globe	globe
globes	globe
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gloomy	gloomi
glories	glori
glorified	glorifi
glorify	glorifi
glorious	gloriou
gloriously	glorious
glory	glori
glose	glose
gloss	gloss
glosses	gloss
glou	glou
glouceste	gloucest
gloucester	gloucest
gloucestershire	gloucestershir
glove	glove
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gloves	glove
glow	glow
glowed	glow
glowing	glow
glowworm	glowworm
glöz	glöz
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glut	glut
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gluttoning	glutton
gluttony	gluttoni
gnarled	gnarl
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gnat	gnat
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gnaw	gnaw
gnawing	gnaw
gnawn	gnawn
gnaws	gnaw
go	go
goad	goad
goaded	goad
goads	goad
goal	goal
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goatish	goatish
goats	goat
gobbets	gobbet
gobbo	gobbo
goblet	goblet
goblets	goblet
goblin	goblin
goblins	goblin
god	god
godded	god
godden	godden
goddess	goddess
goddesses	goddess
goddild	goddild
godfather	godfath
godfathers	
	godfath
godhead	godhead
godlike	godlik
godliness	godli
godly	godli
godmother	godmoth
gods	god
godson	godson
goer	goer
goers	goer
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goeth	goeth
goffe	goff
gogs	gog

going	go
gold	gold
golden	golden
goldenly	goldenli
goldsmith	goldsmith
goldsmiths	goldsmith
golgotha	golgotha
goliases	goliias
goliath	goliath
gon	gon
gondola	gondola
gondolier	gondoli
gone	gone
goneril	goneril
gong	gong
gonzago	gonzago
gonzalo	gonzalo
good	good
goodfellow	goodfellow
goodlier	goodlier
goodliest	goodliest
goodly	goodli
goodman	goodman
goodness	good
goodnight	goodnight
goodrig	goodrig
goods	good
goodwife	goodwif
goodwill	goodwil
goodwin	goodwin
goodwins	goodwin
goodyear	goodyear
goodyears	goodyear
goose	goos
gooseberry	gooseberri
goosequills	goosequil
goot	goot
gor	gor
gorbellied	gorbelli
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gordian	gordian
gore	gore
gored	gore
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gorgeous	gorgeou
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gorgon	gorgon
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gosling	gosl
gospel	gospel
gospels	gospel
goss	goss
gossamer	gossam
gossip	gossip
gossiping	gossip
gossiplate	gossiplate
gossips	gossip
got	got
goth	goth
goths	goth
gotten	gotten
gourd	gourd
gout	gout
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govern	govern
governance	govern
governed	govern
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governor	governor
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governs	govern
gower	gower
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grace	grace
graced	grace
graceful	grace
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graces	grace
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gradation	gradat
graff	graff
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grain	grain
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gramercies	gramerci
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grammar	grammar
grand	grand
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grandame	grandam
grandchild	grandchild
grande	grand
grandeur	grandeur
grandfather	grandfath
grandjurors	grandjuror
grandmother	
grandmoth	
grandpre	grandpr
grandsir	grandsir
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grasps	grasp
grass	grass
grasshoppers	grasshopp
grassy	grassi
grate	grate
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grateful	grate
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gratiano	gratiano
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graves	grave
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gravestone	graveston
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gray	grai
graymalkin	graymalkin
graz	graz
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grazing	graze
grease	greas
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great	great
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greeks	greek
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greens	green
greensleeves	greensleev
greenwich	greenwich
greenwood	greenwood
greet	greet
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greeting	greet
greetings	greet
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greg	greg
gregory	gregori
gremio	gremio
grew	grew
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greybeard	greybeard
greybeards	greybeard
greyhound	greyhound
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grief	grief
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grievous	grievou
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griffin	griffin
griffith	griffith
grim	grim
grime	grime
grimly	grimli
grin	grin
grind	grind
grinding	grind
grindstone	grindston
grinning	grin
grip	grip
gripe	gripe
gripes	gripe
gripping	gripe
grise	grise

grisly	grisli
grissel	grissel
grize	grize
grizzle	grizzl
grizzled	grizzl
groan	groan
groaning	groan
groans	groan
groat	groat
groats	groat
groin	groin
groom	groom
grooms	groom
grop	grop
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gros	gro
gross	gross
grosser	grosser
grossly	grossli
grossness	gross
ground	ground
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groundlings	groundl
grounds	ground
grove	grove
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grovelling	grovel
groves	grove
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grub	grub
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grudge	grudg
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grumio	grumio
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grunt	grunt
gualtier	gualtier
guard	guard
guardage	guardag
guardant	guardant
guarded	guard
guardian	guardian
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guards	guard
guardsman	guardsman
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gudgeon	gudgeon
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guerra	guerra
guess	guess
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guessingly	guessingli
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guidon	guidon
guienne	guienn
guil	guil
guildenstern	guildenstern
guilders	guilder
guildford	guildford
guildhall	guildhal
guile	guil
guiled	guil
guileful	guil
guilfords	guilford
guilt	guilt
guiltian	guiltian
guiltier	guiltier
guiltily	guiltili
guiltiness	guilti
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gun	gun
gunner	gunner
gunpowder	gunpowd
guns	gun
gurnet	gurnet
gurney	gurnei
gust	gust
gusts	gust
gusty	gusti
guts	gut
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gypsy	gypsi
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halfpenny	halfpenni
halfpennyworth	halfpennyworth
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halloa	halloa
halloing	hallo
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hamstring	hamstr
hand	hand
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handful	hand
handicraft	handicraft
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handiwork	handiwork
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holidame	holidam
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holloa	holloa
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hollowly	hollowli
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holmedon	holmedon
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homespuns	homespun
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horizon	horizon
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hornbook	hornbook
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horologe	horolog
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horrider	horrid
horridly	horridli
horror	horror
horrors	horror

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horseback	horseback
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horseman	horseman
horsemanship	horsemanship
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horses	hors
horseway	horsewai
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hortensio	hortensio
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hyperboles	hyperbol
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ignominy	ignomini
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ii	ii
iii	iii
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incantations	incant
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incessant	incess
incessantly	incessantli
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lazarus	lazaru
lazy	lazi
lc	lc
ld	ld
ldst	ldst
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lead	lead
leaden	leaden
leader	leader
leaders	leader
leadest	leadest
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leaf	leaf
leagu	leagu
league	leagu
leagued	leagu
leaguer	leaguer
leagues	leagu
leah	leah
leak	leak
leaky	leaki
lean	lean
leander	leander
leaner	leaner
leaning	lean
leanness	lean
leans	lean
leap	leap
leaped	leap
leaping	leap
leaps	leap
leapt	leapt
lear	lear
learn	learn
learned	learn
learnedly	learnedli
learning	learn
learnings	learn
learns	learn
learnt	learnt
leas	lea
lease	leas
leases	leas
leash	leash
leasing	leas
least	least
leather	leather
leathern	leathern
leav	leav
leave	leav
leaven	leaven
leavening	leaven
leaver	leaver

leaves	leav
leaving	leav
leavy	leavi
lecher	lecher
lecherous	
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lechers	lecher
lechery	lecheri
lecon	lecon
lecture	lectur
lectures	lectur
led	led
leda	leda
leech	leech
leeches	leech
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lees	lee
leese	lees
leet	leet
leets	leet
left	left
leg	leg
legacies	legaci
legacy	legaci
legate	legat
legatine	legatin
lege	lege
legerity	leger
leges	lege
legg	legg
legion	legion
legions	legion
legitimate	legitim
legitimation	legitim
legs	
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leicester	leicest
leicestershire	leicestershir
leiger	leiger
leigers	leiger
leisure	leisur
leisurely	leisur
leisures	leisur
leman	leman
lemon	lemon

lena	lena
lend	lend
lender	lender
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lendings	lend
lends	lend
length	length
lengthen	lengthen
lengthens	lengthen
lengths	length
lenity	leniti
lennox	lennox
lent	lent
lenten	lenten
lentus	lentu
leo	leo
leon	leon
leonardo	leonardo
leonati	leonati
leonato	leonato
leonatus	leonatu
leontes	leont
leopard	leopard
leopards	leopard
leper	leper
leperous	leper
lepidus	lepidu
leprosy	leprosi
lequel	lequel
lers	ler
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less	less
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lesson	lesson
lessoned	lesson
lessons	lesson
lest	lest
lestrake	lestrak
let	let
lethargied	lethargi
lethargies	lethargi
lethargy	lethargi
lethe	leth
lets	let
lett	lett
letter	letter

letters	letter
letting	let
lettuce	lettuc
leur	leur
leve	leve
level	level
levell	level
levelled	level
levels	level
leven	leven
levers	lever
leviathan	leviathan
leviathans	leviathan
levied	levi
levies	levi
levity	leviti
levy	levi
levying	levi
lewd	lewd
lewdly	lewdli
lewdness	lewd
lewdsters	lewdster
lewis	lewi
liable	liabl
liar	liar
liars	liar
libbard	libbard
libelling	libel
libels	libel
liberal	liber
liberality	liber
liberte	libert
liberties	liberti
libertine	libertin
libertines	libertin
liberty	liberti
library	librari
libya	
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licence	licenc
licens	licen
license	licens
licentious	licenti
lichas	licha
licio	licio
lick	lick
licked	lick
licker	licker

lictors	lictor
lid	lid
lids	lid
lie	lie
lied	li
lief	lief
liefest	liefest
liege	lieg
liegeman	liegeman
liegemen	liegemen
lien	lien
lies	li
liest	liest
lieth	lieth
lieu	lieu
lieutenant	lieuten
lieutenantry	lieutenantri
lieutenants	lieuten
lieve	liev
life	life
lifeblood	lifeblood
lifeless	lifeless
lifelings	
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lift	lift
lifted	lift
lifter	lifter
lifteth	lifteth
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lig	lig
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liggins	liggen
light	light
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lightens	lighten
lighter	lighter
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lightly	lightli
lightness	light
lightning	lightn
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lights	light
lik	lik
like	like
liked	like
likeliest	likeliest

likelihood	likelihood
likelihoods	likelihood
likely	like
likeness	like
liker	liker
likes	like
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likewise	likewis
liking	like
likings	like
lilies	lili
lily	lili
lim	lim
limander	limand
limb	limb
limbeck	limbeck
limbecks	limbeck
limber	limber
limbo	limbo
limbs	limb
lime	lime
limed	lime
limehouse	limehous
limekilns	limekiln
limit	limit
limitation	limit
limited	limit
limits	limit
limn	limn
limp	limp
limping	limp
limps	limp
lin	lin
lincoln	lincoln
lincolnshire	lincolnshir
line	line
lineal	lineal
lineally	lineal
lineament	lineament
lineaments	lineament
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linen	linen
linens	linen
lines	line
ling	ling
lingare	lingar
linger	linger
lingered	linger

lingers	linger
linguist	linguist
lining	line
link	link
links	link
linsey	linsei
linstock	linstock
linta	linta
lion	lion
lionel	lionel
lioness	lioness
lions	lion
lip	lip
lipp	lipp
lips	lip
lipsbury	lipsburi
liquid	liquid
liquor	liquor
liquorish	liquorish
liquors	liquor
lirra	lirra
lisbon	lisbon
lisp	
lisp	
lisping	lisp
list	list
listen	listen
listening	listen
lists	list
literatured	literatur
lither	lither
litter	litter
little	littl
littlest	littlest
liv	liv
live	live
lived	live
livelier	lively
livelihood	livelihood
livelong	livelong
lively	live
liver	liver
liveries	liveri
livers	liver
livery	liveri
lives	live
livest	livest
liveth	liveth

livia	livia
living	live
livings	live
lizard	lizard
lizards	lizard
ll	ll
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lo	lo
loa	loa
loach	loach
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loaden	loaden
loading	load
loads	load
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loathly	loathli
loathness	loath
loathsome	loathsom
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loathsomest	loathsomest
loaves	loav
lob	lob
lobbies	lobbi
lobby	lobbi
local	local
lochaber	lochab
lock	lock
locked	lock
locking	lock
lockram	lockram
locks	lock
locusts	locust
lode	lode
lodg	lodg
lodge	lodg
lodged	lodg
lodgers	lodger

lodges	lodg
lodging	lodg
lodgings	lodg
lodovico	lodovico
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lofty	lofti
log	log
logger	logger
loggerhead	loggerhead
loggerheads	loggerhead
loggets	logget
logic	logic
logs	log
loins	loin
loiter	loiter
loiterer	loiter
loiterers	loiter
loitering	loiter
lolling	loll
lolls	loll
lombardy	lombardi
london	london
londoners	london
lone	lone
loneliness	
loneli	
lonely	lone
long	long
longaville	longavil
longboat	longboat
longed	long
longer	longer
longest	longest
longeth	longeth
longing	long
longings	long
longly	longli
longs	long
longtail	longtail
loo	loo
loof	loof
look	look
looked	look
looker	looker
lookers	looker
lookest	lookest
looking	look
looks	look

loon	loon
loop	loop
loos	loo
loose	loos
loosed	loos
loosely	loos
loosen	loosen
loosing	loos
lop	lop
lopp	lopp
loquitur	loquitur
lord	lord
lorded	lord
lording	lord
lordings	lord
lordliness	lordli
lordly	lordli
lords	lord
lordship	lordship
lordships	lordship
lorenzo	lorenzo
lorn	lorn
lorraine	lorrain
lorship	lorship
los	lo
lose	lose
loser	loser
losers	loser
loses	lose
losest	losest
loseth	loseth
losing	lose
loss	loss
losses	loss
lost	lost
lot	lot
lots	lot
lott	lott
lottery	lotteri
loud	loud
louder	louder
loudly	loudli
lour	
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loureth	loureth
louring	lour
louse	lous

louses	lous
lousy	lousi
lout	lout
louted	lout
louts	lout
louvre	louvr
lov	lov
love	love
loved	love
lovedst	lovedst
level	level
lovelier	loveli
loveliness	loveli
lovell	level
lovely	love
lover	lover
loved	lover
lovers	lover
loves	love
lovest	lovest
loveth	loveth
loving	love
lovingly	lovingli
low	low
lowe	low
lower	lower
lowest	lowest
lowing	low
lowliness	
lowli	
lowly	lowli
lown	lown
lowness	low
loyal	loyal
loyally	loyal
loyalties	loyalti
loyalty	loyalti
lozel	lozel
lt	lt
lubber	lubber
lubberly	lubberli
luc	luc
luccicos	luccico
luce	luce
lucentio	lucentio
luces	luce
lucetta	lucetta
luciana	luciana

lucianus	lucianu
lucifer	lucif
lucifier	lucifi
lucilius	luciliu
lucina	lucina
lucio	lucio
lucius	luciu
luck	luck
luckier	luckier
luckiest	luckiest
luckily	luckili
luckless	luckless
lucky	lucki
lucre	
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lucrece	lucrec
lucretia	lucretia
lucullius	luculliu
lucullus	lucullu
lucy	luci
lud	lud
ludlow	ludlow
lug	lug
lugg	lugg
luggage	luggag
luke	luke
lukewarm	lukewarm
lull	lull
lulla	lulla
lullaby	lullabi
lulls	lull
lumbert	lumbert
lump	lump
lumpish	lumpish
luna	luna
lunacies	lunaci
lunacy	lunaci
lunatic	lunat
lunatics	lunat
lunes	lune
lungs	lung
lupercal	luperc
lurch	lurch
lure	lure
lurk	lurk
lurketh	lurketh
lurking	

lurk	
lurks	lurk
luscious	luscious
lush	lush
lust	lust
lusted	lust
luster	luster
lustful	lust
lustier	lustier
lustiest	lustiest
lustig	lustig
lustihood	lustihood
lustily	lustily
lustre	lustre
lustrous	lustrous
lusts	lust
lusty	lustily
lute	lute
lutes	lute
lutestring	lutestring
lutheran	lutheran
luxurious	luxurious
luxuriously	luxurious
luxury	luxurious
ly	ly
lycaonia	lycaonia
lycurguses	lycurgus
lydia	lydia
lye	lye
lyen	lyen
lying	ly
lym	lym
lymoges	
lymog	
lynn	lynn
lysander	lysander
m	m
ma	ma
maan	maan
mab	mab
macbeth	macbeth
maccabaeus	maccabaeus
macdonwald	macdonwald
macduff	macduff
mace	mace
macedon	macedon
maces	mace
machiavel	machiavel

machination	machin
machinations	machin
machine	machin
mack	mack
macmorris	macmorri
maculate	macul
maculation	macul
mad	mad
madam	madam
madame	madam
madams	madam
madcap	madcap
madded	mad
madding	mad
made	made
madeira	madeira
madly	madli
madman	
madman	
madmen	madmen
madness	mad
madonna	madonna
madrigals	madrig
mads	mad
maecenas	maecena
maggot	maggot
maggots	maggot
magic	magic
magical	magic
magician	magician
magistrate	magistr
magistrates	magistr
magnanimity	magnanim
magnanimous	magnanim
magni	magni
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magnificence	magnific
magnificent	magnific
magnifico	magnifico
magnificoes	magnifico
magnus	magnu
mahomet	mahomet
mahu	mahu
maid	maid
maiden	maiden
maidenhead	maidenhead
maidenheads	maidenhead
maidenhood	maidenhood

maidenhoods	maidenhood
maidenliest	maidenliest
maidenly	maidenli
maidens	maiden
maidhood	maidhood
maids	maid
mail	mail
mailed	mail
mails	mail
maim	maim
maimed	maim
maims	maim
main	main
maincourse	maincours
maine	main
mainly	mainli
mainmast	mainmast
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maintain	maintain
maintained	maintain
maintains	maintain
maintenance	mainten
mais	mai
maison	maison
majestas	majesta
majestee	majeste
majestic	majest
majestical	majest
majestically	majest
majesties	majesti
majesty	majesti
major	major
majority	major
mak	mak
make	make
makeless	makeless
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makers	maker
makes	make
makest	makest
maketh	maketh
making	make
makings	make
mal	mal
mala	mala
maladies	maladi
malady	maladi
malapert	malapert

malcolm	malcolm
malcontent	malcont
malcontents	malcont
male	male
maledictions	maledict
malefactions	malefact
malefactor	malefactor
malefactors	malefactor
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malevolence	malevol
malevolent	malevol
malhecho	malhecho
malice	malic
malicious	malici
maliciously	malici
malign	
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malignancy	malign
malignant	malign
malignantly	malignantli
malkin	malkin
mall	mall
mallard	mallard
mallet	mallet
mallows	mallow
malmsey	malmsei
malt	malt
maltworms	maltworm
malvolio	malvolio
mamillius	mamilliu
mammering	mammer
mammet	mammet
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man	man
manacle	manacl
manacles	manacl
manage	manag
managed	manag
manager	manag
managing	manag
manakin	manakin
manchus	manchu
mandate	mandat
mandragora	mandragora
mandrake	mandrak
mandrakes	mandrak

mane	mane
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manet	manet
manfully	manfulli
mangle	mangl
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mangy	mangi
manhood	manhood
manhoods	manhood
manifest	manifest
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manifests	manifest
manifold	manifold
manifoldly	manifoldli
manka	manka
mankind	mankind
manlike	manlik
manly	manli
mann	mann
manna	manna
manner	manner
mannerly	mannerli
manners	manner
manningtree	manningtre
mannish	mannish
manor	manor
manors	manor
mans	man
mansion	
	mansion
mansionry	mansionri
mansions	mansion
manslaughter	manslaught
mantle	mantl
mantled	mantl
mantles	mantl
mantua	mantua
mantuan	mantuan
manual	manual
manure	manur
manured	manur
manus	manu
many	mani
map	map
mapp	mapp

maps	map
mar	mar
marble	marbl
marbled	marbl
marcade	marcad
marcellus	marcellu
march	march
marches	march
marcheth	marcheth
marching	march
marchioness	marchio
marchpane	marchpan
marcians	marcian
marcius	marciu
marcus	marcu
mardian	
mardian	
mare	mare
mares	mare
marg	marg
margarelon	margarelon
margaret	margaret
marge	marg
margent	margent
margery	margeri
maria	maria
marian	marian
mariana	mariana
maries	mari
marigold	marigold
mariner	marin
mariners	marin
maritime	maritim
marjoram	marjoram
mark	mark
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market	market
marketable	market
marketplace	marketplac
markets	market
marking	mark
markman	markman
marks	mark
marl	marl
marle	marl
marmoset	marmoset
marquess	marquess
marquis	marqui

marr	marr
marriage	marriag
marriages	marriag
married	marri
marries	marri
marring	mar
marrow	marrow
marrowless	marrowless
marrows	marrow
marry	marri
marrying	marri
mars	mar
marseilles	marseil
marsh	marsh
marshal	marshal
marshalsea	marshalsea
marshalship	marshalship
mart	mart
marted	mart
martem	martem
martext	martext
martial	martial
martin	martin
martino	martino
martius	martiu
martlemas	martlema
martlet	martlet
marts	mart
martyr	martyr
martyrs	martyr
marullus	marullu
marv	marv
marvel	marvel
marvell	marvel
marvellous	marvel
marvellously	marvel
marvels	marvel
mary	mari
mas	ma
masculine	masculin
masham	masham
mask	mask
masked	mask
masker	masker
maskers	masker
masking	mask
masks	mask

mason	mason
masonry	masonri
masons	mason
masque	masqu
masquers	masquer
masques	masqu
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mass	mass
massacre	massacr
massacres	massacr
masses	mass
massy	massi
mast	mast
master	master
master	master
masterdom	masterdom
masterest	masterest
masterless	masterless
masterly	masterli
masterpiece	masterpiec
masters	master
mastership	mastership
mastic	mastic
mastiff	mastiff
mastiffs	mastiff
masts	mast
match	match
matches	match
matcheth	matcheth
matching	match
matchless	matchless
mate	mate
mated	mate
mater	mater
material	materi
mates	mate
mathematics	mathemat
matin	matin
matron	matron
matrons	matron
matter	matter
matters	matter
matthew	matthew
mattock	mattock
mattress	mattress
mature	matur
maturity	

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maud	maud
maudlin	maudlin
maugre	maugr
maul	maul
maund	maund
mauri	mauri
mauritania	mauritania
mauvais	mauvai
maw	maw
maws	maw
maxim	maxim
may	mai
mayday	maydai
mayest	mayest
mayor	mayor
maypole	maypol
mayst	mayst
maz	maz
maze	maze
mazed	maze
mazes	maze
mazzard	mazzard
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meacock	meacock
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meagre	meagr
meal	meal
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mealy	meali
mean	mean
meanders	meander
meaner	meaner
meanest	meanest
meaneth	meaneth
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meanings	mean
meanly	meanli
means	mean
meant	meant
meantime	meantim
meanwhile	meanwhil
measles	measl
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measurable	measur
measure	measur
measured	measur
measureless	measureless
measures	measur
measuring	measur
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meats	meat
mechanic	mechan
mechanical	mechan
mechanicals	mechan
mechanics	mechan
mechante	mechant
med	med
medal	medal
meddle	meddl
meddler	meddler
meddling	
meddl	
mede	mede
medea	medea
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mediation	mediat
mediators	mediat
medice	medic
medicinal	medicin
medicine	medicin
medicines	medicin
meditate	medit
meditates	medit
meditating	medit
meditation	medit
meditations	medit
mediterranean	mediterranean
mediterraneum	mediterraneum
medlar	medlar
medlars	medlar
meed	meed
meeds	meed
meek	meek
meekly	meekli
meekness	meek
meet	meet
meeter	meeter
meetest	meetest
meeting	meet
meetings	meet
meetly	meetli

meetness	meet
meets	meet
meg	meg
mehercle	mehercl
meilleur	meilleur
meiny	meini
meisen	meisen
melancholies	melancholi
melancholy	melancholi
melford	melford
mell	mell
mellifluous	melliflu
mellow	mellow
mellowing	mellow
melodious	melodi
melody	melodi
melt	melt
melted	melt
melteth	melteth
melting	melt
melts	melt
melun	melun
member	member
members	member
memento	memento
memorable	memor
memorandums	memorandum
memorial	memori
memorials	memori
memories	memori
memoriz	memoriz
memorize	memor
memory	memori
memphis	
	memphi
men	men
menac	menac
menace	menac
menaces	menac
menaphon	menaphon
menas	mena
mend	mend
mended	mend
mender	mender
mending	mend
mends	mend
menecrates	menecr

menelaus	menelau
menenius	meneniu
mental	mental
menteith	menteith
mention	mention
mentis	menti
menton	menton
mephostophilus	mephostophilu
mer	mer
mercatante	mercatant
mercatio	mercatio
mercenaries	mercenari
mercenary	mercenari
mercer	mercer
merchandise	merchandis
merchandized	merchand
merchant	merchant
merchants	merchant
mercies	merci
merciful	merci
mercifully	mercifulli
merciless	merciless
mercurial	mercuri
mercuries	mercuri
mercury	mercuri
mercutio	mercutio
mercy	merci
mere	mere
mered	mere
merely	mere
merest	merest
meridian	meridian
merit	merit
merited	merit
meritorious	meritori
merits	merit
merlin	merlin
mermaid	mermaid
mermaids	mermaid
merops	merop
merrier	merrier
merriest	merriest
merrily	merrili
merriman	merriman
merriment	merriment
merriments	merriment
merriness	merri
merry	merri

mervailous	mervail
mes	me
mesh	mesh
meshes	mesh
mesopotamia	mesopotamia
mess	mess
message	messag
messages	messag
messala	messala
messaline	messalin
messenger	messeng
messengers	messeng
messes	mess
messina	messina
met	met
metal	metal
metals	metal
metamorphis	metamorphi
metamorphoses	metamorphos
metaphor	metaphor
metaphysical	metaphys
metaphysics	metaphys
mete	mete
metellus	metellu
meteor	meteor
meteors	meteor
meteyard	meteyard
metheglin	metheglin
metheglins	metheglin
methink	methink
methinks	methink
method	
method	
methods	method
methought	methought
methoughts	methought
metre	metr
metres	metr
metropolis	metropoli
mette	mett
mettle	mettl
mettled	mettl
meus	meu
mew	mew
mewed	mew
mewling	mewl
mexico	mexico
mi	mi

mice	mice
michael	michael
michaelmas	michaelma
micher	micher
miching	mich
mickle	mickl
microcosm	microcosm
mid	mid
midas	mida
middest	middest
middle	middl
middleham	middleham
midnight	midnight
midriff	midriff
midst	midst
midsummer	midsumm

midway	midwai
midwife	midwif
midwives	midwiv
miene	mienn
might	might
mightful	might
mightier	mightier
mightiest	mightiest
mightily	mightili
mightiness	mighti
mightst	mightst
mighty	mighti
milan	milan
milch	milch
mild	mild
milder	milder
mildest	mildest
mildew	mildew
mildews	mildew
mildly	mildli
mildness	mild
mile	mile
miles	mile
milford	milford
militarist	militarist
military	militari
milk	milk
milking	milk
milkmaid	milkmaid
milks	milk
milksops	milksop

milky	
	milki
mill	mill
mille	mill
miller	milller
milliner	millin
million	million
millioned	million
millions	million
mills	mill
millstones	millston
milo	milo
mimic	mimic
minc	minc
mince	minc
minces	minc
mincing	minc
mind	mind
minded	mind
mindin	mind
mindless	mindless
minds	mind
mine	mine
mineral	miner
minerals	miner
minerva	minerva
mines	mine
mingle	mingl
mingled	mingl
mingling	mingl
minikin	minikin
minim	minim
minime	minim
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	minimo
minimus	minimu
mining	mine
minion	minion
minions	minion
minist	minist
minister	minist
ministers	minist
ministration	ministr
minnow	minnow
minnows	minnow
minola	minola
minority	minor
minos	mino

minotaurs	minotaur
minstrel	minstrel
minstrels	minstrel
minstrelsy	minstrelsi
mint	mint
mints	mint
minute	minut
minutely	minut
minutes	minut
minx	minx
mio	mio
mir	mir
mirable	mirabl
miracle	miracl
miracles	miracl
miraculous	miracul
miranda	miranda
mire	mire
mirror	mirror
mirrors	mirror
mirth	mirth
mirthful	mirth
miry	miri
mis	mi
misadventur	misadventur
misadventure	misadventur
misanthropos	misanthropo
misapplied	misappli
misbecame	misbecam
misbecom	misbecom
misbecome	misbecom
misbegot	misbegot
misbegotten	misbegotten
misbeliever	misbeliev
misbelieving	misbeliev
misbhav	misbhav
miscall	miscal
miscalled	miscal
miscarried	miscarri
miscarries	miscarri
miscarry	miscarri
miscarrying	miscarri
mischance	mischanc
mischances	mischanc
mischief	mischief
mischiefs	mischief
mischievous	mischiev
misconceived	

misconceiv	
misconst	misconst
misconster	misconst
misconstruction	misconstruct
misconstrued	misconstru
misconstrues	misconstru
miscreant	miscreant
miscreate	miscreat
misdeed	misde
misdeeds	misde
misdemean	misdemean
misdemeanours	misdemeanour
misdoubt	misdoubt
misdoubteth	misdoubteth
misdoubts	misdoubt
misenum	misenum
miser	miser
miserable	miser
miserably	miser
misericorde	misericord
miseries	miseri
misers	miser
misery	miseri
misfortune	misfortun
misfortunes	misfortun
misgive	misgiv
misgives	misgiv
misgiving	misgiv
misgoverned	misgovern
misgovernment	misgovern
misgraffed	
misgraf	
misguide	misguid
mishap	mishap
mishaps	mishap
misheard	misheard
misinterpret	misinterpret
mislead	mislead
misleader	mislead
misleaders	mislead
misleading	mislead
misled	misl
mislike	mislik
misord	misord
misplac	misplac
misplaced	misplac
misplaces	misplac
mispris	mispri

misprised	mispris
misprision	mispris
misprizing	mispriz
misproud	misproud
misquote	misquot
misreport	misreport
miss	miss
missed	miss
misses	miss
misshap	misshap
misshapen	misshapen
missheathed	missheath
missing	miss
missingly	
missingli	
missions	mission
missive	missiv
missives	missiv
misspoke	misspok
mist	mist
mista	mista
mistak	mistak
mistake	mistak
mistaken	mistaken
mistakes	mistak
mistaketh	mistaketh
mistaking	mistak
mistakings	mistak
mistemp	mistemp
mistempered	mistemp
mistern	mistern
mistful	mist
misthink	misthink
misthought	misthought
mistletoe	mistleto
mistook	mistook
mistreadings	mistread
mistress	mistress
mistresses	mistress
mistresss	mistresss
mistriship	mistriship
mistrust	mistrust
mistrusted	mistrust
mistrustful	mistrust
mistrusting	mistrust
mists	mist
misty	misti
misus	misu

misuse	misus
misused	misus
misuses	misus
mites	mite
mithridates	mithrid
mitigate	mitig
mitigation	mitig
mix	mix
mixed	mix
mixture	mixtur
mixtures	mixtur
mm	mm
mnd	mnd
moan	moan
moans	moan
moat	moat
moated	moat
mobled	mobl
mock	mock
mockable	mockabl
mocker	mocker
mockeries	mockeri
mockers	mocker
mockery	mockeri
mocking	mock
mocks	mock
mockvater	mockvat
mockwater	mockwat
model	model
modena	
modena	
moderate	moder
moderately	moder
moderation	moder
modern	modern
modest	modest
modesties	modesti
modestly	modestli
modesty	modesti
modicums	modicum
modo	modo
module	modul
moe	moe
moi	moi
moiety	moieti
moist	moist
moisten	moisten
moisture	moistur

moldwarp	moldwarp
mole	mole
molehill	molehil
moles	mole
molest	molest
molestation	molest
mollification	mollif
mollis	molli
molten	molten
molto	molto
mome	mome
moment	moment
momentary	momentari
moming	
mome	
mon	mon
monachum	monachum
monarch	monarch
monarchies	monarchi
monarchize	monarch
monarcho	monarcho
monarchs	monarch
monarchy	monarchi
monast	monast
monastery	monasteri
monastic	monast
monday	mondai
monde	mond
money	monei
moneys	monei
mong	mong
monger	monger
mongers	monger
monging	mong
mongrel	mongrel
mongrels	mongrel
mongst	mongst
monk	monk
monkey	monkei
monkeys	monkei
monks	monk
monmouth	monmouth
monopoly	monopoli
mons	mon
monsieur	monsieur
monsieurs	monsieur
monster	monster
monsters	monster

monstrous	monstrou
monstrously	monstrous
monstrousness	monstrous
monstruosity	monstruos
montacute	montacut
montage	montag
montague	montagu
montagues	montagu
montano	montano
montant	montant
montez	montez
montferrat	montferrat
montgomery	montgomeri
month	month
monthly	monthli
months	month
montjoy	montjoi
monument	monument
monumental	monument
monuments	monument
mood	mood
moods	mood
moody	moodi
moon	moon
moonbeams	moonbeam
moonish	moonish
moonlight	moonlight
moons	moon
moonshine	
moonshin	
moonshines	moonshin
moor	moor
moorfields	moorfield
moors	moor
moorship	moorship
mop	mop
mope	mope
moping	mope
mopping	mop
mopsa	mopsa
moral	moral
moraler	moral
morality	moral
moralize	moral
mordake	mordak
more	more
moreover	moreov
mores	more

morgan	morgan
mori	mori
morisco	morisco
morn	morn
morning	morn
mornings	morn
morocco	morocco
morris	morri
morrow	morrow
morrows	morrow
morsel	morsel
morsels	morsel
mort	mort
mortal	mortal
mortality	mortal
mortally	mortal
mortals	mortal
mortar	mortar
mortgaged	mortgag
mortified	mortifi
mortifying	mortifi
mortimer	mortim
mortimers	mortim
mortis	morti
mortise	mortis
morton	morton
mose	mose
moss	moss
mossgrown	mossgrown
most	most
mote	mote
moth	moth
mother	mother
mothers	mother
moths	moth
motion	motion
motionless	motionless
motions	motion
motive	motiv
motives	motiv
motley	motlei
mots	mot
mought	mought
mould	mould
moulded	
mould	
mouldeth	mouldeth

moulds	mould
mouldy	mouldi
moult	moult
moulten	moulten
mouch	mouch
mounseur	mounseur
mounsieur	mounsieur
mount	mount
mountain	mountain
mountaineer	mountain
mountaineers	mountain
mountainous	mountain
mountains	mountain
mountant	mountant
mountanto	mountanto
mountebank	mountebank
mountebanks	mountebank
mounted	mount
mounteth	mounteth
mounting	mount
mounts	mount
mourn	mourn
mourned	mourn
mourner	mourner
mourners	mourner
mournful	mourn
mournfully	mournfulli
mourning	mourn
mourningly	mourningli
mournings	mourn
mourns	mourn
mous	mou
mouse	mous
mousetrap	mousetrap
mousing	mous
mouth	mouth
mouthed	mouth
mouths	mouth
mov	mov
movables	movabl
move	move
moveable	moveabl
moveables	moveabl
moved	move
mover	mover
movers	mover
moves	move
moveth	moveth

moving	move
movingly	movingli
movousus	movousu
mow	mow
mowbray	mowbrai
mower	mower
mowing	mow
mows	mow
moy	moi
moys	moi
moyses	moys
mrs	mr
much	much
muck	
muck	
mud	mud
mudded	mud
muddied	muddi
muddy	muddi
muffins	muffin
muffl	muffl
muffle	muffl
muffled	muffl
muffler	muffler
muffling	muffl
mugger	mugger
mugs	mug
mulberries	mulberri
mulberry	mulberri
mule	mule
mules	mule
muleteers	mulet
mulier	mulier
mulieres	mulier
muliteus	muliteu
mull	mull
mulmutius	mulmutiu
multiplied	multipli
multiply	multipli
multiplying	multipli
multipotent	multipot
multitude	multitud
multitudes	multitud
multitudinous	multitudin
mum	mum
mumble	
mumbl	
mumbling	mumbl

mummers	mummer
mummy	mummi
mun	mun
munch	munch
muniments	muniment
munition	munit
murd	murd
murder	murder
murdered	murder
murderer	murder
murderers	murder
murdering	murder
murderous	murder
murders	murder
mure	mure
murk	murk
murkiest	murkiest
murky	murki
murmur	murmur
murmurers	murmur
murmuring	murmur
murrain	murrain
murray	murrai
murrion	murrion
murther	murther
murtherer	murther
murtherers	murther
murthering	murther
murtherous	murther
murthers	murther
mus	mu
muscadel	muscadel
muscovites	muscovit
muscovits	muscovit
muscovy	muscovi
muse	muse
muses	muse
mush	mush
mushrooms	mushroom
music	music
musical	music
musician	musician
musicians	musician
musics	music
musings	muse
musings	muse
musk	musk

musket	musket
muskets	musket
uskos	musko
muss	muss
mussel	mussel
mussels	mussel
must	must
mustachio	mustachio
mustard	mustard
mustardseed	mustardse
muster	muster
mustering	muster
musters	muster
musty	musti
mutability	
mutabl	
mutable	mutabl
mutation	mutat
mutations	mutat
mute	mute
mutés	mute
mutest	mutest
mutine	mutin
mutineer	mutin
mutineers	mutin
mutines	mutin
mutinies	mutini
mutinous	mutin
mutiny	mutini
mutius	mutiu
mutter	mutter
muttered	mutter
mutton	mutton
muttons	mutton
mutual	mutual
mutualities	mutual
mutually	mutual
muzzl	muzzl
muzzle	muzzl
muzzled	muzzl
mv	mv
mww	mww
my	my
mynheers	mynheer
myrmidon	myrmidon
myrmidons	myrmidon
myrtle	myrtl
myself	

	myself
myst	myst
mysteries	mysteri
mystery	mysteri
n	n
nag	nag
nage	nage
nags	nag
naiads	naiad
nail	nail
nails	nail
nak	nak
naked	nake
nakedness	naked
nal	nal
nam	nam
name	name
named	name
nameless	nameless
namely	name
names	name
namest	namest
naming	name
nan	nan
nance	nanc
nap	nap
nape	nape
napes	nape
napkin	napkin
napkins	napkin
naples	napl
napless	napless
napping	nap
naps	
	nap
narbon	narbon
narcissus	narcissu
narines	narin
narrow	narrow
narrowly	narrowli
naso	naso
nasty	nasti
nathaniel	nathaniel
natifs	natif
nation	nation
nations	nation
native	nativ
nativity	nativ

natur	natur
natural	natur
naturalize	natur
naturally	natur
nature	natur
natured	natur
natures	natur
natus	natu
naught	naught
naughtily	naughtili
naughty	naughti
navarre	navarr
nave	nave
navel	navel
navigation	navig
navy	navi
nay	nai
nayward	nayward
nayword	nayword
nazarite	nazarit
ne	ne
neaf	neaf
neamnoin	neamnoin
neanmoin	neanmoin
neapolitan	neapolitan
neapolitans	neapolitan
near	near
nearer	nearer
nearest	nearest
nearly	nearli
nearness	near
neat	neat
neatly	neatli
neb	neb
nebour	nebour
nebuchadnezzar	nebuchadnezzar
nec	nec
necessaries	necessari
necessarily	necessarili
necessary	necessari
necessitied	necess
necessities	necess
necessity	necess
neck	neck
necklace	necklac
necks	neck
nectar	nectar

ned	ned
nedar	nedar
need	need
needed	need
needer	needer
needful	need
needfull	needful
needing	need
needle	needl
needles	needl
needless	needless
needly	needli
needs	need
needy	needi
neer	neer
neeze	neez
nefas	nefa
negation	negat
negative	neg
negatives	neg
neglect	neglect
neglected	neglect
neglecting	neglect
neglectingly	neglectingli
neglection	neglect
negligence	neglig
negligent	neglig
negotiate	negoti
negotiations	negoti
negro	negro
neigh	neigh
neighbors	neighbor
neighbour	neighbour
neighbourhood	
neighbourhood	
neighbouring	neighbour
neighbourly	neighbourli
neighbours	neighbour
neighing	neigh
neighs	neigh
neither	neither
nell	nell
nemean	nemean
nemesis	nemesi
neoptolemus	neoptolemu
nephew	nephew
nephews	nephew

neptune	neptun
ner	ner
neraides	neraid
nerissa	nerissa
nero	nero
neroes	nero
ners	ner
nerve	nerv
nerves	nerv
nervii	nervii
nervy	nervi
nessus	nessu
nest	nest
nestor	nestor
nests	nest
net	net
nether	nether
netherlands	netherland
nets	net
nettle	nettl
nettled	nettl
nettles	nettl
neuter	neuter
neutral	neutral
nev	nev
never	never
nevil	nevil
nevals	nevil
new	new
newborn	newborn
newer	newer
newest	newest
newgate	newgat
newly	newli
newness	new
news	new
newsmongers	newsmong
newt	newt
newts	newt
next	next
nibbling	nibbl
nicanor	nicanor
nice	nice
nicely	nice
niceness	nice
nicer	nicer
nicety	niceti
nicholas	nichola

nick	nick
nickname	nicknam
nicks	nick
niece	
	niec
nieces	niec
niggard	niggard
niggarding	niggard
niggardly	niggardli
nigh	nigh
night	night
nightcap	nightcap
nightcaps	nightcap
nighted	night
nightgown	nightgown
nightingale	nightingal
nightingales	nightingal
nightly	nightli
nightmare	nightmar
nights	night
nightwork	nightwork
nihil	nihil
nile	nile
nill	nill
nilus	nilu
nimble	nimbl
nimbleness	nimbl
nimbler	nimbler
nimbly	nimbl
nine	nine
nineteen	nineteen
ning	ning
ningly	ningli
ninny	ninni
ninth	ninth
ninus	
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niobe	niob
niobes	niob
nip	nip
nipp	nipp
nipping	nip
nipple	nippl
nips	nip
nit	nit
nly	nly
nnight	nnight
nights	nnight

no	no
noah	noah
nob	nob
nobility	nobil
nobis	nobi
noble	nobl
nobleman	nobleman
noblemen	noblemen
nobleness	nobl
nobler	nobler
nobles	nobl
noblesse	nobless
noblest	noblest
nobly	nobli
nobody	nobodi
noces	noce
nod	nod
nodded	nod
nodding	nod
noddle	noddl
noddles	noddl
noddy	noddi
nods	nod
noes	noe
nointed	noint
nois	noi
noise	nois
noiseless	noiseless
noisemaker	noisemak
noises	nois
noisome	noisom
nole	nole
nominate	nomin
nominated	nomin
nomination	nomin
nominativo	nominativo
non	non
nonage	nonag
nonce	nonc
none	none
nonino	nonino
nonny	nonni
nonpareil	nonpareil
nonsuits	nonsuit
nony	noni
nook	nook
nooks	nook

noon	noon
noonday	noon dai
noontide	noontid
nor	nor
norbery	norberi
norfolk	norfolk
norman	norman
normandy	normandi
normans	norman
north	north
northampton	northampton
northamptonshire	northamptonshir
northerly	northerli
northern	northern
northgate	northgat
northumberland	northumberland
northumberlands	northumberland
northward	northward
norway	norwai
norways	norwai
norwegian	norwegian
norweyan	norweyan
nos	no
nose	nose
nosegays	nosegai
noseless	noseless
noses	nose
noster	noster
nostra	nostra
nostril	nostril
nostrils	nostril
not	not
notable	notabl
notably	notabl
notary	notari
notch	notch
note	note
notebook	notebook
noted	note
notedly	notedli
notes	note
notest	notest
noteworthy	noteworthyi
nothing	noth
nothings	noth
notice	notic

notify	notifi
noting	note
notion	notion
notorious	notori
notoriously	notori
notre	notr
notwithstanding	notwithstand
nought	nought
noun	noun
nouns	noun
nourish	nourish
nourished	nourish
nourisher	nourish
nourishes	nourish
nourisheth	nourisheth
nourishing	nourish
nourishment	nourish
nous	nou
novel	novel
novelties	novelti
novelty	novelti
noverbs	
noverb	
novi	novi
novice	novic
novices	novic
novum	novum
now	now
nowhere	nowher
noyance	noyanc
ns	ns
nt	nt
nubibus	nubibu
numa	numa
numb	numb
number	number
numbered	number
numbering	number
numberless	numberless
numbers	number
numbness	numb
nun	nun
nuncio	nuncio
nuncle	nuncul
nunnery	nunneri
nuns	nun
nuntius	nuntiu
nuptial	nuptial

nurs	nur
nurse	nurs
nursed	nurs
nurser	nurser
nursery	nurseri
nurses	nurs
nurseth	
nurseth	
nursh	nursh
nursing	nurs
nurtur	nurtur
nurture	nurtur
nut	nut
nuthook	nuthook
nutmeg	nutmeg
nutmegs	nutmeg
nutriment	nutriment
nuts	nut
nutshell	nutshel
ny	ny
nym	nym
nymph	nymph
nymphs	nymph
o	o
oak	oak
oaken	oaken
oaks	oak
oared	oar
oars	oar
oatcake	oatcak
oaten	oaten
oath	oath
oathable	oathabl
oaths	oath
oats	oat
ob	ob
obduracy	obduraci
obdurate	obdur
obedience	obedi
obedient	obedi
obeisance	obeis
oberon	oberon
obey	obei
obeyed	obei
obeying	obei
obeys	obei
obidicut	obidicut

object	object
objected	object
objections	object
objects	object
oblation	oblat
oblations	oblat
obligation	oblig
obligations	oblig
obliged	oblig
oblique	obliqu
oblivion	oblivion
oblivious	oblivi
obloquy	obloqui
obscene	obscen
obscenely	obscen
obscur	obscur
obscure	obscur
obscured	obscur
obscurely	obscur
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philosopher	philosoph
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philotus	philotu
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phoenix	phoenix
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prosecution	prosecut
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protheus	protheu
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should	should
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snatches	snatch
snatching	snatch
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socks	sock
socrates	socrat
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sola	sola
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solanio	solanio
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soldiers	soldier

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solely	sole
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solitary	solitari
solomon	solomon
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somerset	somerset
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somewhat	somewhat
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sonties	sonti
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soothsay	soothsai
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sop	sop
sophister	sophist
sophisticated	sophist
sophy	sophi
sops	sop
sorcerer	sorcer
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south	south
southam	southam
southampton	southampton
southerly	southerli
southern	southern
southward	southward
southwark	southwark
southwell	southwel
souviendrai	souviendrai
sov	sov
sovereign	sovereign
sovereignest	sovereignest
sovereignly	sovereignli
sovereignty	sovereignti
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spark	spark
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sparkling	sparkl
sparks	spark
sparrow	sparrow
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special	special
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specially	special
specialties	specialti
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specify	specifi
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spectacle	spectacl
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speculative	specul
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sperm	sperm
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sphinx	sphinx
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spightfully	spightfulli
spigot	spigot
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stanley	stanlei
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stephano	stephano
stephen	stephen
stepmothers	stepmoth
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sterile	steril
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stickler	stickler
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thrum	thrum
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thumb	thumb
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turmoil	turmoil
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twelvemonth	twelvemonth

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tybalt	tybalt
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tyburn	tyburn
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tymbria	tymbria
type	type
types	type
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tyrannical	tyrann
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unaccustom	unaccustom
unaching	unach
unacquainted	unacquaint
unactive	unact
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unadvised	unadvis
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unagreeable	unagre
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unanswer	unansw
unappeas	unappea
unapproved	unapprov
unapt	unapt
unaptness	unapt
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unassail	unassail
unassailable	unassail
unattainted	unattaint
unattempted	unattempt

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unauspicious	unauspici
unauthorized	unauthor
unavoided	unavoid
unawares	unawar
unback	unback
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unbanded	unband
unbar	unbar
unbarb	unbarb
unbashful	unbash
unbated	unbat
unbatter	unbatt
unbecoming	unbecom
unbefitting	unbefit
unbegot	unbegot
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unblown	unblown
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unbounded	unbound
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unbrac	unbrac
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unbred	unbr
unbreech	unbreech

unbridled	unbridl
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unclean	unclean
uncleanliness	uncleanli
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uncomfortable	uncomfort

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unconfirm	unconfirm
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unconsidered	unconsid
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uncontemn	uncontemn
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uncourteous	uncourt
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unction	unction
unctuous	unctuou
uncuckolded	uncuckold
uncurable	uncur
uncurbable	uncurb
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uncurls	uncurl
uncurrent	uncurr
uncurse	uncurs
undaunted	undaunt
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undercrest	undercrest
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undergo	undergo
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undergoing	undergo
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underground	underground

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underlings	underl
undermine	undermin
underminers	undermin
underneath	underneath
underprizing	underpr
underprop	underprop
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understandings	understand
understands	understand
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undertake	undertak
undertakeing	undertak
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undividable	undivid
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undo	undo
undoes	undo
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undone	undon
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undrown	undrown
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unearthly	unearthli
uneasiness	uneasin
uneasy	uneasi
uneath	uneath
uneducated	uneduc
ineffectual	ineffectu
unelected	unelect
unequal	unequ
uneven	uneven
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unexecuted	unexecut
unexpected	unexpected
unexperienc	unexperienc
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unfasten	unfasten
unfather	unfath
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ward	ward
warded	ward
warden	warden
warder	warder
warders	warder
wardrobe	wardrob
wardrop	wardrop
wards	ward
ware	ware
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warkworth	warkworth
warlike	warlik
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warmed	warm
warmer	warmer
warming	warm
warms	warm
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watchers	watcher
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watchful	watch
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watchman	watchman
watchmen	watchmen
watchword	watchword
water	water
waterdrops	waterdrop
watered	water
waterfly	waterfli
waterford	waterford
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waterish	waterish
waterpots	waterpot
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weeper	weeper
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weighty	weighti
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welcome	welcom
welcomer	welcom
welcomes	welcom
welcomest	welcomest
welfare	welfar
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welkin	
well	well
wells	well
welsh	welsh
welshman	welshman
welshmen	welshmen
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wench	wench
wenches	wench
wenching	wench

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westmoreland	westmoreland
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whitsun	whitsun
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witches	witch
witching	witch
with	with
withal	withal
withdraw	withdraw
withdrawing	withdraw
withdrawn	withdrawn
withdrew	withdrew
wither	wither
withered	wither
withering	wither

withers	wither
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withhold	withhold
withholds	withhold
within	within
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withstand	withstand
withstanding	withstand
withstood	withstood
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wrongfully	wrongfulli
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yaughan	yaughan
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ycleped	yclepe
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yedward	yedward
yell	yell
yellow	yellow
yellowed	yellow
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yellowness	yellow
yellowes	yellow
yells	yell
yelping	yelp
yeoman	yeoman
yeomen	yeomen
yerk	yerk
yes	ye
yesterday	yesterdai

yesterdays	yesterdai
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yesty	yesti
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yield	yield
yield	yield
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yielder	yielder
yielders	yielder
yielding	yield
yields	yield
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yokefellow	yokefellow
yokes	yoke
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yon	yon
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yonder	yonder
yongrey	yongrei
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yorick	yorick
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yorkists	yorkist
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yours	your
yourself	yourself
yourselves	yourself
youth	youth
youthful	youth
youths	youth
youtli	youtli
zanies	zani
zany	zani
zeal	zeal

```

zealous      zealou
zeals        zeal
zed          zed
zenelophon   zenelophon
zenith       zenith
zephyrs      zephyr
zir          zir
zo           zo
zodiac       zodiac
zodiacs      zodiac
zone         zone
zounds       zound
zwagger      zwagger
}

```

```
# Create a full-text index to use for testing the stemmer.
```

```
#
```

```
db close
```

```
sqlite3 db :memory:
```

```
db eval {
```

```
CREATE VIRTUAL TABLE t1 USING fts1(word, tokenize Porter);
```

```
}
```

```
foreach {pfrom pto} $porter_test_data {
```

```
do_test fts1porter-$pfrom {
```

```
execsql {
```

```
DELETE FROM t1_term;
```

```
DELETE FROM t1_content;
```

```
INSERT INTO t1(word) VALUES($pfrom);
```

```
SELECT term FROM t1_term;
```

```
}
```

```
} $pto
```

```
}
```

```
finish_test
```

```
Found in path(s):
```

```
* /opt/cola/permits/1195232069_1629740071.25/0/sqlite-3.7.17-4.el7-1.src.rpm-cosi-expand-archive-
r1W3nghG/sqlite-src-3071700.zip-cosi-expand-archive-bg3rHQWU/sqlite-src-3071700/test/fts1porter.test
```

1.106 shadow 4.6

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Version 2, June 1991

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*
* curve25519-donna: Curve25519 elliptic curve, public key function
*
* <http://code.google.com/p/curve25519-donna/>
*
* Adam Langley <agl@imperialviolet.org>
*
* Derived from public domain C code by Daniel J. Bernstein <djb@cr.yp.to>
*
* More information about curve25519 can be found here
* <http://cr.yp.to/ecdh.html>
*
* djb's sample implementation of curve25519 is written in a special assembly
* language called qhasm and uses the floating point registers.
*
* This is, almost, a clean room reimplementation from the curve25519 paper. It
* uses many of the tricks described therein. Only the crecip function is taken
* from the sample implementation.
*/

1.108 libxvmc 1.0.12-1.el8

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1.109 linux-kernel 5.14.0

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```
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```

```
<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice
```


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/* nicstar.c v0.22 Jawaid Bazyar (bazyar@hypermall.com)

* nicstar.c, M. Welsh (matt.welsh@cl.cam.ac.uk)

*

* Hacked October, 1997 by Jawaid Bazyar, Interlink Advertising Services Inc.

* <http://www.hypermall.com/>

* 10/1/97 - commented out CFG_PHYIE bit - we don't care when the PHY

- * interrupts us (except possibly for removal/insertion of the cable?)
- * 10/4/97 - began heavy inline documentation of the code. Corrected typos
- * and spelling mistakes.
- * 10/5/97 - added code to handle PHY interrupts, disable PHY on
- * loss of link, and correctly re-enable PHY when link is
- * re-established. (put back CFG_PHYIE)
- *
- * Modified to work with the IDT7721 nicstar -- AAL5 (tested) only.
- *
- * R. D. Rechenmacher <ron@fnal.gov>, Aug. 6, 1997
- *
- * Linux driver for the IDT77201 NICStAR PCI ATM controller.
- * PHY component is expected to be 155 Mbps S/UNI-Lite or IDT 77155;
- * see init_nicstar() for PHY initialization to change this. This driver
- * expects the Linux ATM stack to support scatter-gather
- lists
- * (skb->atm.iovcnt != 0) for Rx skb's passed to vcc->push.
- *
- * Implementing minimal-copy of received data:
- * IDT always receives data into a small buffer, then large buffers
- * as needed. This means that data must always be copied to create
- * the linear buffer needed by most non-ATM protocol stacks (e.g. IP)
- * Fix is simple: make large buffers large enough to hold entire
- * SDU, and leave <small_buffer_data> bytes empty at the start. Then
- * copy small buffer contents to head of large buffer.
- * Trick is to avoid fragmenting Linux, due to need for a lot of large
- * buffers. This is done by 2 things:
- * 1) skb->destructor / skb->atm.recycle_buffer
- * combined, allow nicstar_free_rx_skb to be called to
- * recycle large data buffers
- * 2) skb_clone of received buffers
- * See nicstar_free_rx_skb and linearize_buffer for implementation
- * details.
- *
- *
- *
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*
* M. Welsh, 6 July 1996

*
*
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1.113 libedit 3.0-12.20121213cvs.el7

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1.114 ncurses 6.1-9.20180224.el8

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1.115 zstd 1.5.1

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1.116 libjpeg-turbo 2.0.90

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```

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```

The

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1.118 perl 1.04-291.e17

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 *
 */
```

1.119 keyutils 1.6.3

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Version 2, June 1991

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1.120 bash 5.1.8

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1.121 inetutils 1.4.2

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```

```
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1.122 libqrencode 3.4.1-3.el7

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1.124 glib 2.68.4

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1.126 libuv 1.23.1-1.el8

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1.127 tiny-xml 2.6.2-19.el8

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Original code by Lee Thomason (www.grinninglizard.com)

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/** @mainpage

<h1> TinyXML </h1>

TinyXML is a simple, small, C++ XML parser that can be easily integrated into other programs.

<h2> What it does. </h2>

In brief, TinyXML parses an XML document, and builds from that a Document Object Model (DOM) that can be read, modified, and saved.

XML stands for "eXtensible Markup Language." It allows you to create your own document markups. Where HTML does a very good job of marking documents for browsers, XML allows you to define any kind of document markup, for example a document that describes a "to do" list for an organizer application. XML is a very structured and convenient format. All those random file formats created to store application data can

all be replaced with XML. One parser for everything.

The best place for the complete, correct, and quite frankly hard to read spec is at <http://www.w3.org/TR/2004/REC-xml-20040204/>.

An intro to XML

(that I really like) can be found at

<http://skew.org/xml/tutorial/>.

There are different ways to access and interact with XML data.

TinyXML uses a Document Object Model (DOM), meaning the XML data is parsed into a C++ objects that can be browsed and manipulated, and then written to disk or another output stream. You can also construct an XML document from scratch with C++ objects and write this to disk or another output stream.

TinyXML is designed to be easy and fast to learn. It is two headers and four cpp files. Simply add these to your project and off you go. There is an example file - xmltest.cpp - to get you started.

TinyXML is released under the ZLib license, so you can use it in open source or commercial code. The details of the license are at the top of every source file.

TinyXML attempts to be a flexible parser, but with truly correct and compliant XML output. TinyXML should compile on any reasonably C++ compliant system. It does not rely on exceptions or RTTI. It can be compiled with or without STL support. TinyXML fully supports the UTF-8 encoding, and the first 64k character entities.

<h2> What it doesn't do. </h2>

TinyXML doesn't parse or use DTDs (Document Type Definitions) or XSLs (eXtensible Stylesheet Language.) There are other parsers out there (check out www.sourceforge.org, search for XML) that are much more fully featured. But they are also much bigger, take longer to set up in your project, have a higher learning curve, and often have a more restrictive license. If you are working with browsers or have more complete XML needs, TinyXML is not the parser for you.

The following DTD syntax will not parse at this time in TinyXML:

@verbatim

```
<!DOCTYPE Archiv [  
<!ELEMENT Comment (#PCDATA)>  
>
```

@endverbatim

because TinyXML sees this as a !DOCTYPE node with an illegally embedded !ELEMENT node. This may be addressed in the future.

<h2> Tutorials. </h2>

For

the impatient, here is a tutorial to get you going. A great way to get started, but it is worth your time to read this (very short) manual completely.

- @subpage tutorial0

<h2> Code Status. </h2>

TinyXML is mature, tested code. It is very stable. If you find bugs, please file a bug report on the sourceforge web site (www.sourceforge.net/projects/tinyxml). We'll get them straightened out as soon as possible.

There are some areas of improvement; please check sourceforge if you are interested in working on TinyXML.

<h2> Related Projects </h2>

TinyXML projects you may find useful! (Descriptions provided by the projects.)

 TinyXPath (<http://tinypath.sourceforge.net>). TinyXPath is a small footprint XPath syntax decoder, written in C++.

 TinyXML++ (<http://code.google.com/p/ticpp/>). TinyXML++ is a completely new interface to TinyXML that uses MANY of the C++ strengths. Templates, exceptions, and much better error handling.

<h2>

Features </h2>

<h3> Using STL </h3>

TinyXML can be compiled to use or not use STL. When using STL, TinyXML uses the std::string class, and fully supports std::istream, std::ostream, operator<<, and operator>>. Many API methods have both 'const char*' and 'const std::string&' forms.

When STL support is compiled out, no STL files are included whatsoever. All the string classes are implemented by TinyXML itself. API methods all use the 'const char*' form for input.

Use the compile time #define:

```
TIXML_USE_STL
```

to compile one version or the other. This can be passed by the compiler, or set as the first line of "tinyxml.h".

Note: If compiling the test code in Linux, setting the environment variable TINYXML_USE_STL=YES/NO will control STL compilation. In the Windows project file, STL and non STL targets are provided. In your project, It's probably easiest to add the line "#define TIXML_USE_STL" as the first line of tinyxml.h.

UTF-8

TinyXML supports UTF-8 allowing to manipulate XML files in any language. TinyXML also supports "legacy mode" - the encoding used before UTF-8 support and probably best described as "extended ascii".

Normally, TinyXML will try to detect the correct encoding and use it. However, by setting the value of TIXML_DEFAULT_ENCODING in the header file, TinyXML can be forced to always use one encoding.

TinyXML will assume Legacy Mode until one of the following occurs:

 If the non-standard but common "UTF-8 lead bytes" (0xef 0xbb 0xbf) begin the file or data stream, TinyXML will read it as UTF-8.

 If the declaration tag is read, and it has an encoding="UTF-8", then TinyXML will read it as UTF-8.

 If the declaration tag is read, and it has no encoding specified, then TinyXML will read it as UTF-8.

 If the declaration tag is read, and it has an encoding="something else", then TinyXML will read it as Legacy Mode. In legacy mode, TinyXML will work as it did before. It's

not clear what that mode does exactly, but old content should keep working.

 Until one of the above criteria is met, TinyXML runs in Legacy Mode.

What happens if the encoding is incorrectly set or detected? TinyXML will try to read and pass through text seen as improperly encoded. You may get some strange results or mangled characters. You may want to force TinyXML to the correct mode.

You may force TinyXML to Legacy Mode by using LoadFile(TIXML_ENCODING_LEGACY) or LoadFile(filename, TIXML_ENCODING_LEGACY). You may force it to use legacy mode all the time by setting TIXML_DEFAULT_ENCODING = TIXML_ENCODING_LEGACY. Likewise, you may force it to TIXML_ENCODING_UTF8 with the same technique.

For English users, using English XML, UTF-8 is the same as low-ASCII. You don't need to be aware of UTF-8 or change your code in any way. You can think of UTF-8 as a "superset" of ASCII.

UTF-8 is not a double byte format - but it is a standard encoding of Unicode!

TinyXML

does not use or directly support wchar, TCHAR, or Microsoft's _UNICODE at this time. It is common to see the term "Unicode" improperly refer to UTF-16, a wide byte encoding of unicode. This is a source of confusion.

For "high-ascii" languages - everything not English, pretty much - TinyXML can handle all languages, at the same time, as long as the XML is encoded in UTF-8. That can be a little tricky, older programs and operating systems tend to use the "default" or "traditional" code page. Many apps (and almost all modern ones) can output UTF-8, but older or stubborn (or just broken) ones still output text in the default code page.

For example, Japanese systems traditionally use SHIFT-JIS encoding.

Text encoded as SHIFT-JIS can not be read by TinyXML.

A good text editor can import SHIFT-JIS and then save as UTF-8.

The `Skew.org link` does a great job covering the encoding issue.

The test file "utf8test.xml" is an XML containing English, Spanish, Russian, and Simplified Chinese. (Hopefully they are translated correctly). The file "utf8test.gif" is a screen capture of the XML file, rendered in IE. Note that if you don't have the correct fonts (Simplified Chinese or Russian) on your system, you won't see output that matches the GIF file even if you can parse it correctly. Also note that (at least on my Windows machine) console output is in a Western code page, so that Print() or printf() cannot correctly display the file. This is not a bug in TinyXML - just an OS issue. No data is lost or destroyed by TinyXML. The console just doesn't render UTF-8.

`<h3> Entities </h3>`

TinyXML recognizes the pre-defined "character entities", meaning special characters. Namely:

```
@verbatim
&amp; &
&lt; <
&gt; >
&quot; "
&apos; '
@endverbatim
```

These are recognized when the XML document is read, and translated to their UTF-8 equivalents. For instance, text with the XML of:

```
@verbatim
Far & Away
@endverbatim
```

will have the Value() of "Far & Away" when queried from the TiXmlText object, and will be written back to the XML stream/file as an ampersand. Older versions of TinyXML "preserved" character entities, but the newer versions will translate them into characters.

Additionally, any character can be specified by its Unicode code point: The syntax " " or " " are both to the non-breaking space character.

<h3> Printing </h3>

TinyXML can print output in several different ways that all have strengths and limitations.

- Print(FILE*). Output to a std-C stream, which includes all C files as well as stdout.
 - "Pretty prints", but you don't have control over printing options.
 - The output is streamed directly to the FILE object, so there is no memory overhead in the TinyXML code.
 - used by Print() and SaveFile()
- operator<<. Output to a c++ stream.
 - Integrates with standard C++ iostreams.
 - Outputs in "network printing" mode without line breaks. Good for network transmission and moving XML between C++ objects, but hard for a human to read.
- TiXmlPrinter. Output to a std::string or memory buffer.
 - API is less concise
 - Future printing options will be put here.
 - Printing may change slightly in future versions as it is refined and expanded.

<h3> Streams </h3>

With TIXML_USE_STL on TinyXML supports C++ streams (operator <<, >>) streams as well as C (FILE*) streams. There are some differences that you may need to be aware of.

C style output:

- based on FILE*
- the Print() and SaveFile() methods

Generates formatted output, with plenty of white space, intended to be as human-readable as possible. They are very fast, and tolerant of ill formed XML documents. For example, an XML document that contains 2 root elements

and 2 declarations, will still print.

C style input:

- based on FILE*
- the Parse() and LoadFile() methods

A fast, tolerant read. Use whenever you don't need the C++ streams.

C++ style output:

- based on std::ostream
- operator<<

Generates

condensed output, intended for network transmission rather than readability. Depending on your system's implementation of the ostream class, these may be somewhat slower. (Or may not.) Not tolerant of ill formed XML: a document should contain the correct one root element. Additional root level elements will not be streamed out.

C++ style input:

- based on std::istream
- operator>>

Reads XML from a stream, making it useful for network transmission. The tricky part is knowing when the XML document is complete, since there will almost certainly be other data in the stream. TinyXML will assume the XML data is complete after it reads the root element. Put another way, documents that are ill-constructed with more than one root element will not read correctly. Also note that operator>> is somewhat slower than Parse, due to both implementation of the STL and limitations of TinyXML.

<h3> White space </h3>

The world simply does not agree on whether white space should be kept, or condensed.

For example, pretend the '_' is a space, and look at "Hello___world". HTML, and at least some XML parsers, will interpret this as "Hello_ world". They condense white space. Some XML parsers do not, and will leave it as "Hello___world". (Remember to keep pretending the _ is a space.) Others suggest that __Hello___world__ should become Hello___world.

It's an issue that hasn't been resolved to my satisfaction. TinyXML supports the first 2 approaches. Call TiXmlBase::SetCondenseWhiteSpace(bool) to set the desired behavior. The default is to condense white space.

If you change the default, you should call TiXmlBase::SetCondenseWhiteSpace(bool) before making any calls to Parse XML data, and I don't recommend changing it after it has been set.

<h3> Handles </h3>

Where browsing an XML document in a robust way, it is important to check for null returns from method calls. An error safe implementation can generate a lot of code like:

```
@verbatim
TiXmlElement* root = document.FirstChildElement(
    "Document" );
if ( root )
{
    TiXmlElement* element = root->FirstChildElement( "Element" );
    if ( element )
    {
        TiXmlElement* child = element->FirstChildElement( "Child" );
        if ( child )
        {
            TiXmlElement* child2 = child->NextSiblingElement( "Child" );
            if ( child2 )
            {
                // Finally do something useful.
            }
        }
    }
}
@endverbatim
```

Handles have been introduced to clean this up. Using the TiXmlHandle class, the previous code reduces to:

```
@verbatim
TiXmlHandle docHandle( &document );
TiXmlElement* child2 = docHandle.FirstChild( "Document" ).FirstChild( "Element" ).Child( "Child", 1
).ToElement();
if ( child2 )
{
    // do something useful
}
@endverbatim
```

Which is much easier to deal with. See TiXmlHandle for more information.

<h3> Row and Column tracking </h3>

Being able to track nodes and attributes back to their origin location in source files can be very important for some applications. Additionally, knowing where parsing errors occurred in the original source can be very time saving.

TinyXML can track the row and column origin of all nodes and attributes in a text file. The TiXmlBase::Row() and TiXmlBase::Column() methods return

the origin of the node in the source text. The correct tabs can be configured in TiXmlDocument::SetTabSize().

<h2> Using and Installing </h2>

To Compile and Run xmltest:

A Linux Makefile and a Windows Visual C++ .dsw file is provided. Simply compile and run. It will write the file demotest.xml to your disk and generate output on the screen. It also tests walking the DOM by printing out the number of nodes found using different techniques.

The Linux makefile is very generic and runs on many systems - it is currently tested on mingw and MacOSX. You do not need to run 'make depend'. The dependencies have been hard coded.

<h3>Windows project file for VC6</h3>

tinyxml: tinyxml library, non-STL

tinyxmlSTL: tinyxml library, STL

tinyXmlTest: test app, non-STL

tinyXmlTestSTL: test app,
STL

<h3>Makefile</h3>

At the top of the makefile you can set:

PROFILE, DEBUG, and TINYXML_USE_STL. Details (such that they are) are in the makefile.

In the tinyxml directory, type "make clean" then "make". The executable file 'xmltest' will be created.

<h3>To Use in an Application:</h3>

Add tinyxml.cpp, tinyxml.h, tinyxmlerror.cpp, tinyxmlparser.cpp, tinystr.cpp, and tinystr.h to your project or make file. That's it! It should compile on any reasonably compliant C++ system. You do not need to enable exceptions or RTTI for TinyXML.

<h2> How TinyXML works. </h2>

An example is probably the best way to go. Take:

```
@verbatim
<?xml version="1.0" standalone=no>
<!-- Our to do list data -->
<ToDo>
  <Item priority="1"> Go to the <bold>Toy store!</bold></Item>
  <Item priority="2"> Do bills</Item>
</ToDo>
@endverbatim
```

Its not much of a To Do list, but it will do. To read this file (say "demo.xml") you would create a document, and parse it in:

```
@verbatim
TiXmlDocument
doc( "demo.xml" );
doc.LoadFile();
@endverbatim
```

And its ready to go. Now lets look at some lines and how they relate to the DOM.

```
@verbatim
<?xml version="1.0" standalone=no>
@endverbatim
```

The first line is a declaration, and gets turned into the TiXmlDeclaration class. It will be the first child of the document node.

This is the only directive/special tag parsed by TinyXML. Generally directive tags are stored in TiXmlUnknown so the commands wont be lost when it is saved back to disk.

```
@verbatim
<!-- Our to do list data -->
@endverbatim
```

A comment. Will become a TiXmlComment object.

```
@verbatim
<ToDo>
@endverbatim
```

The "ToDo" tag defines a TiXmlElement object. This one does not have any attributes, but does contain 2 other elements.

```
@verbatim
```

```
<Item priority="1">
```

```
@endverbatim
```

Creates another TiXmlElement which is a child of the "ToDo" element.
This element has 1 attribute, with the name "priority" and the value "1".

```
@verbatim
```

```
Go to the
```

```
@endverbatim
```

A TiXmlText.

This is a leaf node and cannot contain other nodes.

It is a child of the "Item" TiXmlElement.

```
@verbatim
```

```
<bold>
```

```
@endverbatim
```

Another TiXmlElement, this one a child of the "Item" element.

Etc.

Looking at the entire object tree, you end up with:

```
@verbatim
```

```
TiXmlDocument "demo.xml"
```

```
TiXmlDeclaration "version='1.0'" "standalone=no"
```

```
TiXmlComment " Our to do list data"
```

```
TiXmlElement "ToDo"
```

```
TiXmlElement "Item" Attributes: priority = 1
```

```
TiXmlText "Go to the "
```

```
TiXmlElement "bold"
```

```
TiXmlText "Toy store!"
```

```
TiXmlElement "Item" Attributes: priority=2
```

```
TiXmlText "Do bills"
```

```
@endverbatim
```

```
<h2> Documentation </h2>
```

The documentation is build with Doxygen, using the 'dox' configuration file.

```
<h2> License </h2>
```

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<h2> References </h2>

The World Wide Web Consortium is the definitive standard body for XML, and their web pages contain huge amounts of information.

The definitive spec: <http://www.w3.org/TR/2004/REC-xml-20040204/>

I also recommend "XML Pocket Reference" by Robert Eckstein and published by OReilly...the book that got the whole thing started.

<h2> Contributors, Contacts, and a Brief History </h2>

Thanks very much to everyone who sends suggestions, bugs, ideas, and encouragement. It all helps, and makes this project fun. A special thanks to the contributors on the web pages that keep it lively.

So many people have sent in bugs and ideas, that rather than list here we try to give credit due in the "changes.txt" file.

TinyXML was originally written by Lee Thomason. (Often the "I" still in the documentation.) Lee reviews changes and releases new versions, with the help of Yves Berquin, Andrew Ellerton, and the tinyXml community.

We appreciate your suggestions, and would love to know if you use TinyXML. Hopefully you will enjoy it and find it useful. Please post questions, comments, file bugs, or contact us at:

www.sourceforge.net/projects/tinyxml

Lee Thomason, Yves Berquin, Andrew Ellerton

*/

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No license file was found, but licenses were detected in source scan.

/*

www.sourceforge.net/projects/tinyxml

Original code by Lee Thomason (www.grinninglizard.com)

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*/

Found in path(s):

*

/opt/cola/permits/1312928940_1652695503.2678666/0/tinyxml-2-6-2-tar-gz/tinyxml/tinyxmlparser.cpp

No license file was found, but licenses were detected in source scan.

/*

www.sourceforge.net/projects/tinyxml

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- */

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1.128 json-cpp 1.8.4-6.el8

1.128.1 Available under license :

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/opt/cola/permits/1314067067_1652699307.6553345/0/jsoncpp-1-8-4-6-el8-x86-64-zip/jsoncpp-1.8.4-6.el8.x86_64.rpm: binary file matches

Found in path(s):

* /bin/grep

1.129 pcre 10.40

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Email local part: Philip.Hazel
Email domain: gmail.com

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1.130 binutils 2.17.50.0.6-20.el5_8.3

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```

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Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot

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For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,

then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the

entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

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3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

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4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

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When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because
of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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iconv (Charset Conversion Library) v2.0

(28) Artem Bityuckiy (--enable-newlib-iconv)

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That's all there is to it!
(This file is under construction.) -*- text -*-

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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c, input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several

processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith

Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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1.136 Ishw B.02.19.2

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```
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If you've contributed to gas and your name isn't listed here, it is not meant as a slight. I just don't know about it. Email me, nickc@redhat.com and I'll correct the situation.

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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c, input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith

Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many

small
bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed

for everyone's
free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because
of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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0. This License Agreement applies to any software library which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Library General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and

distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition,
mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under

the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not.

Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials

specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses

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If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot

impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

12. If the distribution and/or use of the Library is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Library under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.

13. The Free Software Foundation may publish revised and/or new versions of the Library General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each

version is given a distinguishing version number. If the Library specifies a version number of this License which applies to it and "any later version", you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Library does not specify a license version number, you may choose any version ever published by the Free Software Foundation.

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END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
<one line to give the library's name and a brief idea of what it does.>  
Copyright (C) <year>  
<name of author>
```

This library is free software; you can redistribute it and/or modify it under the terms of the GNU Library General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

This library is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU Library General Public License for more details.

You should have received a copy of the GNU Library General Public License along with this library; if not, write to the Free Software Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary.

Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

That's all there is to it!

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Version 3, 29 June 2007

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Preamble

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When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for them if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs, and that you know you can do these things.

To protect your rights, we need to prevent others from denying you these rights or asking you to surrender the rights. Therefore, you have certain responsibilities if you distribute copies of the software, or if you modify it: responsibilities to respect the freedom of others.

For example, if you distribute copies of such a program, whether

gratis or for a fee, you must pass on to the recipients the same freedoms that you received. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

Developers that use the GNU GPL protect your rights with two steps:

(1)

assert copyright on the software, and (2) offer you this License giving you legal permission to copy, distribute and/or modify it.

For the developers' and authors' protection, the GPL clearly explains that there is no warranty for this free software. For both users' and authors' sake, the GPL requires that modified versions be marked as changed, so that their problems will not be attributed erroneously to authors of previous versions.

Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand

ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

"The Program" refers to any copyrightable work licensed under this

License. Each licensee is addressed as "you". "Licensees" and "recipients" may be individuals or organizations.

To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

A "covered work" means either the unmodified Program or a work based on the Program.

To "propagate" a work means to do anything with it that, without permission, would make you directly or secondarily liable for infringement under applicable copyright law, except executing it on a computer or modifying a private copy. Propagation includes copying, distribution (with or without modification), making available to the public, and in some countries other activities as well.

To "convey" a work means any kind of propagation that enables other parties to make or receive copies. Mere interaction with a user through a computer network, with no transfer of a copy, is not conveying.

An interactive user interface displays "Appropriate Legal Notices" to the extent that it includes a convenient and prominently visible feature that (1) displays an appropriate copyright notice, and (2) tells the user that there is no warranty for the work (except to the extent that warranties are provided), that licensees may convey the work under this License, and how to view a copy of this License. If the interface presents a list of user commands or options, such as a menu, a prominent item in the list meets this criterion.

1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major

Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

The Corresponding Source need not include anything that users can regenerate automatically from other parts of the Corresponding Source.

The Corresponding Source for a work in source code form is that same work.

2. Basic Permissions.

All rights granted under this License are granted for the term of copyright on the Program, and are irrevocable provided the stated conditions are met. This License explicitly affirms your unlimited permission to run the unmodified Program. The output from running a covered work is covered by this License only if the output, given its content, constitutes a covered work. This License acknowledges your rights of fair use or other equivalent, as provided by copyright law.

You may make, run and propagate covered works that you do not convey, without conditions so long as your license otherwise remains in force. You may convey covered works to others for the sole purpose of having them make modifications exclusively for you, or provide you with facilities for running those works, provided that you comply with the terms of this License in conveying all material for which you do not control copyright. Those thus making or running the covered works for you must do so exclusively on your behalf, under your direction

and control, on terms that prohibit them from making any copies of your copyrighted material outside their relationship with you.

Conveying under any other circumstances is permitted solely under the conditions stated below. Sublicensing is not allowed; section 10 makes it unnecessary.

3. Protecting Users' Legal Rights From Anti-Circumvention Law.

No covered work shall be deemed part of an effective technological measure under any applicable law fulfilling obligations under article 11 of the WIPO copyright treaty adopted on 20 December 1996, or similar laws prohibiting or restricting circumvention of such measures.

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4. Conveying Verbatim Copies.

You may convey verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice; keep intact all notices stating that this License and any non-permissive terms added in accord with section 7 apply to the code; keep intact all notices of the absence of any warranty; and give all recipients a copy of this License along with the Program.

You may charge any price or no price for each copy that you convey, and you may offer support or warranty protection for a fee.

5. Conveying Modified Source Versions.

You may convey a work based on the Program, or the modifications to produce it from the Program, in the form of source code under the terms of section 4, provided that you also meet all of these conditions:

- a) The work must carry prominent notices stating that you modified it, and giving a relevant date.
- b) The work must carry prominent notices stating that it is

released under this License and any conditions added under section 7. This requirement modifies the requirement in section 4 to "keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the

product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

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1.139 packaging 21.3

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Version: 0.1.2

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Author-email: web-sig@python.org

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Description: This is a standalone release of the ``wsgiref`` library to be included in Python 2.5. For the standalone version's documentation, see:

HTML

http://peak.telecommunity.com/wsgiref_docs/

PDF

<http://peak.telecommunity.com/wsgiref.pdf>

Platform: UNKNOWN

Found in path(s):

* /opt/cola/permits/1403963770_1661913703.6112542/0/wsgiref-0-1-2-2-zip/wsgiref-0.1.2/wsgiref.egg-info/PKG-INFO

* /opt/cola/permits/1403963770_1661913703.6112542/0/wsgiref-0-1-2-2-zip/wsgiref-0.1.2/PKG-INFO

1.141 strace 5.18

1.141.1 Available under license :

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Version 2.1, February 1999

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Ajay Joshi <jaj@google.com>

Balzs Dn <balazs.dan@gmail.com>

Benoit Sigoure <tsuna@google.com>

Bharat Mediratta <bharat@menalto.com>

Bogdan Pilocca <boo@google.com>

Chandler Carruth <chandlerc@google.com>

Chris Prince <cprince@google.com>

Chris Taylor <taylorc@google.com>

Dan Egnor <egnor@google.com>

Dave MacLachlan <dmaclach@gmail.com>

David Anderson <danderson@google.com>

Dean Sturtevant

Eric Roman <eroman@chromium.org>

Gene Volovich <gv@cite.com>

Hady Zalek <hady.zalek@gmail.com>

Hal Burch <gmock@hburch.com>

Jeffrey Yasskin <jyasskin@google.com>

Jim Keller <jimkeller@google.com>

Joe Walnes <joe@truemesh.com>

Jon Wray <jwray@google.com>

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Kenton Varda

<kenton@google.com>

Kostya Serebryany <kcc@google.com>

Krystian Kuzniarek <krystian.kuzniarek@gmail.com>

Lev Makhlis

Manuel Klimek <klimek@google.com>
Mario Tanev <radix@google.com>
Mark Paskin
Markus Heule <markus.heule@gmail.com>
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From `strings/apr_fnmatch.c`, `include/apr_fnmatch.h`,
`misc/unix/getopt.c`,
`file_io/unix/mktemp.c`, `strings/apr_strings.c`:

/*

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From network_io/unix/inet_ntop.c, network_io/unix/inet_pton.c:

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From dso/aix/dso.c:

* Based on libdl (dlfcn.c/dlfcn.h) which is

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From strings/apr_strnatcmp.c, include/apr_strings.h:

strnatcmp.c -- Perform 'natural order' comparisons of strings in C.

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From test/CuTest.c, test/CuTest.h:

```
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*
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*
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*
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```

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The following was received February 23, 2000 From: "Linn, John" February 19, 2000

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1.144 expat 2.5.0

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1.145 openssl 3.0.7

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```
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```

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```
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This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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1.146 python-setuptools 65.5.1

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes

1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
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2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
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1.147 pkix-ssh 13.5

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*
* Optimised ANSI C code for the Rijndael cipher (now AES)
*
* @author Vincent Rijmen <vincent.rijmen@esat.kuleuven.ac.be>
* @author Antoon Bosselaers <antoon.bosselaers@esat.kuleuven.ac.be>
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1.149 llvm 14.0.5

1.149.1 Available under license :

; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py

; RUN: llc < %s -mtriple=aarch64-- | FileCheck %s

; A shuffle mask with all undef elements is always legal.

```
define <4 x i32> @PR41535(<2 x i32> %p1, <2 x i32> %p2) {
; CHECK-LABEL: PR41535:
; CHECK:      // %bb.0:
; CHECK-NEXT:  ext v0.8b, v0.8b, v1.8b, #4
; CHECK-NEXT:  mov v0.d[1], v0.d[0]
; CHECK-NEXT:  ret
%cat1 = shufflevector <2 x i32> %p1, <2 x i32> undef, <4 x i32> <i32 undef, i32 1, i32 undef, i32 undef>
%cat2 = shufflevector <2 x i32> %p2, <2 x i32> undef, <4 x i32> <i32 0, i32 undef, i32 undef, i32 undef>
%r = shufflevector <4 x i32> %cat1, <4 x i32> %cat2, <4 x i32> <i32 undef, i32 undef, i32 1, i32 4>
ret <4 x i32> %r
}
```

; RUN: llc < %s -mtriple=s390x-linux-gnu -mcpu=zEC12 -verify-machineinstrs | FileCheck %s

;

; Test that early if conversion produces LOCR with operands of the right

; register classes.

```
define void @autogen_SD4739(i8*) {
; CHECK-NOT: Expected a GR32Bit register, but got a GRX32Bit register
BB:
%L34 = load i8, i8* %0
%Cmp56 = icmp sgt i8 undef, %L34
br label %CF246
```

CF246: ; preds = %CF246, %BB


```
%S1163 = select i1 %Cmp56, i8 %L34, i8 undef
br i1 undef, label %CF246, label %CF248
```

```
CF248:                                ; preds = %CF248, %CF246
store i8 %S1163, i8* %0
br label %CF248
}
```

; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --include-generated-funcs

; RUN: opt -S -verify -iroutliner -ir-outlining-no-cost < %s | FileCheck %s

; This test checks that debug info is recognized as able to be extracted along
; with the other instructions, but is not included in the consolidated function.

```
define void @function1() !dbg !6 {
entry:
  %a = alloca i32, align 4, !dbg !17
  call void @llvm.dbg.value(metadata i32* %a, metadata !9, metadata !DIExpression()), !dbg !17
  %b = alloca i32, align 4, !dbg !18
  call void @llvm.dbg.value(metadata i32* %b, metadata !11, metadata !DIExpression()), !dbg !18
  %c = alloca i32, align 4, !dbg !19
  call void @llvm.dbg.value(metadata i32* %c, metadata !12, metadata !DIExpression()), !dbg !19
  store i32 2, i32* %a, align 4, !dbg !20
  store i32 3, i32* %b, align 4, !dbg !21
  store i32 4, i32* %c, align 4, !dbg !22
  %al = load i32, i32* %a, align 4, !dbg !23
  call void @llvm.dbg.value(metadata i32 %al,
    metadata !13, metadata !DIExpression()), !dbg !23
  %bl = load i32, i32* %b, align 4, !dbg !24
  call void @llvm.dbg.value(metadata i32 %bl, metadata !15, metadata !DIExpression()), !dbg !24
  %cl = load i32, i32* %c, align 4, !dbg !25
  call void @llvm.dbg.value(metadata i32 %cl, metadata !16, metadata !DIExpression()), !dbg !25
  ret void, !dbg !26
}
```

```
define void @function2() !dbg !27 {
entry:
  %a = alloca i32, align 4, !dbg !35
  call void @llvm.dbg.value(metadata i32* %a, metadata !29, metadata !DIExpression()), !dbg !35
  %b = alloca i32, align 4, !dbg !36
  call void @llvm.dbg.value(metadata i32* %b, metadata !30, metadata !DIExpression()), !dbg !36
  %c = alloca i32, align 4, !dbg !37
  call void @llvm.dbg.value(metadata i32* %c, metadata !31, metadata !DIExpression()), !dbg !37
  store i32 2, i32* %a, align 4, !dbg !38
  store i32 3, i32* %b, align 4, !dbg !39
  store i32 4, i32* %c, align 4, !dbg !40
  %al = load i32, i32* %a, align 4, !dbg !41
  call void @llvm.dbg.value(metadata
```

```

i32 %al, metadata !32, metadata !DIExpression(), !dbg !41
%bl = load i32, i32* %b, align 4, !dbg !42
call void @llvm.dbg.value(metadata i32 %bl, metadata !33, metadata !DIExpression()), !dbg !42
%cl = load i32, i32* %c, align 4, !dbg !43
call void @llvm.dbg.value(metadata i32 %cl, metadata !34, metadata !DIExpression()), !dbg !43
ret void, !dbg !44
}

```

```

; Function Attrs: nounwind readnone speculatable willreturn
declare void @llvm.dbg.value(metadata, metadata, metadata) #0

```

```

attributes #0 = { nounwind readnone speculatable willreturn }

```

```

!llvm.dbg.cu = !{!0}
!llvm.debugify = !{!3, !4}
!llvm.module.flags = !{!5}

```

```

!0 = distinct !DICompileUnit(language: DW_LANG_C, file: !1, producer: "debugify", isOptimized: true,
runtimeVersion: 0, emissionKind: FullDebug, enums: !2)
!1 = !DIFile(filename: "legal-debug.ll", directory: "/")
!2 = !{}
!3 = !{i32 20}
!4 = !{i32 12}
!5 = !{i32 2, !"Debug Info Version", i32 3}
!6 = distinct !DISubprogram(name: "function1", linkageName: "function1",
scope: null, file: !1, line: 1, type: !7, scopeLine: 1, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0,
retainedNodes: !8)
!7 = !DISubroutineType(types: !2)
!8 = !{!9, !11, !12, !13, !15, !16}
!9 = !DILocalVariable(name: "1", scope: !6, file: !1, line: 1, type: !10)
!10 = !DIBasicType(name: "ty64", size: 64, encoding: DW_ATE_unsigned)
!11 = !DILocalVariable(name: "2", scope: !6, file: !1, line: 2, type: !10)
!12 = !DILocalVariable(name: "3", scope: !6, file: !1, line: 3, type: !10)
!13 = !DILocalVariable(name: "4", scope: !6, file: !1, line: 7, type: !14)
!14 = !DIBasicType(name: "ty32", size: 32, encoding: DW_ATE_unsigned)
!15 = !DILocalVariable(name: "5", scope: !6, file: !1, line: 8, type: !14)
!16 = !DILocalVariable(name: "6", scope: !6, file: !1, line: 9, type: !14)
!17 = !DILocation(line: 1, column: 1, scope: !6)
!18 = !DILocation(line: 2, column: 1, scope: !6)
!19 = !DILocation(line: 3, column: 1, scope: !6)
!20 = !DILocation(line: 4, column: 1, scope: !6)
!21
= !DILocation(line: 5, column: 1, scope: !6)
!22 = !DILocation(line: 6, column: 1, scope: !6)
!23 = !DILocation(line: 7, column: 1, scope: !6)
!24 = !DILocation(line: 8, column: 1, scope: !6)
!25 = !DILocation(line: 9, column: 1, scope: !6)

```

```

!26 = !DILocation(line: 10, column: 1, scope: !6)
!27 = distinct !DISubprogram(name: "function2", linkageName: "function2", scope: null, file: !1, line: 11, type: !7,
scopeLine: 11, spFlags: DISPFlagDefinition | DISPFlagOptimized, unit: !0, retainedNodes: !28)
!28 = !{!29, !30, !31, !32, !33, !34}
!29 = !DILocalVariable(name: "7", scope: !27, file: !1, line: 11, type: !10)
!30 = !DILocalVariable(name: "8", scope: !27, file: !1, line: 12, type: !10)
!31 = !DILocalVariable(name: "9", scope: !27, file: !1, line: 13, type: !10)
!32 = !DILocalVariable(name: "10", scope: !27, file: !1, line: 17, type: !14)
!33 = !DILocalVariable(name: "11", scope: !27, file: !1, line: 18, type: !14)
!34 = !DILocalVariable(name: "12", scope: !27, file: !1, line: 19, type:
!14)
!35 = !DILocation(line: 11, column: 1, scope: !27)
!36 = !DILocation(line: 12, column: 1, scope: !27)
!37 = !DILocation(line: 13, column: 1, scope: !27)
!38 = !DILocation(line: 14, column: 1, scope: !27)
!39 = !DILocation(line: 15, column: 1, scope: !27)
!40 = !DILocation(line: 16, column: 1, scope: !27)
!41 = !DILocation(line: 17, column: 1, scope: !27)
!42 = !DILocation(line: 18, column: 1, scope: !27)
!43 = !DILocation(line: 19, column: 1, scope: !27)
!44 = !DILocation(line: 20, column: 1, scope: !27)
; CHECK-LABEL: @function1(
; CHECK-NEXT: entry:
; CHECK-NEXT:  [[A:%.*]] = alloca i32, align 4, !dbg [[DBG17:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META9:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG17]]
; CHECK-NEXT:  [[B:%.*]] = alloca i32, align 4, !dbg [[DBG18:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META11:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG18]]
; CHECK-NEXT:  [[C:%.*]]
= alloca i32, align 4, !dbg [[DBG19:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META12:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG19]]
; CHECK-NEXT:  call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]], !dbg [[DBG20:![0-9]+]]
; CHECK-NEXT:  ret void, !dbg [[DBG21:![0-9]+]]
;
;
; CHECK-LABEL: @function2(
; CHECK-NEXT: entry:
; CHECK-NEXT:  [[A:%.*]] = alloca i32, align 4, !dbg [[DBG30:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[A]], metadata [[META24:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG30]]
; CHECK-NEXT:  [[B:%.*]] = alloca i32, align 4, !dbg [[DBG31:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[B]], metadata [[META25:![0-9]+]], metadata
!DIExpression()), !dbg [[DBG31]]
; CHECK-NEXT:  [[C:%.*]] = alloca i32, align 4, !dbg [[DBG32:![0-9]+]]
; CHECK-NEXT:  call void @llvm.dbg.value(metadata i32* [[C]], metadata [[META26:![0-9]+]], metadata
!DIExpression()),

```

```

!dbg [[DBG32]]
; CHECK-NEXT: call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]]), !dbg [[DBG33:![0-9]+]]
; CHECK-NEXT: ret void, !dbg [[DBG34:![0-9]+]]
;
;
; CHECK: @outlined_ir_func_0(i32* [[TMP0:%.*]], i32* [[TMP1:%.*]], i32* [[TMP2:%.*]])
; CHECK: entry_to_outline:
; CHECK-NEXT: store i32 2, i32* [[TMP0]], align 4
; CHECK-NEXT: store i32 3, i32* [[TMP1]], align 4
; CHECK-NEXT: store i32 4, i32* [[TMP2]], align 4
; CHECK-NEXT: [[AL:%.*]] = load i32, i32* [[TMP0]], align 4
; CHECK-NEXT: [[BL:%.*]] = load i32, i32* [[TMP1]], align 4
; CHECK-NEXT: [[CL:%.*]] = load i32, i32* [[TMP2]], align 4
; CHECK-NEXT: br label [[ENTRY_AFTER_OUTLINE_EXITSTUB:%.*]]
;
; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked gathers operating on scalable vectors that are
; packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv4i32(
; CHECK: call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32
define <vscale x 4 x i32> @masked_gather_nxv4i32(<vscale x 4 x i32*> %ld, <vscale x 4 x i1> %masks, <vscale x
4 x i32> %passthru) {
%res = call <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ld, i32 0, <vscale x 4 x i1>
%masks, <vscale x 4 x i32> %passthru)
ret <vscale x 4 x i32> %res
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is packed in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f64(
; CHECK: call <vscale x 2 x double> @llvm.masked.gather.nxv2f64
define <vscale x 2 x double> @masked_gather_nxv2f64(<vscale x 2 x double*> %ld, <vscale x 2 x i1> %masks,
<vscale x 2 x double> %passthru)
{
%res = call <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ld, i32 0, <vscale x 2 x
i1> %masks, <vscale x 2 x double> %passthru)
ret <vscale x 2 x double> %res
}

; Testing that masked gathers operating on scalable vectors of FP data
; that is unpacked in SVE registers are not scalarized.

; CHECK-LABEL: @masked_gather_nxv2f16(
; CHECK: call <vscale x 2 x half> @llvm.masked.gather.nxv2f16
define <vscale x 2 x half> @masked_gather_nxv2f16(<vscale x 2 x half*> %ld, <vscale x 2 x i1> %masks, <vscale

```

```

x 2 x half> %passthru) {
  %res = call <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ld, i32 0, <vscale x 2 x i1>
% masks, <vscale x 2 x half> %passthru)
  ret <vscale x 2 x half> %res
}

; Testing that masked gathers operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions.

; CHECK-LABEL: @masked_gather_v2f32(
; CHECK-NOT: @llvm.masked.gather.v2f32(
define <2 x float> @masked_gather_v2f32(<2
x float*> %ld, <2 x i1> %masks, <2 x float> %passthru) {
  %res = call <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ld, i32 0, <2 x i1> %masks, <2 x float>
%passthru)
  ret <2 x float> %res
}

; Testing that masked gathers operating on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked gather
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_gather_v4i32(
; CHECK-NOT: @llvm.masked.gather.v4i32(
define <4 x i32> @masked_gather_v4i32(<4 x i32*> %ld, <4 x i1> %masks, <4 x i32> %passthru) {
  %res = call <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ld, i32 0, <4 x i1> %masks, <4 x i32> %passthru)
  ret <4 x i32> %res
}

declare <vscale x 4 x i32> @llvm.masked.gather.nxv4i32(<vscale x 4 x i32*> %ptrs, i32 %align, <vscale x 4 x i1>
% masks, <vscale x 4 x i32> %passthru)
declare <vscale x 2 x double> @llvm.masked.gather.nxv2f64(<vscale x 2 x double*> %ptrs, i32 %align, <vscale x
2 x i1> %masks, <vscale
x 2 x double> %passthru)
declare <vscale x 2 x half> @llvm.masked.gather.nxv2f16(<vscale x 2 x half*> %ptrs, i32 %align, <vscale x 2 x
i1> %masks, <vscale x 2 x half> %passthru)
declare <2 x float> @llvm.masked.gather.v2f32(<2 x float*> %ptrs, i32 %align, <2 x i1> %masks, <2 x float>
%passthru)
declare <4 x i32> @llvm.masked.gather.v4i32(<4 x i32*> %ptrs, i32 %align, <4 x i1> %masks, <4 x i32>
%passthru)
; RUN: llc -O3 -mtriple=powerpc-unknown-linux-gnu -mcpu=e500 -mattr=spe < %s | FileCheck %s

; PowerPC SPE is a rare in-tree target that has the FP_TO_SINT node marked
; as Legal.

; Verify that fptosi(42.1) isn't simplified when the rounding mode is
; unknown.

```

```

; Verify that no gross errors happen.
; CHECK-LABEL: @f20
; COMMON: cfdctsiz
define i32 @f20(double %a) strictfp {
entry:
%result = call i32 @llvm.experimental.constrained.fptosi.i32.f64(double 42.1,
                        metadata !"fpexcept.strict")
                        strictfp
ret i32 %result
}

```

```

@llvm.fp.env = thread_local global i8 zeroinitializer, section "llvm.metadata"
declare i32 @llvm.experimental.constrained.fptosi.i32.f64(double, metadata)

```

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```
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-linux-android -mattr=+mmx -enable-legalize-types-checking | FileCheck %s
;
; D31946
; Check that we dont end up with the ""LLVM ERROR: Cannot select" error.
; Additionally ensure that the output code actually put fp128 values in SSE registers.
```

```
declare fp128 @llvm.fabs.f128(fp128)
declare fp128 @llvm.copysign.f128(fp128, fp128)

define fp128 @TestSelect(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestSelect:
; CHECK:      # %bb.0:
; CHECK-NEXT:  pushq %rbx
; CHECK-NEXT:  .cfi_def_cfa_offset 16
; CHECK-NEXT:  subq $32, %rsp
; CHECK-NEXT:  .cfi_def_cfa_offset 48
; CHECK-NEXT:  .cfi_offset %rbx, -16
; CHECK-NEXT:  movaps %xmm1, {[[-0-9]+]}(%r{[sb]})p) # 16-byte Spill
; CHECK-NEXT:  movaps %xmm0, (%rsp) # 16-byte Spill
; CHECK-NEXT:  callq __gttf2@PLT
; CHECK-NEXT:  movl %eax, %ebx
; CHECK-NEXT:  movaps (%rsp), %xmm0 # 16-byte Reload
; CHECK-NEXT:  movaps {[[-0-9]+]}(%r{[sb]})p),
    %xmm1 # 16-byte Reload
; CHECK-NEXT:  callq __subtf3@PLT
; CHECK-NEXT:  testl %ebx, %ebx
; CHECK-NEXT:  jg .LBB0_2
; CHECK-NEXT:  # %bb.1:
; CHECK-NEXT:  xorps %xmm0, %xmm0
; CHECK-NEXT:  .LBB0_2:
; CHECK-NEXT:  addq $32, %rsp
; CHECK-NEXT:  .cfi_def_cfa_offset 16
; CHECK-NEXT:  popq %rbx
; CHECK-NEXT:  .cfi_def_cfa_offset 8
; CHECK-NEXT:  retq
    %cmp = fcmp ogt fp128 %a, %b
```

```

%sub = fsub fp128 %a, %b
%res = select i1 %cmp, fp128 %sub, fp128 0xL00000000000000000000000000000000
ret fp128 %res
}

```

```

define fp128 @TestFabs(fp128 %a) {
; CHECK-LABEL: TestFabs:
; CHECK:      # %bb.0:
; CHECK-NEXT: andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT: retq
%res = call fp128 @llvm.fabs.f128(fp128 %a)
ret fp128 %res
}

```

```

define fp128 @TestCopysign(fp128 %a, fp128 %b) {
; CHECK-LABEL: TestCopysign:
; CHECK:      # %bb.0:
; CHECK-NEXT: andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1
; CHECK-NEXT: andps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT:
    orps %xmm1, %xmm0
; CHECK-NEXT: retq
%res = call fp128 @llvm.copysign.f128(fp128 %a, fp128 %b)
ret fp128 %res
}

```

```

define fp128 @TestFneg(fp128 %a) {
; CHECK-LABEL: TestFneg:
; CHECK:      # %bb.0:
; CHECK-NEXT: pushq %rax
; CHECK-NEXT: .cfi_def_cfa_offset 16
; CHECK-NEXT: movaps %xmm0, %xmm1
; CHECK-NEXT: callq __multf3@PLT
; CHECK-NEXT: xorps {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm0
; CHECK-NEXT: popq %rax
; CHECK-NEXT: .cfi_def_cfa_offset 8
; CHECK-NEXT: retq
%mul = fmul fp128 %a, %a
%res = fsub fp128 0xL00000000000000008000000000000000, %mul
ret fp128 %res
}
; RUN: llc -march=hexagon -hexagon-hvx-widen=32 < %s | FileCheck %s

```

```

; Truncating a type-to-be-widened to a legal type (v8i8).
; Check that this compiles successfully.
; CHECK-LABEL: f0:
; CHECK: dealloc_return

```

```
target datalayout = "e-m:e-p:32:32:32-a:0-n16:32-i64:64:64-i32:32:32-i16:16:16-i1:8:8-f32:32:32-f64:64:64-
v32:32:32-v64:64:64-v512:512:512-v1024:1024:1024-v2048:2048:2048"
```

```
target triple = "hexagon"
```

```
define dllexport void @f0(i8* %a0) local_unnamed_addr #0 {
b0:
  %v0 = load i8, i8* undef, align 1
  %v1 = zext i8 %v0 to i16
  %v2 = add i16 0, %v1
  %v3 = icmp sgt i16 %v2, 1
  %v4 = select i1 %v3, i16 %v2, i16 1
  %v5 = udiv i16 -32768, %v4
  %v6 = zext i16 %v5 to i32
  %v7 = insertelement <8 x i32> undef, i32 %v6, i32 0
  %v8 = shufflevector <8 x i32> %v7, <8 x i32> undef, <8 x i32> zeroinitializer
  %v9 = load <8 x i16>, <8 x i16>* undef, align 2
  %v10 = sext <8 x i16> %v9 to <8 x i32>
  %v11 = mul nsw <8 x i32> %v8, %v10
  %v12 = add nsw <8 x i32> %v11, <i32 16384, i32 16384,
i32 16384, i32 16384, i32 16384, i32 16384, i32 16384, i32 16384>
  %v13 = lshr <8 x i32> %v12, <i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15, i32 15>
  %v14 = trunc <8 x i32> %v13 to <8 x i8>
  %v15 = getelementptr inbounds i8, i8* %a0, i32 undef
  %v16 = bitcast i8* %v15 to <8 x i8>*
  store <8 x i8> %v14, <8 x i8>* %v16, align 1
  ret void
}
```

```
attributes #0 = { "target-features"="+hvx,+hvx-length128b" }
```

```
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```

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*

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*/

; RUN: llc -march=hexagon < %s

; REQUIRES: asserts

; The two loads based on %struct.0, loading two different data types
 ; cause LSR to assume type "void" for the memory type. This would then
 ; cause an assert in isLegalAddressingMode. Make sure we no longer crash.

target triple = "hexagon"

%struct.0 = type { i8*, i8, %union.anon.0 }

%union.anon.0 = type { i8* }

define hidden fastcc void @fred() unnamed_addr #0 {

entry:

br i1 undef, label %while.end, label %while.body.lr.ph

while.body.lr.ph: ; preds = %entry

br label %while.body

while.body: ; preds = %exit.2, %while.body.lr.ph

%lsr.iv = phi %struct.0* [%cgep22, %exit.2], [undef, %while.body.lr.ph]

switch i32 undef, label %exit [

i32 1, label %sw.bb.i

i32 2, label %sw.bb3.i

]

sw.bb.i: ; preds = %while.body

unreachable

sw.bb3.i: ; preds = %while.body

unreachable

exit:

; preds = %while.body

switch i32 undef, label %exit.2 [

i32 1, label %sw.bb.i17

i32 2, label %sw.bb3.i20

]


```

sw.bb.i17:                                ; preds = %.exit
%0 = bitcast %struct.0* %lsrc.iv to i32*
%1 = load i32, i32* %0, align 4
unreachable

sw.bb3.i20:                                ; preds = %exit
%2 = bitcast %struct.0* %lsrc.iv to i8**
%3 = load i8*, i8** %2, align 4
unreachable

exit.2:                                    ; preds = %exit
%cgep22 = getelementptr %struct.0, %struct.0* %lsrc.iv, i32 1
br label %while.body

while.end:                                 ; preds = %entry
ret void
}

attributes #0 = { nounwind optsize "target-cpu"="hexagonv55" }
; RUN: opt %s -inline -S | FileCheck %s

define internal void @innerSmall() "min-legal-vector-width"="128" {
ret void
}

define internal void @innerLarge() "min-legal-vector-width"="512" {
ret void
}

define internal void @innerNoAttribute() {
ret void
}

; We should not add an attribute during inlining. No attribute means unknown.
; Inlining doesn't change the fact that we don't know anything about this
; function.
define void @outerNoAttribute() {
call void @innerLarge()
ret void
}

define void @outerConflictingAttributeSmall() "min-legal-vector-width"="128" {
call void @innerLarge()
ret void
}

define void @outerConflictingAttributeLarge() "min-legal-vector-width"="512" {

```

```
call void @innerSmall()
ret void
}
```

; We should remove the attribute after inlining since the callee's
; vector width requirements are unknown.

```
define void @outerAttribute() "min-legal-vector-width"="128" {
  call void @innerNoAttribute()
  ret void
}
```

```
; CHECK: define void @outerNoAttribute() {
; CHECK:
define void @outerConflictingAttributeSmall() #0
; CHECK: define void @outerConflictingAttributeLarge() #0
; CHECK: define void @outerAttribute() {
; CHECK: attributes #0 = { "min-legal-vector-width"="512" }
```

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```
; RUN: opt -consthoist -S -o - %s | FileCheck %s
```

```
target datalayout = "e-m:e-p:32:32-i64:64-v128:64:128-a:0:32-n32-S64"
```

target triple = "thumbv6m-none--musleabi"

```
; Check that for i8 type, the maximum legal offset is 31.
; Also check that an constant used as value to be stored rather than
; pointer in a store instruction is hoisted.
; CHECK: foo_i8
; CHECK-DAG: %[[C1:const[0-9]?]] = bitcast i32 805874720 to i32
; CHECK-DAG: %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK-DAG: %[[C3:const[0-9]?]] = bitcast i32 805873720 to i32
; CHECK-DAG: %[[C4:const[0-9]?]] = bitcast i32 805873688 to i32
; CHECK: %0 = inttoptr i32 %[[C2]] to i8*
; CHECK-NEXT: %1 = load volatile i8, i8* %0
; CHECK-NEXT: %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT: %2 = inttoptr i32 %[[M1]] to i8*
; CHECK-NEXT: %3 = load volatile i8, i8* %2
; CHECK-NEXT: %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 31
; CHECK-NEXT: %4 = inttoptr i32 %[[M2]] to i8*
; CHECK-NEXT: %5 = load volatile i8, i8*
%4
; CHECK-NEXT: %6 = inttoptr i32 %[[C1]] to i8*
; CHECK-NEXT: %7 = load volatile i8, i8* %6
; CHECK-NEXT: %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 7
; CHECK-NEXT: %8 = inttoptr i32 %[[M3]] to i8*
; CHECK-NEXT: %9 = load volatile i8, i8* %8
; CHECK-NEXT: %10 = inttoptr i32 %[[C4]] to i8*
; CHECK-NEXT: store i8 %9, i8* %10
; CHECK-NEXT: %[[M4:const_mat[0-9]?]] = add i32 %[[C4]], 31
; CHECK-NEXT: %11 = inttoptr i32 %[[M4]] to i8*
; CHECK-NEXT: store i8 %7, i8* %11
; CHECK-NEXT: %12 = inttoptr i32 %[[C3]] to i8*
; CHECK-NEXT: store i8 %5, i8* %12
; CHECK-NEXT: %[[M5:const_mat[0-9]?]] = add i32 %[[C3]], 7
; CHECK-NEXT: %13 = inttoptr i32 %[[M5]] to i8*
; CHECK-NEXT: store i8 %3, i8* %13
; CHECK-NEXT: %[[M6:const_mat[0-9]?]] = add i32 %[[C1]], 80
; CHECK-NEXT: %14 = inttoptr i32 %[[M6]] to i8*
; CHECK-NEXT: store i8* %14, i8** @goo
```

```
@goo = global i8* undef
```

```
define void @foo_i8() {
entry:
%0 = load volatile i8, i8* inttoptr (i32 805874688 to i8*)
%1 = load volatile
i8, i8* inttoptr (i32 805874692 to i8*)
%2 = load volatile i8, i8* inttoptr (i32 805874719 to i8*)
%3 = load volatile i8, i8* inttoptr (i32 805874720 to i8*)
%4 = load volatile i8, i8* inttoptr (i32 805874727 to i8*)
```

```

store i8 %4, i8* inttoptr(i32 805873688 to i8*)
store i8 %3, i8* inttoptr(i32 805873719 to i8*)
store i8 %2, i8* inttoptr(i32 805873720 to i8*)
store i8 %1, i8* inttoptr(i32 805873727 to i8*)
store i8* inttoptr(i32 805874800 to i8*), i8** @goo
ret void
}

```

```

; Check that for i16 type, the maximum legal offset is 62.
; CHECK: foo_i16
; CHECK-DAG: %[[C1:const[0-9]?]] = bitcast i32 805874752 to i32
; CHECK-DAG: %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK: %0 = inttoptr i32 %[[C2]] to i16*
; CHECK-NEXT: %1 = load volatile i16, i16* %0, align 2
; CHECK-NEXT: %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT: %2 = inttoptr i32 %[[M1]] to i16*
; CHECK-NEXT: %3 = load volatile i16, i16* %2, align 2
; CHECK-NEXT: %[[M2:const_mat[0-9]?]] = add i32
%[[C2]], 32
; CHECK-NEXT: %4 = inttoptr i32 %[[M2]] to i16*
; CHECK-NEXT: %5 = load volatile i16, i16* %4, align 2
; CHECK-NEXT: %[[M3:const_mat[0-9]?]] = add i32 %[[C2]], 62
; CHECK-NEXT: %6 = inttoptr i32 %[[M3]] to i16*
; CHECK-NEXT: %7 = load volatile i16, i16* %6, align 2
; CHECK-NEXT: %8 = inttoptr i32 %[[C1]] to i16*
; CHECK-NEXT: %9 = load volatile i16, i16* %8, align 2
; CHECK-NEXT: %[[M4:const_mat[0-9]?]] = add i32 %[[C1]], 22
; CHECK-NEXT: %10 = inttoptr i32 %[[M4]] to i16*
; CHECK-NEXT: %11 = load volatile i16, i16* %10, align 2

```

```

define void @foo_i16() {
entry:
%0 = load volatile i16, i16* inttoptr (i32 805874688 to i16*), align 2
%1 = load volatile i16, i16* inttoptr (i32 805874692 to i16*), align 2
%2 = load volatile i16, i16* inttoptr (i32 805874720 to i16*), align 2
%3 = load volatile i16, i16* inttoptr (i32 805874750 to i16*), align 2
%4 = load volatile i16, i16* inttoptr (i32 805874752 to i16*), align 2
%5 = load volatile i16, i16* inttoptr (i32 805874774
to i16*), align 2
ret void
}

```

```

; Check that for i32 type, the maximum legal offset is 124.
; CHECK: foo_i32
; CHECK-DAG: %[[C1:const[0-9]?]] = bitcast i32 805874816 to i32
; CHECK-DAG: %[[C2:const[0-9]?]] = bitcast i32 805874688 to i32
; CHECK: %0 = inttoptr i32 %[[C2]] to i32*
; CHECK-NEXT: %1 = load volatile i32, i32* %0, align 4

```

```

; CHECK-NEXT: %[[M1:const_mat[0-9]?]] = add i32 %[[C2]], 4
; CHECK-NEXT: %2 = inttoptr i32 %[[M1]] to i32*
; CHECK-NEXT: %3 = load volatile i32, i32* %2, align 4
; CHECK-NEXT: %[[M2:const_mat[0-9]?]] = add i32 %[[C2]], 124
; CHECK-NEXT: %4 = inttoptr i32 %[[M2]] to i32*
; CHECK-NEXT: %5 = load volatile i32, i32* %4, align 4
; CHECK-NEXT: %6 = inttoptr i32 %[[C1]] to i32*
; CHECK-NEXT: %7 = load volatile i32, i32* %6, align 4
; CHECK-NEXT: %[[M3:const_mat[0-9]?]] = add i32 %[[C1]], 8
; CHECK-NEXT: %8 = inttoptr i32 %[[M3]] to i32*
; CHECK-NEXT: %9 = load volatile i32, i32* %8, align 4
; CHECK-NEXT: %[[M4:const_mat[0-9]?]] = add i32 %[[C1]],
12
; CHECK-NEXT: %10 = inttoptr i32 %[[M4]] to i32*
; CHECK-NEXT: %11 = load volatile i32, i32* %10, align 4

define void @foo_i32() {
entry:
%0 = load volatile i32, i32* inttoptr (i32 805874688 to i32*), align 4
%1 = load volatile i32, i32* inttoptr (i32 805874692 to i32*), align 4
%2 = load volatile i32, i32* inttoptr (i32 805874812 to i32*), align 4
%3 = load volatile i32, i32* inttoptr (i32 805874816 to i32*), align 4
%4 = load volatile i32, i32* inttoptr (i32 805874824 to i32*), align 4
%5 = load volatile i32, i32* inttoptr (i32 805874828 to i32*), align 4
ret void
}
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit | FileCheck %s --check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 -mattr=prefer-256-bit,avx512vbmi | FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
; Make sure CPUs default to prefer-256-bit. avx512vnni isn't interesting as it just adds an isel peephole for vpmaddwd+vpadd
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=skylake-avx512 | FileCheck %s --check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cascadelake | FileCheck %s --check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=cooperlake | FileCheck %s --check-prefixes=CHECK,CHECK-AVX512
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mcpu=cannonlake | FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
;
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-client | FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=icelake-server | FileCheck %s --check-prefixes=CHECK,CHECK-VBMI
; RUN: llc < %s -mtriple=x86_64-unknown-unknown -mattr=-avx512vnni -mcpu=tigerlake | FileCheck %s --check-prefixes=CHECK,CHECK-VBMI

```

; This file primarily contains tests for specific places in X86ISelLowering.cpp that needed be made aware of the legalizer not allowing 512-bit vectors due to prefer-256-bit even though AVX512 is enabled.

```
define dso_local void @add256(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-width"="256" {
; CHECK-LABEL: add256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vpaddd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:  vpaddd (%rsi), %ymm0, %ymm0
; CHECK-NEXT:  vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:
vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%d = load <16 x i32>, <16 x i32>* %a
%e = load <16 x i32>, <16 x i32>* %b
%f = add <16 x i32> %d, %e
store <16 x i32> %f, <16 x i32>* %c
ret void
}
```

```
define dso_local void @add512(<16 x i32>* %a, <16 x i32>* %b, <16 x i32>* %c) "min-legal-vector-width"="512" {
; CHECK-LABEL: add512:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:  vpaddd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:  vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%d = load <16 x i32>, <16 x i32>* %a
%e = load <16 x i32>, <16 x i32>* %b
%f = add <16 x i32> %d, %e
store <16 x i32> %f, <16 x i32>* %c
ret void
}
```

```
define dso_local void @avg_v64i8_256(<64 x i8>* %a, <64 x i8>* %b) "min-legal-vector-width"="256" {
; CHECK-LABEL: avg_v64i8_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rsi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:  vpavgb (%rdi), %ymm0,
%ymm0
; CHECK-NEXT:  vpavgb 32(%rdi), %ymm1, %ymm1
```



```

ret void
}

define dso_local void @pmaddwd_32_256(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-
legal-vector-width"="256" {
; CHECK-LABEL: pmaddwd_32_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vpmaddwd 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT:  vpmaddwd (%rsi), %ymm0, %ymm0
; CHECK-NEXT:  vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:  vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
    %A = load <32 x i16>, <32 x i16>* %APtr
    %B = load <32 x i16>, <32 x i16>* %BPtr
    %a = sext <32 x i16> %A to <32 x i32>
    %b = sext <32 x i16> %B to <32 x i32>
    %m = mul nsw <32 x i32> %a, %b
    %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32
12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
    %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 1, i32 3, i32 5, i32 7, i32 9,
i32 11, i32 13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29, i32 31>
    %ret = add <16 x i32> %odd, %even
    store <16 x i32> %ret, <16 x i32>* %CPtr
    ret void
}

define dso_local void @pmaddwd_32_512(<32 x i16>* %APtr, <32 x i16>* %BPtr, <16 x i32>* %CPtr) "min-
legal-vector-width"="512" {
; CHECK-LABEL: pmaddwd_32_512:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT:  vpmaddwd (%rsi), %zmm0, %zmm0
; CHECK-NEXT:  vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
    %A = load <32 x i16>, <32 x i16>* %APtr
    %B = load <32 x i16>, <32 x i16>* %BPtr
    %a = sext <32 x i16> %A to <32 x i32>
    %b = sext <32 x i16> %B to <32 x i32>
    %m = mul nsw <32 x i32> %a, %b
    %odd = shufflevector <32 x i32> %m, <32 x i32> undef, <16 x i32> <i32 0, i32 2, i32 4, i32 6, i32 8, i32 10, i32
12, i32 14, i32 16, i32 18, i32 20, i32 22, i32 24, i32 26, i32 28, i32 30>
    %even = shufflevector <32 x i32> %m, <32 x i32> undef, <16
x i32> <i32 1, i32 3, i32 5, i32 7, i32 9, i32 11, i32 13, i32 15, i32 17, i32 19, i32 21, i32 23, i32 25, i32 27, i32 29,
i32 31>

```



```

%ret = add <16 x i32> %odd, %even
store <16 x i32> %ret, <16 x i32>* %CPtr
ret void
}

```

```

define dso_local void @psubus_64i8_max_256(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-
vector-width"="256" {
; CHECK-LABEL: psubus_64i8_max_256:
; CHECK:      # %bb.0:
; CHECK-NEXT: vmovdqa (%rdi), %ymm0
; CHECK-NEXT: vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT: vpsubusb 32(%rsi), %ymm1, %ymm1
; CHECK-NEXT: vpsubusb (%rsi), %ymm0, %ymm0
; CHECK-NEXT: vmovdqa %ymm0, (%rdx)
; CHECK-NEXT: vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%x = load <64 x i8>, <64 x i8>* %xptr
%y = load <64 x i8>, <64 x i8>* %yptr
%cmp = icmp ult <64 x i8> %x, %y
%max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
%res = sub <64 x i8> %max, %y
store <64 x i8> %res, <64 x i8>* %zptr
ret void
}

```

```

define dso_local
void @psubus_64i8_max_512(<64 x i8>* %xptr, <64 x i8>* %yptr, <64 x i8>* %zptr) "min-legal-vector-
width"="512" {
; CHECK-LABEL: psubus_64i8_max_512:
; CHECK:      # %bb.0:
; CHECK-NEXT: vmovdqa64 (%rdi), %zmm0
; CHECK-NEXT: vpsubusb (%rsi), %zmm0, %zmm0
; CHECK-NEXT: vmovdqa64 %zmm0, (%rdx)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%x = load <64 x i8>, <64 x i8>* %xptr
%y = load <64 x i8>, <64 x i8>* %yptr
%cmp = icmp ult <64 x i8> %x, %y
%max = select <64 x i1> %cmp, <64 x i8> %y, <64 x i8> %x
%res = sub <64 x i8> %max, %y
store <64 x i8> %res, <64 x i8>* %zptr
ret void
}

```

```

define dso_local i32 @_Z9test_charPcS_i_256(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-
vector-width"="256" {
; CHECK-LABEL: _Z9test_charPcS_i_256:

```

```

; CHECK:      # %bb.0: # %entry
; CHECK-NEXT:  movl %edx, %eax
; CHECK-NEXT:  vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:  xorl %ecx, %ecx
; CHECK-NEXT:  vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:  vpxor %xmm2,
%xmm2, %xmm2
; CHECK-NEXT:  .p2align 4, 0x90
; CHECK-NEXT:  .LBB8_1: # %vector.body
; CHECK-NEXT:  # =>This Inner Loop Header: Depth=1
; CHECK-NEXT:  vpmovsxbw 16(%rdi,%rcx), %ymm3
; CHECK-NEXT:  vpmovsxbw (%rdi,%rcx), %ymm4
; CHECK-NEXT:  vpmovsxbw 16(%rsi,%rcx), %ymm5
; CHECK-NEXT:  vpmaddwd %ymm3, %ymm5, %ymm3
; CHECK-NEXT:  vpadd %ymm2, %ymm3, %ymm2
; CHECK-NEXT:  vpmovsxbw (%rsi,%rcx), %ymm3
; CHECK-NEXT:  vpmaddwd %ymm4, %ymm3, %ymm3
; CHECK-NEXT:  vpadd %ymm1, %ymm3, %ymm1
; CHECK-NEXT:  addq $32, %rcx
; CHECK-NEXT:  cmpq %rcx, %rax
; CHECK-NEXT:  jne .LBB8_1
; CHECK-NEXT:  # %bb.2: # %middle.block
; CHECK-NEXT:  vpadd %ymm0, %ymm1, %ymm1
; CHECK-NEXT:  vpadd %ymm0, %ymm2, %ymm0
; CHECK-NEXT:  vpadd %ymm0, %ymm1, %ymm0
; CHECK-NEXT:  vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT:  vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:  vpslufd {{.*#+}} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT:  vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:  vpslufd {{.*#+}} xmm1
= xmm0[1,1,1,1]
; CHECK-NEXT:  vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT:  vmovd %xmm0, %eax
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
entry:
%3 = zext i32 %2 to i64
br label %vector.body

vector.body:
%index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
%vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
%4 = getelementptr inbounds i8, i8* %0, i64 %index
%5 = bitcast i8* %4 to <32 x i8>*
%wide.load = load <32 x i8>, <32 x i8>* %5, align 1
%6 = sext <32 x i8> %wide.load to <32 x i32>
%7 = getelementptr inbounds i8, i8* %1, i64 %index
%8 = bitcast i8* %7 to <32 x i8>*

```

```

%wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
%9 = sext <32 x i8> %wide.load14 to <32 x i32>
%10 = mul nsw <32 x i32> %9, %6
%11 = add nsw <32 x i32> %10, %vec.phi
%index.next = add i64 %index, 32
%12 = icmp eq i64 %index.next, %3
br i1 %12, label %middle.block, label %vector.body

middle.block:
%rdx.shuf1 = shufflevector <32 x i32> %11,
<32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20, i32 21, i32 22, i32 23, i32 24, i32 25, i32 26,
i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
%rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
%rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
%rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
%rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
%13 = extractelement <32 x i32> %bin.rdx20, i32 0
ret i32 %13
}

define dso_local i32 @_Z9test_charPcS_i_512(i8* nocapture readonly, i8* nocapture readonly, i32) "min-legal-
vector-width"="512" {
; CHECK-LABEL: _Z9test_charPcS_i_512:
; CHECK:      # %bb.0: # %entry
; CHECK-NEXT:  movl %edx, %eax
; CHECK-NEXT:  vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT:  xorl %ecx, %ecx
; CHECK-NEXT:  vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT:  .p2align 4, 0x90

```

```

; CHECK-NEXT: .LBB9_1: # %vector.body
; CHECK-NEXT: # =>This Inner Loop Header: Depth=1
; CHECK-NEXT: vpmovsxbw (%rdi,%rcx), %zmm2
; CHECK-NEXT: vpmovsxbw (%rsi,%rcx), %zmm3
; CHECK-NEXT: vpmaddwd %zmm2, %zmm3, %zmm2
; CHECK-NEXT: vpaddd %zmm1, %zmm2, %zmm1
;
CHECK-NEXT: addq $32, %rcx
; CHECK-NEXT: cmpq %rcx, %rax
; CHECK-NEXT: jne .LBB9_1
; CHECK-NEXT: # %bb.2: # %middle.block
; CHECK-NEXT: vpaddd %zmm0, %zmm1, %zmm0
; CHECK-NEXT: vextracti64x4 $1, %zmm0, %ymm1
; CHECK-NEXT: vpaddd %zmm1, %zmm0, %zmm0
; CHECK-NEXT: vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT: vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpslufd { {. *#+ } } xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT: vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpslufd { {. *#+ } } xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT: vpaddd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vmovd %xmm0, %eax
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
entry:
%3 = zext i32 %2 to i64
br label %vector.body

```

vector.body:

```

%index = phi i64 [ %index.next, %vector.body ], [ 0, %entry ]
%vec.phi = phi <32 x i32> [ %11, %vector.body ], [ zeroinitializer, %entry ]
%4 = getelementptr inbounds i8, i8* %0, i64 %index
%5 = bitcast i8* %4 to <32 x i8>*
%wide.load = load <32 x i8>, <32 x i8>* %5, align
1
%6 = sext <32 x i8> %wide.load to <32 x i32>
%7 = getelementptr inbounds i8, i8* %1, i64 %index
%8 = bitcast i8* %7 to <32 x i8>*
%wide.load14 = load <32 x i8>, <32 x i8>* %8, align 1
%9 = sext <32 x i8> %wide.load14 to <32 x i32>
%10 = mul nsw <32 x i32> %9, %6
%11 = add nsw <32 x i32> %10, %vec.phi
%index.next = add i64 %index, 32
%12 = icmp eq i64 %index.next, %3
br i1 %12, label %middle.block, label %vector.body

```

middle.block:

```

%rdx.shuf1 = shufflevector <32 x i32> %11, <32 x i32> undef, <32 x i32> <i32 16, i32 17, i32 18, i32 19, i32 20,
i32 21, i32 22, i32 23, i32 24, i32 25, i32 26, i32 27, i32 28, i32 29, i32 30, i32 31, i32 undef, i32 undef, i32 undef,

```

```

i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef>
%bin.rdx1 = add <32 x i32> %11, %rdx.shuf1
%rdx.shuf = shufflevector <32 x i32> %bin.rdx1, <32 x i32> undef, <32 x i32> <i32 8, i32 9, i32 10, i32 11, i32
12,
i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx = add <32 x i32> %bin.rdx1, %rdx.shuf
%rdx.shuf15 = shufflevector <32 x i32> %bin.rdx, <32 x i32> undef, <32 x i32> <i32 4, i32 5, i32 6, i32 7, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx32 = add <32 x i32> %bin.rdx, %rdx.shuf15
%rdx.shuf17 = shufflevector <32 x i32> %bin.rdx32, <32 x i32> undef, <32 x i32> <i32 2, i32 3, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx18 = add <32 x i32> %bin.rdx32, %rdx.shuf17
%rdx.shuf19 = shufflevector <32 x i32> %bin.rdx18, <32 x i32> undef, <32 x i32> <i32 1, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32
undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx20 = add <32 x i32> %bin.rdx18, %rdx.shuf19
%13 = extractelement <32 x i32> %bin.rdx20, i32 0
ret i32 %13
}

```

```

@a = dso_local global [1024 x i8] zeroinitializer, align 16
@b = dso_local global [1024 x i8] zeroinitializer, align 16

```

```

define dso_local i32 @sad_16i8_256()
    "min-legal-vector-width"="256" {
; CHECK-LABEL: sad_16i8_256:
; CHECK:      # %bb.0: # %entry
; CHECK-NEXT: vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT: movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT: vpxor %xmm1, %xmm1, %xmm1
; CHECK-NEXT: .p2align 4, 0x90
; CHECK-NEXT: .LBB10_1: # %vector.body
; CHECK-NEXT: # =>This Inner Loop Header: Depth=1
; CHECK-NEXT: vmovdqu a+1024(%rax), %xmm2
; CHECK-NEXT: vpsadbw b+1024(%rax), %xmm2, %xmm2
; CHECK-NEXT: vpadd %ymm1, %ymm2, %ymm1
; CHECK-NEXT: addq $4, %rax
; CHECK-NEXT: jne .LBB10_1
; CHECK-NEXT: # %bb.2: # %middle.block
; CHECK-NEXT: vpadd %ymm0, %ymm1, %ymm0

```

```

; CHECK-NEXT: vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT: vpaddq %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpshufd {.*#+} xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT: vpaddq %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpshufd {.*#+} xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT: vpaddq %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vmovd %xmm0, %eax
; CHECK-NEXT: vzeroupper
; CHECK-NEXT:
    retq
entry:
    br label %vector.body

vector.body:
    %index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
    %vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
    %0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
    %1 = bitcast i8* %0 to <16 x i8>*
    %wide.load = load <16 x i8>, <16 x i8>* %1, align 4
    %2 = zext <16 x i8> %wide.load to <16 x i32>
    %3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
    %4 = bitcast i8* %3 to <16 x i8>*
    %wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
    %5 = zext <16 x i8> %wide.load1 to <16 x i32>
    %6 = sub nsw <16 x i32> %2, %5
    %7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1>
    %8 = sub nsw <16 x i32> zeroinitializer, %6
    %9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
    %10 = add nsw <16 x i32> %9, %vec.phi
    %index.next = add i64 %index,
    4
    %11 = icmp eq i64 %index.next, 1024
    br i1 %11, label %middle.block, label %vector.body

middle.block:
    %rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
    %bin.rdx = add <16 x i32> %10, %rdx.shuf
    %rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
    %bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
    %rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
    %bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
    %rdx.shuf4 = shufflevector

```

```

<16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32 undef, i32 undef,
i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
%12 = extractelement <16 x i32> %bin.rdx4, i32 0
ret i32 %12
}

```

```

define dso_local i32 @sad_16i8_512() "min-legal-vector-width"="512" {
; CHECK-LABEL: sad_16i8_512:
; CHECK:      # %bb.0: # %entry
; CHECK-NEXT: vpxor %xmm0, %xmm0, %xmm0
; CHECK-NEXT: movq $-1024, %rax # imm = 0xFC00
; CHECK-NEXT: .p2align 4, 0x90
; CHECK-NEXT: .LBB11_1: # %vector.body
; CHECK-NEXT: # =>This Inner Loop Header: Depth=1
; CHECK-NEXT: vmovdqu a+1024(%rax), %xmm1
; CHECK-NEXT: vpsadbw b+1024(%rax), %xmm1, %xmm1
; CHECK-NEXT: vpadd %zmm0, %zmm1, %zmm0
; CHECK-NEXT: addq $4, %rax
; CHECK-NEXT: jne .LBB11_1
; CHECK-NEXT: # %bb.2: # %middle.block
; CHECK-NEXT: vextracti64x4 $1, %zmm0, %ymm1
; CHECK-NEXT:
    vpadd %zmm1, %zmm0, %zmm0
; CHECK-NEXT: vextracti128 $1, %ymm0, %xmm1
; CHECK-NEXT: vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpshufd { {. *#+ } } xmm1 = xmm0[2,3,2,3]
; CHECK-NEXT: vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vpshufd { {. *#+ } } xmm1 = xmm0[1,1,1,1]
; CHECK-NEXT: vpadd %xmm1, %xmm0, %xmm0
; CHECK-NEXT: vmovd %xmm0, %eax
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
entry:
br label %vector.body

```

```

vector.body:
%index = phi i64 [ 0, %entry ], [ %index.next, %vector.body ]
%vec.phi = phi <16 x i32> [ zeroinitializer, %entry ], [ %10, %vector.body ]
%0 = getelementptr inbounds [1024 x i8], [1024 x i8]* @a, i64 0, i64 %index
%1 = bitcast i8* %0 to <16 x i8>*
%wide.load = load <16 x i8>, <16 x i8>* %1, align 4
%2 = zext <16 x i8> %wide.load to <16 x i32>
%3 = getelementptr inbounds [1024 x i8], [1024 x i8]* @b, i64 0, i64 %index
%4 = bitcast i8* %3 to <16 x i8>*
%wide.load1 = load <16 x i8>, <16 x i8>* %4, align 4
%5 = zext <16 x i8> %wide.load1

```

```

to <16 x i32>
%6 = sub nsw <16 x i32> %2, %5
%7 = icmp sgt <16 x i32> %6, <i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1, i32 -1>
%8 = sub nsw <16 x i32> zeroinitializer, %6
%9 = select <16 x i1> %7, <16 x i32> %6, <16 x i32> %8
%10 = add nsw <16 x i32> %9, %vec.phi
%index.next = add i64 %index, 4
%11 = icmp eq i64 %index.next, 1024
br i1 %11, label %middle.block, label %vector.body

```

middle.block:

```

%rdx.shuf = shufflevector <16 x i32> %10, <16 x i32> undef, <16 x i32> <i32 8, i32 9, i32 10, i32 11, i32 12, i32 13, i32 14, i32 15, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx = add <16 x i32> %10, %rdx.shuf
%rdx.shuf2 = shufflevector <16 x i32> %bin.rdx, <16 x i32> undef, <16 x i32> <i32 4, i32 5, i32 6, i32 7, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx2 = add <16 x i32> %bin.rdx, %rdx.shuf2
%rdx.shuf3 = shufflevector <16 x i32> %bin.rdx2, <16 x i32> undef, <16 x i32> <i32 2, i32 3, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx3 = add <16 x i32> %bin.rdx2, %rdx.shuf3
%rdx.shuf4 = shufflevector <16 x i32> %bin.rdx3, <16 x i32> undef, <16 x i32> <i32 1, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef, i32 undef>
%bin.rdx4 = add <16 x i32> %bin.rdx3, %rdx.shuf4
%12 = extractelement <16 x i32> %bin.rdx4, i32 0
ret i32 %12
}

```

```

define dso_local void @sbto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: sbto16f32_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vpmovw2m %ymm0, %k0
; CHECK-NEXT:  kshiftrw $8, %k0, %k1
; CHECK-NEXT:  vpmovm2d %k1, %ymm0
;
; CHECK-NEXT:  vcvt dq2ps %ymm0, %ymm0
; CHECK-NEXT:  vpmovm2d %k0, %ymm1
; CHECK-NEXT:  vcvt dq2ps %ymm1, %ymm1
; CHECK-NEXT:  vmovaps %ymm1, (%rdi)
; CHECK-NEXT:  vmovaps %ymm0, 32(%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = sitofp <16 x i1> %mask to <16 x float>
store <16 x float> %1, <16 x float>* %res

```



```

ret void
}

define dso_local void @sbto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f32_512:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vpmovw2m %ymm0, %k0
; CHECK-NEXT:  vpmovm2d %k0, %zmm0
; CHECK-NEXT:  vcvtdq2ps %zmm0, %zmm0
; CHECK-NEXT:  vmovaps %zmm0, (%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = sitofp <16 x i1> %mask to <16 x float>
store <16 x float> %1, <16 x float>* %res
ret void
}

define dso_local void @sbto16f64_256(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="256"
{
; CHECK-LABEL: sbto16f64_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vpmovw2m %ymm0, %k0
; CHECK-NEXT:  kshiftrw $8, %k0, %k1
; CHECK-NEXT:  vpmovm2d %k1, %ymm0
; CHECK-NEXT:  vcvtdq2pd %xmm0, %ymm1
; CHECK-NEXT:  vextracti128 $1, %ymm0, %xmm0
; CHECK-NEXT:  vcvtdq2pd %xmm0, %ymm0
; CHECK-NEXT:  vpmovm2d %k0, %ymm2
; CHECK-NEXT:  vcvtdq2pd %xmm2, %ymm3
; CHECK-NEXT:  vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:  vcvtdq2pd %xmm2, %ymm2
; CHECK-NEXT:  vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:  vmovaps %ymm3, (%rdi)
; CHECK-NEXT:  vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:  vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = sitofp <16 x i1> %mask to <16 x double>
store <16 x double> %1, <16 x double>* %res
ret void
}

define dso_local void @sbto16f64_512(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: sbto16f64_512:
; CHECK:

```

```

    # %bb.0:
; CHECK-NEXT: vpmovw2m %ymm0, %k0
; CHECK-NEXT: vpmovm2d %k0, %zmm0
; CHECK-NEXT: vcvt dq2pd %ymm0, %zmm1
; CHECK-NEXT: vextracti64x4 $1, %zmm0, %ymm0
; CHECK-NEXT: vcvt dq2pd %ymm0, %zmm0
; CHECK-NEXT: vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT: vmovaps %zmm1, (%rdi)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = sitofp <16 x i1> %mask to <16 x double>
store <16 x double> %1, <16 x double>* %res
ret void
}

define dso_local void @ubto16f32_256(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f32_256:
; CHECK:    # %bb.0:
; CHECK-NEXT: vpmovw2m %ymm0, %k0
; CHECK-NEXT: kshiftrw $8, %k0, %k1
; CHECK-NEXT: vpmovm2d %k1, %ymm0
; CHECK-NEXT: vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT: vcvt dq2ps %ymm0, %ymm0
; CHECK-NEXT: vpmovm2d %k0, %ymm1
; CHECK-NEXT: vpsrld $31, %ymm1, %ymm1
; CHECK-NEXT: vcvt dq2ps %ymm1, %ymm1
; CHECK-NEXT: vmovaps %ymm1,
(%rdi)
; CHECK-NEXT: vmovaps %ymm0, 32(%rdi)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = uitofp <16 x i1> %mask to <16 x float>
store <16 x float> %1, <16 x float>* %res
ret void
}

define dso_local void @ubto16f32_512(<16 x i16> %a, <16 x float>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f32_512:
; CHECK:    # %bb.0:
; CHECK-NEXT: vpmovw2m %ymm0, %k0
; CHECK-NEXT: vpmovm2d %k0, %zmm0
; CHECK-NEXT: vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT: vcvt dq2ps %zmm0, %zmm0
; CHECK-NEXT: vmovaps %zmm0, (%rdi)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq

```

```

%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = uitofp <16 x i1> %mask to <16 x float>
store <16 x float> %1, <16 x float>* %res
ret void
}

define dso_local void @ubto16f64_256(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="256" {
; CHECK-LABEL: ubto16f64_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vpmovw2m
               %ymm0, %k0
; CHECK-NEXT:  kshiftrw $8, %k0, %k1
; CHECK-NEXT:  vpmovm2d %k1, %ymm0
; CHECK-NEXT:  vpsrld $31, %ymm0, %ymm0
; CHECK-NEXT:  vcvt dq2pd %xmm0, %ymm1
; CHECK-NEXT:  vextracti128 $1, %ymm0, %xmm0
; CHECK-NEXT:  vcvt dq2pd %xmm0, %ymm0
; CHECK-NEXT:  vpmovm2d %k0, %ymm2
; CHECK-NEXT:  vpsrld $31, %ymm2, %ymm2
; CHECK-NEXT:  vcvt dq2pd %xmm2, %ymm3
; CHECK-NEXT:  vextracti128 $1, %ymm2, %xmm2
; CHECK-NEXT:  vcvt dq2pd %xmm2, %ymm2
; CHECK-NEXT:  vmovaps %ymm2, 32(%rdi)
; CHECK-NEXT:  vmovaps %ymm3, (%rdi)
; CHECK-NEXT:  vmovaps %ymm0, 96(%rdi)
; CHECK-NEXT:  vmovaps %ymm1, 64(%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = uitofp <16 x i1> %mask to <16 x double>
store <16 x double> %1, <16 x double>* %res
ret void
}

define dso_local void @ubto16f64_512(<16 x i16> %a, <16 x double>* %res) "min-legal-vector-width"="512" {
; CHECK-LABEL: ubto16f64_512:
; CHECK:      # %bb.0:
; CHECK-NEXT:
               vpmovw2m %ymm0, %k0
; CHECK-NEXT:  vpmovm2d %k0, %zmm0
; CHECK-NEXT:  vpsrld $31, %zmm0, %zmm0
; CHECK-NEXT:  vcvt dq2pd %ymm0, %zmm1
; CHECK-NEXT:  vextracti64x4 $1, %zmm0, %ymm0
; CHECK-NEXT:  vcvt dq2pd %ymm0, %zmm0
; CHECK-NEXT:  vmovaps %zmm0, 64(%rdi)
; CHECK-NEXT:  vmovaps %zmm1, (%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq

```

```

%mask = icmp slt <16 x i16> %a, zeroinitializer
%1 = uitofp <16 x i1> %mask to <16 x double>
store <16 x double> %1, <16 x double>* %res
ret void
}

define <16 x i16> @test_16f32toub_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32toub_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:  vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:  vpmovd2m %ymm1, %k0
; CHECK-NEXT:  vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:  vpslld $31, %ymm1, %ymm1
; CHECK-NEXT:  vpmovd2m %ymm1, %k1
; CHECK-NEXT:  kunpckbw %k0, %k1, %k1
; CHECK-NEXT:  vmovdqu16
%ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:  retq
%a = load <16 x float>, <16 x float>* %ptr
%mask = fptoui <16 x float> %a to <16 x i1>
%select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
ret <16 x i16> %select
}

define <16 x i16> @test_16f32toub_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32toub_512:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:  vpslld $31, %zmm1, %zmm1
; CHECK-NEXT:  vpmovd2m %zmm1, %k1
; CHECK-NEXT:  vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:  retq
%a = load <16 x float>, <16 x float>* %ptr
%mask = fptoui <16 x float> %a to <16 x i1>
%select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_256(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="256" {
; CHECK-LABEL: test_16f32tosb_256:
; CHECK:      # %bb.0:
; CHECK-NEXT:
; CHECK-NEXT:  vcvttps2dq (%rdi), %ymm1
; CHECK-NEXT:  vpmovd2m %ymm1, %k0

```

```

; CHECK-NEXT:   vcvttps2dq 32(%rdi), %ymm1
; CHECK-NEXT:   vpmovd2m %ymm1, %k1
; CHECK-NEXT:   kunpckbw %k0, %k1, %k1
; CHECK-NEXT:   vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:   retq
%a = load <16 x float>, <16 x float>* %ptr
%mask = fptosi <16 x float> %a to <16 x i1>
%select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
ret <16 x i16> %select
}

define <16 x i16> @test_16f32tosb_512(<16 x float>* %ptr, <16 x i16> %passthru) "min-legal-vector-
width"="512" {
; CHECK-LABEL: test_16f32tosb_512:
; CHECK:       # %bb.0:
; CHECK-NEXT:   vcvttps2dq (%rdi), %zmm1
; CHECK-NEXT:   vpmovd2m %zmm1, %k1
; CHECK-NEXT:   vmovdqu16 %ymm0, %ymm0 {%k1} {z}
; CHECK-NEXT:   retq
%a = load <16 x float>, <16 x float>* %ptr
%mask = fptosi <16 x float> %a to <16 x i1>
%select = select <16 x i1> %mask, <16 x i16> %passthru, <16 x i16> zeroinitializer
ret <16 x i16> %select
}

define
dso_local void @mul256(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: mul256:
; CHECK-AVX512:   # %bb.0:
; CHECK-AVX512-NEXT:   vmovdqa (%rdi), %ymm0
; CHECK-AVX512-NEXT:   vmovdqa 32(%rdi), %ymm1
; CHECK-AVX512-NEXT:   vmovdqa (%rsi), %ymm2
; CHECK-AVX512-NEXT:   vmovdqa 32(%rsi), %ymm3
; CHECK-AVX512-NEXT:   vpunpckhbw {{.*#+}} %ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:   vpunpckhbw {{.*#+}} %ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT:   vpmullw %ymm4, %ymm5, %ymm4
; CHECK-AVX512-NEXT:   vmovdqa {{.*#+}} %ymm5 =
[255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255]
; CHECK-AVX512-NEXT:   vpand %ymm5, %ymm4, %ymm4
; CHECK-AVX512-NEXT:   vpunpcklbw {{.*#+}} %ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
;
CHECK-AVX512-NEXT:   vpunpcklbw {{.*#+}} %ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT:   vpmullw %ymm3, %ymm1, %ymm1
; CHECK-AVX512-NEXT:   vpand %ymm5, %ymm1, %ymm1

```

```

; CHECK-AVX512-NEXT: vpackuswb %ymm4, %ymm1, %ymm1
; CHECK-AVX512-NEXT: vpunpckhbw {{.*#+}} ymm3 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT: vpunpckhbw {{.*#+}} ymm4 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-AVX512-NEXT: vpmullw %ymm3, %ymm4, %ymm3
; CHECK-AVX512-NEXT: vpand %ymm5, %ymm3, %ymm3
; CHECK-AVX512-NEXT: vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT: vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-AVX512-NEXT: vpmullw
%ymm2, %ymm0, %ymm0
; CHECK-AVX512-NEXT: vpand %ymm5, %ymm0, %ymm0
; CHECK-AVX512-NEXT: vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-AVX512-NEXT: vmovdqa %ymm0, (%rdx)
; CHECK-AVX512-NEXT: vmovdqa %ymm1, 32(%rdx)
; CHECK-AVX512-NEXT: vzeroupper
; CHECK-AVX512-NEXT: retq
;
; CHECK-VBMI-LABEL: mul256:
; CHECK-VBMI: # %bb.0:
; CHECK-VBMI-NEXT: vmovdqa (%rdi), %ymm0
; CHECK-VBMI-NEXT: vmovdqa 32(%rdi), %ymm1
; CHECK-VBMI-NEXT: vmovdqa (%rsi), %ymm2
; CHECK-VBMI-NEXT: vmovdqa 32(%rsi), %ymm3
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} ymm4 =
ymm3[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} ymm5 =
ymm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT: vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} ymm3 =
ymm3[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
;
CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} ymm1 =
ymm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT: vpmullw %ymm3, %ymm1, %ymm1
; CHECK-VBMI-NEXT: vmovdqa {{.*#+}} ymm3 =
[0,2,4,6,8,10,12,14,32,34,36,38,40,42,44,46,16,18,20,22,24,26,28,30,48,50,52,54,56,58,60,62]
; CHECK-VBMI-NEXT: vpermt2b %ymm4, %ymm3, %ymm1
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} ymm4 =
ymm2[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} ymm5 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-VBMI-NEXT: vpmullw %ymm4, %ymm5, %ymm4
; CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} ymm2 =
ymm2[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} ymm0 =

```

yymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]

; CHECK-VBMI-NEXT:

 vpmullw %ymm2, %ymm0, %ymm0

; CHECK-VBMI-NEXT: vpermt2b %ymm4, %ymm3, %ymm0

; CHECK-VBMI-NEXT: vmovdqa %ymm0, (%rdx)

; CHECK-VBMI-NEXT: vmovdqa %ymm1, 32(%rdx)

; CHECK-VBMI-NEXT: vzeroupper

; CHECK-VBMI-NEXT: retq

 %d = load <64 x i8>, <64 x i8>* %a

 %e = load <64 x i8>, <64 x i8>* %b

 %f = mul <64 x i8> %d, %e

 store <64 x i8> %f, <64 x i8>* %c

 ret void

}

define dso_local void @mul512(<64 x i8>* %a, <64 x i8>* %b, <64 x i8>* %c) "min-legal-vector-width"="512" {

; CHECK-AVX512-LABEL: mul512:

; CHECK-AVX512: # %bb.0:

; CHECK-AVX512-NEXT: vmovdqa64 (%rdi), %zmm0

; CHECK-AVX512-NEXT: vmovdqa64 (%rsi), %zmm1

; CHECK-AVX512-NEXT: vpunpckhbw {{.*#+}} %zmm2 =

zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4

2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]

; CHECK-AVX512-NEXT: vpunpckhbw {{.*#+}} %zmm3 =

zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4

2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]

;

 CHECK-AVX512-NEXT: vpmullw %zmm2, %zmm3, %zmm2

; CHECK-AVX512-NEXT: vmovdqa64 {{.*#+}} %zmm3 =

[255,2

55,255,255,255,255,255]

; CHECK-AVX512-NEXT: vpandq %zmm3, %zmm2, %zmm2

; CHECK-AVX512-NEXT: vpunpcklbw {{.*#+}} %zmm1 =

zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3

6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]

; CHECK-AVX512-NEXT: vpunpcklbw {{.*#+}} %zmm0 =

zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3

6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]

; CHECK-AVX512-NEXT: vpmullw %zmm1, %zmm0, %zmm0

; CHECK-AVX512-NEXT: vpandq %zmm3, %zmm0,

 %zmm0

; CHECK-AVX512-NEXT: vpackuswb %zmm2, %zmm0, %zmm0

; CHECK-AVX512-NEXT: vmovdqa64 %zmm0, (%rdx)

; CHECK-AVX512-NEXT: vzeroupper

; CHECK-AVX512-NEXT: retq

;

; CHECK-VBMI-LABEL: mul512:

; CHECK-VBMI: # %bb.0:

```

; CHECK-VBMI-NEXT: vmovdqa64 (%rdi), %zmm0
; CHECK-VBMI-NEXT: vmovdqa64 (%rsi), %zmm1
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} zmm2 =
zmm1[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT: vpunpckhbw {{.*#+}} zmm3 =
zmm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31,40,40,41,41,4
2,42,43,43,44,44,45,45,46,46,47,47,56,56,57,57,58,58,59,59,60,60,61,61,62,62,63,63]
; CHECK-VBMI-NEXT: vpmullw %zmm2, %zmm3, %zmm2
; CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} zmm1 =
zmm1[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
;
CHECK-VBMI-NEXT: vpunpcklbw {{.*#+}} zmm0 =
zmm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23,32,32,33,33,34,34,35,35,36,3
6,37,37,38,38,39,39,48,48,49,49,50,50,51,51,52,52,53,53,54,54,55,55]
; CHECK-VBMI-NEXT: vpmullw %zmm1, %zmm0, %zmm0
; CHECK-VBMI-NEXT: vmovdqa64 {{.*#+}} zmm1 =
[0,2,4,6,8,10,12,14,64,66,68,70,72,74,76,78,16,18,20,22,24,26,28,30,80,82,84,86,88,90,92,94,32,34,36,38,40,42,44,
46,96,98,100,102,104,106,108,110,48,50,52,54,56,58,60,62,112,114,116,118,120,122,124,126]
; CHECK-VBMI-NEXT: vpermi2b %zmm2, %zmm0, %zmm1
; CHECK-VBMI-NEXT: vmovdqa64 %zmm1, (%rdx)
; CHECK-VBMI-NEXT: vzeroupper
; CHECK-VBMI-NEXT: retq
%d = load <64 x i8>, <64 x i8>* %a
%e = load <64 x i8>, <64 x i8>* %b
%f = mul <64 x i8> %d, %e
store <64 x i8> %f, <64 x i8>* %c
ret void
}

; This threw an assertion at one point.
define <4 x i32> @mload_v4i32(<4
x i32> %trigger, <4 x i32>* %addr, <4 x i32> %dst) "min-legal-vector-width"="256" {
; CHECK-LABEL: mload_v4i32:
; CHECK: # %bb.0:
; CHECK-NEXT: vptestnmd %xmm0, %xmm0, %k1
; CHECK-NEXT: vpblendmd (%rdi), %xmm1, %xmm0 {%k1}
; CHECK-NEXT: retq
%mask = icmp eq <4 x i32> %trigger, zeroinitializer
%res = call <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>* %addr, i32 4, <4 x i1> %mask, <4 x i32>
%dst)
ret <4 x i32> %res
}
declare <4 x i32> @llvm.masked.load.v4i32.p0v4i32(<4 x i32>*, i32, <4 x i1>, <4 x i32>)

define <16 x i32> @trunc_v16i64_v16i32(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i32:

```



```

; CHECK:    # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:  vmovdqa 96(%rdi), %ymm3
; CHECK-NEXT:  vpmovqd %ymm0, %xmm0
; CHECK-NEXT:  vpmovqd %ymm1, %xmm1
; CHECK-NEXT:  vinserti128 $1, %xmm1, %ymm0, %ymm0
; CHECK-NEXT:
    vpmovqd %ymm2, %xmm1
; CHECK-NEXT:  vpmovqd %ymm3, %xmm2
; CHECK-NEXT:  vinserti128 $1, %xmm2, %ymm1, %ymm1
; CHECK-NEXT:  retq
%a = load <16 x i64>, <16 x i64>* %x
%b = trunc <16 x i64> %a to <16 x i32>
ret <16 x i32> %b
}

define <16 x i8> @trunc_v16i64_v16i8(<16 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i64_v16i8:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vmovdqa 64(%rdi), %ymm2
; CHECK-NEXT:  vmovdqa 96(%rdi), %ymm3
; CHECK-NEXT:  vpmovqb %ymm3, %xmm3
; CHECK-NEXT:  vpmovqb %ymm2, %xmm2
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm2 = xmm2[0],xmm3[0],xmm2[1],xmm3[1]
; CHECK-NEXT:  vpmovqb %ymm1, %xmm1
; CHECK-NEXT:  vpmovqb %ymm0, %xmm0
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm2[0]
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%a = load <16 x i64>, <16
x i64>* %x
%b = trunc <16 x i64> %a to <16 x i8>
ret <16 x i8> %b
}

define <16 x i8> @trunc_v16i32_v16i8(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i8:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vpmovdb %ymm1, %xmm1
; CHECK-NEXT:  vpmovdb %ymm0, %xmm0
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0]

```

```

; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%a = load <16 x i32>, <16 x i32>* %x
%b = trunc <16 x i32> %a to <16 x i8>
ret <16 x i8> %b
}

define <8 x i8> @trunc_v8i64_v8i8(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i8:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vpmovqb %ymm1, %xmm1
; CHECK-NEXT:  vpmovqb %ymm0, %xmm0
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0],xmm0[1],xmm1[1]
; CHECK-NEXT:  vzeroupper
;
CHECK-NEXT:  retq
%a = load <8 x i64>, <8 x i64>* %x
%b = trunc <8 x i64> %a to <8 x i8>
ret <8 x i8> %b
}

define <8 x i16> @trunc_v8i64_v8i16(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i16:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm1
; CHECK-NEXT:  vpmovqw %ymm1, %xmm1
; CHECK-NEXT:  vpmovqw %ymm0, %xmm0
; CHECK-NEXT:  vpunpckldq {{.*#+}} xmm0 = xmm0[0],xmm1[0]
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%a = load <8 x i64>, <8 x i64>* %x
%b = trunc <8 x i64> %a to <8 x i16>
ret <8 x i16> %b
}

define <8 x i32> @trunc_v8i64_v8i32_zeroes(<8 x i64>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v8i64_v8i32_zeroes:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vpsrlq $48, 32(%rdi), %ymm0
; CHECK-NEXT:  vpsrlq $48, (%rdi), %ymm1
; CHECK-NEXT:  vpackusdw %ymm0, %ymm1, %ymm0
; CHECK-NEXT:  vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:
retq
%a = load <8 x i64>, <8 x i64>* %x

```



```

; CHECK-NEXT: vpsraq $48, (%rdi), %ymm1
; CHECK-NEXT: vpmovqd %ymm1, %xmm1
; CHECK-NEXT: vpmovqd %ymm0, %xmm0
; CHECK-NEXT: vinserti128 $1, %xmm0, %ymm1, %ymm0
; CHECK-NEXT: retq
%a = load <8 x i64>, <8 x i64>* %x
%b = ashr <8 x i64> %a, <i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48, i64 48>
%c = trunc <8 x i64> %b to <8 x i32>
ret <8 x i32> %c
}

define <16 x i16> @trunc_v16i32_v16i16_sign(<16 x i32>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-LABEL: trunc_v16i32_v16i16_sign:
; CHECK: # %bb.0:
; CHECK-NEXT: vmovdqa (%rdi), %ymm1
; CHECK-NEXT: vmovdqa {{.*#+}} ymm0 = [1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31]
; CHECK-NEXT: vpermi2w 32(%rdi), %ymm1, %ymm0
; CHECK-NEXT: retq
%a = load <16 x i32>, <16 x i32>* %x
%b = ashr <16 x i32> %a, <i32 16, i32 16, i32 16, i32 16,
i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16, i32 16>
%c = trunc <16 x i32> %b to <16 x i16>
ret <16 x i16> %c
}

define <32 x i8> @trunc_v32i16_v32i8_sign(<32 x i16>* %x) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-AVX512: # %bb.0:
; CHECK-AVX512-NEXT: vpsrlw $8, 32(%rdi), %ymm0
; CHECK-AVX512-NEXT: vpsrlw $8, (%rdi), %ymm1
; CHECK-AVX512-NEXT: vpackuswb %ymm0, %ymm1, %ymm0
; CHECK-AVX512-NEXT: vpermq {{.*#+}} ymm0 = ymm0[0,2,1,3]
; CHECK-AVX512-NEXT: retq
;
; CHECK-VBMI-LABEL: trunc_v32i16_v32i8_sign:
; CHECK-VBMI: # %bb.0:
; CHECK-VBMI-NEXT: vmovdqa (%rdi), %ymm1
; CHECK-VBMI-NEXT: vmovdqa {{.*#+}} ymm0 =
[1,3,5,7,9,11,13,15,17,19,21,23,25,27,29,31,33,35,37,39,41,43,45,47,49,51,53,55,57,59,61,63]
; CHECK-VBMI-NEXT: vpermi2b 32(%rdi), %ymm1, %ymm0
; CHECK-VBMI-NEXT: retq
%a = load <32 x i16>, <32 x i16>* %x
%b = ashr <32 x i16> %a, <i16 8, i16
8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8,
i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8, i16 8>
%c = trunc <32 x i16> %b to <32 x i8>
ret <32 x i8> %c
}

```

```

define dso_local void @zext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-
width"="256" {
; CHECK-LABEL: zext_v16i8_v16i64:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vpmovzxbw {{.*#+}} ymm1 =
xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zer
o,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xm
mm0[15],zero
; CHECK-NEXT:  vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:  vpmovxwq {{.*#+}} ymm2 =
xmm2[0],zero,zero,zero,xmm2[1],zero,zero,zero,xmm2[2],zero,zero,zero,xmm2[3],zero,zero,zero
; CHECK-NEXT:  vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:  vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:
    vpmovxwq {{.*#+}} ymm3 =
xmm3[0],zero,zero,zero,xmm3[1],zero,zero,zero,xmm3[2],zero,zero,zero,xmm3[3],zero,zero,zero
; CHECK-NEXT:  vpmovxwq {{.*#+}} ymm1 =
xmm1[0],zero,zero,zero,xmm1[1],zero,zero,zero,xmm1[2],zero,zero,zero,xmm1[3],zero,zero,zero
; CHECK-NEXT:  vpmovxbq {{.*#+}} ymm0 =
xmm0[0],zero,zero,zero,zero,zero,zero,xmm0[1],zero,zero,zero,zero,zero,zero,xmm0[2],zero,zero,zero,zer
o,zero,zero,zero,xmm0[3],zero,zero,zero,zero,zero,zero,zero
; CHECK-NEXT:  vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:  vmovdqa %ymm1, 64(%rdi)
; CHECK-NEXT:  vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT:  vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
    %a = zext <16 x i8> %x to <16 x i64>
    store <16 x i64> %a, <16 x i64>* %y
    ret void
}

```

```

define dso_local void @sext_v16i8_v16i64(<16 x i8> %x, <16 x i64>* %y) nounwind "min-legal-vector-
width"="256" {
; CHECK-LABEL: sext_v16i8_v16i64:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vpmovsxbw %xmm0, %ymm1
; CHECK-NEXT:
    vpshufd {{.*#+}} xmm2 = xmm1[2,3,2,3]
; CHECK-NEXT:  vpmovsxwq %xmm2, %ymm2
; CHECK-NEXT:  vextracti128 $1, %ymm1, %xmm1
; CHECK-NEXT:  vpshufd {{.*#+}} xmm3 = xmm1[2,3,2,3]
; CHECK-NEXT:  vpmovsxwq %xmm3, %ymm3
; CHECK-NEXT:  vpmovsxwq %xmm1, %ymm1
; CHECK-NEXT:  vpmovsxbq %xmm0, %ymm0
; CHECK-NEXT:  vmovdqa %ymm0, (%rdi)
; CHECK-NEXT:  vmovdqa %ymm1, 64(%rdi)

```

```

; CHECK-NEXT: vmovdqa %ymm3, 96(%rdi)
; CHECK-NEXT: vmovdqa %ymm2, 32(%rdi)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%a = sext <16 x i8> %x to <16 x i64>
store <16 x i64> %a, <16 x i64>* %y
ret void
}

```

```

define dso_local void @vselect_split_v8i16_setcc(<8 x i16> %s, <8 x i16> %t, <8 x i64>* %p, <8 x i64>* %q, <8
x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i16_setcc:
; CHECK: # %bb.0:
; CHECK-NEXT: vmovdqa (%rsi), %ymm2
; CHECK-NEXT: vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT: vpcmpeqw %xmm1, %xmm0, %k1
; CHECK-NEXT: kshiftrb $4, %k1, %k2
;
CHECK-NEXT: vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT: vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT: vmovdqa %ymm2, (%rdx)
; CHECK-NEXT: vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%x = load <8 x i64>, <8 x i64>* %p
%y = load <8 x i64>, <8 x i64>* %q
%a = icmp eq <8 x i16> %s, %t
%b = select <8 x i16> %a, <8 x i64> %x, <8 x i64> %y
store <8 x i64> %b, <8 x i64>* %r
ret void
}

```

```

define dso_local void @vselect_split_v8i32_setcc(<8 x i32> %s, <8 x i32> %t, <8 x i64>* %p, <8 x i64>* %q, <8
x i64>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v8i32_setcc:
; CHECK: # %bb.0:
; CHECK-NEXT: vmovdqa (%rsi), %ymm2
; CHECK-NEXT: vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT: vpcmpeqd %ymm1, %ymm0, %k1
; CHECK-NEXT: kshiftrb $4, %k1, %k2
; CHECK-NEXT: vmovdqa64 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT: vmovdqa64 (%rdi), %ymm2 {%k1}
; CHECK-NEXT: vmovdqa %ymm2, (%rdx)
; CHECK-NEXT: vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT:
vzeroupper
; CHECK-NEXT: retq
%x = load <8 x i64>, <8 x i64>* %p

```

```

%y = load <8 x i64>, <8 x i64>* %q
%a = icmp eq <8 x i32> %s, %t
%b = select <8 x i1> %a, <8 x i64> %x, <8 x i64> %y
store <8 x i64> %b, <8 x i64>* %r
ret void
}

```

```

define dso_local void @vselect_split_v16i8_setcc(<16 x i8> %s, <16 x i8> %t, <16 x i32>* %p, <16 x i32>* %q,
<16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i8_setcc:
; CHECK:      # %bb.0:
; CHECK-NEXT: vmovdqa (%rsi), %ymm2
; CHECK-NEXT: vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT: vpcmpeqb %xmm1, %xmm0, %k1
; CHECK-NEXT: kshiftrw $8, %k1, %k2
; CHECK-NEXT: vmovdqa32 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT: vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT: vmovdqa %ymm2, (%rdx)
; CHECK-NEXT: vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%x = load <16 x i32>, <16 x i32>* %p
%y = load <16 x i32>, <16 x i32>* %q
%a = icmp eq <16 x i8> %s, %t
%b = select <16 x i1>
%a, <16 x i32> %x, <16 x i32> %y
store <16 x i32> %b, <16 x i32>* %r
ret void
}

```

```

define dso_local void @vselect_split_v16i16_setcc(<16 x i16> %s, <16 x i16> %t, <16 x i32>* %p, <16 x i32>*
%q, <16 x i32>* %r) "min-legal-vector-width"="256" {
; CHECK-LABEL: vselect_split_v16i16_setcc:
; CHECK:      # %bb.0:
; CHECK-NEXT: vmovdqa (%rsi), %ymm2
; CHECK-NEXT: vmovdqa 32(%rsi), %ymm3
; CHECK-NEXT: vpcmpeqw %ymm1, %ymm0, %k1
; CHECK-NEXT: kshiftrw $8, %k1, %k2
; CHECK-NEXT: vmovdqa32 32(%rdi), %ymm3 {%k2}
; CHECK-NEXT: vmovdqa32 (%rdi), %ymm2 {%k1}
; CHECK-NEXT: vmovdqa %ymm2, (%rdx)
; CHECK-NEXT: vmovdqa %ymm3, 32(%rdx)
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
%x = load <16 x i32>, <16 x i32>* %p
%y = load <16 x i32>, <16 x i32>* %q
%a = icmp eq <16 x i16> %s, %t
%b = select <16 x i1> %a, <16 x i32> %x, <16 x i32> %y

```

```

store <16 x i32> %b, <16 x i32>* %r
ret void
}

define <16 x i8> @trunc_packus_v16i32_v16i8(<16 x i32>* %p) "min-legal-vector-width"="256"
{
; CHECK-LABEL: trunc_packus_v16i32_v16i8:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:  vpermq { {. *#+} } ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:  vpmovuswb %ymm0, %xmm0
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%a = load <16 x i32>, <16 x i32>* %p
%b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
%c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
%d = icmp sgt <16 x i32> %c, zeroinitializer
%e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
%f = trunc <16 x i32> %e to <16 x i8>
ret <16 x i8> %f
}

define dso_local void @trunc_packus_v16i32_v16i8_store(<16 x i32>* %p, <16 x i8>* %q) "min-legal-vector-width"="256"
{
; CHECK-LABEL: trunc_packus_v16i32_v16i8_store:
; CHECK:    # %bb.0:
; CHECK-NEXT:  vmovdqa (%rdi), %ymm0
; CHECK-NEXT:  vpackusdw 32(%rdi), %ymm0, %ymm0
; CHECK-NEXT:  vpermq { {. *#+} } ymm0 = ymm0[0,2,1,3]
; CHECK-NEXT:  vpmovuswb %ymm0, (%rsi)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%a = load <16 x i32>, <16 x i32>* %p
%b = icmp slt <16 x i32> %a, <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
%c = select <16 x i1> %b, <16 x i32> %a, <16 x i32> <i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255, i32 255>
%d = icmp sgt <16 x i32> %c, zeroinitializer
%e = select <16 x i1> %d, <16 x i32> %c, <16 x i32> zeroinitializer
%f = trunc <16 x i32> %e to <16 x i8>
store <16 x i8> %f, <16 x i8>* %q
ret void
}

```



```

define <64 x i1> @v64i1_argument_return(<64 x
i1> %x) "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_argument_return:
; CHECK:    # %bb.0:
; CHECK-NEXT:  retq
ret <64 x i1> %x
}

```

```

define dso_local void @v64i1_shuffle(<64 x i8>* %x, <64 x i8>* %y) "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_shuffle:
; CHECK:    # %bb.0: # %entry
; CHECK-NEXT:  vmovdqa (%rdi), %ymm1
; CHECK-NEXT:  vmovdqa 32(%rdi), %ymm0
; CHECK-NEXT:  vptestnmb %ymm1, %ymm1, %k0
; CHECK-NEXT:  kshiftrd $1, %k0, %k1
; CHECK-NEXT:  movq $-3, %rax
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftlq $63, %k0, %k2
; CHECK-NEXT:  kshiftrq $62, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-5, %rax
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $3, %k0, %k2
; CHECK-NEXT:  kshiftlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $61, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-9, %rax
; CHECK-NEXT:  kmovq
%rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $2, %k0, %k2
; CHECK-NEXT:  kshiftlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $60, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-17, %rax
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $5, %k0, %k2
; CHECK-NEXT:  kshiftlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $59, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-33, %rax
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $4, %k0, %k2
; CHECK-NEXT:  kshiftlq $63, %k2, %k2

```

```

; CHECK-NEXT: kshiftrq $58, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-65, %rax
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $7, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $57, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq
$-129, %rax
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $6, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $56, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-257, %rax # imm = 0xFEFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $9, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $55, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-513, %rax # imm = 0xFDFD
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $8, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $54, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-1025, %rax # imm = 0xFBFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $11, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT:
kshiftrq $53, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-2049, %rax # imm = 0xF7FF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $10, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $52, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-4097, %rax # imm = 0xEFFF
; CHECK-NEXT: kmovq %rax, %k2

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```

; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $13, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $51, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-8193, %rax # imm = 0xDFFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $12, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $50, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-16385, %rax # imm = 0xBFFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2,
%k1, %k1
; CHECK-NEXT:  kshiftrd $15, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $49, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-32769, %rax # imm = 0xFFFF7FFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $14, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $48, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-65537, %rax # imm = 0xFFFFEFFFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $17, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $47, %k2, %k2
; CHECK-NEXT:  korq %k2, %k1, %k1
; CHECK-NEXT:  movq $-131073, %rax # imm = 0xFFFFDFFFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $16, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $46, %k2, %k2
; CHECK-NEXT:  korq %k2,
%k1, %k1
; CHECK-NEXT:  movq $-262145, %rax # imm = 0xFFFFBFFFF
; CHECK-NEXT:  kmovq %rax, %k2
; CHECK-NEXT:  kandq %k2, %k1, %k1
; CHECK-NEXT:  kshiftrd $19, %k0, %k2
; CHECK-NEXT:  kshiftrlq $63, %k2, %k2
; CHECK-NEXT:  kshiftrq $45, %k2, %k2

```

```

; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-524289, %rax # imm = 0xFFF7FFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $18, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $44, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-1048577, %rax # imm = 0xFFEFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $21, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $43, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-2097153, %rax # imm = 0xFFDFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT:
    kshiftrd $20, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $42, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-4194305, %rax # imm = 0xFFBFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $23, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $41, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-8388609, %rax # imm = 0xFF7FFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $22, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $40, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-16777217, %rax # imm = 0xFEFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $25, %k0, %k2
; CHECK-NEXT: kshiftlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $39, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT:
    movq $-33554433, %rax # imm = 0xFDFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1

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; CHECK-NEXT: kshiftrd $24, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $38, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-67108865, %rax # imm = 0xFBFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $27, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $37, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-134217729, %rax # imm = 0xF7FFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $26, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $36, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-268435457, %rax # imm = 0xEFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd
$29, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $35, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-536870913, %rax # imm = 0xDFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $28, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $34, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movq $-1073741825, %rax # imm = 0xBFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k1
; CHECK-NEXT: kshiftrd $31, %k0, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $33, %k2, %k2
; CHECK-NEXT: korq %k2, %k1, %k1
; CHECK-NEXT: movabsq $-2147483649, %rax # imm = 0xFFFFFFFF7FFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k1, %k2
; CHECK-NEXT: vptestnmb %ymm0, %ymm0, %k1
; CHECK-NEXT: kshiftrd $30, %k0, %k0
; CHECK-NEXT: kshiftrlq $63, %k0, %k0
; CHECK-NEXT: kshiftrq $32, %k0,

```

```

%k0
; CHECK-NEXT: korq %k0, %k2, %k0
; CHECK-NEXT: movabsq $-4294967297, %rax # imm = 0xFFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $1, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $31, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-8589934593, %rax # imm = 0xFFFFFFFFDFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrlq $63, %k1, %k2
; CHECK-NEXT: kshiftrq $30, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-17179869185, %rax # imm = 0xFFFFFFFFBFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $3, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $29, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-34359738369, %rax # imm = 0xFFFFFFFF7FFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
;
CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $2, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $28, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-68719476737, %rax # imm = 0xFFFFFFFFEFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $5, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $27, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-137438953473, %rax # imm = 0xFFFFFFFFDFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $4, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $26, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-274877906945, %rax # imm = 0xFFFFFFFFBFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $7, %k1, %k2

```

```

; CHECK-NEXT: kshiflq $63, %k2,
%k2
; CHECK-NEXT: kshiftrq $25, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-549755813889, %rax # imm = 0xFFFFFFFF7FFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $6, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $24, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-1099511627777, %rax # imm = 0xFFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $9, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $23, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-2199023255553, %rax # imm = 0xFFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $8, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $22, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq
$-4398046511105, %rax # imm = 0xFFFFFBFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $11, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $21, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-8796093022209, %rax # imm = 0xFFFFF7FFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $10, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $20, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-17592186044417, %rax # imm = 0xFFFFEFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $13, %k1, %k2
; CHECK-NEXT: kshiflq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $19, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-35184372088833, %rax # imm = 0xFFFFDFFFFFFFFFFFFF

```

```

; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT:
    kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $12, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $18, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-70368744177665, %rax # imm = 0xFFFFBFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $15, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $17, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-140737488355329, %rax # imm = 0xFFFF7FFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $14, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $16, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-281474976710657, %rax # imm = 0xFFFEFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $17, %k1, %k2
; CHECK-NEXT: kshiftrlq $63,
    %k2, %k2
; CHECK-NEXT: kshiftrq $15, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-562949953421313, %rax # imm = 0xFFFDFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $16, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $14, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-112589906842625, %rax # imm = 0xFFFBFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $19, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $13, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-2251799813685249, %rax # imm = 0xFFF7FFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $18, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2

```



```

; CHECK-NEXT: kshiftrq $12, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT:
    movabsq $-4503599627370497, %rax # imm = 0xFFEFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $21, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $11, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-9007199254740993, %rax # imm = 0xFFDFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $20, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $10, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-18014398509481985, %rax # imm = 0xFFBFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $23, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $9, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-36028797018963969, %rax # imm = 0xFF7FFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq
    %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $22, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $8, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-72057594037927937, %rax # imm = 0xFEFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $25, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $7, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-144115188075855873, %rax # imm = 0xFDFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $24, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $6, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-288230376151711745, %rax # imm = 0xFBFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2

```

```

; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $27, %k1, %k2
;
CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $5, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-576460752303423489, %rax # imm = 0xF7FFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $26, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $4, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-1152921504606846977, %rax # imm = 0xEFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $29, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $3, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-2305843009213693953, %rax # imm = 0xDFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $28, %k1, %k2
; CHECK-NEXT: kshiftrlq $63, %k2, %k2
; CHECK-NEXT: kshiftrq $2, %k2, %k2
; CHECK-NEXT:
korq %k2, %k0, %k0
; CHECK-NEXT: movabsq $-4611686018427387905, %rax # imm = 0xBFFFFFFFFFFFFFFF
; CHECK-NEXT: kmovq %rax, %k2
; CHECK-NEXT: kandq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $31, %k1, %k2
; CHECK-NEXT: kshiftrlq $62, %k2, %k2
; CHECK-NEXT: korq %k2, %k0, %k0
; CHECK-NEXT: kshiftrd $30, %k1, %k1
; CHECK-NEXT: kshiftrlq $1, %k0, %k0
; CHECK-NEXT: kshiftrq $1, %k0, %k0
; CHECK-NEXT: kshiftrlq $63, %k1, %k1
; CHECK-NEXT: korq %k1, %k0, %k1
; CHECK-NEXT: vmovdqu8 %ymm1, (%rsi) {%k1}
; CHECK-NEXT: kshiftrq $32, %k1, %k1
; CHECK-NEXT: vmovdqu8 %ymm0, 32(%rsi) {%k1}
; CHECK-NEXT: vzeroupper
; CHECK-NEXT: retq
entry:
%a = load <64 x i8>, <64 x i8>* %x
%b = icmp eq <64 x i8> %a, zeroinitializer
%shuf = shufflevector <64 x i1> %b, <64 x i1> undef, <64 x i32> <i32 1, i32 0, i32 3, i32 2, i32 5, i32 4, i32 7, i32

```

```

6, i32 9, i32 8, i32 11, i32 10, i32 13, i32 12, i32 15, i32 14, i32 17, i32 16, i32 19, i32 18, i32 21, i32 20, i32
23, i32 22, i32 25, i32 24, i32 27, i32 26, i32 29, i32 28, i32 31, i32 30, i32 33, i32 32, i32 35, i32 34, i32 37, i32
36, i32 39, i32 38, i32 41, i32 40, i32 43, i32 42, i32 45, i32 44, i32 47, i32 46, i32 49, i32 48, i32 51, i32 50, i32 53,
i32 52, i32 55, i32 54, i32 57, i32 56, i32 59, i32 58, i32 61, i32 60, i32 63, i32 62>
call void @llvm.masked.store.v64i8.p0v64i8(<64 x i8> %a, <64 x i8>* %y, i32 1, <64 x i1> %shuf)
ret void
}
declare void @llvm.masked.store.v64i8.p0v64i8(<64 x i8>, <64 x i8>*, i32, <64 x i1>)

```

```

@mem64_dst = dso_local global i64 0, align 8
@mem64_src = dso_local global i64 0, align 8
define dso_local i32 @v64i1_inline_asm() "min-legal-vector-width"="256" {
; CHECK-LABEL: v64i1_inline_asm:
; CHECK:      # %bb.0:
; CHECK-NEXT:  kmovq mem64_src(%rip), %k0
; CHECK-NEXT:  #APP
; CHECK-NEXT:  #NO_APP
; CHECK-NEXT:  kmovq %k0, mem64_dst(%rip)
; CHECK-NEXT:  movl -{[0-9]+}(%rsp), %eax
; CHECK-NEXT:  retq
%1 = alloca i32, align 4
%2 = load i64, i64*
@mem64_src, align 8
%3 = call i64 @asm "", "=k,k,~{dirflag},~{fpsr},~{flags}"(i64 %2)
store i64 %3, i64* @mem64_dst, align 8
%4 = load i32, i32* %1, align 4
ret i32 %4
}

```

```

define dso_local void @cmp_v8i64_sext(<8 x i64>* %xptra, <8 x i64>* %yptra, <8 x i64>* %zptr) "min-legal-
vector-width"="256" {
; CHECK-LABEL: cmp_v8i64_sext:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rsi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:  vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:  vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:  vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:  vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%x = load <8 x i64>, <8 x i64>* %xptra
%y = load <8 x i64>, <8 x i64>* %yptra
%cmp = icmp slt <8 x i64> %x, %y
%ext = sext <8 x i1> %cmp to <8 x i64>
store <8 x i64> %ext, <8 x i64>* %zptr
ret void
}

```

```

define dso_local void @cmp_v8i64_zext(<8 x i64>* %xptr, <8 x i64>* %yptr, <8 x i64>* %zptr) "min-legal-
vector-width"="256"
{
; CHECK-LABEL: cmp_v8i64_zext:
; CHECK:      # %bb.0:
; CHECK-NEXT:  vmovdqa (%rsi), %ymm0
; CHECK-NEXT:  vmovdqa 32(%rsi), %ymm1
; CHECK-NEXT:  vpcmpgtq 32(%rdi), %ymm1, %ymm1
; CHECK-NEXT:  vpcmpgtq (%rdi), %ymm0, %ymm0
; CHECK-NEXT:  vpsrlq $63, %ymm1, %ymm1
; CHECK-NEXT:  vpsrlq $63, %ymm0, %ymm0
; CHECK-NEXT:  vmovdqa %ymm0, (%rdx)
; CHECK-NEXT:  vmovdqa %ymm1, 32(%rdx)
; CHECK-NEXT:  vzeroupper
; CHECK-NEXT:  retq
%x = load <8 x i64>, <8 x i64>* %xptr
%y = load <8 x i64>, <8 x i64>* %yptr
%cmp = icmp slt <8 x i64> %x, %y
%ext = zext <8 x i1> %cmp to <8 x i64>
store <8 x i64> %ext, <8 x i64>* %zptr
ret void
}

```

```

define <16 x i8> @var_rotate_v16i8(<16 x i8> %a, <16 x i8> %b) nounwind "min-legal-vector-width"="256" {
; CHECK-AVX512-LABEL: var_rotate_v16i8:
; CHECK-AVX512:      # %bb.0:
; CHECK-AVX512-NEXT:  vpand {{\.?LCPI[0-9]+_[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-AVX512-NEXT:  vpmovzxbw {{.*#+}} ymm1 =
xmm1[0],zero,xmm1[1],zero,xmm1[2],zero,xmm1[3],zero,xmm1[4],zero,xmm1[5],zero,xmm1[6],zero,xmm1[7],zer
o,xmm1[8],zero,xmm1[9],zero,xmm1[10],zero,xmm1[11],zero,xmm1[12],zero,xmm1[13],zero,xmm1[14],zero,xm
m1[15],zero
;
CHECK-AVX512-NEXT:  vpmovzxbw {{.*#+}} ymm0 =
xmm0[0],zero,xmm0[1],zero,xmm0[2],zero,xmm0[3],zero,xmm0[4],zero,xmm0[5],zero,xmm0[6],zero,xmm0[7],zer
o,xmm0[8],zero,xmm0[9],zero,xmm0[10],zero,xmm0[11],zero,xmm0[12],zero,xmm0[13],zero,xmm0[14],zero,xm
m0[15],zero
; CHECK-AVX512-NEXT:  vpslq {{.*#+}} ymm0 =
ymm0[0,0,2,2,4,4,6,6,8,8,10,10,12,12,14,14,16,16,18,18,20,20,22,22,24,24,26,26,28,28,30,30]
; CHECK-AVX512-NEXT:  vpsllvw %ymm1, %ymm0, %ymm0
; CHECK-AVX512-NEXT:  vpsrlw $8, %ymm0, %ymm0
; CHECK-AVX512-NEXT:  vpmovwb %ymm0, %xmm0
; CHECK-AVX512-NEXT:  vzeroupper
; CHECK-AVX512-NEXT:  retq
;
; CHECK-VBMI-LABEL: var_rotate_v16i8:
; CHECK-VBMI:      # %bb.0:
; CHECK-VBMI-NEXT:  # kill: def $xmm0 killed $xmm0 def $ymm0

```

```

; CHECK-VBMI-NEXT: vmovdqa {{.*#+}} ymm2 =
[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15]
;
CHECK-VBMI-NEXT: vpand {{\.?LCPI[0-9]+_?[0-9]+}}(%rip), %xmm1, %xmm1
; CHECK-VBMI-NEXT: vperm %ymm0, %ymm2, %ymm0
; CHECK-VBMI-NEXT: vpmovzxbw {{.*#+}} ymm1 =
xmm1[0],zero,xmm1[1],zero,xmm1[2],zero,xmm1[3],zero,xmm1[4],zero,xmm1[5],zero,xmm1[6],zero,xmm1[7],zero,
xmm1[8],zero,xmm1[9],zero,xmm1[10],zero,xmm1[11],zero,xmm1[12],zero,xmm1[13],zero,xmm1[14],zero,xm
mm1[15],zero
; CHECK-VBMI-NEXT: vpsllw %ymm1, %ymm0, %ymm0
; CHECK-VBMI-NEXT: vpsrlw $8, %ymm0, %ymm0
; CHECK-VBMI-NEXT: vpmovwb %ymm0, %xmm0
; CHECK-VBMI-NEXT: vzeroupper
; CHECK-VBMI-NEXT: retq
%b8 = sub <16 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b
%shl = shl <16 x i8> %a, %b
%lshr = lshr <16 x i8> %a, %b8
%or = or <16 x i8> %shl, %lshr
ret <16 x i8> %or
}

```

```

define <32 x i8> @var_rotate_v32i8(<32 x i8> %a, <32 x i8> %b) nounwind "min-legal-vector-width"="256" {

```

```

; CHECK-LABEL: var_rotate_v32i8:
;
CHECK: # %bb.0:
; CHECK-NEXT: vpand {{\.?LCPI[0-9]+_?[0-9]+}}(%rip), %ymm1, %ymm1
; CHECK-NEXT: vpxor %xmm2, %xmm2, %xmm2
; CHECK-NEXT: vpunpckhbw {{.*#+}} ymm3 =
ymm1[8],ymm2[8],ymm1[9],ymm2[9],ymm1[10],ymm2[10],ymm1[11],ymm2[11],ymm1[12],ymm2[12],ymm1[13
],ymm2[13],ymm1[14],ymm2[14],ymm1[15],ymm2[15],ymm1[24],ymm2[24],ymm1[25],ymm2[25],ymm1[26],ymm
2[26],ymm1[27],ymm2[27],ymm1[28],ymm2[28],ymm1[29],ymm2[29],ymm1[30],ymm2[30],ymm1[31],ymm2[
31]
; CHECK-NEXT: vpunpckhbw {{.*#+}} ymm4 =
ymm0[8,8,9,9,10,10,11,11,12,12,13,13,14,14,15,15,24,24,25,25,26,26,27,27,28,28,29,29,30,30,31,31]
; CHECK-NEXT: vpsllw %ymm3, %ymm4, %ymm3
; CHECK-NEXT: vpsrlw $8, %ymm3, %ymm3
; CHECK-NEXT: vpunpcklbw {{.*#+}} ymm1 =
ymm1[0],ymm2[0],ymm1[1],ymm2[1],ymm1[2],ymm2[2],ymm1[3],ymm2[3],ymm1[4],ymm2[4],ymm1[5],ymm2[
5],ymm1[6],ymm2[6],ymm1[7],ymm2[7],ymm1[16],ymm2[16],ymm1[17],ymm2[17],ymm1[18],ymm2[18],ymm1[
19],ymm2[19],ymm1[20],ymm2[20],ymm1[21],ymm2[21],ymm1[22],ymm2[22],ymm1[23],ymm2[23]
;
CHECK-NEXT: vpunpcklbw {{.*#+}} ymm0 =
ymm0[0,0,1,1,2,2,3,3,4,4,5,5,6,6,7,7,16,16,17,17,18,18,19,19,20,20,21,21,22,22,23,23]
; CHECK-NEXT: vpsllw %ymm1, %ymm0, %ymm0
; CHECK-NEXT: vpsrlw $8, %ymm0, %ymm0
; CHECK-NEXT: vpackuswb %ymm3, %ymm0, %ymm0
; CHECK-NEXT: retq
%b8 = sub <32 x i8> <i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8, i8 8>, %b8

```



```

prefixes=CHECK,NOT_CGSCC_NPM,NOT_CGSCC_OPM,NOT_TUNIT_NPM,IS__TUNIT____,IS_____OP
M,IS__TUNIT_OPM
; RUN: opt -aa-pipeline=basic-aa -passes=attributor -attributor-manifest-internal -attributor-max-iterations-verify -
attributor-annotate-decl-cs -attributor-max-iterations=3 -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_CGSCC_OPM,NOT_CGSCC_NPM,NOT_TUNIT_OPM,IS__TUNIT____,IS_____NP
M,IS__TUNIT_NPM
; RUN: opt -attributor-cgsc -enable-new-pm=0 -attributor-manifest-internal -attributor-annotate-decl-cs -S < %s |
FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_NPM,IS__CGSCC____,IS_____OP
M,IS__CGSCC_OPM
; RUN: opt -aa-pipeline=basic-aa
-passes=attributor-cgsc -attributor-manifest-internal -attributor-annotate-decl-cs -S < %s | FileCheck %s --check-
prefixes=CHECK,NOT_TUNIT_NPM,NOT_TUNIT_OPM,NOT_CGSCC_OPM,IS__CGSCC____,IS_____NP
M,IS__CGSCC_NPM
; Test that we only promote arguments when the caller/callee have compatible
; function attributes.

```

```
target triple = "x86_64-unknown-linux-gnu"
```

```

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define
{{{^@+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR0:[0-9]+]] {
; IS_____OPM-NEXT:
bb:
; IS_____OPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{{^@+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function

```



```

Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{[^[^@]+]}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias norecurse nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0:[0-9]+]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree
norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {[^[^@]+]}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* norecurse nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* norecurse nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__TUNIT_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* norecurse nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* norecurse nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_OPM-NEXT:
[[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {[^[^@]+]}@avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* norecurse nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* norecurse nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]

```

```

; IS__TUNIT_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align
64
; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{{^@+}} @avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x
i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7:[0-9]+]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{{^@+}} @avx512_legal512_prefer512_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef
nonnull writeonly align 2 dereferenceable(64) [[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6:[0-9]+]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7:[0-9]+]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]],
align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:

```

```

%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

```

; This should promote

```

define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {

```

```
;
```

```
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
```

```
; IS_____OPM-LABEL: define
```

```
{{^@+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
```

```
; IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
```

```
[[ARG:%.*]], <8 x i64>* nocapture
```

```
nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]] #[[ATTR1:[0-9]+]] {
```

```
; IS_____OPM-NEXT: bb:
```

```
; IS_____OPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
```

```
; IS_____OPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
```

```
; IS_____OPM-NEXT: ret void
```

```
;
```

```
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
```

```
; IS__TUNIT_NPM-LABEL: define
```

```
{{^@+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
```

```
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
```

```
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]] #[[ATTR1:[0-9]+]] {
```

```
; IS__TUNIT_NPM-NEXT: bb:
```

```
; IS__TUNIT_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
```

```
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
```

```
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
```

```
; IS__TUNIT_NPM-NEXT:
```

```
store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
```

```
; IS__TUNIT_NPM-NEXT: ret void
```

```
;
```

```
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
```

```
; IS__CGSCC_NPM-LABEL: define
```

```
{{^@+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
```

```
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
```

```
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]] #[[ATTR1:[0-9]+]] {
```

```
; IS__CGSCC_NPM-NEXT: bb:
```

```
; IS__CGSCC_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
```

```
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
```

```
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
```

```

; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
  %tmp = load <8 x i64>, <8 x i64>* %arg1
  store <8 x i64> %tmp, <8 x i64>* %arg
  ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8
x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{^(^@)+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture
nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{^(^@)+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef
false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn

```

```

; IS__CGSCC_OPM-LABEL: define {{[^\@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]]
= alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^\@]+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
;
IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
;
IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void

```

```

}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align
64 dereferenceable(64) [[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR1]] {
; IS_____OPM-NEXT: bb:
; IS_____OPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>*
[[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:  ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:  ret void
;
bb:
  %tmp = load <8 x i64>, <8 x i64>* %arg1
  store <8 x i64> %tmp, <8 x i64>* %arg
  ret
  void
}

```

```

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^\@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64)
[[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]])
#[[ATTR7]]
; IS__TUNIT_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^\@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]],
i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^\@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>,
align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*

```

```

; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* nocapture norecurse noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture norecurse noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{^[^@]+}} @avx512_legal512_prefer512_call_avx512_legal512_prefer256
;
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture norecurse noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture norecurse
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8
x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define

```



```

{{{^@+}}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS_____OPM-SAME: (<8 x i64>* nocapture
  nofree noundef nonnull writeonly align 64 dereferenceable(64) [[ARG:%.*]], <8 x i64>* nocapture nofree noundef
  nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]]) #[[ATTR0]] {
; IS_____OPM-NEXT: bb:
; IS_____OPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
  dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:
  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:  ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
  dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR0]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:  ret void
;
bb:
  %tmp = load <8 x i64>, <8 x i64>* %arg1
  store
  <8 x i64> %tmp, <8 x i64>* %arg
  ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{{^@+}}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32

```

```

; IS__TUNIT_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture norecurse
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture norecurse noundef nonnull
readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{^(^@)+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture norecurse writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture norecurse
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{^(^@)+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture norecurse noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT:
[[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* nocapture norecurse noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture norecurse noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;

```

```

; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
;
IS__CGSCC_NPM-LABEL: define {{{^@}+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT:
[[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define
{{{^@}+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
;
IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR1]] {
; IS_____OPM-NEXT: bb:
; IS_____OPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT: ret void
;

```

```

; IS_____NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS_____NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[ARG1:%.*]]) #[[ATTR1:[0-9]+]] {
; IS_____NPM-NEXT: bb:
; IS_____NPM-NEXT:  [[TMP:%.*]] = load <8 x
i64>, <8 x i64>* [[ARG1]], align 64
; IS_____NPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____NPM-NEXT:  ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{{^@+}}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64)
[[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:  call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{{^@+}}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP2:%.*]]
= alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]

```

```

; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^\@]+}} @avx512_legal256_prefer256_call_avx512_legal512_prefer256
;
IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
;
IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^\@]+}} @avx512_legal256_prefer256_call_avx512_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR2:[0-9]+]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8
x i64>* noalias nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>*
noalias nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32

```

```

%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly
%arg1) #2 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR2:[0-9]+]] {
; IS_____OPM-NEXT: bb:
; IS_____OPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT:  ret void
;
; IS_____NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____NPM-LABEL: define
{{{^@+}}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS_____NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64)
[[ARG:%.*]], <8 x i64>* noalias nocapture nofree noundef nonnull readonly align 64 dereferenceable(64)
[[ARG1:%.*]]) #[[ATTR2:[0-9]+]] {
; IS_____NPM-NEXT: bb:
; IS_____NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____NPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____NPM-NEXT:  ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{{^@+}}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256

```

```

; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture norelease writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:  [[TMP2:%.*]] = alloca
<8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture norelease noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:  call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture norelease noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture norelease noundef nonnull readonly
align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint norelease norelease nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
;
IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture norelease writeonly [[ARG:%.*]]) #[[ATTR1]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture norelease noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:  call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture norelease
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture norelease noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]],
align 2
; IS__TUNIT_NPM-NEXT:  ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint norelease norelease nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture norelease noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture norelease noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:  call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* nocapture norelease noundef
nonnull writeonly align 64 dereferenceable(64)

```

```

[[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[TMP]])
#[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define { {[^@]+} } @avx512_legal512_prefer256_call_avx512_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR1]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align
64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* noalias nocapture nofree
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* noalias nocapture nofree noundef
nonnull readonly align 64 dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4,
<8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #3 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define { {[^@]+} } @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS_____OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR3:[0-9]+]] {
; IS_____OPM-NEXT: bb:

```



```

; IS_____OPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL:
define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR3:[0-9]+]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT:  store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT:  ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture nofree noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]])
#[[ATTR3:[0-9]+]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT:  [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT:  store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT:  ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:
[[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT:  call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull

```

```

writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT:  ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
;
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture nofree writeonly [[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT:  [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT:  call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT:  store <8
x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT:  ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT:  call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT:  call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT:  ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR4:[0-9]+]] {
; IS__CGSCC_NPM-NEXT: bb:

```

```

; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse
noundef nonnull writeonly align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false)
#[[ATTR6]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* noalias nocapture norecurse noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
  %tmp = alloca <8 x i64>, align 32
  %tmp2 = alloca <8 x i64>, align 32
  %tmp3 = bitcast <8 x i64>* %tmp to i8*
  call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
  call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
  %tmp4 = load <8 x i64>, <8 x i64>* %tmp2,
  align 32
  store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
  ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
;
; IS_____OPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS_____OPM-LABEL: define {{{^@+}}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS_____OPM-SAME: (<8 x i64>* nocapture norecurse noundef nonnull writeonly align 64 dereferenceable(64)
[[ARG:%.*]], <8 x i64>* nocapture norecurse noundef nonnull readonly align 64 dereferenceable(64) [[ARG1:%.*]])
#[[ATTR4:[0-9]+]] {
; IS_____OPM-NEXT: bb:
; IS_____OPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]], align 64
; IS_____OPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS_____OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable
willreturn
; IS__TUNIT_NPM-LABEL: define {{{^@+}}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_NPM-SAME: (<8 x i64>* noalias nocapture norecurse noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]], <8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__TUNIT_NPM-NEXT: bb:
; IS__TUNIT_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64

```

```

; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__TUNIT_NPM-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]], align 64
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* noalias nocapture norecurse noundef nonnull writeonly align 64
dereferenceable(64) [[ARG:%.*]],
<8 x i64> [[TMP0:%.*]]) #[[ATTR4]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[ARG1_PRIV:%.*]] = alloca <8 x i64>, align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1_PRIV]], align 64
; IS__CGSCC_NPM-NEXT: store <8 x i64> [[TMP0]], <8 x i64>* [[ARG]], align 64
; IS__CGSCC_NPM-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
;
; IS__TUNIT_OPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_OPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__TUNIT_OPM-SAME: (<8 x i64>* nocapture norecurse writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_OPM-NEXT: bb:
; IS__TUNIT_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
;
; IS__TUNIT_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture norecurse noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_OPM-NEXT: call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture norecurse noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture norecurse noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__TUNIT_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_OPM-NEXT: ret void
;
; IS__TUNIT_NPM: Function Attrs: argmemonly inlinehint norecurse nosync nounwind uwtable willreturn
; IS__TUNIT_NPM-LABEL: define {{[^@]+}}@avx2_legal512_prefer256_call_avx2_legal256_prefer256
;
; IS__TUNIT_NPM-SAME: (<8 x i64>* nocapture norecurse writeonly [[ARG:%.*]]) #[[ATTR3]] {
; IS__TUNIT_NPM-NEXT: bb:

```

```

; IS__TUNIT_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__TUNIT_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__TUNIT_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 32 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__TUNIT_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__TUNIT_NPM-NEXT: call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__TUNIT_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__TUNIT_NPM-NEXT: store
<8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__TUNIT_NPM-NEXT: ret void
;
; IS__CGSCC_OPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_OPM-LABEL: define {{[^@]+}} @avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_OPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_OPM-NEXT: bb:
; IS__CGSCC_OPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_OPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_OPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef nonnull writeonly
align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false) #[[ATTR6]]
; IS__CGSCC_OPM-NEXT: call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* nocapture nofree noundef nonnull
writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64>* nocapture nofree noundef nonnull readonly align 64
dereferenceable(64) [[TMP]]) #[[ATTR7]]
; IS__CGSCC_OPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64
; IS__CGSCC_OPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC_OPM-NEXT: ret void
;
; IS__CGSCC_NPM: Function Attrs: argmemonly inlinehint nofree norecurse nosync nounwind uwtable willreturn
; IS__CGSCC_NPM-LABEL: define {{[^@]+}} @avx2_legal512_prefer256_call_avx2_legal256_prefer256
; IS__CGSCC_NPM-SAME: (<8 x i64>* nocapture nofree noundef nonnull writeonly align 2 dereferenceable(64)
[[ARG:%.*]]) #[[ATTR3]] {
; IS__CGSCC_NPM-NEXT: bb:
; IS__CGSCC_NPM-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; IS__CGSCC_NPM-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; IS__CGSCC_NPM-NEXT: call void @llvm.memset.p0i8.i64(i8* nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP3]], i8 noundef 0, i64 noundef 32, i1 noundef false)
#[[ATTR6]]
; IS__CGSCC_NPM-NEXT: [[TMP0:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]], align 64
; IS__CGSCC_NPM-NEXT: call fastcc void
@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* noalias nocapture nofree noundef
nonnull writeonly align 64 dereferenceable(64) [[TMP2]], <8 x i64> [[TMP0]]) #[[ATTR7]]
; IS__CGSCC_NPM-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 64

```

```

; IS__CGSCC__NPM-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; IS__CGSCC__NPM-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align
32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

```

; Function Attrs: argmemonly nounwind

```
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5
```

```
attributes #0 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="512" }
```

```
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="256" }
```

```
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="256" "prefer-vector-width"="256" }
```

```
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512"
"prefer-vector-width"="256" }
```

```
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256"
"prefer-vector-width"="256" }
```

```
attributes #5 = { argmemonly nounwind }
```

```
;
```

```
; IS__TUNIT____: attributes #[[ATTR0:[0-9]+]]
```

```
= { argmemonly inlinehint norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512"
"prefer-vector-width"="512" "target-features"="+avx512vl" }
```

```
; IS__TUNIT____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
```

```
; IS__TUNIT____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
```

```
; IS__TUNIT____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx2" }
```

```
; IS__TUNIT____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2"
}
```

```
; IS__TUNIT____: attributes #[[ATTR5:[0-9]+]] = { argmemonly norecurse nounwind willreturn writeonly }
```

```
; IS__TUNIT____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
```

```
; IS__TUNIT____: attributes #[[ATTR7:[0-9]+]] = { norecurse nosync nounwind willreturn }
```

```
;
```

```
; IS__CGSCC____: attributes #[[ATTR0:[0-9]+]] = { argmemonly inlinehint norecurse nosync nounwind
```

```

uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="512" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR1:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR2:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx512vl" }
; IS__CGSCC____: attributes #[[ATTR3:[0-9]+]] = { argmemonly inlinehint
nofree norecurse nosync nounwind uwtable willreturn "min-legal-vector-width"="512" "prefer-vector-
width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR4:[0-9]+]] = { argmemonly inlinehint nofree norecurse nosync nounwind
uwtable willreturn "min-legal-vector-width"="256" "prefer-vector-width"="256" "target-features"="+avx2" }
; IS__CGSCC____: attributes #[[ATTR5:[0-9]+]] = { argmemonly nofree nounwind willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR6:[0-9]+]] = { willreturn writeonly }
; IS__CGSCC____: attributes #[[ATTR7:[0-9]+]] = { nosync nounwind willreturn }
;
; NOTE: Assertions have been autogenerated by utils/update_llc_test_checks.py
; RUN: llc -mtriple=aarch64-apple-ios %s -o - | FileCheck %s

```

```

define <16 x double> @test_sitofp_fixed(<16 x i32> %in) {

```

```

; CHECK-LABEL: test_sitofp_fixed:
; CHECK:      ; %bb.0:
; CHECK-NEXT:  sshll.2d v4, v2, #0
; CHECK-NEXT:  sshll.2d v16, v1, #0
; CHECK-NEXT:  sshll.2d v5, v0, #0
; CHECK-NEXT:  sshll.2d v6, v1, #0
; CHECK-NEXT:  sshll.2d v7, v3, #0
; CHECK-NEXT:  sshll.2d v0, v0, #0
; CHECK-NEXT:  sshll.2d v17, v2, #0
; CHECK-NEXT:  sshll.2d v18, v3, #0
; CHECK-NEXT:  scvtf.2d v1, v5, #6
; CHECK-NEXT:  scvtf.2d v3, v6, #6
; CHECK-NEXT:  scvtf.2d v2, v16, #6
; CHECK-NEXT:  scvtf.2d v5, v4, #6
; CHECK-NEXT:  scvtf.2d v0, v0, #6
; CHECK-NEXT:  scvtf.2d v7, v7, #6
; CHECK-NEXT:  scvtf.2d v4, v17, #6
; CHECK-NEXT:  scvtf.2d v6, v18, #6
; CHECK-NEXT:  ret

```

```

%flt = sitofp <16 x i32> %in to <16 x double>
%res = fdiv <16 x double> %flt, <double 64.0, double 64.0, double 64.0,
double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0, double 64.0>
ret <16 x double> %res
}

```

; This one is small enough to satisfy isSimple, but still illegally large.

```

define <4 x double> @test_sitofp_fixed_shortish(<4 x i64> %in) {
; CHECK-LABEL: test_sitofp_fixed_shortish:

```

```

; CHECK:      ; %bb.0:
; CHECK-NEXT:  scvtf.2d v0, v0, #6
; CHECK-NEXT:  scvtf.2d v1, v1, #6
; CHECK-NEXT:  ret

%flt = sitofp <4 x i64> %in to <4 x double>
%res = fdiv <4 x double> %flt, <double 64.0, double 64.0, double 64.0, double 64.0>
ret <4 x double> %res
}

```

LLVM System Interface Library

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SPDX-License-Identifier: Apache-2.0 WITH LLVM-exception

; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --function-signature --scrub-attributes

; RUN: opt -S -argpromotion < %s | FileCheck %s

; RUN: opt -S -passes=argpromotion < %s | FileCheck %s

; Test that we only promote arguments when the caller/callee have compatible

; function attributes.

target triple = "x86_64-unknown-linux-gnu"

; This should promote

```

define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {

```

```

; CHECK-LABEL: define {{[^\@]+}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512

```

```

; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])

```

```

; CHECK-NEXT: bb:

```

```

; CHECK-NEXT: store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]

```

```

; CHECK-NEXT: ret void

```

```

;

```

```

bb:

```

```

%tmp = load <8 x i64>, <8 x i64>* %arg1

```

```

store <8 x i64> %tmp, <8 x i64>* %arg

```

```

ret void

```

```

}

```

```

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %arg) #0

```

```

{

```

```

; CHECK-LABEL: define {{[^\@]+}}@avx512_legal512_prefer512_call_avx512_legal512_prefer512

```

```

; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])

```

```

; CHECK-NEXT: bb:

```

```

; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32

```

```

; CHECK-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32

```

```

; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*

```



```

; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT: [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT: call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64
32, i1 false)
call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{{^@+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{{^@+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
;
CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT: [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT: call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])

```

```

; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{{^@+}}}@callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %arg) #0 {
; CHECK-LABEL: define {{{^@+}}}@avx512_legal512_prefer512_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP2:%.*]] = alloca
<8 x i64>, align 32
; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT: [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT: call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:

```

```

%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer512_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret
void
}

```

; This should promote

```

define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #0 {
; CHECK-LABEL: define {{{^@}+}}@callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

```

```

define void @avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{{^@}+}}@avx512_legal512_prefer256_call_avx512_legal512_prefer512
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8*
align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT: [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT: call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x
i64>* [[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)

```

```

call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal512_prefer512(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

```

; This should not promote

```

define internal fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8
x i64>* %arg, <8 x i64>* readonly %arg1) #1 {
; CHECK-LABEL: define {{{^@+}}@callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

```

```

define void @avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %arg) #2 {
; CHECK-LABEL: define {{{^@+}}@avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0,
i64 32, i1 false)
; CHECK-NEXT: call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x
i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void

```

```

}

; This should not promote
define internal fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg,
<8 x i64>* readonly %arg1) #2 {
; CHECK-LABEL: define {{{^@}+}}@callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
;
CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64>* readonly [[ARG1:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = load <8 x i64>, <8 x i64>* [[ARG1]]
; CHECK-NEXT: store <8 x i64> [[TMP]], <8 x i64>* [[ARG]]
; CHECK-NEXT: ret void
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %arg) #1 {
; CHECK-LABEL: define {{{^@}+}}@avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT: [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT: [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT: call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT: call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8
x i64>* [[TMP2]], <8 x i64>* [[TMP]])
; CHECK-NEXT: [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT: store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT: ret void
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(<8 x i64>* %tmp2, <8 x
i64>* %tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #3 {

```

```

; CHECK-LABEL: define {{{^@+}}}@callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT:
    store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]
; CHECK-NEXT:  ret void
;
;
bb:
%tmp = load <8 x i64>, <8 x i64>* %arg1
store <8 x i64> %tmp, <8 x i64>* %arg
ret void
}

define void @avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %arg) #4 {
; CHECK-LABEL: define {{{^@+}}}@avx2_legal256_prefer256_call_avx2_legal512_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:  call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:  [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:  call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:  store
<8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:  ret void
;
;
bb:
%tmp = alloca <8 x i64>, align 32
%tmp2 = alloca <8 x i64>, align 32
%tmp3 = bitcast <8 x i64>* %tmp to i8*
call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
call fastcc void @callee_avx2_legal256_prefer256_call_avx2_legal512_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
%tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
ret void
}

; This should promote
define internal fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg, <8
x i64>* readonly %arg1) #4 {
; CHECK-LABEL: define {{{^@+}}}@callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]], <8 x i64> [[ARG1_VAL:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT:  store <8 x i64> [[ARG1_VAL]], <8 x i64>* [[ARG]]

```

```

; CHECK-NEXT:  ret void
;
bb:
  %tmp = load <8 x i64>, <8 x i64>* %arg1
  store <8 x i64>
  %tmp, <8 x i64>* %arg
  ret void
}

define void @avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %arg) #3 {
; CHECK-LABEL: define {{{^@+}}} @avx2_legal512_prefer256_call_avx2_legal256_prefer256
; CHECK-SAME: (<8 x i64>* [[ARG:%.*]])
; CHECK-NEXT: bb:
; CHECK-NEXT:  [[TMP:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:  [[TMP2:%.*]] = alloca <8 x i64>, align 32
; CHECK-NEXT:  [[TMP3:%.*]] = bitcast <8 x i64>* [[TMP]] to i8*
; CHECK-NEXT:  call void @llvm.memset.p0i8.i64(i8* align 32 [[TMP3]], i8 0, i64 32, i1 false)
; CHECK-NEXT:  [[TMP_VAL:%.*]] = load <8 x i64>, <8 x i64>* [[TMP]]
; CHECK-NEXT:  call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>*
[[TMP2]], <8 x i64> [[TMP_VAL]])
; CHECK-NEXT:  [[TMP4:%.*]] = load <8 x i64>, <8 x i64>* [[TMP2]], align 32
; CHECK-NEXT:  store <8 x i64> [[TMP4]], <8 x i64>* [[ARG]], align 2
; CHECK-NEXT:  ret void
;
bb:
  %tmp = alloca <8 x i64>, align 32
  %tmp2 = alloca <8 x i64>,
  align 32
  %tmp3 = bitcast <8 x i64>* %tmp to i8*
  call void @llvm.memset.p0i8.i64(i8* align 32 %tmp3, i8 0, i64 32, i1 false)
  call fastcc void @callee_avx2_legal512_prefer256_call_avx2_legal256_prefer256(<8 x i64>* %tmp2, <8 x i64>*
%tmp)
  %tmp4 = load <8 x i64>, <8 x i64>* %tmp2, align 32
  store <8 x i64> %tmp4, <8 x i64>* %arg, align 2
  ret void
}

; If the arguments are scalar, its ok to promote.
define internal i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{{^@+}}} @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:  [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:  ret i32 [[C]]
;
%A = load i32, i32* %X
%B = load i32, i32* %Y

```

```

%C = add i32 %A, %B
ret i32 %C
}

define i32 @scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{{^@}+}}@scalar_avx512_legal256_prefer256_call_avx512_legal512_prefer256
;
CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:  [[A:%.*]] = alloca i32
; CHECK-NEXT:  store i32 1, i32* [[A]]
; CHECK-NEXT:  [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:  [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:  [[C:%.*]] = call i32
@scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:  ret i32 [[C]]
;
%A = alloca i32
store i32 1, i32* %A
%C = call i32 @scalar_callee_avx512_legal256_prefer256_call_avx512_legal512_prefer256(i32* %A, i32* %B)
ret i32 %C
}

```

; If the arguments are scalar, its ok to promote.

```

define internal i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %X, i32*
%Y) #2 {
; CHECK-LABEL: define
{{{^@}+}}@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32 [[X_VAL:%.*]], i32 [[Y_VAL:%.*]])
; CHECK-NEXT:  [[C:%.*]] = add i32 [[X_VAL]], [[Y_VAL]]
; CHECK-NEXT:  ret
i32 [[C]]
;
%A = load i32, i32* %X
%B = load i32, i32* %Y
%C = add i32 %A, %B
ret i32 %C
}

```

```

define i32 @scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %B) #2 {
; CHECK-LABEL: define {{{^@}+}}@scalar_avx512_legal512_prefer256_call_avx512_legal256_prefer256
; CHECK-SAME: (i32* [[B:%.*]])
; CHECK-NEXT:  [[A:%.*]] = alloca i32
; CHECK-NEXT:  store i32 1, i32* [[A]]
; CHECK-NEXT:  [[A_VAL:%.*]] = load i32, i32* [[A]]
; CHECK-NEXT:  [[B_VAL:%.*]] = load i32, i32* [[B]]
; CHECK-NEXT:  [[C:%.*]] = call i32
@scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32 [[A_VAL]], i32 [[B_VAL]])
; CHECK-NEXT:  ret i32 [[C]]

```



```

;
%A = alloca i32
store i32 1, i32* %A
%C = call i32 @scalar_callee_avx512_legal512_prefer256_call_avx512_legal256_prefer256(i32* %A, i32* %B)
ret i32 %C
}

; Function Attrs: argmemonly nounwind
declare void @llvm.memset.p0i8.i64(i8* nocapture writeonly, i8, i64, i1) #5

attributes #0 = { inlinehint norecurse nounwind
  uwtable "target-features"="+avx512vl" "min-legal-vector-width"="512" "prefer-vector-width"="512" }
attributes #1 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="512" "prefer-vector-width"="256" }
attributes #2 = { inlinehint norecurse nounwind uwtable "target-features"="+avx512vl" "min-legal-vector-
width"="256" "prefer-vector-width"="256" }
attributes #3 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="512"
"prefer-vector-width"="256" }
attributes #4 = { inlinehint norecurse nounwind uwtable "target-features"="+avx2" "min-legal-vector-width"="256"
"prefer-vector-width"="256" }
attributes #5 = { argmemonly nounwind }
; NOTE: Assertions have been autogenerated by utils/update_analyze_test_checks.py
; RUN: opt < %s -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx2 | FileCheck %s --check-
prefixes=VEC256,AVX
; RUN: opt < %s -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,+prefer-256-bit |
FileCheck %s --check-prefixes=VEC256,AVX512VL256
; RUN: opt < %s -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -mattr=+avx512vl,-prefer-256-bit |
FileCheck %s --check-prefixes=AVX512VL512
; RUN: opt < %s -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -
mattr=+avx512vl,+avx512bw,+avx512dq,+prefer-256-bit | FileCheck %s --check-prefixes=VEC256,SKX256
; RUN: opt < %s -cost-model -analyze -mtriple=x86_64-apple-macosx10.8.0 -
mattr=+avx512vl,+avx512bw,+avx512dq,-prefer-256-bit | FileCheck %s --check-prefixes=SKX512

define void @zext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256'
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction:
  %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext256'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to

```

```

<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated
cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'zext256'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
;
SKX256-LABEL: 'zext256'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %A = zext <8 x i16> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %C = zext <16 x i8> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext256'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction:
%C = zext <16 x i8> undef to <16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void

```

```

;
%A = zext <8 x i16> undef to <8 x i64>
%B = zext <8 x i32> undef to <8 x i64>
%C = zext <16 x i8> undef to <16 x i32>
%D = zext <16 x i16> undef to <16 x i32>
%E = zext <32 x i8> undef to <32 x i16>
ret void
}

define void @zext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'zext512'
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %A = zext <8 x i16> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %B = zext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; AVX-NEXT:
Cost Model: Found an estimated cost of 3 for instruction: %D = zext <16 x i16> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %E = zext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'zext512'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction:
ret void
;
; AVX512VL512-LABEL: 'zext512'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = zext <32 x i8> undef to
<32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'zext512'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x

```

```

i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT: Cost
Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'zext512'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = zext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = zext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = zext <16 x i8> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = zext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = zext <32 x i8> undef to <32 x
i16>
;
SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
%A = zext <8 x i16> undef to <8 x i64>
%B = zext <8 x i32> undef to <8 x i64>
%C = zext <16 x i8> undef to <16 x i32>
%D = zext <16 x i16> undef to <16 x i32>
%E = zext <32 x i8> undef to <32 x i16>
ret void
}

define void @sext256() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256'
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for
instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext256'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %B = sext <8 x i16> undef to

```

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<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext256'
;
AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
<32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext256'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction:
%B = sext <8 x i16> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %D = sext <16 x i8> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext256'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated

```

```

cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
%A = sext <8 x i8> undef to <8 x i64>
%B = sext <8 x i16> undef to <8 x i64>
%C = sext <8 x i32> undef to <8 x i64>
%D = sext <16 x i8> undef to <16 x i32>
%E = sext <16 x i16> undef to <16 x i32>
%F = sext <32 x i8> undef to <32 x i16>
ret void
}

define void @sext512() "min-legal-vector-width"="512" {
; AVX-LABEL: 'sext512'
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %B = sext <8 x i16> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for
instruction: %C = sext <8 x i32> undef to <8 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %D = sext <16 x i8> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %F = sext <32 x i8> undef to <32 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL256-LABEL: 'sext512'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to
<8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL256-NEXT: Cost Model:
Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %F = sext <32 x i8> undef to
<32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'sext512'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8
x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to
<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to

```

```

<8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to
<16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction:
%F = sext <32 x i8> undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX256-LABEL: 'sext512'
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'sext512'
; SKX512-NEXT: Cost Model: Found an estimated cost
of 1 for instruction: %A = sext <8 x i8> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %B = sext <8 x i16> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %C = sext <8 x i32> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %D = sext <16 x i8> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %E = sext <16 x i16> undef to <16 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %F = sext <32 x i8> undef to <32 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
%A = sext <8 x i8> undef to <8 x i64>
%B = sext <8 x i16> undef to <8 x i64>
%C = sext <8 x i32> undef to <8 x i64>
%D = sext <16 x i8> undef to <16 x i32>
%E = sext <16 x i16> undef to <16 x i32>
%F = sext <32 x i8> undef to <32 x i16>
ret void
}

define void @trunc256()

```

```

"min-legal-vector-width"="256" {
; VEC256-LABEL: 'trunc256'
; VEC256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %A = trunc <8 x i64> undef to <8 x
i32>
; VEC256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %B = trunc <8 x i64> undef to <8 x
i16>
; VEC256-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %C = trunc <8 x i64> undef to <8 x
i8>
; VEC256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %D = trunc <16 x i32> undef to <16 x
i16>
; VEC256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %E = trunc <16 x i32> undef to <16 x
i8>
; VEC256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %F = trunc <32 x i16> undef to <32 x
i8>
; VEC256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; AVX512VL512-LABEL: 'trunc256'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to
<8 x i32>
; AVX512VL512-NEXT:
  Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %C = trunc <8 x i64> undef to
<8 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef
to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to
<16 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %F = trunc <32 x i16> undef to
<32 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
; SKX512-LABEL: 'trunc256'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %A = trunc <8 x i64> undef to <8 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %B = trunc <8 x i64> undef to <8 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction:
  %C = trunc <8 x i64> undef to <8 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %D = trunc <16 x i32> undef to <16 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %E = trunc <16 x i32> undef to <16 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %F = trunc <32 x i16> undef to <32 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret void
;
  %A = trunc <8 x i64> undef to <8 x i32>
  %B = trunc <8 x i64> undef to <8 x i16>

```



```

%C = trunc <8 x i64> undef to <8 x i8>
%D = trunc <16 x i32> undef to <16 x i16>
%E = trunc <16 x i32> undef to <16 x i8>
%F = trunc <32 x i16> undef to <32 x i8>
ret void
}

define i32 @zext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'zext256_vXi1'
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = zext <2 x i1> undef to <2 x
i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 3
for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = zext <8 x i1> undef to <8 x
i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = zext <2 x i1> undef to <2 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = zext <4 x i1> undef to <4 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = zext <8 x i1> undef to <8 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = zext <16 x i1> undef to <16 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = zext <2 x i1> undef to <2 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = zext <4 x i1> undef to <4 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = zext <8 x i1> undef to <8 x
i16>
; AVX-NEXT: Cost Model: Found an
estimated cost of 1 for instruction: %V16i16 = zext <16 x i1> undef to <16 x i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = zext <32 x i1> undef to <32 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = zext <2 x i1> undef to <2 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = zext <4 x i1> undef to <4 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = zext <8 x i1> undef to <8 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = zext <16 x i1> undef to <16 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = zext <32 x i1> undef to <32 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'zext256_vXi1'
; AVX512VL256-NEXT:
Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef

```

```

to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i64 = zext <8 x i1> undef
to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef
to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef
to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef
to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = zext <16 x i1>
undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i16 = zext <2 x i1> undef
to <2 x i16>
; AVX512VL256-NEXT: Cost Model:
Found an estimated cost of 5 for instruction: %V4i16 = zext <4 x i1> undef to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i16 = zext <8 x i1> undef
to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i16 = zext <16 x i1>
undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 24 for instruction: %V32i16 = zext <32 x i1>
undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V2i8 = zext <2 x i1> undef to
<2 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V4i8 = zext <4 x i1> undef to
<4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 6 for instruction: %V8i8 = zext <8 x i1> undef to
<8 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 12 for instruction: %V16i8 = zext <16 x i1>
undef to <16 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 25
for instruction: %V32i8 = zext <32 x i1> undef to <32 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 50 for instruction: %V64i8 = zext <64 x i1>
undef to <64 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'zext256_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef
to <2 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef
to <4 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef
to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef
to <2 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef
to <4 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction:

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%V8i32 = zext <8 x i1> undef to <8 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1>
undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = zext <2 x i1> undef
to <2 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = zext <4 x i1> undef
to <4 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = zext <8 x i1> undef
to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i16 = zext <16 x i1>
undef to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = zext <32 x i1>
undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i8 = zext <2 x i1> undef to
<2 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i8 = zext <4 x i1> undef
to <4 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i8 = zext <8 x i1> undef to
<8 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i8 = zext <16 x i1> undef
to <16 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i8 = zext <32 x i1> undef
to <32 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 19 for instruction: %V64i8 = zext <64 x i1>
undef to <64 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'zext256_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = zext <8 x i1> undef to <8 x
i64>
; SKX256-NEXT: Cost Model:
Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = zext <16 x i1> undef to
<16 x i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x
i16>

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; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to
<16 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V32i16 = zext <32
x i1> undef to <32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x
i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x
i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x
i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V64i8 = zext <64 x i1> undef to <64
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'zext256_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = zext <2 x i1> undef to <2 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated
cost of 2 for instruction: %V4i64 = zext <4 x i1> undef to <4 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = zext <8 x i1> undef to <8 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = zext <2 x i1> undef to <2 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = zext <4 x i1> undef to <4 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = zext <8 x i1> undef to <8 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = zext <16 x i1> undef to
<16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = zext <2 x i1> undef to <2 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = zext <4 x i1> undef to <4 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = zext <8 x i1> undef to <8 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = zext <16 x i1> undef to
<16 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = zext <32 x i1> undef to
<32 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = zext <2 x i1> undef to <2 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = zext <4 x i1> undef to <4 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = zext <8 x i1> undef to <8 x

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i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = zext <16 x i1> undef to <16
x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = zext <32 x i1> undef to <32
x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = zext <64 x i1> undef to <64
x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction:
ret i32 undef
;
%V2i64 = zext <2 x i1> undef to <2 x i64>
%V4i64 = zext <4 x i1> undef to <4 x i64>
%V8i64 = zext <8 x i1> undef to <8 x i64>

%V2i32 = zext <2 x i1> undef to <2 x i32>
%V4i32 = zext <4 x i1> undef to <4 x i32>
%V8i32 = zext <8 x i1> undef to <8 x i32>
%V16i32 = zext <16 x i1> undef to <16 x i32>

%V2i16 = zext <2 x i1> undef to <2 x i16>
%V4i16 = zext <4 x i1> undef to <4 x i16>
%V8i16 = zext <8 x i1> undef to <8 x i16>
%V16i16 = zext <16 x i1> undef to <16 x i16>
%V32i16 = zext <32 x i1> undef to <32 x i16>

%V2i8 = zext <2 x i1> undef to <2 x i8>
%V4i8 = zext <4 x i1> undef to <4 x i8>
%V8i8 = zext <8 x i1> undef to <8 x i8>
%V16i8 = zext <16 x i1> undef to <16 x i8>
%V32i8 = zext <32 x i1> undef to <32 x i8>
%V64i8 = zext <64 x i1> undef to <64 x i8>

ret i32 undef
}

define i32 @sext256_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'sext256_vXi1'
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction:
%I64 = sext i1 undef to i64
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = sext <2 x i1> undef to <2 x
i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i64 = sext <4 x i1> undef to <4 x
i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i64 = sext <8 x i1> undef to <8 x
i64>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = sext <2 x i1> undef to <2 x
i32>

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; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = sext <4 x i1> undef to <4 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i32 = sext <8 x i1> undef to <8 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = sext <16 x i1> undef to <16 x
i32>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16
= sext i1 undef to i16
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = sext <2 x i1> undef to <2 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = sext <4 x i1> undef to <4 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = sext <8 x i1> undef to <8 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to <16 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V32i16 = sext <32 x i1> undef to <32 x
i16>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = sext <2 x i1> undef to <2 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = sext <4 x i1> undef to <4 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = sext
<8 x i1> undef to <8 x i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = sext <16 x i1> undef to <16 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = sext <32 x i1> undef to <32 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V64i8 = sext <64 x i1> undef to <64 x
i8>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'sext256_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef
to <2 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef
to <4 x i64>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i64 = sext <8 x i1> undef
to <8 x i64>
; AVX512VL256-NEXT: Cost Model: Found
an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef
to <2 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef
to <4 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef
to <8 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i32 = sext <16 x i1>

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undef to <16 x i32>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V2i16 = sext <2 x i1> undef
to <2 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i16 = sext <4 x i1> undef
to <4 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V8i16 = sext <8
x i1> undef to <8 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V16i16 = sext <16 x i1>
undef to <16 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 20 for instruction: %V32i16 = sext <32 x i1>
undef to <32 x i16>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V2i8 = sext <2 x i1> undef to
<2 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V4i8 = sext <4 x i1> undef to
<4 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V8i8 = sext <8 x i1> undef to
<8 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V16i8 = sext <16 x i1>
undef to <16 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 21 for instruction: %V32i8 = sext <32 x i1>
undef to <32 x i8>
; AVX512VL256-NEXT:
Cost Model: Found an estimated cost of 42 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL512-LABEL: 'sext256_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef
to <2 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef
to <4 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i64 = sext <8 x i1> undef
to <8 x i64>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef
to <2 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for
instruction: %V4i32 = sext <4 x i1> undef to <4 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef
to <8 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1>
undef to <16 x i32>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = sext <2 x i1> undef
to <2 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = sext <4 x i1> undef

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to <4 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = sext <8 x i1> undef
to <8 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = sext <16 x i1>
undef to <16 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = sext <32 x i1>
undef to <32 x i16>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = sext <2 x i1> undef to
<2 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = sext <4 x i1> undef to
<4 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = sext <8 x i1> undef to
<8 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = sext <16 x i1> undef
to <16 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = sext <32 x i1> undef
to <32 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = sext <64 x i1>
undef to <64 x i8>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'sext256_vXi1'
; SKX256-NEXT: Cost Model:
Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = sext <8 x i1> undef to <8 x
i64>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x
i32>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = sext <16 x i1> undef to
<16 x i32>
; SKX256-NEXT:
Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x
i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x
i16>

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; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to
<16 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = sext <32 x i1> undef to
<32 x i16>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x
i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to
<4 x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x
i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V64i8 = sext <64 x i1> undef to <64
x i8>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'sext256_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I64 = sext i1 undef to i64
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i64 = sext <2 x i1> undef to <2 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i64 = sext <4 x i1> undef to <4 x
i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction:
%V8i64 = sext <8 x i1> undef to <8 x i64>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I32 = sext i1 undef to i32
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = sext <2 x i1> undef to <2 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i32 = sext <4 x i1> undef to <4 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i32 = sext <8 x i1> undef to <8 x
i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i32 = sext <16 x i1> undef to
<16 x i32>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I16 = sext i1 undef to i16
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = sext <2 x i1> undef to <2 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = sext <4 x i1> undef to <4 x
i16>
; SKX512-NEXT: Cost Model: Found an estimated cost
of 1 for instruction: %V8i16 = sext <8 x i1> undef to <8 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i16 = sext <16 x i1> undef to
<16 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i16 = sext <32 x i1> undef to
<32 x i16>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %I8 = sext i1 undef to i8

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; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = sext <2 x i1> undef to <2 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = sext <4 x i1> undef to <4 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = sext <8 x i1> undef to <8 x
i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V16i8 = sext <16 x i1> undef to <16
x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V32i8 = sext <32 x i1> undef to <32
x i8>
; SKX512-NEXT: Cost
Model: Found an estimated cost of 1 for instruction: %V64i8 = sext <64 x i1> undef to <64 x i8>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
%I64 = sext i1 undef to i64
%V2i64 = sext <2 x i1> undef to <2 x i64>
%V4i64 = sext <4 x i1> undef to <4 x i64>
%V8i64 = sext <8 x i1> undef to <8 x i64>

%I32 = sext i1 undef to i32
%V2i32 = sext <2 x i1> undef to <2 x i32>
%V4i32 = sext <4 x i1> undef to <4 x i32>
%V8i32 = sext <8 x i1> undef to <8 x i32>
%V16i32 = sext <16 x i1> undef to <16 x i32>

%I16 = sext i1 undef to i16
%V2i16 = sext <2 x i1> undef to <2 x i16>
%V4i16 = sext <4 x i1> undef to <4 x i16>
%V8i16 = sext <8 x i1> undef to <8 x i16>
%V16i16 = sext <16 x i1> undef to <16 x i16>
%V32i16 = sext <32 x i1> undef to <32 x i16>

%I8 = sext i1 undef to i8
%V2i8 = sext <2 x i1> undef to <2 x i8>
%V4i8 = sext <4 x i1> undef to <4 x i8>
%V8i8 = sext <8 x i1> undef to <8 x i8>
%V16i8 = sext <16 x i1> undef
to <16 x i8>
%V32i8 = sext <32 x i1> undef to <32 x i8>
%V64i8 = sext <64 x i1> undef to <64 x i8>

ret i32 undef
}

define i32 @trunc_vXi1() "min-legal-vector-width"="256" {
; AVX-LABEL: 'trunc_vXi1'
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V2i64 = trunc <2 x i64> undef to <2 x
i1>

```

```

; AVX-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V4i64 = trunc <4 x i64> undef to <4 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to
<16 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to
<32 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 46 for instruction: %V64i64 = trunc <64 x i64> undef to
<64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i32 = trunc <2 x i32>
undef to <2 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V16i32 = trunc <16 x i32> undef to <16
x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 17 for instruction: %V32i32 = trunc <32 x i32> undef to
<32 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 34 for instruction: %V64i32 = trunc <64 x i32> undef to
<64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i16 = trunc <2 x i16> undef to <2 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i16 = trunc <4 x i16> undef to <4 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V8i16 = trunc <8 x i16> undef to <8 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 4 for
instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i16 = trunc <32 x i16> undef to <32
x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 18 for instruction: %V64i16 = trunc <64 x i16> undef to
<64 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 1 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V16i8 = trunc <16 x i8> undef to <16 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V32i8 = trunc <32 x i8> undef to <32 x
i1>
; AVX-NEXT: Cost Model: Found an estimated cost of 0 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x
i1>
; AVX-NEXT: Cost Model:
Found an estimated cost of 0 for instruction: ret i32 undef
;
; AVX512VL256-LABEL: 'trunc_vXi1'
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64>

```

```

undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64>
undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64>
undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64>
undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64>
undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64>
undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32>
undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found
an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32>
undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V16i32 = trunc <16 x i32>
undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 10 for instruction: %V32i32 = trunc <32 x i32>
undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 20 for instruction: %V64i32 = trunc <64 x i32>
undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16>
undef to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16>
undef to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16 = trunc <8 x i16>
undef to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated
cost of 8 for instruction: %V16i16 = trunc <16 x i16> undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 16 for instruction: %V32i16 = trunc <32 x i16>
undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 32 for instruction: %V64i16 = trunc <64 x i16>
undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef
to <2 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef
to <4 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef
to <8 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V16i8 = trunc <16 x i8>
undef to <16 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 17 for instruction: %V32i8 = trunc <32 x i8>
undef to <32 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 34 for
instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; AVX512VL256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef

```

```

;
; AVX512VL512-LABEL: 'trunc_vXi1'
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64>
undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64>
undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64>
undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64>
undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 22 for instruction: %V32i64 = trunc <32 x i64>
undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 44 for instruction: %V64i64 = trunc <64 x i64>
undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction:
%V2i32 = trunc <2 x i32> undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32>
undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32>
undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32>
undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V32i32 = trunc <32 x i32>
undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V64i32 = trunc <64 x i32>
undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i16 = trunc <2 x i16>
undef to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i16 = trunc <4 x i16>
undef to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i16
= trunc <8 x i16> undef to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i16 = trunc <16 x i16>
undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i16 = trunc <32 x i16>
undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 14 for instruction: %V64i16 = trunc <64 x i16>
undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V2i8 = trunc <2 x i8> undef
to <2 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V4i8 = trunc <4 x i8> undef
to <4 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V8i8 = trunc <8 x i8> undef
to <8 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 3 for instruction: %V16i8 = trunc <16 x i8>
undef to <16 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 7 for instruction: %V32i8 = trunc <32 x i8>

```

```

undef to <32 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 15 for instruction: %V64i8 = trunc <64 x i8>
undef to <64 x i1>
; AVX512VL512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX256-LABEL: 'trunc_vXi1'
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V8i64 = trunc <8 x i64> undef to <8
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to
<16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to
<32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to
<64 x i1>
; SKX256-NEXT: Cost
Model: Found an estimated cost of 2 for instruction: %V2i32 = trunc <2 x i32> undef to <2 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V16i32 = trunc <16 x i32> undef to
<16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 9 for instruction: %V32i32 = trunc <32 x i32> undef to
<32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 19 for instruction: %V64i32 = trunc <64 x i32> undef to
<64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4
x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction:
%V8i16 = trunc <8 x i16> undef to <8 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to
<16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V32i16 = trunc <32 x i16> undef to
<32 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 8 for instruction: %V64i16 = trunc <64 x i16> undef to
<64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x
i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x
i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x
i1>

```

```

; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to
<16 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to
<32 x i1>
; SKX256-NEXT:
  Cost Model: Found an estimated cost of 4 for instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX256-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
; SKX512-LABEL: 'trunc_vXi1'
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i64 = trunc <2 x i64> undef to <2
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i64 = trunc <4 x i64> undef to <4
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i64 = trunc <8 x i64> undef to <8
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V16i64 = trunc <16 x i64> undef to
<16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 23 for instruction: %V32i64 = trunc <32 x i64> undef to
<32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 47 for instruction: %V64i64 = trunc <64 x i64> undef to
<64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction:
  %V2i32 = trunc <2 x i32> undef to <2 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i32 = trunc <4 x i32> undef to <4
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i32 = trunc <8 x i32> undef to <8
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i32 = trunc <16 x i32> undef to
<16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 5 for instruction: %V32i32 = trunc <32 x i32> undef to
<32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 11 for instruction: %V64i32 = trunc <64 x i32> undef to
<64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i16 = trunc <2 x i16> undef to <2
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i16 = trunc <4 x i16> undef to <4
x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i16 = trunc <8 x i16> undef to <8
x i1>
;
  SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i16 = trunc <16 x i16> undef to
<16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i16 = trunc <32 x i16> undef to
<32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 4 for instruction: %V64i16 = trunc <64 x i16> undef to
<64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V2i8 = trunc <2 x i8> undef to <2 x
i1>

```

```

; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V4i8 = trunc <4 x i8> undef to <4 x
i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V8i8 = trunc <8 x i8> undef to <8 x
i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V16i8 = trunc <16 x i8> undef to
<16 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for instruction: %V32i8 = trunc <32 x i8> undef to
<32 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 2 for
instruction: %V64i8 = trunc <64 x i8> undef to <64 x i1>
; SKX512-NEXT: Cost Model: Found an estimated cost of 0 for instruction: ret i32 undef
;
%V2i64 = trunc <2 x i64> undef to <2 x i1>
%V4i64 = trunc <4 x i64> undef to <4 x i1>
%V8i64 = trunc <8 x i64> undef to <8 x i1>
%V16i64 = trunc <16 x i64> undef to <16 x i1>
%V32i64 = trunc <32 x i64> undef to <32 x i1>
%V64i64 = trunc <64 x i64> undef to <64 x i1>

%V2i32 = trunc <2 x i32> undef to <2 x i1>
%V4i32 = trunc <4 x i32> undef to <4 x i1>
%V8i32 = trunc <8 x i32> undef to <8 x i1>
%V16i32 = trunc <16 x i32> undef to <16 x i1>
%V32i32 = trunc <32 x i32> undef to <32 x i1>
%V64i32 = trunc <64 x i32> undef to <64 x i1>

%V2i16 = trunc <2 x i16> undef to <2 x i1>
%V4i16 = trunc <4 x i16> undef to <4 x i1>
%V8i16 = trunc <8 x i16> undef to <8 x i1>
%V16i16 = trunc <16 x i16> undef to <16 x i1>
%V32i16 = trunc <32 x i16> undef to <32 x i1>
%V64i16 = trunc <64 x i16> undef to <64 x i1>

%V2i8 = trunc
<2 x i8> undef to <2 x i1>
%V4i8 = trunc <4 x i8> undef to <4 x i1>
%V8i8 = trunc <8 x i8> undef to <8 x i1>
%V16i8 = trunc <16 x i8> undef to <16 x i1>
%V32i8 = trunc <32 x i8> undef to <32 x i1>
%V64i8 = trunc <64 x i8> undef to <64 x i1>

ret i32 undef
}

```

```

=====
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LLVM Team

University of Illinois at Urbana-Champaign

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; RUN: opt -mtriple=aarch64-linux-gnu -mattr=+sve -scalarize-masked-mem-intrin -S < %s | FileCheck %s

; Testing that masked scatters operating on scalable vectors that are
; packed in SVE registers are not scalarized.

```
; CHECK-LABEL: @masked_scatter_nxv4i32(  
; CHECK: call void @llvm.masked.scatter.nxv4i32  
define void @masked_scatter_nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, <vscale x 4 x i1>  
%masks) {  
  call void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 0, <vscale x 4 x  
i1> %masks)  
  ret void  
}
```

; Testing that masked scatters operating on scalable vectors of FP
; data that is packed in SVE registers are not scalarized.

```
; CHECK-LABEL: @masked_scatter_nxv2f64(  
; CHECK: call void @llvm.masked.scatter.nxv2f64  
define void @masked_scatter_nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, <vscale x 2 x  
i1> %masks) {  
  call void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs,  
i32 0, <vscale x 2 x i1> %masks)  
  ret void  
}
```

; Testing that masked scatters operating on scalable vectors of FP
; data that is unpacked in SVE registers are not scalarized.

```
; CHECK-LABEL: @masked_scatter_nxv2f16(  
; CHECK: call void @llvm.masked.scatter.nxv2f16  
define void @masked_scatter_nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, <vscale x 2 x i1>  
%masks) {  
  call void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 0, <vscale x 2  
x i1> %masks)  
  ret void  
}
```

; Testing that masked scatters operating on 64-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions.

```
; CHECK-LABEL: @masked_scatter_v2f32(  
; CHECK-NOT: @llvm.masked.scatter.v2f32(  
define void @masked_scatter_v2f32(<2 x float> %data, <2 x float*> %ptrs, <2 x i1> %masks) {  
  call void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 0, <2 x i1> %masks)  
  ret void  
}
```

```

; Testing that masked scatters operating
on 128-bit fixed vectors are
; scalarized because NEON doesn't have support for masked scatter
; instructions and because we are not targeting fixed width SVE.

; CHECK-LABEL: @masked_scatter_v4i32(
; CHECK-NOT: @llvm.masked.scatter.v4i32(
define void @masked_scatter_v4i32(<4 x i32> %data, <4 x i32*> %ptrs, <4 x i1> %masks) {
    call void @llvm.masked.scatter.v4i32(<4 x i32> %data, <4 x i32*> %ptrs, i32 0, <4 x i1> %masks)
    ret void
}

declare void @llvm.masked.scatter.nxv4i32(<vscale x 4 x i32> %data, <vscale x 4 x i32*> %ptrs, i32 %align,
<vscale x 4 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f64(<vscale x 2 x double> %data, <vscale x 2 x double*> %ptrs, i32
%align, <vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.nxv2f16(<vscale x 2 x half> %data, <vscale x 2 x half*> %ptrs, i32 %align,
<vscale x 2 x i1> %masks)
declare void @llvm.masked.scatter.v2f32(<2 x float> %data, <2 x float*> %ptrs, i32 %align, <2 x i1> %masks)
declare void @llvm.masked.scatter.v4i32(<4
x i32> %data, <4 x i32*> %ptrs, i32 %align, <4 x i1> %masks)
static_library("BSD-Archive") {
    output_name = "lldbPluginObjectContainerBSDArchive"
    configs += [ "//llvm/utils/gn/build:lldb_code" ]
    deps = [
        "//lldb/source/Core",
        "//lldb/source/Host",
        "//lldb/source/Symbol",
        "//llvm/lib/Support",
    ]
    sources = [ "ObjectContainerBSDArchive.cpp" ]
}
; NOTE: Assertions have been autogenerated by utils/update_test_checks.py UTC_ARGS: --include-generated-
funcs
; RUN: opt -S -verify -iroutliner -ir-outlining-no-cost < %s | FileCheck %s

; This test checks that we do outline indirect calls when it is not specified
; that we should not.

declare void @f1(i32*, i32*);
declare void @f2(i32*, i32*);

define void @function1(void()* %func) {
entry:
    %a = alloca i32, align 4
    %b = alloca i32, align 4
    %c = alloca i32, align 4

```



```

store i32 2, i32* %a, align 4
store i32 3, i32* %b, align 4
store i32 4, i32* %c, align 4
call void %func()
%al = load i32, i32* %a
%bl = load i32, i32* %b
%cl = load i32, i32* %c
ret void
}

```

```

define void @function2(void()* %func) {

```

```

entry:

```

```

%a = alloca i32, align 4

```

```

%b = alloca i32, align 4

```

```

%c = alloca i32, align 4

```

```

store i32 2, i32* %a, align 4

```

```

store i32 3, i32* %b, align 4

```

```

store i32 4, i32* %c, align 4

```

```

call void %func()

```

```

%al = load i32, i32* %a

```

```

%bl = load i32, i32* %b

```

```

%cl = load i32, i32*

```

```

%c

```

```

ret void

```

```

}

```

```

; CHECK-LABEL: @function1(

```

```

; CHECK-NEXT: entry:

```

```

; CHECK-NEXT: [[A:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: [[B:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: [[C:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]], void ()* [[FUNC:%.*]])

```

```

; CHECK-NEXT: ret void

```

```

;

```

```

;

```

```

; CHECK-LABEL: @function2(

```

```

; CHECK-NEXT: entry:

```

```

; CHECK-NEXT: [[A:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: [[B:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: [[C:%.*]] = alloca i32, align 4

```

```

; CHECK-NEXT: call void @outlined_ir_func_0(i32* [[A]], i32* [[B]], i32* [[C]], void ()* [[FUNC:%.*]])

```

```

; CHECK-NEXT: ret void

```

```

;

```

```

;

```

```

; CHECK-LABEL: define internal void @outlined_ir_func_0(

```

```

; CHECK-NEXT: newFuncRoot:

```

```

; CHECK-NEXT: br label [[ENTRY_TO_OUTLINE:%.*]]

```

```

; CHECK: entry_to_outline:

```

```

; CHECK-NEXT: store i32 2, i32* [[TMP0:%.*]], align 4

```

```

; CHECK-NEXT: store i32 3, i32* [[TMP1:%.*]], align 4
; CHECK-NEXT: store i32 4, i32*
[[TMP2:%.*]], align 4
; CHECK-NEXT: call void [[TMP3:%.*]]()
; CHECK-NEXT: [[AL:%.*]] = load i32, i32* [[TMP0]], align 4
; CHECK-NEXT: [[BL:%.*]] = load i32, i32* [[TMP1]], align 4
; CHECK-NEXT: [[CL:%.*]] = load i32, i32* [[TMP2]], align 4
; CHECK-NEXT: br label [[ENTRY_AFTER_OUTLINE_EXITSTUB:%.*]]
; CHECK: entry_after_outline.exitStub:
; CHECK-NEXT: ret void
;

```

1.150 safestring 02.00.00.3852

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```
/*
```

SafeString readUntil, non-blocking until delimiter found

Example of how to use the non-blocking readUntil() method to parse a CSV line

by Matthew Ford

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www.forward.com.au/pfod/ArduinoProgramming/SafeString/index.html

```
*/
```

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```
* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeString_readUntil/SafeString_readUntil.ino
```

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```
/*
```

SafeString from char[] constructor

Examples of how to create SafeStrings from an existing char[]

also see the SafeString_ConstructorAndDebugging, SafeStringFromCharPtr and SafeStringFromCharPtrWithSize examples

by Matthew Ford

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Modified from String Examples by Tom Igoe

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```
*/
```

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringFromArray/SafeStringFromArray.ino

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/*

SafeString constructors and assignments

Examples of how to create SafeStrings and how to assign SafeStrings from other data types

also see the SafeStringFromArray, SafeStringFromCharPtr and SafeStringFromCharPtrWithSize examples

by Matthew Ford

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*/

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeString_ConstructorAndDebugging/SafeString_ConstructorAndDebugging.ino

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/*

SafeString startsWith(), startsWithIgnoreCase(), endsWithCharFrom() and endsWith()

by Matthew Ford

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringStartsWithEndsWith/SafeStringStartsWithEndsWith.ino

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/*

SafeString charAt() and setCharAt()

Examples of how to get and set characters of a SafeString

by Matthew Ford

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*/

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringCharacters/SafeStringCharacters.ino

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/*

SafeString.h static memory SafeString library modified by

Matthew Ford

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modified from

WString.h - String library for Wiring & Arduino

...mostly rewritten by Paul Stoffregen...

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*/

Found in path(s):

* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/src/SafeString.h

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/*

Appending to SafeStrings using print()/println()

Examples of how to use the standard print()/println() to append and format different data types to SafeStrings

by Matthew Ford

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*/

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringPrint/SafeStringPrint.ino

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/*

SafeString removeFrom(), removeBefore(), remove(), removeLast(), keepLast()

Examples of SafeString remove

by Matthew Ford

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SafeString replace()

Examples of SafeString replace for chars and strings

by Matthew Ford

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/*

SafeString substring()

Examples of SafeString substring

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/*

Tokenizing SafeStrings and converting to numbers

Examples of how to use the stoken and toLong() and toDouble() to parse a CSV line

by Matthew Ford

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/*

Prefixing to SafeStrings using the -= operator and prefix()

Examples of how to prefix different data types to SafeStrings

by Matthew Ford

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*/

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringPrefixOperator/SafeStringPrefixOperator.ino

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/*

SafeString from char* constructor

Examples of how to create SafeStrings from an existing pointer to a char[]

also see the SafeString_ConstructorAndDebugging, SafeStringFromArray and

SafeStringFromCharPtrWithSize examples

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/*
SafeString to Number conversion
Examples of SafeString to Number conversions and comparing these to the results from String methods

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/*
SafeString Case changes
Examples of how to change the case of a SafeString

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/*
Comparing SafeStrings

Examples of how to compare SafeStrings using the comparison operators

by Matthew Ford

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringComparisonOperators/SafeStringComparisonOperators.ino

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/*

SSring indexOf() and lastIndexOf()

by Matthew Ford

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringIndexOf/SafeStringIndexOf.ino

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/*

SafeString from char* with specified size constructor

Examples of how to create SafeStrings from an existing pointer to a char[]

also see the SafeString_ConstructorAndDebugging, SafeStringFromArray and SafeStringFromCharPtr examples

by Matthew Ford

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringFromCharPtrWithSize/SafeStringFromCharPtrWithSize.ino

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/*

SafeSting length(), trim()

by Matthew Ford

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/*

SafeString.cpp V2.0.0 static memory SafeString library modified by
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extensively modified from

WString.cpp - SafeString library for Wiring & Arduino

...mostly rewritten by Paul Stoffregen...

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/src/SafeString.cpp

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/*

Appending to SafeStrings using the += operator and concat()
Examples of how to append different data types to SafeStrings

by Matthew Ford

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* /opt/cola/permits/1501632008_1681206855.9550555/0/safestring-2-0-0-tar-gz/SafeString-2.0.0/examples/SafeStringAssignmentAndConcatOperator/SafeStringAssignmentAndConcatOperator.ino

1.151 openssh 9.1p1

1.151.1 Available under license :

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* @version 3.0 (December 2000)

*

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*

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1.154 protobuf 21.12

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This file contains a list of people who have made large contributions to the public version of Protocol Buffers.

Original Protocol Buffers design and implementation:

Sanjay Ghemawat <sanjay@google.com>

Jeff Dean <jeff@google.com>

Daniel Dulitz <daniel@google.com>

Craig Silverstein

Paul Haahr <haahr@google.com>

Corey Anderson <corin@google.com>

(and many others)

Proto2 C++ and Java primary author:

Kenton Varda <kenton@google.com>

Proto2 Python primary authors:

Will Robinson <robinson@google.com>

Petar Petrov <petar@google.com>

Java Nano primary authors:

Brian Duff <bduff@google.com>

Tom Chao <chaot@google.com>

Max Cai <maxtroy@google.com>

Ulas Kirazci <ulas@google.com>

Large code contributions:

Jason Hsueh <jasonh@google.com>

Joseph Schorr <jschorr@google.com>

Wenbo Zhu <wenboz@google.com>

Large quantity of code reviews:

Scott Bruce <sbruce@google.com>

Frank Yellin

Neal Norwitz <nnorwitz@google.com>

Jeffrey Yasskin <jyasskin@google.com>

Ambrose

Feinstein <ambrose@google.com>

Documentation:

Lisa Carey <lcarey@google.com>

Maven packaging:

Gregory Kick <gak@google.com>

Patch contributors:

Kevin Ko <kevin.s.ko@gmail.com>

* Small patch to handle trailing slashes in --proto_path flag.

Johan Euphrosine <proppy@aminche.com>

* Small patch to fix Python CallMethod().
Ulrich Kunitz <kune@deine-taler.de>
* Small optimizations to Python serialization.
Leandro Lucarella <llucax@gmail.com>
* VI syntax highlighting tweaks.
* Fix compiler to not make output executable.
Dilip Joseph <dilip.antony.joseph@gmail.com>
* Heuristic detection of sub-messages when printing unknown fields in text format.
Brian Atkinson <nairb774@gmail.com>
* Added @Override annotation to generated Java code where appropriate.
Vincent Choiniere <Choiniere.Vincent@hydro.qc.ca>
* Tru64 support.
Monty Taylor <monty.taylor@gmail.com>
* Solaris 10 + Sun Studio fixes.
Alek Storm <alek.storm@gmail.com>

* Slicing support for repeated scalar fields for the Python API.
Oleg Smolsky <oleg.smolsky@gmail.com>
* MS Visual Studio error format option.
* Detect unordered_map in stl_hash.m4.
Brian Olson <brianolson@google.com>
* gzip/zlib I/O support.
Michael Poole <mdpoole@troilus.org>
* Fixed warnings about generated constructors not explicitly initializing all fields (only present with certain compiler settings).
* Added generation of field number constants.
Wink Saville <wink@google.com>
* Fixed initialization ordering problem in logging code.
Will Pierce <willp@nuclei.com>
* Small patch improving performance of in Python serialization.
Alexandre Vassalotti <alexandre@peadrop.com>
* Emacs mode for Protocol Buffers (editors/protobuf-mode.el).
Scott Stafford <scott.stafford@gmail.com>
* Added Swap(), SwapElements(), and RemoveLast() to Reflection interface.
Alexander Melnikov <alm@sibmail.ru>
* HPUX support.
Oliver Jowett <oliver.jowett@gmail.com>
* Detect whether zlib is new enough in configure script.
* Fixes for Solaris 10 32/64-bit confusion.
Evan Jones <evanj@mit.edu>
* Optimize Java serialization code when writing a small message to a stream.
* Optimize Java serialization of strings so that UTF-8 encoding happens only once per string per serialization call.
* Clean up some Java warnings.
* Fix bug with permanent callbacks that delete themselves when run.
Michael Kucharski <m.kucharski@gmail.com>
* Added CodedInputStream.getTotalBytesRead().

Kacper Kowalik <xarthisius.kk@gmail.com>

* Fixed m4/acx_pthread.m4 problem for some Linux distributions.

William Orr <will@worrbase.com>

* Fixed detection of sched_yield on Solaris.

* Added atomicops for Solaris

Andrew Paprocki <andrew@ishiboo.com>

* Fixed minor IBM xLC compiler build issues

* Added atomicops for AIX (POWER)

Nipunn Koorapati <nipunn1313@gmail.com>

* Provide a type alias field ValueType

on EnumTypeWrapper

* Match service argument names to abstract interface

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1.155 xz 5.2.5-8.el9_0

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1.156 open-ldap 2.6.2-3.el9

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1.160 glib-networking 2.68.3-3.el9

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#

builds/unix/pkg.m4

#

docs/FTL.TXT

docs/GPLv2.TXT

#

include/freetype/internal/fthash.h

#

src/base/fthash.c

src/base/md5.c

src/base/md5.h

#

src/bdf/bdf.c

src/bdf/bdf.h

src/bdf/bdfdrivr.c

src/bdf/bdfdrivr.h

src/bdf/bdferror.h

src/bdf/bdflib.c

src/bdf/module.mk

src/bdf/README

src/bdf/rules.mk

#

src/pcf/module.mk

src/pcf/pcf.c

src/pcf/pcf.h

src/pcf/pcfdrivr.c

```
src/pcf/pcfdrivr.h
src/pcf/pcferror.h
src/pcf/pcfread.c
src/pcf/pcfread.h
src/pcf/pcfutil.c
src/pcf/pcfutil.h
src/pcf/README
src/pcf/rules.mk
#
src/gzip/adler32.c
src/gzip/infblock.c
src/gzip/infblock.h
src/gzip/infcodes.c
src/gzip/infcodes.h
src/gzip/inffixed.h
src/gzip/inflate.c
src/gzip/inftrees.c
src/gzip/inftrees.h
src/gzip/infutil.c
src/gzip/infutil.h
src/gzip/zconf.h
src/gzip/zlib.h
src/gzip/zutil.c
src/gzip/zutil.h
#
src/tools/apinames.c
src/tools/ftandom/ftandom.c
#
#
EOF
```

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```
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This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

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```
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```

```
<signature of Ty Coon>, 1 April 1989
```

```
Ty Coon, President of Vice
```

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1.162 fontconfig 2.14.0-2.el9_1

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fontconfig/fc-case/CaseFolding.txt

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fontconfig/src/fcatomic.h

/*

* Mutex operations. Originally copied from HarfBuzz.

*

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<chris@chris-wilson.co.uk>

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*/

fontconfig/src/fcfoundry.h

/*

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*/

fontconfig/src/cmd5.h

/*

* This code implements the MD5 message-digest algorithm.
* The algorithm is due to Ron Rivest. This code was
* written by Colin Plumb in 1993, no copyright is claimed.
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*

* Equivalent code is available from RSA Data Security, Inc.
* This code has been tested against that, and is equivalent,
* except that you don't need to include two pages of legalese
* with every copy.

*

* To compute the message digest of a chunk of bytes, declare an
* MD5Context structure, pass it to MD5Init, call MD5Update
* as
* needed on buffers full of bytes, and then call MD5Final, which
* will fill a supplied 16-byte array with the digest.

*/

fontconfig/src/fcmutex.h

/*

* Atomic int and pointer operations. Originally copied from HarfBuzz.

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*/

fontconfig/src/ftglue.[ch]

/* ftglue.c: Glue code for compiling the OpenType code from
* FreeType 1 using only the public API of FreeType 2
*
* By David Turner, The FreeType Project (www.freetype.org)
*
* This code is explicitly put in the public domain
*
* =====
*
* the OpenType
* parser codes was originally written as an extension to
* FreeType 1.x. As such, its source code was embedded within the library,
* and used many internal FreeType functions to deal with memory and
* stream i/o.
*
* When it was 'salvaged' for Pango and Qt, the code was "ported" to FreeType 2,
* which basically means that some macro tricks were performed in order to
* directly access FT2 _internal_ functions.
*
* these functions were never part of FT2 public API, and _did_ change between
* various releases. This created chaos for many users: when they upgraded the
* FreeType library on their system, they couldn't run Gnome anymore since
* Pango refused to link.
*
* Very fortunately, it's possible to completely avoid this problem because
* the FT_StreamRec and FT_MemoryRec structure types, which describe how

* memory and stream implementations interface with the rest of the font
* library, have always been part of the public API, and never changed.
*
* What we do
this is re-implement, within the OpenType parser, the few
* functions that depend on them. This only adds one or two kilobytes of
* code, and ensures that the parser can work with `_any_` version
* of FreeType installed on your system. How sweet... !
*
* Note that we assume that Pango doesn't use any other internal functions
* from FreeType. It used to in old versions, but this should no longer
* be the case. (crossing my fingers).
*
* - David Turner
* - The FreeType Project (www.freetype.org)
*
* PS: This "glue" code is explicitly put in the public domain
*/

1.163 rsyslog 7.4.7-7.el7_0

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Version 3, 29 June 2007

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1.164 coreutils 8.22-11.el7

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<one line to give the library's name and a brief idea of what it

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name and a brief idea of what it does.>
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```
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```
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<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

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1.167 libsemanage-common 2.1.10-16.el7

1.167.1 Available under license :

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Version 2.1, February 1999

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derivative

work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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For

an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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1.168 python 2.7.5-16.el7

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A. HISTORY OF THE SOFTWARE

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Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

All Python releases are Open Source (see <http://www.opensource.org> for the Open Source Definition). Historically, most, but not all, Python

releases have also been GPL-compatible; the table below summarizes the various releases.

Release	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2	1.2	1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002		
PSF	yes			
2.1.3	2.1.2	2002	PSF	yes
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
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2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
2.7	2.6	2010	PSF	yes

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(2) According to Richard

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/* zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.3, July 18th, 2005

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Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files <http://www.ietf.org/rfc/rfc1950.txt> (zlib format), [rfc1951.txt](http://www.ietf.org/rfc/rfc1951.txt) (deflate format) and [rfc1952.txt](http://www.ietf.org/rfc/rfc1952.txt) (gzip format).

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```
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```

```
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1.173 libuser 0.60-5.e17

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1.174 xz 5.1.2-9alpha.el7

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*

*/

```
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* Rob Earhart
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*/
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1.178 findutils 4.5.11-3.el7

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Version 3, 29 June 2007

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1.180 chkconfig 1.3.61-4.el7

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1.182 shared-mime-info 1.1-7.el7

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The

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1.184 file 5.11-21.el7

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1.185 cronie 1.4.11-13.el7

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1.186 zlib 1.2.7-13.el7

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version 1.2.7, May 2nd, 2012

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*/

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1.187 bzip2 1.0.6-12.el7

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

1.188 iptables 1.4.21-13.el7

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```
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```
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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
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```

```
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1.190 acl 2.2.51-12.el7

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1.193 rpm 4.11.1-25.el7

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when it starts in an interactive mode:

```
Gnomovision version 69, Copyright (C) 19yy name of author  
Gnomovision comes with ABSOLUTELY NO WARRANTY;  
for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

The hypothetical commands `show w' and `show c' should show the appropriate
parts of the General Public License. Of course, the commands you use may
be called something other than `show w' and `show c'; they could even be
mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a "copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

```
Yoyodyne, Inc., hereby disclaims all copyright interest in the program  
'Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989  
Ty Coon, President of Vice
```

This General Public License does not permit incorporating your program into
proprietary programs. If your program is a subroutine library,
you may
consider it more useful to permit linking proprietary applications with the
library. If this is what you want to do, use the GNU Library General

Public License instead of this License.

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Version 2, June 1991

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675 Mass Ave, Cambridge, MA 02139, USA

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

Preamble

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This license, the Library General Public License, applies to some specially designated Free Software Foundation software, and to any other libraries whose authors decide to use it. You can use it for your libraries, too.

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To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library, or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link a program with the library, you must provide complete object files to the recipients so that they can relink them with the library, after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

Our method of protecting your rights has two steps: (1) copyright the library, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the library.

Also, for each distributor's protection, we want to make certain that everyone understands that there is no warranty for this free library. If the library is modified by someone else and passed on, we want its recipients to know that what they have is not the original version, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that companies distributing free software will individually obtain patent licenses, thus in effect transforming the program into proprietary software. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License, which was designed for utility programs. This license, the GNU Library General Public License, applies to certain designated libraries. This license is quite different from the ordinary one; be sure to read it in full, and don't assume that anything in it is the same as in the ordinary license.

The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated

in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

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A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for

writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You

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2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in

themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on

the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

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compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

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To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>

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That's
all there is to it!

1.194 pyxattr 0.5.1-5.el7

1.194.1 Available under license :

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For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

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Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the "Lesser" General Public License because it does Less to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

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1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

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2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

a) The modified work must itself be a software library.

b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably

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sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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1.195 perl-getopt-long 2.40-2.el7

1.195.1 Available under license :

From RPM File Metadata:GPLv2+ or Artistic

1.196 crontabs 1.11-6.20121102git.el7

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1.197 popt 1.13-16.el7

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1.198 python-iniparse 0.4-9.e17

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=====

Python was created in the early 1990s by Guido van Rossum at Stichting Mathematisch Centrum (CWI, see <http://www.cwi.nl>) in the Netherlands as a successor of a language called ABC. Guido remains Python's principal author, although it includes many contributions from others.

In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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Release from	Derived from	Year	Owner	GPL-compatible? (1)
0.9.0 thru 1.2		1991-1995	CWI	yes
1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2			
2002	PSF	yes		
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes

2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
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The

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1.200 libestr 0.1.9-2.el7

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1.201 sed 4.2.2-5.el7

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Version 3, 29 June 2007

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src/preproc/grn/gprint.h
src/preproc/grn/hdb.cpp
src/preproc/grn/hgraph.cpp
src/preproc/grn/hpoint.cpp
src/preproc/grn/main.cpp

. The `gxditview' output device. It is based on X11's `xditview' program and thus has the X license.

src/devices/xditview/DESC.in
src/devices/xditview/Dvi.c
src/devices/xditview/Dvi.h
src/devices/xditview/DviP.h
src/devices/xditview/FontMap
src/devices/xditview/GXditview.ad
src/devices/xditview/Menu.h
src/devices/xditview/ad2c
src/devices/xditview/device.c
src/devices/xditview/device.h
src/devices/xditview/draw.c
src/devices/xditview/font.c
src/devices/xditview/gray1.bm
src/devices/xditview/gray2.bm
src/devices/xditview/gray3.bm
src/devices/xditview/gray4.bm
src/devices/xditview/gray5.bm
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src/devices/xditview/gray7.bm
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src/devices/xditview/gxditview.man
src/devices/xditview/lex.c
src/devices/xditview/page.c
src/devices/xditview/parse.c
src/devices/xditview/xdit.bm
src/devices/xditview/xdit_mask.bm
src/devices/xditview/xditview.c

src/include/DviChar.h
src/include/XFontName.h

src/libs/libxutil/DviChar.c
src/libs/libxutil/XFontName.c

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- . The -mdoc macro set, using the BSD license.

tmac/doc.tmac
tmac/doc-old.tmac
tmac/doc-common
tmac/doc-ditroff
tmac/doc-nroff
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tmac/e.tmac
tmac/groff_me.man
doc/meintro.me
doc/meref.me

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- . The file `tmac/hyphen.us' is identical to the file `hyphen.tex', part of the TeX system written by Donald E. Knuth; the master file can be found at

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- . The file `tmac/hyphen.fr' contains the same patterns as the file `frhyph.tex' (for TeX), which can be found at

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The

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AUTHOR

Peter Schaffter (peter@schaffter.ca)
1-355 Lafontaine Ave
Ottawa (ON) K1L 6X6

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- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest

your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition,

mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the

Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library

creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified

executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

- b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

- a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.
- b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library,

and explaining

where to find the accompanying uncombined form of the same work.

8. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

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If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply, and the section as a whole is intended to apply in other circumstances.

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END OF TERMS AND CONDITIONS

Appendix: How to Apply These Terms to Your New Libraries

If you develop a new library, and you want it to be of the greatest possible use to the public, we recommend making it free software that everyone can redistribute and change. You can do so by permitting redistribution under these terms (or, alternatively, under the terms of the ordinary General Public License).

To apply these terms, attach the following notices to the library. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

<one line to give the library's name and a brief idea of what it does.>
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<name of author>

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Also add information on how to contact you by electronic and paper mail.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the library, if necessary. Here is a sample; alter the names:

Yoyodyne, Inc., hereby disclaims all copyright interest in the library `Frob' (a library for tweaking knobs) written by James Random Hacker.

<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

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[This is the first released version of the Lesser GPL. It also counts as the successor of the GNU Library Public License, version 2, hence the version number 2.1.]
@end display

@subheading Preamble

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This license, the Lesser General Public License, applies to some

specially designated software---typically

libraries---of the Free

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When we speak of free software, we are referring to freedom of use, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish); that you receive source code or can get it if you want it; that you can change the software and use pieces of it in new free programs; and that you are informed that you can do these things.

To protect your rights, we need to make restrictions that forbid distributors to deny you these rights or to ask you to surrender these rights. These restrictions translate to certain responsibilities for you if you distribute copies of the library or if you modify it.

For example, if you distribute copies of the library, whether gratis or for a fee, you must give the recipients all the rights that we gave you. You must make sure that they, too, receive or can get the source code. If you link other code with the library, you must provide complete object files to the recipients, so that they can relink them with the library after making changes to the library and recompiling it. And you must show them these terms so they know their rights.

We protect your rights with a two-step method: (1) we copyright the library, and (2) we offer you this license, which gives you legal permission to copy, distribute and/or modify the library.

To protect each distributor, we want to make it very clear that there is no warranty for the free library. Also, if the library is modified by someone else and passed on, the recipients should know that what they have is not the original version, so that the original author's reputation will not be affected by problems that might be introduced by others.

Finally, software patents pose a constant threat to the existence of any free program. We wish to make sure that a company cannot effectively restrict the users of a free program by obtaining a restrictive license from a patent holder. Therefore, we insist that any patent license obtained for a version of the library must be consistent with the full freedom of use specified in this license.

Most GNU software, including some libraries, is covered by the ordinary GNU General Public License. This license, the GNU Lesser General Public License, applies to certain designated libraries, and is quite different from the ordinary General Public License. We use this license for certain libraries in order to permit linking those libraries into non-free programs.

When a program is linked with a library, whether statically or using a shared library, the combination of the two is legally speaking a combined work, a derivative of the original library. The ordinary General Public License therefore permits such linking only if the entire combination fits its criteria of freedom. The Lesser General Public License permits more lax criteria for linking other code with the library.

We call this license the @dfn{Lesser} General Public License because it does @emph{Less} to protect the user's freedom than the ordinary General Public License. It also provides other free software developers Less of an advantage over competing non-free programs. These disadvantages are the reason we use the ordinary General Public License for many libraries. However, the Lesser license provides advantages in certain special circumstances.

For example, on rare occasions, there may be a special need to encourage the widest possible use of a certain library, so that it becomes a de-facto standard. To achieve this, non-free programs must be allowed to use the library. A more frequent case is that a free library does the same job as widely used non-free libraries. In this case, there is little to gain by limiting the free library to free software only, so we use the Lesser General Public License.

In other cases, permission to use a particular library in non-free programs enables a greater number of people to use a large body of free software. For example, permission to use the GNU C Library in non-free programs enables many more people to use the whole GNU operating system, as well as its variant, the GNU/Linux operating system.

Although the Lesser General Public License is Less protective of the users' freedom, it does ensure that the user of a program that is linked with the Library has the freedom and the wherewithal to run that program using a modified version of the Library.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a ``work based on the library" and a ``work that uses the library". The

former

contains code derived from the library, whereas the latter must be combined with the library in order to run.

@subheading TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION

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@item

This License Agreement applies to any software library or other program which contains a notice placed by the copyright holder or other authorized party saying it may be distributed under the terms of this Lesser General Public License (also called ``this License"). Each licensee is addressed as ``you".

A ``library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The ``Library", below, refers to any such software library or work which has been distributed under these terms. A ``work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term ``modification".)

``Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

@item

You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any

warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

@item

You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

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The modified work must itself be a software library.

@item

You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.

@item

You must

cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.

@item

If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

@end enumerate

These requirements apply to the modified work as a whole. If identifiable sections

of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those

sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

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You may opt to apply the terms of the ordinary GNU General Public License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

@item

You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not

compelled to copy the source along with the object code.

@item

A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

@item

As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the

copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

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Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable ``work that uses the Library'', as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

@item

Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

@item

Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

@item

Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

@end enumerate

For an executable, the required form of the ``work that uses the Library'' must include any data and utility programs needed for reproducing the executable from it. However, as a special exception,

the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

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Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

@end enumerate

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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a)

Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified

executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

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1.204 wget 1.14-10.el7_0.1

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Version 3, 29 June 2007

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those

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The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The

"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

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- b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
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To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the "copyright" line and a pointer to where the full notice is found.

```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) <year> <name of author>
```

```
This program is free software;  
you can redistribute it and/or modify  
it under the terms of the GNU General Public License as published by  
the Free Software Foundation; either version 2 of the License, or  
(at your option) any later version.
```

```
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Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this when it starts in an interactive mode:

Gnomovision version 69, Copyright (C) year name of author
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.

This is free software, and you are welcome to redistribute it under certain conditions; type `show c' for details.

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

This General Public License does not permit incorporating your program into proprietary programs. If your program is a subroutine library, you may consider it more useful to permit linking proprietary applications with the library. If this is what you want to do, use the GNU Library General Public License instead of this License.

1.206 curl 7.29.0-25.el7.centos

1.206.1 Available under license :

License Mixing with apps, libcurl and Third Party Libraries

=====

libcurl can be built to use a fair amount of various third party libraries,

libraries that are written and provided by other parties that are distributed using their own licenses. Even libcurl itself contains code that may cause problems to some. This document attempts to describe what licenses libcurl and the other libraries use and what possible dilemmas linking and mixing them all can lead to for end users.

I am not a lawyer and this is not legal advice!

One common dilemma is that GPL[1]-licensed code is not allowed to be linked with code licensed under the Original BSD license (with the announcement clause). You may still build your own copies that use them all, but distributing them as binaries would be to violate the GPL license - unless you accompany your license with an exception[2]. This particular problem was addressed when the Modified BSD license was created, which does not have the announcement clause that collides with GPL.

libcurl <http://curl.haxx.se/docs/copyright.html>

Uses an MIT (or Modified BSD)-style license that is as liberal as possible. Some of the source files that deal with KRB4 have Original BSD-style announce-clause licenses. You may not distribute binaries with krb4-enabled libcurl that also link with GPL-licensed code!

OpenSSL <http://www.openssl.org/source/license.html>

(May be used for SSL/TLS support) Uses an Original BSD-style license with an announcement clause that makes it "incompatible" with GPL. You are not allowed to ship binaries that link with OpenSSL that includes GPL code (unless that specific GPL code includes an exception for OpenSSL - a habit that is growing more and more common). If OpenSSL's licensing is a problem for you, consider using GnuTLS or yassl instead.

GnuTLS <http://www.gnutls.org/>

(May be used for SSL/TLS support) Uses the LGPL[3] license. If this is a problem for you, consider using OpenSSL instead. Also note that GnuTLS itself depends on and uses other libs (libgcrypt and libpgg-error) and they too are LGPL- or GPL-licensed.

yassl <http://www.yassl.com/>

(May be used for SSL/TLS support) Uses the GPL[1] license. If this is a problem for you, consider using OpenSSL or GnuTLS instead.

NSS <http://www.mozilla.org/projects/security/pki/nss/>

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axTLS <http://axtls.sourceforge.net/>

(May be used for SSL/TLS support) Uses a Modified BSD-style license.

c-ares <http://daniel.haxx.se/projects/c-ares/license.html>

(Used for asynchronous name resolves) Uses an MIT license that is very liberal and imposes no restrictions on any other library or part you may link with.

zlib http://www.gzip.org/zlib/zlib_license.html

(Used for compressed Transfer-Encoding support) Uses an MIT-style license that shouldn't collide with any other library.

krb4

While nothing in particular says that a Kerberos4 library must use any particular license, the one I've tried and used successfully so far (kth-krb4) is partly Original BSD-licensed with the announcement clause. Some of the code in libcurl that is written to deal with Kerberos4 is Modified BSD-licensed.

MIT Kerberos <http://web.mit.edu/kerberos/www/dist/>

(May be used for GSS support) MIT licensed, that shouldn't collide with any other parts.

Heimdal <http://www.pdc.kth.se/heimdal/>

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GNU GSS <http://www.gnu.org/software/gss/>

(May be used for GSS support) GNU GSS is GPL licensed. Note that you may not distribute binary curl packages that uses this if you build curl to also link and use any Original BSD licensed libraries!

fbopenssl

(Used for SPNEGO support) Unclear license. Based on its name, I assume that it uses the OpenSSL license and thus shares the same issues as described for OpenSSL above.

libidn <http://josefsson.org/libidn/>

(Used for IDNA support) Uses the GNU Lesser General Public License [3]. LGPL is a variation of GPL with slightly less aggressive "copyleft". This license requires more requirements to be met when distributing binaries, see the license for details. Also note that if you distribute a binary that includes this library, you must also include the

full LGPL license text. Please properly point out what parts of the distributed package that the license addresses.

OpenLDAP <http://www.openldap.org/software/release/license.html>

(Used for LDAP support) Uses a Modified BSD-style license. Since libcurl uses OpenLDAP as a shared library only, I have not heard of anyone that ships OpenLDAP linked with libcurl in an app.

libssh2 <http://www.libssh2.org/>

(Used for scp and sftp support) libssh2 uses a Modified BSD-style license.

[1] = GPL - GNU General Public License: <http://www.gnu.org/licenses/gpl.html>

[2] = <http://www.fsf.org/licenses/gpl-faq.html#GPLIncompatibleLibs> details on how to write such an exception to the GPL

[3] = LGPL - GNU Lesser General Public License:

<http://www.gnu.org/licenses/lgpl.html>

[4] = MPL - Mozilla Public License:

<http://www.mozilla.org/MPL/>

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1.207 gawk 4.0.2-4.el7

1.207.1 Available under license :

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Version 2, June 1991

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[This is the first released version of the library GPL. It is numbered 2 because it goes with version 2 of the ordinary GPL.]

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software

sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the

application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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<one line to give the library's name and a brief idea of what it does.>
Copyright (C) <year>
<name of author>

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Also add information on how to contact you by electronic and paper mail.

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Here is a sample; alter the names:

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<signature of Ty Coon>, 1 April 1990
Ty Coon, President of Vice

That's all there is to it!

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Version 3, 29 June 2007

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1.213 libnfnetlink 1.0.1-4.el7

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```
<one line to give the program's name and a brief idea of what it does.>  
Copyright (C) 19yy <name of author>
```

```
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it under the terms of the GNU General Public License as published by  
the Free Software Foundation; either version 2 of  
the License, or  
(at your option) any later version.
```

```
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```
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Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

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```
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```

<signature of Ty Coon>, 1 April 1989

Ty Coon, President of Vice

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1.214 fipscheck 1.4.1-5.el7

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1.215 json-c 0.11-4.el7_0

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1.216 grep 2.20-2.el7

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1.217 libcap 2.22-8.el7

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1.219 nss-util 3.16.2.3-2.el7

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+++++

Dean Elsner wrote the original gas for vax. [more details?]

Jay Fenlason maintained gas for a while, adding support for gdb-specific debug information and the 68k series machines, most of the preprocessing pass, and extensive changes in messages.c, input-file.c, write.c.

K. Richard Pixley maintained gas for a while, adding various enhancements and many bug fixes, including merging support for several processors, breaking gas up to handle multiple object file format backends (including heavy rewrite, testing, an integration of the coff and b.out backends), adding configuration including heavy testing and verification of cross assemblers and file splits and renaming, converted gas to strictly ansi C including full prototypes, added support for m680[34]0 & cpu32, considerable work on i960 including a coff port (including considerable amounts of reverse engineering), a sparc opcode file rewrite, decstation, rs6000, and hp300hpux host ports, updated "know" assertions and made them work, much other reorganization, cleanup, and lint.

Ken Raeburn wrote the high-level BFD interface code to replace most of the code in format-specific I/O modules.

The original Vax-VMS support was contributed by David L. Kashtan. Eric Youngdale and Pat Rankin have done much work with it since.

The Intel 80386 machine description was written by Eliot Dresselhaus.

Minh Tran-Le at IntelliCorp contributed some AIX 386 support.

The Motorola 88k machine description was contributed by Devon Bowen of Buffalo University and Torbjorn Granlund of the Swedish Institute of Computer Science.

Keith

Knowles at the Open Software Foundation wrote the original MIPS back end (tc-mips.c, tc-mips.h), and contributed Rose format support that hasn't been merged in yet. Ralph Campbell worked with the MIPS code to support a.out format.

Support for the Zilog Z8k and Hitachi H8/300, H8/500 and SH processors (tc-z8k, tc-h8300, tc-h8500, tc-sh), and IEEE 695 object file format (obj-ieee), was written by Steve Chamberlain of Cygnus Solutions. Steve also modified the COFF back end (obj-coffbfd) to use BFD for some low-level operations, for use with the Hitachi, 29k and Zilog targets.

John Gilmore built the AMD 29000 support, added .include support, and simplified the configuration of which versions accept which pseudo-ops. He updated the 68k machine description so that Motorola's opcodes always produced fixed-size instructions (e.g. jsr), while synthetic instructions remained shrinkable (jbsr). John fixed many bugs, including true tested cross-compilation support, and one bug in relaxation that took a week and required the proverbial one-bit fix.

Ian Lance Taylor of Cygnus Solutions merged the Motorola and MIT syntaxes for the 68k, completed support for some COFF targets (68k, i386 SVR3, and SCO Unix), wrote the ECOFF support based on Michael Meissner's mips-tfile program, wrote the PowerPC and RS/6000 support, and made a few other minor patches. He handled the binutils releases for versions 2.7 through 2.9.

David Edelsohn contributed fixes for the PowerPC and AIX support.

Steve Chamberlain made gas able to generate listings.

Support for the HP9000/300 was contributed by Glenn Engel of HP.

Support for ELF format files has been worked on by Mark Eichin of Cygnus Solutions (original, incomplete implementation), Pete Hoogenboom at the University of Utah (HPPA mainly), Michael Meissner of the Open Software Foundation (i386 mainly), and Ken Raeburn of Cygnus Solutions (sparc, initial 64-bit support).

Several engineers at Cygnus Solutions have also provided many small bug fixes and configuration enhancements.

The initial Alpha support was contributed by Carnegie-Mellon University. Additional work was done by Ken Raeburn of Cygnus Solutions. Richard Henderson then rewrote much of the Alpha support.

Ian Dall updated the support code for the National Semiconductor 32000 series, and added support for Mach 3 and NetBSD running on the PC532.

Klaus Kaempf ported the assembler and the binutils to openVMS/Alpha.

Steve Haworth contributed the support for the Texas Instruction c30 (tms320c30).

H.J. Lu has contributed many patches and much testing.

Alan Modra reworked much of the i386 backend, improving the error

checking, updating the code, and improving the 16 bit support, using patches from the work of Martynas Kunigelis and H.J. Lu.

Many others have contributed large or small bugfixes and enhancements. If you've contributed significant work and are not mentioned on this list, and want to be, let us know. Some of the history has been lost; we aren't intentionally leaving anyone out.

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d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves,

then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be

distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License.

Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative

work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6.

Any

executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials

specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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Version 2, June 1991

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software

sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated

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d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the

application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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@enumerate 0
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`Frob' (a library for tweaking knobs) written by James Random Hacker.
```

```
@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
@end smallexample
```

That's all there is to it!

1.221 sysv-init 2.88-14.dsf.el7

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Version 2, June 1991

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- * A rewrite
- of the original Debian's start-stop-daemon Perl script
- * in C (faster - it is executed many times during system startup).
- *

- * Written by Marek Michalkiewicz <marekm@i17linuxb.ists.pwr.wroc.pl>,
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1.222 systemd 208-20.el7_1.2

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a)

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5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit

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- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception,

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<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

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1.228 libpkit 0.20.7-3.el7

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1.229 e2fsprogs 1.42.9-7.el7

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This is the Debian GNU/Linux prepackaged version of the static EXT2 file system consistency checker (e2fsck.static). The EXT2 utilities were written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

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Index: tdbsa/tdb.c

--- tdbsa.orig/tdb.c

+++ tdbsa/tdb.c

@@ -4,11 +4,11 @@ Rev: 23371

Last Changed Date: 2007-06-06 20:14:06 -0400 (Wed, 06 Jun 2007)

*/

/*

- Unix SMB/CIFS implementation.
- + trivial database library - standalone version

- trivial database library - private includes
-
- Copyright (C) Andrew Tridgell 2005
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Gadi Oxman, August 1995

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```

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```
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```

```
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#

This is a Makefile stub which handles the creation of BSD shared
libraries.

#

In order to use this stub, the following makefile variables must be defined.

#

BSDLIB_VERSION = 1.0

BSDLIB_IMAGE = libce

BSDLIB_MYDIR = et

BSDLIB_INSTALL_DIR = \$(SHLIBDIR)

#

all:: image

real-subdirs:: Makefile

@echo " MKDIR pic"

@mkdir -p pic

BSD_LIB = \$(BSDLIB_IMAGE).so.\$(BSDLIB_VERSION)

BSDLIB_PIC_FLAG = -fpic

image: \$(BSD_LIB)

\$(BSD_LIB): \$(OBJS)

(cd pic; ld -Bshareable -o \$(BSD_LIB) \$(LDFLAGS) \$(OBJS))

\$(MV) pic/\$(BSD_LIB) .

\$(RM) -f ../\$(BSD_LIB)

(cd ..; \$(LN) \$(LINK_BUILD_FLAGS) \

`echo \$(my_dir) | sed -e 's;lib/;;'/'\$(BSD_LIB) \$(BSD_LIB))

install-shlibs install:: \$(BSD_LIB)

@echo " INSTALL_PROGRAM \$(BSDLIB_INSTALL_DIR)/\$(BSD_LIB)"

@\$(INSTALL_PROGRAM) \$(BSD_LIB) \

\$(DESTDIR)\$\$(BSDLIB_INSTALL_DIR)/\$(BSD_LIB)

@-\$(LDCONFIG)

install-strip: install

install-shlibs-strip: install-shlibs

```
uninstall-shlibs uninstall::
$(RM) -f $(DESTDIR)$(BSDLIB_INSTALL_DIR)/$(BSD_LIB)
```

```
clean::
$(RM)
-rf pic
$(RM) -f $(BSD_LIB)
$(RM) -f ../$(BSD_LIB)
```

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Theodore Ts'o
23-June-2007

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```

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That's all there is to it!

This is the Debian GNU/Linux prepackaged version of the Common Error Description library. It is currently distributed together with the EXT2 file system utilities, which are otherwise packaged as "e2fsprogs".

This package was put together by Yann Dirson <dirson@debian.org>, from sources obtained from a mirror of:
tsx-11.mit.edu/pub/linux/packages/ext2fs/

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This package was put together by Yann Dirson <dirson@debian.org>, from sources obtained from a mirror of:
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This is the Debian GNU/Linux prepackaged version of the EXT2 file system utilities (e2fsck, mke2fs, etc.). The EXT2 utilities were written by Theodore Ts'o <tytso@mit.edu> and Remy Card <card@masi.ibp.fr>.

Sources were obtained from <http://sourceforge.net/projects/e2fsprogs>

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This package was added to the e2fsprogs debian source package by Theodore Ts'o <tytso@mit.edu> on Fri Dec 14 22:24:35 EST 2007

It is part of the main e2fsprogs distribution, which can be found at:

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1.230 ustr 1.0.4-16.e17

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1.232 util-linux 2.23.2-21.el7

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The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

You should also get your employer (if you work as a programmer) or your school, if any, to sign a "copyright disclaimer" for the program, if necessary. Here is a sample; alter the names:

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'Gnomovision' (which makes passes at compilers) written
by James Hacker.

<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice

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```
#!/bin/bash  
#
```

```

# This file is part of util-linux.
#
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#
#

TS_TOPDIR="$(dirname $0)/../.."
TS_DESC="nested BSD"

. $TS_TOPDIR/functions.sh
ts_init "$*"

FDISK_CMD_CREATE_DOSLABEL="o\n"          # create dos label
FDISK_CMD_SETID="x\ni\n0x1\nr\n"        # set non-random ID
FDISK_CMD_WRITE_CLOSE="w\nq\n"         # write to image
FDISK_CMD_CREATE_PRIMARY1="n\np\n1\nn+1M\n" # 1st primary partition of size 1MiB
FDISK_CMD_CREATE_PRIMARY2="n\np\n2\nn\n"
    # 2nd primary partition for whole of the disk
FDISK_CMD_CHANGE_PART2TYPE="t\n2\na5\n"  # change partition type FreeBSD

FDISK_CMD_BSD_CREATE="b\ny\n"          # create nested BSD PT
FDISK_CMD_BSD_LIST="b\np\nr\nq\n"       # list nested BSD PT and quit
FDISK_CMD_BSD_CREATE_PART="b\nn\na\nn+1M\n" # add BSD partition 'a', size 1MiB
FDISK_CMD_BSD_PARTTYPE="b\nt\na\n7\n"   # set partition 'a' to type 4.2BSD
FDISK_CMD_BSD_LIST_TYPES="b\nl\nq\n"    # list supported PT types and quit

#set -x

function print_layout {
echo -ne "\n---layout-----" >> $TS_OUTPUT
$TS_CMD_FDISK -l ${TEST_IMAGE_NAME} | \
sed 's/^\.*\.img/___ts_dev___/g;
    s/^[[:blank:]]*Device Boot/ Device Boot/g' >> $TS_OUTPUT 2>&1
echo -ne "-----\n\n" >> $TS_OUTPUT
}

function print_bsd_layout {
echo -ne "\n---layout-----" >> $TS_OUTPUT

```

```

echo -e "${FDISK_CMD_BSD_LIST}" | $TS_CMD_FDISK ${TEST_IMAGE_NAME} |\
sed 's/Reading
.*//g;
    s/Welcome to fdisk .*/' >> $TS_OUTPUT 2>&1
echo -ne "-----\n\n" >> $TS_OUTPUT
}

ts_log "Initialize empty image"
TEST_IMAGE_NAME=$(ts_image_init 10)
ts_image_md5sum >> $TS_OUTPUT 2>&1

ts_log "Create new DOS partition table"
echo -e "${FDISK_CMD_CREATE_DOSLABEL}${FDISK_CMD_SETID}${FDISK_CMD_WRITE_CLOSE}" \
| $TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null
ts_image_md5sum >> $TS_OUTPUT 2>&1

print_layout

ts_log "Create 1st primary partition"
echo -e "${FDISK_CMD_CREATE_PRIMARY1}${FDISK_CMD_WRITE_CLOSE}" |\
$TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null
ts_image_md5sum >> $TS_OUTPUT 2>&1

print_layout

ts_log "Create 2st primary partition"
echo -e "${FDISK_CMD_CREATE_PRIMARY2}${FDISK_CMD_WRITE_CLOSE}" |\
$TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null
ts_image_md5sum >> $TS_OUTPUT 2>&1

ts_log "Set 2nd partition type"
echo -e "${FDISK_CMD_CHANGE_PART2TYPE}${FDISK_CMD_WRITE_CLOSE}" |\
$TS_CMD_FDISK ${TEST_IMAGE_NAME}
&> /dev/null
ts_image_md5sum >> $TS_OUTPUT 2>&1

print_layout

ts_log "Create default BSD"
echo -e "${FDISK_CMD_BSD_CREATE}${FDISK_CMD_WRITE_CLOSE}" |\
$TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null
ts_image_md5sum >> $TS_OUTPUT 2>&1

print_bsd_layout

echo -e "${FDISK_CMD_BSD_CREATE_PART}${FDISK_CMD_WRITE_CLOSE}" |\
$TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null

```

```
echo -e "${FDISK_CMD_BSD_PARTTYPE}${FDISK_CMD_WRITE_CLOSE}" | \  
$TS_CMD_FDISK ${TEST_IMAGE_NAME} &> /dev/null  
ts_image_md5sum >> $TS_OUTPUT 2>&1  
  
print_bsd_layout  
  
echo -e "${FDISK_CMD_BSD_LIST_TYPES}" | \  
$TS_CMD_FDISK ${TEST_IMAGE_NAME} | \  
sed 's/Reading .*/g; s/Welcome to fdisk .*/' >> $TS_OUTPUT 2>&1  
  
ts_finalize
```

1.233 vim 7.4.160-1.el7

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```
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```

Arnaud LE HORS BULL Research FRANCE -- Koala Project
 (XPM - X PixMap format version 2 & 3)
Internet: lehors@sophia.inria.fr
Surface Mail: Arnaud LE HORS, INRIA - Sophia Antipolis,
 2004, route des Lucioles, 06565 Valbonne Cedex -- FRANCE
Voice phone: (33) 93.65.77.71, Fax: (33) 93 65 77 66, Telex: 97 00 50 F

VIM REFERENCE MANUAL by Bram Moolenaar

uganda *Uganda* *copying* *copyright* *license*

SUMMARY

iccf *ICCF*

Vim is Charityware. You can use and copy it as much as you like, but you are encouraged to make a donation for needy children in Uganda. Please see |kcc| below or visit the ICCF web site, available at these URLs:

<http://iccf-holland.org/>

<http://www.vim.org/iccf/>

<http://www.iccf.nl/>

You can also sponsor the development of Vim. Vim sponsors can vote for features. See |sponsor|. The money goes to Uganda anyway.

The Open Publication License applies to the Vim documentation, see |manual-copyright|.

=== begin of license ===

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4) The contact information as required under 2)a) and 2)d) must not be removed or changed, except that the person himself can make corrections.

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If the number of changes is small (e.g., a modified Makefile) e-mailing a context diff will do. The e-mail address to be used is <maintainer@vim.org>

IV) It is not allowed to remove this license from the distribution of the Vim sources, parts of it or from a modified version. You may use this license for previous Vim releases instead of the license that they came with, at your option.

=== end of license ===

Note:

- If you are happy with Vim, please express that by reading the rest of this file and consider helping needy children in Uganda.
- If you want to support further Vim development consider becoming a [sponsor]. The money goes to Uganda anyway.
- According to Richard Stallman the Vim license is GNU GPL compatible. A few minor changes have been made since he checked it, but that should not make a difference.
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- Once a change is included that goes under the GNU GPL, this forces all further changes to also be made under the GNU GPL or a compatible license.
- If you distribute a modified version of Vim, you can include your name and contact information with the "--with-modified-by" configure argument or the MODIFIED_BY define.

=====
Kibaale Children's Centre *kcc* *Kibaale* *charity*

Kibaale Children's Centre (KCC) is located in Kibaale, a small town in the south of Uganda, near Tanzania, in East Africa. The area is known as Rakai District. The population is mostly farmers. Although people are poor, there is enough food. But this district is suffering from AIDS more than any other part of the world. Some say that it started there. Estimations are that 10 to 30% of the Ugandans are infected with HIV. Because parents

die, there are many orphans. In this district about 60,000 children have lost one or both parents, out of a population of 350,000. And this is still continuing.

The children need a lot of help. The KCC is working hard to provide the needy with food, medical care and education. Food and medical care to keep them healthy now, and education so that they can take care of themselves in the future. KCC works on a Christian base, but help is given to children of any religion.

The key to solving the problems in this area is education. This has been neglected in the past years with president Idi Amin and the following civil wars. Now that the government is stable again, the children and parents have to learn how to take care of themselves and how to avoid infections. There is also help for people who are ill and hungry, but the primary goal is to prevent people from getting ill and to teach them how to grow healthy food.

Most of the orphans are living in an extended family. An uncle or older sister is taking care of them. Because these families are big and the income (if any) is low, a child is lucky if it gets healthy food. Clothes, medical care and schooling is beyond its reach. To help these needy children, a sponsorship program was put into place. A child can be financially adopted. For a few dollars a month KCC sees to it that the child gets indispensable items, is healthy, goes to school and KCC takes care of anything else that needs to be done for the child and the family that supports it.

Besides helping the child directly, the environment where the child grows up needs to be improved. KCC helps schools to improve their teaching methods. There is a demonstration school at the centre and teacher trainings are given. Health workers are being trained, hygiene education is carried out and households are stimulated to build a proper latrine. I helped setting up a production site for cement slabs. These are used to build a good latrine. They are sold below cost price.

There is a small clinic at the project, which provides children and their family with medical help. When needed, transport to a hospital is offered. Immunization programs are carried out and help is provided when an epidemic is breaking out (measles and cholera have been a problem).

donate

Summer 1994 to summer 1995 I spent a whole year at the centre, working as a volunteer. I have helped to expand the centre and worked in the area of water and sanitation. I learned that the help that the KCC provides really helps. When I came back to Holland, I wanted to continue supporting KCC. To do this I'm raising funds and organizing the sponsorship program. Please consider one of these possibilities:

1. Sponsor a child in primary school: 17 euro a month (or more).
2. Sponsor a child in secondary school: 25 euro a month (or more).
3. Sponsor the clinic: Any amount a month or quarter
4. A one-time donation

Compared with other organizations that do child sponsorship the amounts are

very low. This is because the money goes directly to the centre. Less than 5% is used for administration. This is possible because this is a small organization that works with volunteers. If you would like to sponsor a child, you should have the intention to do this for at least one year.

How do you know that the money will be spent right? First of all you have my personal guarantee as the author of Vim. I trust the people that are working at the centre, I know them personally. Further more, the centre has been co-sponsored and inspected by World Vision, Save the Children Fund and is now under the supervision of Pacific Academy Outreach Society. The centre is visited about once a year to check the progress (at our own cost). I have visited the centre myself many times, starting in 1993. The visit reports are on the ICCF web site.

If you have any further questions, send me e-mail: <Bram@vim.org>.

The address of the centre is:

Kibaale Children's Centre
p.o.
box 1658
Masaka, Uganda, East Africa

Sending money: *iccf-donations*

Check the ICCF web site for the latest information! See [|iccf|](#) for the URL.

USA: The methods mentioned below can be used.

Sending a check to the Nehemiah Group Outreach Society (NGOS) is no longer possible, unfortunately. We are looking for another way to get you an IRS tax receipt.

For sponsoring a child contact KCF in Canada (see below). US checks can be sent to them to lower banking costs.

Canada: Contact Kibaale Children's Fund (KCF) in Surrey, Canada. They take care of the Canadian sponsors for the children in Kibaale. KCF forwards 100% of the money to the project in Uganda. You can send them a one time donation directly. Please send me a note so that I know what has been donated because of Vim. Ask KCF for information about sponsorship.
Kibaale Children's Fund c/o Pacific Academy

10238-168 Street
Surrey, B.C. V4N 1Z4
Canada
Phone: 604-581-5353

If
you make a donation to Kibaale Children's Fund (KCF) you
will receive a tax receipt which can be submitted with your
tax return.

Holland: Transfer to the account of "Stichting ICCF Holland" in Lisse.
This will allow for tax deduction if you live in Holland.
Postbank, nr. 4548774
IBAN: NL95 INGB 0004 5487 74

Germany: It is possible to make donations that allow for a tax return.
Check the ICCF web site for the latest information:
<http://iccf-holland.org/germany.html>

World: Use a postal money order. That should be possible from any
country, mostly from the post office. Use this name (which is
in my passport): "Abraham Moolenaar". Use Euro for the
currency if possible.

Europe: Use a bank transfer if possible. Your bank should have a form
that you can use for this. See "Others" below for the swift
code and IBAN number.
Any other method should work. Ask for information about
sponsorship.

Credit Card: You can use PayPal to send money with a Credit
card. This is
the most widely used Internet based payment system. It's
really simple to use. Use this link to find more info:
https://www.paypal.com/en_US/mrb/pal=XAC62PML3GF8Q
The e-mail address for sending the money to is:
Bram@iccf-holland.org
For amounts above 400 Euro (\$500) sending a check is
preferred.

Others: Transfer to one of these accounts if possible:
Postbank, account 4548774
Swift code: INGB NL 2A
IBAN: NL95 INGB 0004 5487 74
under the name "stichting ICCF Holland", Lisse
If that doesn't work:
Rabobank Lisse, account 3765.05.117
Swift code: RABO NL 2U
under the name "Bram Moolenaar", Lisse

Otherwise, send a check in euro or US dollars to the address below. Minimal amount: \$70 (my bank does not accept smaller amounts for foreign check, sorry)

Address to send checks to:

Bram Moolenaar
Finsterruetihof 1
8134 Adliswil
Switzerland

This address is expected to be valid for a long time.

vim:tw=78:ts=8:ft=help:norl:

1.234 yum-utils 1.1.31-29.el7

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1.236 libutempter 1.1.6-4.el7

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However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
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- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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Sections above.

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1.237 pkg-config 0.27.1-4.el7

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Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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1.240 shadow-utils 4.1.5.1-18.el7

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1.243 kmod 14-10.el7

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Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

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Matt Ackeret
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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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1.248 qrencode 3.4.1-3.e17

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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1.249 elfutils 0.160-1.el7

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1.252 make 3.82-21.el7

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Because

of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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This option is useful when you wish to copy part of the code of the

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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1.257 bash 4.2.46-12.el7

1.257.1 Available under license :

From friedman@cli.com Thu May 25 12:19:06 1995
Flags: 10
Return-Path: friedman@cli.com
Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTTP
(8.6.10+cwru/CWRU-2.1-ins)
id MAA08685; Thu, 25 May 1995 12:19:05 -0400 (from friedman@cli.com for <chet@odin.INS.CWRU.Edu>)
Received: from cli.com (cli.com [192.31.85.1]) by po.cwru.edu with SMTP (8.6.10+cwru/CWRU-2.3)
id MAA11299; Thu, 25 May 1995 12:19:00 -0400 (from friedman@cli.com for <chet@po.cwru.edu>)
Received: from tepui.cli.com by cli.com (4.1/SMI-4.1)
id AA27213; Thu, 25 May 95 11:18:25 CDT
Received: by tepui.cli.com (4.1) id AA16031; Thu, 25 May 95 11:18:23 CDT
Message-Id: <9505251618.AA16031@tepui.cli.com>
From: friedman@gnu.ai.mit.edu (Noah Friedman)
To: chet@po.cwru.edu
Subject: Bash scripts
Reply-To: friedman@gnu.ai.mit.edu
In-Reply-To: <chet@odin.ins.cwru.edu> Thu, 25 May 1995 11:19:59 -0400
References: <9505251519.AA06424.SM@odin.INS.CWRU.Edu>

Date: Thu, 25 May 95 11:18:21 CST

>Hi. I snagged
some of your bash functions from your home directory on
>the FSF machines (naughty, I know), and I was wondering if you'd let
>me distribute them with bash-2.0. Thanks.

Sure. I think there's a later copy in
~ftp/friedman/shell-inits/init-4.89.tar.gz. There are also some elisp and
es frobs in that file.

It should serve as a pretty good example of how to get carried away. :-)

From spcedt@armory.com Wed May 10 10:21:11 1995

Flags: 10

Return-Path: spcedt@armory.com

Received: from po.cwru.edu (root@po.CWRU.Edu [129.22.4.2]) by odin.INS.CWRU.Edu with ESMTP
(8.6.10+cwru/CWRU-2.1-ins)

id KAA22876; Wed, 10 May 1995 10:21:10 -0400 (from spcedt@armory.com for <chet@odin.INS.CWRU.Edu>)

Received: from deepthought.armory.com (mmdf@deepthought.armory.com [192.122.209.42]) by po.cwru.edu with
SMTP (8.6.10+cwru/CWRU-2.3)

id BAA16354; Wed, 10 May 1995 01:33:22 -0400 (from spcedt@armory.com for <chet@po.cwru.edu>)

From: John DuBois <spcedt@armory.com>

Date: Tue, 9 May 1995 22:33:12 -0700

In-Reply-To: Chet Ramey <chet@odin.ins.cwru.edu>

"ksh scripts" (May 9, 1:36pm)

X-Www: <http://www.armory.com/~spcedt/>

X-Mailer: Mail User's Shell (7.2.5 10/14/92)

To: chet@po.cwru.edu

Subject: Re: ksh scripts

Message-ID: <9505092233.aa13001@deepthought.armory.com>

Sure. The canonical versions are available on ftp.armory.com; you might
want to pick up the latest versions
before modifying them.

John

On May 9, 1:36pm, Chet Ramey wrote:

} Subject: ksh scripts
} From odin.ins.cwru.edu!chet Tue May 9 10:39:51 1995
} Received: from odin.INS.CWRU.Edu by deepthought.armory.com id aa22336;
} 9 May 95 10:39 PDT
} Received: (chet@localhost) by odin.INS.CWRU.Edu (8.6.10+cwru/CWRU-2.1-ins)
} id NAA20487; Tue, 9 May 1995 13:39:24 -0400 (from chet)
} Date: Tue, 9 May 1995 13:36:54 -0400
} From: Chet Ramey <chet@odin.ins.cwru.edu>
} To: john@armory.com
} Subject: ksh scripts

```
} Cc: chet@odin.ins.cwru.edu
} Reply-To: chet@po.cwru.edu
} Message-ID: <9505091736.AA20411.SM@odin.INS.CWRU.Edu>
} Read-Receipt-To: chet@po.CWRU.Edu
} MIME-Version: 1.0
} Content-Type: text/plain; charset=us-ascii
} Status: OR
}
} Hi. I'm the maintainer of bash (the GNU `Bourne Again shell') for
} the FSF.
}
} I picked up a tar file of ksh scripts you wrote from an anon FTP site
} a while back. I'd like your permission to include modified versions
} of some of them in
} the next major bash distribution (with proper credit
} given, of course). Is it OK if I do that?
}
} Chet Ramey
}
} --
} ``The lyf so short, the craft so long to lerne." - Chaucer
}
} Chet Ramey, Case Western Reserve University Internet: chet@po.CWRU.Edu
}-- End of excerpt from Chet Ramey
```

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From mikel@ora.com Tue Aug 1 12:13:20 1995

Flags: 10

Return-Path: mikel@ora.com

Received: from ruby.ora.com (ruby.ora.com [198.112.208.25]) by odin.INS.CWRU.Edu with ESMTP (8.6.12+cwru/CWRU-2.1-ins)

id MAA01565; Tue, 1 Aug 1995 12:13:18 -0400 (from mikel@ora.com for <chet@odin.INS.CWRU.Edu>)

Received: (from fax@localhost) by ruby.ora.com (8.6.12/8.6.11) with UUCP id MAA23251; Tue, 1 Aug 1995 12:07:51 -0400

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id AA00672; Tue, 1 Aug 95 08:57:32 EDT

Date: Tue, 1 Aug 95 08:57:32 EDT

From: mikel@ora.com (Michael Loukides)

Message-Id: <9508011257.AA00672@los.ora.com>

Subject: Re: Ksh debugger from Rosenblatt's book [for bash]

To: Chet Ramey <chet@odin.INS.CWRU.Edu>

Cc: cmarie@ora.com, cam@iinet.com.au, brosenblatt@tm.com

In-Reply-To: Chet Ramey <chet@odin.INS.CWRU.Edu>, Mon, 31 Jul 1995 16:22:48 -0400

I've modified a (modified) version of Bill Rosenblatt's ksh debugger to work with bash-2.0. Does ORA have any problem with me distributing

it with bash-2.0?

That's great!

Go ahead and circulate it; in fact, we should probably grab it and stick it in our ftp archive, and put a reference to it in the book.

(Too late to actually discuss the thing, at least for this edition).

1.258 libassuan 2.1.0-3.el7

1.258.1 Available under license :

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Version 2.1, February 1999

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

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Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

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Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or

link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

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d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

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Version 3, 29 June 2007

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To

"modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

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1. Source Code.

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A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The "System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component

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b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the

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```
<one line to give the program's name and a brief idea of what it does.>  
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```

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```

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```

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```
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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
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1.263 perl 5.16.3-291.el7

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```

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```
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```

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```
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```

<signature of Ty Coon>, 1 April 1989

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Julian Seward, jseward@bzip.org
bzip2/libbzip2 version 1.0.6 of 6 September 2010

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<one line to give the program's name and a brief idea of what it does.>  
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```

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```
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```

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```
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program `Gnomovision' (a program to direct compilers to make passes
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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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1.264 perl-pod-perldoc 3.20-4.el7

1.265 perl-file-temp 0.23.01-3.el7

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```

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```
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Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
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```

The hypothetical commands `show w' and `show c' should show the appropriate parts of the General Public License. Of course, the commands you use may be called something other than `show w' and `show c'; they could even be mouse-clicks or menu items--whatever suits your program.

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```
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program `Gnomovision' (a program to direct compilers to make passes
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```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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1.267 perl-socket 2.010-4.el7

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```
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```

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1.268 perl-pod-usage 1.63-3.el7

1.269 perl-http-tiny 0.033-3.el7

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```
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1.270 nspr 4.21.0-1.el7

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1.272 systemd 239-18.el8

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1.273 passwd 0.79-4.el7

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Steve P. Miller, Sergio Monesi, Keith Owens, George Petrov, Greg Roelofs,
Kai Uwe Rommel, Steve Salisbury, Dave Smith, Steven M. Schweda,

Christian Spieler, Cosmin Truta, Antoine Verheijen, Paul von Behren,
Rich Wales, Mike White.

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FIRST NOTE:

This file contains some details about the copyright history of contributions to the UnZip project.

Additionally, it summarises some exceptions to the general BSD-like copyright found in LICENSE that covers our generic code and most of the system specific ports.

Please read LICENSE first to find out what is allowed to do with Info-ZIP's UnZip code.

There are currently two explicit copyrights on portions of UnZip code (at least, of which Info-ZIP is aware):

Jim Luther's Mac OS File Manager interface code; and Christopher Evans' MacBinaryIII coding code (for the MacOS port).. These copyrights are discussed in more detail below.

All remaining code is now (starting with UnZip version 5.41) covered by the new Info-ZIP license. For details, please read the accompanying file LICENSE. The terms and conditions in this license supersede the copyright conditions of the contributions by Igor Mandrichenko (vms/vms.c), Greg Roelofs (zipinfo.c, new version of unshrink.c), Mike White (Windows DLL code in "windll/*"), Steve P. Miller (Pocket UnZip GUI "wince/*"), and Mark Adler (inflate/explode decompression core routines, previously put into the public domain). All these Info-ZIP contributors (or "primary" authors) have permitted us to replace their copyright notes by the Info-ZIP License.

Frequently Asked Questions regarding (re)distribution of Zip and UnZip are near the end of this file.

There are no known patents on any of the code in UnZip. Unisys claims a patent on LZW encoding and on LZW decoding in an apparatus that performs LZW encoding, but the patent appears to exempt a stand-alone decoder (as in UnZip's unshrink.c). Unisys has publicly claimed otherwise, but the issue has never been tested in court. Since this point is unclear, unshrinking is not enabled by default. It is the responsibility of the user to make his or her peace with Unisys and its licensing requirements. (unshrink.c may be removed from future releases altogether.)

The original unzip source code has been extensively modified and almost entirely rewritten (changes include random zipfile access rather than sequential; replacement of unimplode() with explode(); replacement of old unshrink() with new (unrelated) unshrink(); replacement of output routines; addition of inflate(), wildcards, filename-mapping, text translation, ...; etc.). As far as we can tell, only the core code of the unreduce method remained substantially similar to Mr. Smith's original source. As of UnZip

5.42, the complete

core code is now covered by the Info-ZIP Licence. Therefore, support for the reduce method has been removed.

The drop of the reduce method should only affect some test archives, reducing was never used in any publically distributed Zip program.

For pathologic cases where support for reduced archive entries is needed, the unreduce code copyrighted by Samuel H. Smith is available as a separate distribution (the restricted copyright of this code is cited below in the "historical" section).

The following copyright applies to the Mac OS File Manager interface code (macos/source/macstuff.[ch]), distributed with UnZip 5.4 and later:

```
* MoreFiles
*
* A collection of File Manager and related routines
*
* by Jim Luther (Apple Macintosh Developer Technical Support Emeritus)
* with significant code contributions by Nitin Ganatra
* (Apple Macintosh Developer Technical Support Emeritus)
* Copyright 1992-1998
```

Apple Computer, Inc.

```
* Portions copyright 1995 Jim Luther
* All rights reserved.
* The Package "More Files" is distributed under the following
* license terms:
*
* "You may incorporate this sample code into your
* applications without restriction, though the
* sample code has been provided "AS IS" and the
* responsibility for its operation is 100% yours.
* However, what you are not permitted to do is to
* redistribute the source as "DSC Sample Code" after
* having made changes. If you're going to
* redistribute the source, we require that you make
* it clear in the source that the code was descended
* from Apple Sample Code, but that you've made
* changes."
```

The usage terms of this copyright note are compatible with the

Info-ZIP license, they do not add further restrictions.

The following
copyright applies to the Mac OS "macbin3" decoding code
(extra field compatibility with ZipIt):

- * MacBinaryIII.h
- *
- * Copyright 1997 Christopher Evans (cevans@poppybank.com)
- *
- * Basic encoding and decoding of Macintosh files to the
- * MacBinary III spec.
- * -----
- * This source is copyrighted by Christopher Evans (cevans@poppybank.com)
- * (available at ftp://ftp.lazerware.com/MacBinaryIII_src_C.sit
- * homepage of Leonard Rosenthol leonardr@netcom.com)

This copyright note does not contain any usage terms. So, we assume
that this code is freely reusable until we are proved wrong...

The remaining copyright notes have been superseded by the new
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only:

The following copyright applies to the full-featured unreduce.c
(now distributed separately):

- * Copyright 1989 Samuel H. Smith; All rights reserved
- *
- * Do not distribute modified versions without my permission.
- * Do not remove or alter this notice or any other copyright notice.
- * If you use this in your own program you must distribute source code.
- * Do not use any of this in a commercial product.

Regarding the first stipulation, Mr. Smith was tracked down in southern
California some years back [Samuel H. Smith, The Tool Shop; as of mid-
May 1994, (213) 851-9969 (voice), (213) 887-2127(?) (subscription BBS),
71150.2731@compuserve.com]:

"He says that he thought that whoever contacted him understood that
he has no objection to the Info-ZIP group's inclusion of his code.
His primary concern is that it remain freely distributable, he said."

Despite the fact that our "normal" code has been entirely rewritten

and by default

no longer contains any of Mr. Smith's code, Info-ZIP

remains indebted and grateful to him. We hope he finds our contributions as useful as we have his.

Note that the third and fourth stipulations still apply to any company that wishes to incorporate the unreduce code into its products; if you wish to do so, you must contact Mr. Smith directly regarding licensing.

The following copyright applied to most of the VMS code in vms.c, distributed with UnZip version 4.2 and later:

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- * are included unmodified and that this copyright notice is retained.

The following copyright applied to the new version of unshrink.c, distributed with UnZip version 5.2 and later:

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- * Permission is granted to any individual/institution/corporate
- * entity to use, copy, redistribute or modify this software for
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- * condition: namely, that my name not be removed from the source
- * code. (Other names may, of course, be added as modifications
- * are made.) Corporate legal staff (like at IBM :-)) who have
- * problems understanding this can contact me through Zip-Bugs...

The following copyright applied to the Windows DLL code (windll/*), distributed with UnZip version 5.2 and later:

- * Copyright (c) 1996 Mike White.
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UnZip," distributed with UnZip version 5.3 and later:

- * All the source files for Pocket UnZip, except for components
- * written by the Info-ZIP group, are copyrighted 1997 by Steve P.
- * Miller. The product "Pocket UnZip" itself is property of the
- * author and cannot be altered in any way without written consent
- * from Steve P. Miller.

The remaining code was written by many people associated with the Info-ZIP group, with large contributions from (but not limited to): Greg Roelofs (overall program logic, ZipInfo, unshrink, filename mapping/portability, etc.), Mark Adler (inflate, explode, funzip), Kai Uwe Rommel (OS/2), John Bush and Paul Kienitz (Amiga), Antoine Verheijen (Macintosh), Hunter Goatley (more VMS), Mike White (Windows DLLs), Christian Spieler (overall logic, optimization, VMS, etc.) and others. See the file CONTRIBS in the source distribution for a much more complete list of contributors.

The decompression core code for the deflate method (inflate.[ch], explode.c) was originally written by Mark Adler who submitted it as public domain code.

1.276 tcp-wrappers 7.6-77.el7

1.276.1 Available under license :

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<ORGANIZATION> = University of California, Berkeley
<YEAR> = 1998

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*/

1.277 rootfiles 8.1-11.el7

1.277.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: Public Domain

Found in path(s):

* /opt/cola/permits/1592955420_1678786352.412616/0/rootfiles-8.1-11.el7-1.src.rpm-cosi-expand-archive-AKxgBzK5/rootfiles.spec

1.278 perl-threads-shared 1.43-6.el7

1.278.1 Available under license :

No license file was found, but licenses were detected in source scan.

```
/* shared.xs
*
* Copyright (c) 2001-2002, 2006 Larry Wall
*
* You may distribute under the terms of either the GNU General Public
* License or the Artistic License, as specified in the README file.
*
* "Hand any two wizards a piece of rope and they would instinctively pull in
* opposite directions."
*
* --Sourcery
*
* Contributed by Artur Bergman <sky AT crucially DOT net>
* Pulled in the (an)other direction by Nick Ing-Simmons
* <nick AT ing-simmons DOT net>
* CPAN version produced by Jerry D. Hedden <jdhedden AT cpan DOT org>
*/
```

Found in path(s):

```
* /opt/cola/permits/1592955580_1678786392.7259498/0/perl-threads-shared-1.43-6.el7-1.src.rpm-cosi-expand-
archive-iBA9O2LD/threads-shared-1.43.tar.gz-cosi-expand-archive-fMe1wo05/threads-shared-1.43/shared.xs
```

No license file was found, but licenses were detected in source scan.

abstract: 'Perl extension for sharing data structures between threads'

author:

- 'Artur Bergman, Jerry D. Hedden <jdhedden AT cpan DOT org>'

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.64, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: threads-shared

no_index:

directory:

- t

- inc

requires:

Carp: 0
Config: 0
ExtUtils::testlib: 0
Scalar::Util: 0
Test: 0
Test::More: 0
XSLoader: 0
strict: 0
threads: 1.73
warnings: 0
version: 1.43

Found in path(s):

* /opt/cola/permits/1592955580_1678786392.7259498/0/perl-threads-shared-1.43-6.el7-1.src.rpm-cosi-expand-archive-iBA9O2LD/threads-shared-1.43.tar.gz-cosi-expand-archive-fMe1wo05/threads-shared-1.43/META.yml
No license file was found, but licenses were detected in source scan.

Name: perl-threads-shared
Version: 1.43
Release: 6% { ?dist }
Summary: Perl extension for sharing data structures between threads
License: GPL+ or Artistic
Group: Development/Libraries
URL: <http://search.cpan.org/dist/threads-shared/>
Source0: <http://www.cpan.org/authors/id/J/JD/JDHEDDEN/threads-shared-% { version }.tar.gz>
BuildRequires: perl
BuildRequires: perl(Carp)
BuildRequires: perl(Config)
BuildRequires: perl(ExtUtils::MakeMaker)
BuildRequires: perl(ExtUtils::testlib)
BuildRequires: perl(File::Path)
BuildRequires: perl(File::Spec)
BuildRequires: perl(POSIX)
BuildRequires: perl(Scalar::Util)
BuildRequires: perl(strict)
BuildRequires: perl(Test::More)
BuildRequires: perl(threads) >= 1.73
BuildRequires: perl(warnings)
BuildRequires: perl(XSLoader)
Requires: perl(:MODULE_COMPAT_(eval "`perl -V:version`"; echo \$version))
Requires: perl(Carp)
Requires:
 perl(threads) >= 1.73
Requires: perl(XSLoader)

% { ?perl_default_filter }

%description

By default, variables are private to each thread, and each newly created thread gets a private copy of each existing variable. This module allows you to share variables across different threads (and pseudo-forks on Win32). It is used together with the threads module.

```
%prep
%setup -q -n threads-shared-%{version}

%build
perl Makefile.PL INSTALLDIRS=vendor OPTIMIZE="$RPM_OPT_FLAGS"
make %{?_smp_mflags}

%install
make pure_install DESTDIR=$RPM_BUILD_ROOT
find $RPM_BUILD_ROOT -type f -name .packlist -exec rm -f {} \;
find $RPM_BUILD_ROOT -type f -name '*.bs' -size 0 -exec rm -f {} \;
%{_fixperms} $RPM_BUILD_ROOT/*

%check
make test

%files
%doc Changes README
%{perl_vendorarch}/auto/*
%{perl_vendorarch}/threads*
%{_mandir}/man3/*

%changelog
* Fri Jan 24 2014 Daniel Mach <dmach@redhat.com> - 1.43-6
- Mass rebuild 2014-01-24

* Fri Dec 27 2013 Daniel Mach <dmach@redhat.com>
- 1.43-5
- Mass rebuild 2013-12-27

* Tue Jul 02 2013 Jitka Plesnikova <jplesnik@redhat.com> - 1.43-4
- Remove BR perl(Test)

* Tue Jul 02 2013 Jitka Plesnikova <jplesnik@redhat.com> - 1.43-3
- Specify all dependencies

* Thu Feb 14 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.43-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora\_19\_Mass\_Rebuild

* Tue Jan 15 2013 Petr Pisar <ppisar@redhat.com> - 1.43-1
- 1.43 bump

* Fri Nov 23 2012 Jitka Plesnikova <jplesnik@redhat.com> - 1.42-2
```

- Add BR perl(File::Spec)
- Replace PERL_INSTALL_ROOT with DESTDIR
- Remove deleting empty directories
- Remove defattr

- * Wed Oct 03 2012 Petr Písar <ppisar@redhat.com> - 1.42-1
- 1.42 bump

- * Mon Sep 10 2012 Petr Písar <ppisar@redhat.com> - 1.41-1
- 1.41 bump

- * Mon Aug 13 2012 Marcela Mašláová <mmlano@redhat.com> - 1.40-240
- bump release to override sub-package from perl.spec

- * Fri Jul 20 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.40-4
- Rebuilt
- for https://fedoraproject.org/wiki/Fedora_18_Mass_Rebuild

- * Wed Jun 06 2012 Petr Písar <ppisar@redhat.com> - 1.40-3
- Perl 5.16 rebuild

- * Sat Jan 14 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.40-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_17_Mass_Rebuild

- * Mon Sep 12 2011 Petr Písar <ppisar@redhat.com> - 1.40-1
- 1.40 bump

- * Tue Sep 06 2011 Petr Písar <ppisar@redhat.com> - 1.39-1
- 1.39 bump

- * Wed Aug 17 2011 Marcela Mašláová <mmlano@redhat.com> - 1.37-3
- change path on vendor, so our debuginfo are not conflicting with perl core debuginfos

- * Mon Jun 20 2011 Marcela Mašláová <mmlano@redhat.com> - 1.37-2
- Perl mass rebuild

- * Tue Apr 26 2011 Petr Písar <ppisar@redhat.com> - 1.37-1
- 1.37 bump

- * Wed Feb 09 2011 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.36-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_15_Mass_Rebuild

- * Mon Jan 03 2011 Petr Písar <ppisar@redhat.com> - 1.36-1
- 1.36 bump

- * Mon Oct 11 2010

Petr Písar <ppisar@redhat.com> - 1.34-1

- 1.34 bump

* Thu Sep 23 2010 Petr Písar <ppisar@redhat.com> 1.33-1

- Specfile autogenerated by cpanspec 1.78.
- Fix dependencies
- Requires perl(Scalar::Util) is autodetected
- Do not provide private library
- Remove pre-F12 BuildRoot stuff

Found in path(s):

* /opt/cola/permits/1592955580_1678786392.7259498/0/perl-threads-shared-1.43-6.el7-1.src.rpm-cosi-expand-archive-iBA9O2LD/perl-threads-shared.spec

No license file was found, but licenses were detected in source scan.

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Found in path(s):

* /opt/cola/permits/1592955580_1678786392.7259498/0/perl-threads-shared-1.43-6.el7-1.src.rpm-cosi-expand-archive-iBA9O2LD/threads-shared-1.43.tar.gz-cosi-expand-archive-fMe1wo05/threads-shared-1.43/examples/class.pl

No license file was found, but licenses were detected in source scan.

=head1 NAME

threads::shared - Perl extension for sharing data structures between threads

=head1 VERSION

This document describes threads::shared version 1.43

=head1 SYNOPSIS

```
use threads;
use threads::shared;
```

```
my $var :shared;
my %hsh :shared;
my @ary :shared;
```

```
my ($scalar, @array, %hash);
share($scalar);
share(@array);
share(%hash);
```

```
$var = $scalar_value;
```

```
$var = $shared_ref_value;
$var = shared_clone($non_shared_ref_value);
$var = shared_clone({'foo' => [qw/foo bar baz/]});
```

```
$hsh{'foo'} = $scalar_value;
$hsh{'bar'} = $shared_ref_value;
$hsh{'baz'} = shared_clone($non_shared_ref_value);
$hsh{'quz'} = shared_clone([1..3]);
```

```
$ary[0] = $scalar_value;
$ary[1] = $shared_ref_value;
$ary[2] = shared_clone($non_shared_ref_value);
$ary[3] = shared_clone([ {}, [] ]);
```

```
{ lock(%hash); ... }
```

```
cond_wait($scalar);
cond_timedwait($scalar, time() + 30);
cond_broadcast(@array);
cond_signal(%hash);
```

```
my $lockvar :shared;
# condition var != lock var
cond_wait($var, $lockvar);
cond_timedwait($var, time()+30, $lockvar);
```

=head1 DESCRIPTION

By default, variables are private to each thread, and each newly created thread gets a private copy of each existing variable. This module allows you to share variables across different threads (and pseudo-forks on Win32). It is used together with the L<threads> module.

This module supports the sharing of the following data types only: scalars and scalar refs, arrays and array refs, and hashes and hash refs.

=head1 EXPORT

The following functions are exported by this module: C<share>, C<shared_clone>, C<is_shared>, C<cond_wait>, C<cond_timedwait>, C<cond_signal> and C<cond_broadcast>

Note that if this module is imported when L<threads> has not yet been loaded, then these functions all become no-ops. This makes it possible to write modules that will work in both threaded and non-threaded environments.

=head1 FUNCTIONS

=over

4

=item share VARIABLE

C<share> takes a variable and marks it as shared:

```
my ($scalar, @array, %hash);
share($scalar);
share(@array);
share(%hash);
```

C<share> will return the shared rvalue, but always as a reference.

Variables can also be marked as shared at compile time by using the C<:shared> attribute:

```
my ($var, %hash, @array) :shared;
```

Shared variables can only store scalars, refs of shared variables, or refs of shared data (discussed in next section):

```
my ($var, %hash, @array) :shared;
my $bork;
```

```
# Storing scalars
```

```
$var = 1;
$hash{ 'foo' } = 'bar';
$array[0] = 1.5;
```

```
# Storing shared refs
```

```
$var = \%hash;
$hash{ 'ary' } = \@array;
$array[1] = \$var;
```

```
# The following are errors:
```

```
# $var = $bork;           # ref of non-shared variable
# $hash{ 'bork' } = [];   # non-shared array ref
# push(@array, { 'x' => 1 }); # non-shared hash ref
```

=item shared_clone REF

C<shared_clone> takes a reference, and returns a shared version of its argument, performing a deep copy on any non-shared elements. Any shared elements in the argument are used as is (i.e., they are not cloned).

```
my $cpy = shared_clone({ 'foo' => [qw/foo bar baz/] });
```

Object status (i.e., the class an object is blessed into) is also cloned.

```
my $obj = { 'foo' => [qw/foo bar baz/]};  
bless($obj, 'Foo');  
my $cpy = shared_clone($obj);  
print(ref($cpy), "\n");    # Outputs 'Foo'
```

For cloning empty array or hash refs, the following may also be used:

```
$var = &share([]); # Same as $var = shared_clone([]);  
$var = &share({}); # Same as $var = shared_clone({});
```

Not all Perl data types can be cloned (e.g., globs, code refs). By default, `C<shared_clone>` will `L<croak|Carp>` if it encounters such items. To change this behaviour to a warning, then set the following:

```
$threads::shared::clone_warn = 1;
```

In this case, `C<undef>` will be substituted for the item to be cloned. If set to zero:

```
$threads::shared::clone_warn = 0;
```

then

the `C<undef>` substitution will be performed silently.

```
=item is_shared VARIABLE
```

`C<is_shared>` checks if the specified variable is shared or not. If shared, returns the variable's internal ID (similar to `L<refaddr()|Scalar::Util/"refaddr EXPR">`). Otherwise, returns `C<undef>`.

```
if (is_shared($var)) {  
    print("\$var is shared\n");  
} else {  
    print("\$var is not shared\n");  
}
```

When used on an element of an array or hash, `C<is_shared>` checks if the specified element belongs to a shared array or hash. (It does not check the contents of that element.)

```
my %hash :shared;  
if (is_shared(%hash)) {  
    print("\%hash is shared\n");  
}
```

```
$hash{'elem'} = 1;
if (is_shared($hash{'elem'})) {
    print("\$hash{'elem'} is in a shared hash\n");
}
```

=item lock VARIABLE

C<lock> places a B<advisory> lock on a variable until the lock goes out of scope. If the variable is locked by another thread, the C<lock> call will block until it's available. Multiple calls to C<lock> by the same thread from within dynamically nested scopes are safe -- the variable will remain locked until the outermost lock on the variable goes out of scope.

C<lock> follows references exactly I<one> level:

```
my %hash :shared;
my $ref = \%hash;
lock($ref);      # This is equivalent to lock(%hash)
```

Note that you cannot explicitly unlock a variable; you can only wait for the lock to go out of scope. This is most easily accomplished by locking the variable inside a block.

```
my $var :shared;
{
    lock($var);
    # $var is locked from here to the end of the block
    ...
}
# $var is now unlocked
```

As locks are advisory, they do not prevent data access or modification by another thread that does not itself attempt to obtain a lock on the variable.

You cannot lock the individual elements of a container variable:

```
my %hash :shared;
$hash{'foo'} = 'bar';
#lock($hash{'foo'});    # Error
lock(%hash);            # Works
```

If you need more fine-grained control over shared variable access, see L<Thread::Semaphore>.

=item cond_wait VARIABLE

=item cond_wait CONDVAR, LOCKVAR

The C<cond_wait> function takes a B<locked> variable as a parameter, unlocks the variable, and blocks until another thread does a C<cond_signal> or C<cond_broadcast> for that same locked variable. The variable that C<cond_wait> blocked on is re-locked after the C<cond_wait> is satisfied. If there are multiple threads C<cond_wait>ing on the same variable, all but one will re-block waiting to reacquire the lock on the variable. (So if you're only using C<cond_wait> for synchronization, give up the lock as soon as possible). The two actions of unlocking the variable and entering the blocked wait state are atomic, the two actions of exiting from the blocked wait state and re-locking the variable are not.

In its second form, C<cond_wait> takes a shared, B<unlocked> variable followed by a shared, B<locked> variable. The second variable is unlocked and thread execution suspended until another thread signals the first variable.

It is important to note that the variable can be notified even if no thread C<cond_signal> or C<cond_broadcast> on the variable. It is therefore important to check the value of the variable and go back to waiting if the requirement is not fulfilled. For example, to pause until a shared counter drops to zero:

```
{ lock($counter); cond_wait($counter) until $counter == 0; }
```

=item cond_timedwait VARIABLE, ABS_TIMEOUT

=item cond_timedwait CONDVAR, ABS_TIMEOUT, LOCKVAR

In its two-argument form, C<cond_timedwait> takes a B<locked> variable and an absolute timeout in I<epoch> seconds (see L<time() in perlfunc|perlfunc/time> for more) as parameters, unlocks the variable, and blocks until the timeout is reached or another thread signals the variable. A false value is returned if the timeout is reached, and a true value otherwise. In either case, the variable is re-locked upon return.

Like C<cond_wait>, this function may take a shared, B<locked> variable as an additional parameter; in this case the first parameter is an B<unlocked> condition variable protected by a distinct lock variable.

Again like C<cond_wait>, waking up and reacquiring the lock are not atomic, and you should always check your desired condition after this function returns. Since the timeout is an absolute value, however, it does not have to be recalculated with each pass:

```
lock($var);
```

```

my $abs = time() + 15;
until ($ok = desired_condition($var)) {
    last if !cond_timedwait($var, $abs);
}
# we got it if $ok, otherwise we timed out!

```

=item cond_signal VARIABLE

The C<cond_signal> function takes a B<locked> variable as a parameter and unblocks one thread that's C<cond_wait>ing on that variable. If more than one thread is blocked in a C<cond_wait> on that variable, only one (and which one is indeterminate) will be unblocked.

If there are no threads blocked in a C<cond_wait> on the variable, the signal is discarded. By always locking before signaling, you can (with care), avoid signaling before another thread has entered cond_wait().

C<cond_signal> will normally generate a warning if you attempt to use it on an unlocked variable. On the rare occasions where doing this may be sensible, you can suppress the warning with:

```
{ no warnings 'threads'; cond_signal($foo); }
```

=item cond_broadcast VARIABLE

The C<cond_broadcast> function works similarly to C<cond_signal>. C<cond_broadcast>, though, will unblock B<all> the threads that are blocked in a C<cond_wait> on the locked variable, rather than only one.

=back

=head1 OBJECTS

L<threads::shared> exports a version of L<bless()|perlfunc/"bless REF"> that works on shared objects such that I<blessings> propagate across threads.

```

# Create a shared 'Foo' object
my $foo :shared = shared_clone({});
bless($foo, 'Foo');

```

```

# Create a shared 'Bar' object
my $bar :shared = shared_clone({});
bless($bar, 'Bar');

```

```

# Put 'bar' inside 'foo'
$foo->{'bar'} = $bar;

```

```

# Rebless the objects via a thread
threads->create(sub {
  # Rebless the outer object
  bless($foo, 'Yin');

  # Cannot directly rebless the inner object
  #bless($foo->{'bar'}, 'Yang');

  # Retrieve and rebless the inner object
  my $obj = $foo->{'bar'};
  bless($obj, 'Yang');
  $foo->{'bar'} = $obj;

})->join();

print(ref($foo),      "\n"); # Prints 'Yin'
print(ref($foo->{'bar'}), "\n"); # Prints 'Yang'
print(ref($bar),      "\n"); # Also prints 'Yang'

```

=head1 NOTES

L<threads::shared> is designed to disable itself silently if threads are not available. This allows you to write modules and packages that can be used in both threaded and non-threaded applications.

If you want access to threads, you must C<use threads> before you C<use threads::shared>. L<threads> will emit a warning if you use it after L<threads::shared>.

=head1 BUGS AND LIMITATIONS

When C<share> is used on arrays, hashes, array refs or hash refs, any data they contain will be lost.

```

my @arr = qw(foo bar baz);
share(@arr);
# @arr is now empty (i.e., == ());

# Create a 'foo' object
my $foo = { 'data' => 99 };
bless($foo, 'foo');

# Share the object
share($foo); # Contents are now wiped out
print("ERROR: \$foo is empty\n")
  if (! exists($foo->{'data'}));

```


Therefore, populate such variables B<after> declaring them as shared. (Scalar and scalar refs are not affected by this problem.)

It is often not wise to share an object unless the class itself has been written to support sharing. For example, an object's destructor may get called multiple times, once for each thread's scope exit. Another danger is that the contents of hash-based objects will be lost due to the above mentioned limitation. See F<examples/class.pl> (in the CPAN distribution of this module) for how to create a class that supports object sharing.

Destructors may not be called on objects if those objects still exist at global destruction time. If the destructors must be called, make sure there are no circular references and that nothing is referencing the objects, before the program ends.

Does not support C<splice> on arrays. Does not support explicitly changing array lengths via \$#array -- use C<push> and C<pop> instead.

Taking references to the elements of shared arrays and hashes does not autovivify the elements, and neither does slicing a shared array/hash over non-existent indices/keys autovivify the elements.

C<share()> allows you to C<< share(\$hashref->{key}) >> and C<< share(\$arrayref->[idx]) >> without giving any error message. But the C<< \$hashref->{key} >> or C<< \$arrayref->[idx] >> is B<not> shared, causing the error "lock can only be used on shared values" to occur when you attempt to C<< lock(\$hashref->{key}) >> or C<< lock(\$arrayref->[idx]) >> in another thread.

Using L<refaddr()|Scalar::Util/"refaddr EXPR"> is unreliable for testing whether or not two shared references are equivalent (e.g., when testing for circular references). Use L<is_shared()/"is_shared VARIABLE">, instead:

```
use threads;
use threads::shared;
use Scalar::Util qw(refaddr);

# If ref is shared, use threads::shared's internal ID.
# Otherwise, use refaddr().
my $addr1 = is_shared($ref1) || refaddr($ref1);
my $addr2 = is_shared($ref2) || refaddr($ref2);

if ($addr1 == $addr2) {
    # The refs are equivalent
}
```

L<each()|perlfunc/"each HASH"> does not work properly on shared references embedded in shared structures. For example:

```
my %foo :shared;
$foo{'bar'} = shared_clone({'a'=>'x', 'b'=>'y', 'c'=>'z'});

while (my ($key, $val) = each(%{$foo{'bar'}})) {
    ...
}
```

Either of the following will work instead:

```
my $ref = $foo{'bar'};
while (my ($key, $val) = each(%{$ref})) {
    ...
}

foreach my $key (keys(%{$foo{'bar'}})) {
    my $val = $foo{'bar'}{$key};
    ...
}
```

This module supports dual-valued variables created using

L<dualvar() from

Scalar::Util|Scalar::Util/"dualvar NUM, STRING">. However, while C<\$!> acts like a dualvar, it is implemented as a tied SV. To propagate its value, use the follow construct, if needed:

```
my $errno :shared = dualvar($!, $!);
```

View existing bug reports at, and submit any new bugs, problems, patches, etc.

to: L<<http://rt.cpan.org/Public/Dist/Display.html?Name=threads-shared>>

=head1 SEE ALSO

L<threads::shared> Discussion Forum on CPAN:

L<<http://www.cpanforum.com/dist/threads-shared>>

L<threads>, L<perlthrtut>

L<<http://www.perl.com/pub/a/2002/06/11/threads.html>> and

L<<http://www.perl.com/pub/a/2002/09/04/threads.html>>

Perl threads mailing list:

L<<http://lists.perl.org/list/ithreads.html>>

=head1 AUTHOR

Artur Bergman E<lt>sky AT crucially DOT netE<gt>

Documentation borrowed from the old Thread.pm.

CPAN version produced by Jerry D. Hedden E<lt>jdhedden AT cpan DOT orgE<gt>.

=head1 LICENSE

threads::shared is released under the same license as Perl.

=cut

Found

in path(s):

* /opt/cola/permits/1592955580_1678786392.7259498/0/perl-threads-shared-1.43-6.el7-1.src.rpm-cosi-expand-archive-iBA9O2LD/threads-shared-1.43.tar.gz-cosi-expand-archive-fMe1wo05/threads-shared-1.43/lib/threads/shared.pm

1.279 perl-exporter 5.68-3.el7

1.279.1 Available under license :

No license file was found, but licenses were detected in source scan.

=head1 NAME

Exporter - Implements default import method for modules

=head1 SYNOPSIS

In module F<YourModule.pm>:

```
package YourModule;
require Exporter;
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

or

```
package YourModule;
use Exporter 'import'; # gives you Exporter's import() method directly
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

In other files which wish to use C<YourModule>:

```
use YourModule qw(frobnicate); # import listed symbols
frobnicate ($left, $right) # calls YourModule::frobnicate
```

Take a look at [L</Good Practices>](#) for some variants you will like to use in modern Perl code.

=head1 DESCRIPTION

The `Exporter` module implements an `C<import>` method which allows a module to export functions and variables to its users' namespaces. Many modules use `Exporter` rather than implementing their own `C<import>` method because `Exporter` provides a highly flexible interface, with an implementation optimised for the common case.

Perl automatically calls the `C<import>` method when processing a `C<use>` statement for a module. Modules and `C<use>` are documented in [L<perlfunc>](#) and [L<perlmod>](#). Understanding the concept of modules and how the `C<use>` statement operates is important to understanding the `Exporter`.

=head2 How to Export

The arrays `C<@EXPORT>` and `C<@EXPORT_OK>` in a module hold lists of symbols that are going to be exported into the users name space by default, or which they can request to be exported, respectively. The symbols can represent functions, scalars, arrays, hashes, or typeglobs. The symbols must be given by full name with the exception that the ampersand in front of a function is optional, e.g.

```
@EXPORT = qw(afunc $scalar @array); # afunc is a function
@EXPORT_OK = qw(&bfunc %hash *typeglob); # explicit prefix on &bfunc
```

If you are only exporting function names it is recommended to omit the ampersand, as the implementation is faster this way.

=head2 Selecting What to Export

Do **not** export method names!

Do **not** export anything else by default without a good reason!

Exports pollute the namespace of the module user. If you must export try to use `C<@EXPORT_OK>` in preference to `C<@EXPORT>` and avoid short or common symbol names to reduce the risk of name clashes.

Generally anything not exported is still accessible from outside the module using the `C<YourModule::item_name>` (or `C<< $blessed_ref->method >>`) syntax. By convention you can use a leading underscore on names to informally indicate that they are 'internal' and not for public use.

(It is actually possible to get private functions by saying:

```
my $subref = sub { ... };
$subref->(@args);      # Call it as a function
$obj->$subref(@args);  # Use it as a method
```

However if you use them for methods it is up to you to figure out how to make inheritance work.)

As a general rule, if the module is trying to be object oriented then export nothing. If it's just a collection of functions then C<@EXPORT_OK> anything but use C<@EXPORT> with caution. For function and method names use barewords in preference to names prefixed with ampersands for the export lists.

Other module design guidelines can be found in L<perlmod>.

=head2 How to Import

In other files which wish to use your module there are three basic ways for them to load your module and import its symbols:

=over 4

=item C<use YourModule;>

This imports all the symbols from YourModule's C<@EXPORT> into the namespace of the C<use> statement.

=item C<use YourModule ();>

This causes perl to load your module but does not import any symbols.

=item C<use YourModule qw(...);>

This imports only the symbols listed by the caller into their namespace. All listed symbols must be in your C<@EXPORT> or C<@EXPORT_OK>, else an error occurs. The advanced export features of Exporter are accessed like this, but with list entries that are syntactically distinct from symbol names.

=back

Unless you want to use its advanced features, this is probably all you need to know to use Exporter.

=head1 Advanced Features

=head2 Specialised Import Lists

If any of the entries in an import list begins with !, : or / then the list is treated as a series of specifications which either add to or delete from the list of names to import. They are processed left to right. Specifications are in the form:

```
[!]name      This name only
[!]:DEFAULT  All names in @EXPORT
[!]:tag      All names in $EXPORT_TAGS{tag} anonymous list
[!]/pattern/ All names in @EXPORT and @EXPORT_OK which match
```

A leading ! indicates that matching names should be deleted from the list of names to import. If the first specification is a deletion it is treated as though preceded by :DEFAULT. If you just want to import extra names in addition to the default set you will still need to include :DEFAULT explicitly.

e.g.,

F<Module.pm> defines:

```
@EXPORT      = qw(A1 A2 A3 A4 A5);
@EXPORT_OK   = qw(B1 B2 B3 B4 B5);
%EXPORT_TAGS = (T1 => [qw(A1 A2 B1 B2)], T2 => [qw(A1 A2 B3 B4)]);
```

Note that you cannot use tags in @EXPORT or @EXPORT_OK.

Names in EXPORT_TAGS must also appear in @EXPORT or @EXPORT_OK.

An application using Module can say something like:

```
use Module qw(:DEFAULT :T2 !B3 A3);
```

Other examples include:

```
use Socket qw(!^[AP]F_ !SOMAXCONN !SOL_SOCKET);
use POSIX qw(errno_h :termios_h !TCSADRAIN !^EXIT/);
```

Remember that most patterns (using //) will need to be anchored with a leading ^, e.g., C<^EXIT/> rather than C</EXIT/>.

You can say C<BEGIN { \$Exporter::Verbose=1 }> to see how the specifications are being processed and what is actually being imported into modules.

=head2 Exporting Without Using Exporter's import Method

Exporter has a special method, 'export_to_level' which is used in situations where you can't directly call Exporter's import method. The export_to_level method looks like:

```
MyPackage->export_to_level(  
$where_to_export, $package, @what_to_export  
);
```

where C<\$where_to_export> is an integer telling how far up the calling stack to export your symbols, and C<@what_to_export> is an array telling what symbols *to* export (usually this is C<@_>). The C<\$package> argument is currently unused.

For example, suppose that you have a module, A, which already has an import function:

```
package A;  
  
@ISA = qw(Exporter);  
@EXPORT_OK = qw($b);  
  
sub import  
{  
$A::b = 1; # not a very useful import method  
}
```

and you want to Export symbol C<\$A::b> back to the module that called package A. Since Exporter relies on the import method to work, via inheritance, as it stands Exporter::import() will never get called. Instead, say the following:

```
package A;  
@ISA = qw(Exporter);  
@EXPORT_OK = qw($b);  
  
sub import  
{  
$A::b = 1;  
A->export_to_level(1, @_);  
}
```

This will export the symbols one level 'above' the current package - ie: to the program or module that used package A.

Note: Be careful not to modify C<@_> at all before you call export_to_level
- or people using your package will get very unexplained results!

=head2 Exporting Without Inheriting from Exporter

By including Exporter in your C<@ISA> you inherit an Exporter's import() method but you also inherit several other helper methods which you probably don't want. To avoid this you can do

```
package YourModule;  
use Exporter qw( import );
```

which will export Exporter's own import() method into YourModule.
Everything will work as before but you won't need to include Exporter in C<@YourModule::ISA>.

Note: This feature was introduced in version 5.57
of Exporter, released with perl 5.8.3.

=head2 Module Version Checking

The Exporter module will convert an attempt to import a number from a module into a call to C<< \$module_name->VERSION(\$value) >>. This can be used to validate that the version of the module being used is greater than or equal to the required version.

For historical reasons, Exporter supplies a C<require_version> method that simply delegates to C<VERSION>. Originally, before C<UNIVERSAL::VERSION> existed, Exporter would call C<require_version>.

Since the C<UNIVERSAL::VERSION> method treats the C<\$VERSION> number as a simple numeric value it will regard version 1.10 as lower than 1.9. For this reason it is strongly recommended that you use numbers with at least two decimal places, e.g., 1.09.

=head2 Managing Unknown Symbols

In some situations you may want to prevent certain symbols from being exported. Typically this applies to extensions which have functions or constants that may not exist on some systems.

The names of any symbols that cannot be exported should be listed in the C<@EXPORT_FAIL> array.

If a module attempts to import any of these symbols the Exporter will give the module an opportunity to handle the situation before generating an error. The Exporter will

call an `export_fail` method
with a list of the failed symbols:

```
@failed_symbols = $module_name->export_fail(@failed_symbols);
```

If the `C<export_fail>` method returns an empty list then no error is recorded and all the requested symbols are exported. If the returned list is not empty then an error is generated for each symbol and the export fails. The Exporter provides a default `C<export_fail>` method which simply returns the list unchanged.

Uses for the `C<export_fail>` method include giving better error messages for some symbols and performing lazy architectural checks (put more symbols into `C<@EXPORT_FAIL>` by default and then take them out if someone actually tries to use them and an expensive check shows that they are usable on that platform).

=head2 Tag Handling Utility Functions

Since the symbols listed within `C<%EXPORT_TAGS>` must also appear in either `C<@EXPORT>` or `C<@EXPORT_OK>`, two utility functions are provided which allow you to easily add tagged sets of symbols to `C<@EXPORT>` or `C<@EXPORT_OK>`:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);
```

```
Exporter::export_tags('foo'); # add aa, bb and cc to @EXPORT  
Exporter::export_ok_tags('bar'); # add aa, cc and dd to @EXPORT_OK
```

Any names which are not tags are added to `C<@EXPORT>` or `C<@EXPORT_OK>` unchanged but will trigger a warning (with `C<-w>`) to avoid misspelt tags names being silently added to `C<@EXPORT>` or `C<@EXPORT_OK>`. Future versions may make this a fatal error.

=head2 Generating Combined Tags

If several symbol categories exist in `C<%EXPORT_TAGS>`, it's usually useful to create the utility `":all"` to simplify `"use"` statements.

The simplest way to do this is:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);
```

```
# add all the other ":class" tags to the ":all" class,  
# deleting duplicates  
{  
  my %seen;
```

```

push @{$EXPORT_TAGS{all}},
  grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}} foreach keys %EXPORT_TAGS;
}

```

F<CGI.pm> creates an ":all" tag which contains some (but not really all) of its categories. That could be done with one small change:

```

# add some of the other ":class" tags to the ":all" class,
# deleting duplicates
{
  my %seen;

  push @{$EXPORT_TAGS{all}},
    grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}}
      foreach qw/html2 html3 netscape form cgi internal/;
}

```

Note that the tag names in C<%EXPORT_TAGS> don't have the leading '!'.

=head2 C<AUTOLOAD>ed Constants

Many modules make use of C<AUTOLOAD>ing for constant subroutines to avoid having to compile and waste memory on rarely used values (see L<perlsub> for details on constant subroutines). Calls to such constant subroutines are not optimized away at compile time because they can't be checked at compile time for constancy.

Even if a prototype is available at compile time, the body of the subroutine is not (it hasn't been C<AUTOLOAD>ed yet). perl needs to examine both the C<()> prototype and the body of a subroutine at compile time to detect that it can safely replace calls to that subroutine with the constant value.

A workaround for this is to call the constants once in a C<BEGIN> block:

```

package My ;

use Socket ;

foo( SO_LINGER ); ## SO_LINGER NOT optimized away; called at runtime
BEGIN { SO_LINGER }
foo( SO_LINGER ); ## SO_LINGER optimized away at compile time.

```

This forces the C<AUTOLOAD> for C<SO_LINGER> to take place before SO_LINGER is encountered later in C<My> package.

If you are writing a package that C<AUTOLOAD>s, consider forcing an C<AUTOLOAD> for any constants explicitly imported by other packages or which are usually used when your package is C<use>d.

=head1 Good Practices

=head2 Declaring C<@EXPORT_OK> and Friends

When using C<Exporter> with the standard C<strict> and C<warnings> pragmas, the C<our> keyword is needed to declare the package variables C<@EXPORT_OK>, C<@EXPORT>, C<@ISA>, etc.

```
our @ISA = qw(Exporter);
our @EXPORT_OK = qw(munge frobnicate);
```

If backward compatibility for Perls under 5.6 is important, one must write instead a C<use vars> statement.

```
use vars qw(@ISA @EXPORT_OK);
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate);
```

=head2 Playing Safe

There are some caveats with the use of runtime statements like C<require Exporter> and the assignment to package variables, which can be very subtle for the unaware programmer. This may happen for instance with mutually recursive modules, which are affected by the time the relevant constructions are executed.

The ideal (but a bit ugly) way to never have to think about that is to use C<BEGIN> blocks. So the first part of the L</SYNOPSIS> code could be rewritten as:

```
package YourModule;

use strict;
use warnings;

our (@ISA, @EXPORT_OK);
BEGIN {
    require Exporter;
    @ISA = qw(Exporter);
    @EXPORT_OK = qw(munge frobnicate); # symbols to export on request
}
```

The C<BEGIN> will assure that the loading of F<Exporter.pm> and the assignments to C<@ISA> and C<@EXPORT_OK> happen immediately, leaving no room for something to get awry or just plain wrong.

With respect to loading C<Exporter> and inheriting, there are alternatives with the use of modules like C<base> and C<parent>.

```
use base qw( Exporter );
# or
use parent qw( Exporter );
```

Any of these statements are nice replacements for C<BEGIN { require Exporter; @ISA = qw(Exporter); }> with the same compile-time effect. The basic difference is that C<base> code interacts with declared C<fields> while C<parent> is a streamlined version of the older C<base> code to just establish the IS-A relationship.

For more details, see the documentation and code of L<base> and L<parent>.

Another thorough remedy to that runtime vs. compile-time trap is to use L<Exporter::Easy>, which is a wrapper of Exporter that allows all boilerplate code at a single gulp in the use statement.

```
use Exporter::Easy (
    OK => [ qw(munge frobnicate) ],
);
# @ISA setup is automatic
# all assignments happen at compile time
```

=head2 What Not
to Export

You have been warned already in L</Selecting What to Export> to not export:

=over 4

=item *

method names (because you don't need to and that's likely to not do what you want),

=item *

anything by default (because you don't want to surprise your users...
badly)

=item *

anything you don't need to (because less is more)

=back

There's one more item to add to this list. Do B<not>
export variable names. Just because C<Exporter> lets you
do that, it does not mean you should.

```
@EXPORT_OK = qw( $svar @avar %hvar ); # DON'T!
```

Exporting variables is not a good idea. They can
change under the hood, provoking horrible
effects at-a-distance, that are too hard to track
and to fix. Trust me: they are not worth it.

To provide the capability to set/get class-wide
settings, it is best instead to provide accessors
as subroutines or class methods instead.

=head1 SEE ALSO

C<Exporter> is definitely not the only module with
symbol exporter capabilities. At CPAN, you may find
a
bunch of them. Some are lighter. Some
provide improved APIs and features. Peek the one
that fits your needs. The following is
a sample list of such modules.

```
Exporter::Easy  
Exporter::Lite  
Exporter::Renaming  
Exporter::Tidy  
Sub::Exporter / Sub::Installer  
Perl6::Export / Perl6::Export::Attrs
```

=head1 LICENSE

This library is free software. You can redistribute it
and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955572_1678946212.2342932/0/perl-Exporter-5.68-3.el7-1.src.rpm-cosi-expand-archive-DnzOnc7M/Exporter-5.68.tar.gz-cosi-expand-archive-fl88D89z/Exporter-5.68/lib/Exporter.pm

No license file was found, but licenses were detected in source scan.

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Found in path(s):

* /opt/cola/permits/1592955572_1678946212.2342932/0/perl-Exporter-5.68-3.el7-1.src.rpm-cosi-expand-archive-DnzOnc7M/perl-Exporter.spec

No license file was found, but licenses were detected in source scan.

NAME

Exporter - Implements default import method for modules

SYNOPSIS

In module YourModule.pm:

```
package YourModule;
require Exporter;
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

or

```
package YourModule;
use Exporter 'import'; # gives you Exporter's import() method directly
@EXPORT_OK = qw(munge frobnicate); # symbols to export on request
```

In other files which wish to use "YourModule":

```
use YourModule qw(frobnicate); # import listed symbols
frobnicate ($left, $right) # calls YourModule::frobnicate
```

Take a look at "Good Practices" for some variants you will like to use in modern Perl code.

DESCRIPTION

The Exporter module implements an "import" method which allows a module to export functions and variables to its users' namespaces. Many modules use Exporter rather than implementing their own "import" method because Exporter provides a highly flexible interface, with an implementation optimised for the common case.

Perl automatically calls the "import" method when processing a "use" statement for a module. Modules and "use" are documented in perlfunc and perlmod. Understanding the concept of modules and how the "use" statement operates is important to understanding the Exporter.

How to Export

The arrays @EXPORT and @EXPORT_OK in a module hold lists of symbols that are going to be exported into the users name space by default, or which they can request to be exported, respectively. The symbols can represent functions, scalars, arrays, hashes, or typeglobs. The symbols must be given by full name with the exception that the ampersand in front of a function is optional, e.g.

```
@EXPORT = qw(afunc $scalar @array); # afunc is a function
@EXPORT_OK = qw(&bfunc %hash *typeglob); # explicit prefix
on &bfunc
```

If you are only exporting function names it is recommended to omit the ampersand, as the implementation is faster this way.

Selecting What To Export

Do not export method names!

Do not export anything else by default without a good reason!

Exports pollute the namespace of the module user. If you must export try to use @EXPORT_OK in preference to @EXPORT and avoid short or common symbol names to reduce the risk of name clashes.

Generally anything not exported is still accessible from outside the module using the "YourModule::item_name" (or "\$blessed_ref->method") syntax. By convention you can use a leading underscore on names to informally indicate that they are 'internal' and not for public use.

(It is actually possible to get private functions by saying:

```
my $subref = sub { ... };
$subref->(@args);      # Call it as a function
$obj->$subref(@args);  # Use it as a method
```

However if you use them for methods it is up to you to figure out how to make inheritance work.)

As a general rule, if the module is trying to be object oriented then export nothing. If it's just a collection of functions then @EXPORT_OK anything but use @EXPORT with caution. For function and method names use barewords in preference to names prefixed with ampersands for the export

lists.

Other module design guidelines can be found in `perlmod`.

How to Import

In other files which wish to use your module there are three basic ways for them to load your module and import its symbols:

```
"use YourModule;"
```

This imports all the symbols from `YourModule`'s `@EXPORT` into the namespace of the "use" statement.

```
"use YourModule ();"
```

This causes perl to load your module but does not import any symbols.

```
"use YourModule qw(...);"
```

This imports only the symbols listed by the caller into their namespace. All listed symbols must be in your `@EXPORT` or `@EXPORT_OK`, else an error occurs. The advanced export features of `Exporter` are accessed like this, but with list entries that are syntactically distinct from symbol names.

Unless you want to use its advanced features, this is probably all you need to know to use `Exporter`.

Advanced features

Specialised Import Lists

If any of the entries in an import list begins with `!`, `:` or `/` then the list is treated as a series of specifications which either add to or delete from the list of names to import. They are processed left to right. Specifications are in the form:

```
[!]name      This name only
[!]:DEFAULT  All names in @EXPORT
[!]:tag      All names in $EXPORT_TAGS{tag} anonymous list
[!]/pattern/ All names in @EXPORT and @EXPORT_OK which match
```

A leading `!` indicates that matching names should be deleted from the list of names to import. If the first specification is a deletion it is treated as though preceded by `:DEFAULT`. If you just want to import extra names in addition to the default set you will still need to include `:DEFAULT` explicitly.

e.g., `Module.pm` defines:


```
@EXPORT    = qw(A1 A2 A3 A4 A5);
@EXPORT_OK = qw(B1 B2 B3 B4 B5);
%EXPORT_TAGS = (T1 => [qw(A1 A2 B1 B2)], T2 => [qw(A1 A2 B3 B4)]);
```

Note that you cannot use tags in @EXPORT or @EXPORT_OK.
Names in EXPORT_TAGS must also appear in @EXPORT or @EXPORT_OK.

An application using Module can say something like:

```
use Module qw(:DEFAULT :T2 !B3 A3);
```

Other examples include:

```
use Socket qw(!^[AP]F_/ !SOMAXCONN !SOL_SOCKET);
use POSIX qw(:errno_h :termios_h !TCSADRAIN !^EXIT/);
```

Remember that most patterns (using //) will need to be anchored with a leading ^, e.g., "/^EXIT/" rather than "/EXIT/".

You can say "BEGIN { \$Exporter::Verbose=1 }" to see how the specifications are being processed and what is actually being imported into modules.

Exporting without using Exporter's import method

Exporter has a special method, 'export_to_level' which is used in situations where you can't directly call Exporter's import method. The export_to_level method looks like:

```
MyPackage->export_to_level($where_to_export, $package, @what_to_export);
```

where \$where_to_export is an integer telling how far up the calling stack to export your symbols, and @what_to_export is an array telling what symbols *to* export (usually this is @_). The \$package argument is currently unused.

For example, suppose that you have a module, A, which already has an import function:

```
package A;

@ISA = qw(Exporter);
@EXPORT_OK = qw ($b);

sub import
{
    $A::b = 1;  # not a very useful import method
}
```

and you want to Export symbol \$A::b back to the module that called package A. Since Exporter relies on the import method to work, via inheritance, as it stands Exporter::import() will never get called. Instead, say the following:

```
package A;
@ISA = qw(Exporter);
@EXPORT_OK = qw ($b);

sub import
{
    $A::b = 1;
    A->export_to_level(1, @_);
}
```

This will export the symbols one level 'above' the current package - ie: to the program or module that used package A.

Note: Be careful not to modify @_ at all before you call export_to_level - or people using your package will get very unexplained results!

Exporting without inheriting from Exporter

By including Exporter in your @ISA you inherit an Exporter's import() method but you also inherit several other helper methods which you probably don't want. To avoid this you can do

```
package YourModule;
use Exporter qw( import );
```

which will export Exporter's own import() method into YourModule. Everything will work as before but you won't need to include Exporter in @YourModule::ISA.

Note: This feature was introduced in version 5.57 of Exporter, released with perl 5.8.3.

Module Version Checking

The Exporter module will convert an attempt to import a number from a module into a call to "\$module_name->require_version(\$value)". This can be used to validate that the version of the module being used is greater than or equal to the required version.

The Exporter module supplies a default "require_version" method which checks the value of \$VERSION in the exporting module.

Since the default "require_version" method treats the \$VERSION number as a simple numeric value it will regard version 1.10 as lower than 1.9. For this reason it is strongly recommended that you use numbers with at least two decimal places, e.g., 1.09.

Managing Unknown Symbols

In some situations you may want to prevent certain symbols from being exported. Typically this applies to extensions which have functions or constants that may not exist on some systems.

The names of any symbols that cannot be exported should be listed in the @EXPORT_FAIL array.

If a module attempts to import any of these symbols the Exporter will give the module an opportunity to handle the situation before generating an error. The Exporter will call an export_fail method with a list of the failed symbols:

```
@failed_symbols = $module_name->export_fail(@failed_symbols);
```

If the "export_fail" method returns an empty list then no error is recorded and all the requested symbols are exported. If the returned list is not empty then an error is generated for each symbol and the export fails. The Exporter provides a default "export_fail" method which simply returns the list unchanged.

Uses for the "export_fail" method include giving better error messages for some symbols and performing lazy architectural checks (put more symbols into @EXPORT_FAIL by default and then take them out if someone actually tries to use them and an expensive check shows that they are usable on that platform).

Tag Handling Utility Functions

Since the symbols listed within %EXPORT_TAGS must also appear in either @EXPORT or @EXPORT_OK, two utility functions are provided which allow you to easily add tagged sets of symbols to @EXPORT or @EXPORT_OK:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);
```

```
Exporter::export_tags('foo'); # add aa, bb and cc to @EXPORT
Exporter::export_ok_tags('bar'); # add aa, cc and dd to @EXPORT_OK
```

Any names which are not tags are added to @EXPORT or @EXPORT_OK unchanged but will trigger a warning (with "-w") to avoid misspelt tags names being silently added to @EXPORT or @EXPORT_OK. Future versions may make this a fatal error.

Generating combined tags

If several symbol categories exist in %EXPORT_TAGS, it's usually useful to create the utility ":all" to simplify "use" statements.

The simplest way to do this is:

```
%EXPORT_TAGS = (foo => [qw(aa bb cc)], bar => [qw(aa cc dd)]);

# add all the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}} foreach keys %EXPORT_TAGS;
}
```

CGI.pm creates an ":all" tag which contains some (but not really all) of its categories. That could be done with one small change:

```
# add some of the other ":class" tags to the ":all" class,
# deleting duplicates
{
    my %seen;

    push @{$EXPORT_TAGS{all}},
        grep { !$seen{$_}++ } @{$EXPORT_TAGS{$_}}
            foreach qw/html2 html3 netscape form cgi internal/;
}
```

Note that the tag names in %EXPORT_TAGS don't have the leading ':

"AUTOLOAD"ed Constants

Many modules make use of "AUTOLOAD"ing for constant subroutines to avoid

having to compile and waste memory on rarely used values (see perlsub for details on constant subroutines). Calls to such constant subroutines are not optimized away at compile time because they can't be checked at compile time for constancy.

Even if a prototype is available at compile time, the body of the subroutine is not (it hasn't been "AUTOLOAD"ed yet). perl needs to examine both the "()" prototype and the body of a subroutine at compile time to detect that it can safely replace calls to that subroutine with the constant value.

A workaround for this is to call the constants once in a "BEGIN" block:

```
package My ;

use Socket ;

foo( SO_LINGER );  ## SO_LINGER NOT optimized away; called at runtime
BEGIN { SO_LINGER }
foo( SO_LINGER );  ## SO_LINGER optimized away at compile time.
```

This forces the "AUTOLOAD" for "SO_LINGER" to take place before SO_LINGER is encountered later in "My" package.

If you are writing a package that "AUTOLOAD"s, consider forcing an "AUTOLOAD" for any constants explicitly imported by other packages or which are usually used when your package is "use"d.

Good Practices

Declaring @EXPORT_OK and Friends

When using "Exporter" with the standard "strict" and "warnings" pragmas, the "our" keyword is needed to declare the package variables @EXPORT_OK, @EXPORT, @ISA, etc.

```
our @ISA = qw(Exporter);
our @EXPORT_OK = qw(munge frobnicate);
```

If backward compatibility for Perls under 5.6 is important, one must write instead a "use vars" statement.

```
use vars qw(@ISA @EXPORT_OK);
@ISA = qw(Exporter);
@EXPORT_OK = qw(munge frobnicate);
```

Playing Safe

There are some caveats with the use of runtime statements like "require Exporter" and the assignment to package variables, which can be very subtle for the unaware programmer. This may happen for instance with mutually recursive modules, which are affected by the time the relevant constructions are executed.

The ideal (but a bit ugly) way to never have to think about that is to use "BEGIN" blocks. So the first part of the "SYNOPSIS" code could be rewritten as:

```
package YourModule;
```

```

use strict;
use warnings;

our (@ISA, @EXPORT_OK);
BEGIN {
    require Exporter;
    @ISA = qw(Exporter);
    @EXPORT_OK = qw(munge frobnicate); # symbols to export on request
}

```

The "BEGIN" will assure that the loading of Exporter.pm and the assignments to @ISA and @EXPORT_OK happen immediately, leaving no room for something to get awry or just plain wrong.

With respect to loading "Exporter" and inheriting, there are alternatives with the use of modules like "base" and "parent".

```

use base qw( Exporter );
# or
use parent qw( Exporter );

```

Any of these statements are nice replacements for "BEGIN { require Exporter; @ISA = qw(Exporter); }" with the same compile-time effect. The basic difference is that "base" code interacts with declared "fields" while "parent" is a streamlined version of the older "base" code to just establish the IS-A relationship.

For more details, see the documentation and code of base and parent.

Another thorough remedy to that runtime vs. compile-time trap is to use Exporter::Easy, which is a wrapper of Exporter that allows all boilerplate code at a single gulp in the use statement.

```

use Exporter::Easy (
    OK => [ qw(munge frobnicate) ],
);
# @ISA setup is automatic
# all assignments happen at compile time

```

What not to Export

You have been warned already in "Selecting What To Export" to not export:

- * method names (because you don't need to and that's likely to not do what you want),
- * anything by default (because you don't want to surprise your

users... badly)

* anything

you don't need to (because less is more)

There's one more item to add to this list. Do not export variable names. Just because "Exporter" lets you do that, it does not mean you should.

```
@EXPORT_OK = qw( $svar @avar %hvar ); # DON'T!
```

Exporting variables is not a good idea. They can change under the hood, provoking horrible effects at-a-distance, that are too hard to track and to fix. Trust me: they are not worth it.

To provide the capability to set/get class-wide settings, it is best instead to provide accessors as subroutines or class methods instead.

SEE ALSO

"Exporter" is definitely not the only module with symbol exporter capabilities. At CPAN, you may find a bunch of them. Some are lighter. Some provide improved APIs and features. Peek the one that fits your needs. The following is a sample list of such modules.

```
Exporter::Easy  
Exporter::Lite  
Exporter::Renaming  
Exporter::Tidy  
Sub::Exporter  
/ Sub::Installer  
Perl6::Export / Perl6::Export::Attrs
```

LICENSE

This library is free software. You can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1592955572_1678946212.2342932/0/perl-Exporter-5.68-3.el7-1.src.rpm-cosi-expand-archive-DnzOnc7M/Exporter-5.68.tar.gz-cosi-expand-archive-fl88D89z/Exporter-5.68/README
```

No license file was found, but licenses were detected in source scan.

abstract: 'Implements default import method for modules'

author:

- unknown

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1
generated_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.120921'
license: perl
meta-spec:
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>
version: 1.4
name: Exporter
no_index:
directory:
- t
- inc
recommends:
Test::Pod: 1.18
Test::Pod::Coverage: 1.04
requires:
Carp: 1.05
resources:
bugtracker: <http://rt.perl.org/perlbug/>
license: <http://dev.perl.org/licenses/>
repository: <http://perl5.git.perl.org/perl.git/tree/HEAD:/lib>
x_MailingList: <http://lists.perl.org/list/perl5-porters.html>
version: 5.68

Found in path(s):

* /opt/cola/permits/1592955572_1678946212.2342932/0/perl-Exporter-5.68-3.el7-1.src.rpm-cosi-expand-archive-DnzOnc7M/Exporter-5.68.tar.gz-cosi-expand-archive-fl88D89z/Exporter-5.68/META.yml

1.280 perl-threads 1.87-4.el7

1.280.1 Available under license :

No license file was found, but licenses were detected in source scan.

abstract: 'Perl interpreter-based threads'

author:

- 'Artur Bergman, Jerry D. Hedden <jdhedden AT cpan DOT org>'

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.66, CPAN::Meta::Converter version 2.130880'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: threads

no_index:
directory:
- t
- inc
requires:
Carp: 0
Config: 0
ExtUtils::testlib: 0
Hash::Util: 0
IO::File: 0
Test::More: 0
XSLoader: 0
overload: 0
strict: 0
warnings: 0
version: 1.87

Found in path(s):

* /opt/cola/permits/1592955636_1678786352.7711432/0/perl-threads-1.87-4.el7-1.src.rpm-cosi-expand-archive-MM4xbzIz/threads-1.87.tar.gz-cosi-expand-archive-Q6zgayxG/threads-1.87/META.yml

No license file was found, but licenses were detected in source scan.

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Found in path(s):

* /opt/cola/permits/1592955636_1678786352.7711432/0/perl-threads-1.87-4.el7-1.src.rpm-cosi-expand-archive-MM4xbzIz/threads-1.87.tar.gz-cosi-expand-archive-Q6zgayxG/threads-1.87/examples/pool_reuse.pl

* /opt/cola/permits/1592955636_1678786352.7711432/0/perl-threads-1.87-4.el7-1.src.rpm-cosi-expand-archive-MM4xbzIz/threads-1.87.tar.gz-cosi-expand-archive-Q6zgayxG/threads-1.87/examples/pool.pl

No license file was found, but licenses were detected in source scan.

=head1 NAME

threads - Perl interpreter-based threads

=head1 VERSION

This document describes threads version 1.87

=head1 SYNOPSIS

```
use threads ('yield',  
            'stack_size' => 64*4096,  
            'exit' => 'threads_only',  
            'stringify');
```

```

sub start_thread {
    my @args = @_ ;
    print("Thread started: ", join(' ', @args), "\n");
}
my $thr = threads->create('start_thread', 'argument');
$thr->join();

threads->create(sub { print("I am a thread\n"); }->join());

my $thr2 = async { foreach (@files) { ... } };
$thr2->join();
if (my $err = $thr2->error()) {
    warn("Thread error: $err\n");
}

# Invoke thread in list context (implicit) so it can return a list
my ($thr) = threads->create(sub { return (qw/a b c/); });
# or specify list context explicitly
my $thr = threads->create({ 'context' => 'list' },

    sub { return (qw/a b c/); });
my @results = $thr->join();

$thr->detach();

# Get a thread's object
$thr = threads->self();
$thr = threads->object($tid);

# Get a thread's ID
$tid = threads->tid();
$tid = $thr->tid();
$tid = "$thr";

# Give other threads a chance to run
threads->yield();
yield();

# Lists of non-detached threads
my @threads = threads->list();
my $thread_count = threads->list();

my @running = threads->list(threads::running);
my @joinable = threads->list(threads::joinable);

# Test thread objects
if ($thr1 == $thr2) {
    ...

```

```

}

# Manage thread stack size
$stack_size = threads->get_stack_size();
$old_size = threads->set_stack_size(32*4096);

# Create a thread with a specific context and stack size
my $thr = threads->create({ 'context' => 'list',
                          'stack_size' => 32*4096,
                          'exit' => 'thread_only'
},
                        \&foo);

# Get thread's context
my $wantarray = $thr->wantarray();

# Check thread's state
if ($thr->is_running()) {
    sleep(1);
}
if ($thr->is_joinable()) {
    $thr->join();
}

# Send a signal to a thread
$thr->kill('SIGUSR1');

# Exit a thread
threads->exit();

```

=head1 DESCRIPTION

Since Perl 5.8, thread programming has been available using a model called I<interpreter threads> which provides a new Perl interpreter for each thread, and, by default, results in no data or state information being shared between threads.

(Prior to Perl 5.8, I<5005threads> was available through the C<Thread.pm> API. This threading model has been deprecated, and was removed as of Perl 5.10.0.)

As just mentioned, all variables are, by default, thread local. To use shared variables, you need to also load L<threads::shared>:

```

use threads;
use threads::shared;

```

When loading L<threads::shared>, you must C<use

threads> before you
C<use threads::shared>. (C<threads> will emit a warning if you do it the other way around.)

It is strongly recommended that you enable threads via C<use threads> as early as possible in your script.

If needed, scripts can be written so as to run on both threaded and non-threaded Perls:

```
my $can_use_threads = eval 'use threads; 1';
if ($can_use_threads) {
    # Do processing using threads
    ...
} else {
    # Do it without using threads
    ...
}
```

=over

=item \$thr = threads->create(FUNCTION, ARGS)

This will create a new thread that will begin execution with the specified entry point function, and give it the I<ARGS> list as parameters. It will return the corresponding threads object, or C<undef> if thread creation failed.

I<FUNCTION> may either be the name of a function, an anonymous subroutine, or a code ref.

```
my $thr = threads->create('func_name', ...);
# or
my $thr = threads->create(sub { ... }, ...);

# or
my $thr = threads->create(\&func, ...);
```

The C<-E<gt>new()> method is an alias for C<-E<gt>create()>.

=item \$thr->join()

This will wait for the corresponding thread to complete its execution. When the thread finishes, C<-E<gt>join()> will return the return value(s) of the entry point function.

The context (void, scalar or list) for the return value(s) for C<-E<gt>join()> is determined at the time of thread creation.

```

# Create thread in list context (implicit)
my $thr1 = threads->create(sub {
    my @results = qw(a b c);
    return (@results);
});

# or (explicit)
my $thr1 = threads->create({'context' => 'list'},
    sub {
        my @results = qw(a b c);
        return (@results);
    });

# Retrieve list results from thread
my @res1 = $thr1->join();

# Create thread in scalar context (implicit)
my $thr2 = threads->create(sub {
    my $result = 42;
    return ($result);
});

# Retrieve scalar result from thread
my $res2 = $thr2->join();

# Create a thread in void context (explicit)
my $thr3 = threads->create({'void' => 1},
    sub { print("Hello, world\n"); });

# Join the thread in void context (i.e., no return value)
$thr3->join();

```

See [L</"THREAD CONTEXT">](#) for more details.

If the program exits without all threads having either been joined or detached, then a warning will be issued.

Calling `C<-E<gt>join()` or `C<-E<gt>detach()` on an already joined thread will cause an error to be thrown.

```
=item $thr->detach()
```

Makes the thread unjoinable, and causes any eventual return value to be discarded. When the program exits, any detached threads that are still running are silently terminated.

If the program exits without all threads having either been joined or detached, then a warning will be issued.

Calling `C<-E<gt>join()` or `C<-E<gt>detach()` on an already detached thread will cause an error to be thrown.

=item threads->detach()

Class method that allows a thread to detach itself.

=item threads->self()

Class method that allows a thread to obtain its own I<threads> object.

=item \$thr->tid()

Returns the ID of the thread. Thread IDs are unique integers with the main thread in a program being 0, and incrementing by 1 for every thread created.

=item threads->tid()

Class method that allows a thread to obtain its own ID.

=item "\$thr"

If you add the C<stringify> import option to your C<use threads> declaration, then using a threads object in a string or a string context (e.g., as a hash key) will cause its ID to be used as the value:

```
use threads qw(stringify);

my $thr = threads->create(...);
print("Thread $thr started...\n"); # Prints
out: Thread 1 started...
```

=item threads->object(\$tid)

This will return the I<threads> object for the I<active> thread associated with the specified thread ID. If C<\$tid> is the value for the current thread, then this call works the same as C<-E<gt>self()>. Otherwise, returns C<undef> if there is no thread associated with the TID, if the thread is joined or detached, if no TID is specified or if the specified TID is undef.

=item threads->yield()

This is a suggestion to the OS to let this thread yield CPU time to other threads. What actually happens is highly dependent upon the underlying thread implementation.

You may do C<use threads qw(yield)>, and then just use C<yield()> in your code.

=item threads->list()

=item threads->list(threads::all)

=item threads->list(threads::running)

=item threads->list(threads::joinable)

With no arguments (or using C<threads::all>) and in a list context, returns a list of all non-joined, non-detached I<threads> objects. In a scalar context, returns a count of the same.

With a I<true> argument (using C<threads::running>), returns a list of all non-joined, non-detached I<threads> objects that are still running.

With a I<false> argument (using C<threads::joinable>), returns a list of all non-joined, non-detached I<threads> objects that have finished running (i.e., for which C<-E<gt>join()> will not I<block>).

=item \$thr1->equal(\$thr2)

Tests if two threads objects are the same thread or not. This is overloaded to the more natural forms:

```
if ($thr1 == $thr2) {
    print("Threads are the same\n");
}
# or
if ($thr1 != $thr2) {
    print("Threads differ\n");
}
```

(Thread comparison is based on thread IDs.)

=item async BLOCK;

C<async> creates a thread to execute the block immediately following it. This block is treated as an anonymous subroutine, and so must have a semicolon after the closing brace. Like C<threads-E<gt>create()>, C<async> returns a I<threads> object.

=item \$thr->error()

Threads

are executed in an C<eval> context. This method will return C<undef> if the thread terminates I<normally>. Otherwise, it returns the value of C<\$@> associated with the thread's execution status in its C<eval> context.

=item \$thr->_handle()

This I<private> method returns the memory location of the internal thread structure associated with a threads object. For Win32, this is a pointer to the C<HANDLE> value returned by C<CreateThread> (i.e., C<HANDLE *>); for other platforms, it is a pointer to the C<pthread_t> structure used in the C<pthread_create> call (i.e., C<pthread_t *>).

This method is of no use for general Perl threads programming. Its intent is to provide other (XS-based) thread modules with the capability to access, and possibly manipulate, the underlying thread structure associated with a Perl thread.

=item threads->_handle()

Class method that allows a thread to obtain its own I<handle>.

=back

=head1 EXITING A THREAD

The usual method for terminating a thread is

to

L<return()|perlfunc/"return EXPR"> from the entry point function with the appropriate return value(s).

=over

=item threads->exit()

If needed, a thread can be exited at any time by calling C<threads-E<gt>exit()>. This will cause the thread to return C<undef> in a scalar context, or the empty list in a list context.

When called from the I<main> thread, this behaves the same as C<exit(0)>.

=item threads->exit(status)

When called from a thread, this behaves like C<threads-E<gt>exit()> (i.e., the exit status code is ignored).

When called from the I<main> thread, this behaves the same as C<exit(status)>.

=item die()

Calling C<die()> in a thread indicates an abnormal exit for the thread. Any C<\${SIG{__DIE__}}> handler in the thread will be called first, and then the thread will exit with a warning message that will contain any arguments passed

in the `C<die()>` call.

=item `exit(status)`

Calling `L<exit()|perlfunc/"exit EXPR">` inside a thread causes the whole application to terminate.

Because of this, the use of `C<exit()>` inside threaded code, or in modules that might be used in threaded applications, is strongly discouraged.

If `C<exit()>` really is needed, then consider using the following:

```
threads->exit() if threads->can('exit'); # Thread friendly
exit(status);
```

=item use threads 'exit' => 'threads_only'

This globally overrides the default behavior of calling `C<exit()>` inside a thread, and effectively causes such calls to behave the same as `C<threads-E<gt>exit()>`. In other words, with this setting, calling `C<exit()>` causes only the thread to terminate.

Because of its global effect, this setting should not be used inside modules or the like.

The `I<main>` thread is unaffected by this setting.

=item `threads->create({'exit' => 'thread_only'}, ...)`

This overrides the default behavior of `C<exit()>` inside the newly created thread only.

=item `$thr->set_thread_exit_only(boolean)`

This can be used to change the `I<exit thread only>` behavior for a thread after it has been created. With a `I<true>` argument, `C<exit()>` will cause only the thread to exit. With a `I<false>` argument, `C<exit()>` will terminate the application.

The `I<main>` thread is unaffected by this call.

=item `threads->set_thread_exit_only(boolean)`

Class method for use inside a thread to change its own behavior for `C<exit()>`.

The `I<main>` thread is unaffected by this call.

=back

=head1 THREAD STATE

The following boolean methods are useful in determining the I<state> of a thread.

=over

=item \$thr->is_running()

Returns true if a thread is still running (i.e., if its entry point function has not yet finished or exited).

=item \$thr->is_joinable()

Returns true if the thread has finished running, is not detached and has not yet been joined. In other words, the thread is ready to be joined, and a call to C<\$thr-E<gt>join()> will not I<block>.

=item \$thr->is_detached()

Returns true if the thread has been detached.

=item threads->is_detached()

Class method that allows a thread to determine whether or not it is detached.

=back

=head1 THREAD CONTEXT

As with subroutines, the type of value returned from a thread's entry point function may be determined by the thread's I<context>: list, scalar or void. The thread's context is determined at thread creation. This is necessary so that the context is available to the entry point function via L<wantarray()|perlfunc/"wantarray">. The thread may then specify a value of the appropriate type to be returned from C<-E<gt>join()>.

=head2 Explicit context

Because thread creation and thread joining may occur in different contexts, it may be desirable to state the context explicitly to the thread's entry point function. This may be done by calling C<-E<gt>create()> with a hash reference as the first argument:

```
my $thr = threads->create({'context' => 'list'}, \&foo);
```

```
...
my @results = $thr->join();
```

In the above, the threads object is returned to the parent thread in scalar context, and the thread's entry point function C<foo> will be called in list (array) context such that the parent thread can receive a list (array) from the C<-E<gt>join()> call. (C<'array'> is synonymous with C<'list'>.)

Similarly, if you need the threads object, but your thread will not be returning a value (i.e., I<void> context), you would do the following:

```
my $thr = threads->create({'context' => 'void'}, \&foo);
...
$thr->join();
```

The context type may also be used as the I<key> in the hash reference followed by a I<>true> value:

```
threads->create({'scalar' => 1}, \&foo);
...
my ($thr) = threads->list();
my $result = $thr->join();
```

=head2 Implicit context

If not explicitly stated, the thread's context is implied from the context of the C<-E<gt>create()> call:

```
# Create thread in list context
my ($thr) = threads->create(...);

# Create thread in scalar context
my $thr = threads->create(...);

# Create thread in void context
threads->create(...);
```

```
=head2
$thr->wantarray()
```

This returns the thread's context in the same manner as L<wantarray()|perlfunc/"wantarray">.

```
=head2 threads->wantarray()
```

Class method to return the current thread's context. This returns the same value as running L<wantarray()|perlfunc/"wantarray"> inside the current

thread's entry point function.

```
=head1 THREAD STACK SIZE
```

The default per-thread stack size for different platforms varies significantly, and is almost always far more than is needed for most applications. On Win32, Perl's makefile explicitly sets the default stack to 16 MB; on most other platforms, the system default is used, which again may be much larger than is needed.

By tuning the stack size to more accurately reflect your application's needs, you may significantly reduce your application's memory usage, and increase the number of simultaneously running threads.

Note that on Windows, address space allocation granularity is 64 KB, therefore, setting the stack smaller than that on Win32 Perl will not save any more memory.

```
=over
```

```
=item threads->get_stack_size();
```

Returns the current default per-thread stack size. The default is zero, which means the system default stack size is currently in use.

```
=item $size = $thr->get_stack_size();
```

Returns the stack size for a particular thread. A return value of zero indicates the system default stack size was used for the thread.

```
=item $old_size = threads->set_stack_size($new_size);
```

Sets a new default per-thread stack size, and returns the previous setting.

Some platforms have a minimum thread stack size. Trying to set the stack size below this value will result in a warning, and the minimum stack size will be used.

Some Linux platforms have a maximum stack size. Setting too large of a stack size will cause thread creation to fail.

If needed, C<\$new_size> will be rounded up to the next multiple of the memory page size (usually 4096 or 8192).

Threads created after the stack size is set will then either call C<pthread_attr_setstacksize()>

I<(for pthreads platforms)>, or supply the stack size to C<CreateThread()> I<(for Win32 Perl)>.

(Obviously, this call does not affect any currently extant threads.)

```
=item use threads ('stack_size' => VALUE);
```

This sets the default per-thread stack size at the start of the application.

```
=item $ENV{'PERL5_ITHREADS_STACK_SIZE'}
```

The default per-thread stack size may be set at the start of the application through the use of the environment variable C<PERL5_ITHREADS_STACK_SIZE>:

```
PERL5_ITHREADS_STACK_SIZE=1048576
export PERL5_ITHREADS_STACK_SIZE
perl -e'use threads; print(threads->get_stack_size(), "\n")'
```

This value overrides any C<stack_size> parameter given to C<use threads>. Its primary purpose is to permit setting the per-thread stack size for legacy threaded applications.

```
=item threads->create({'stack_size' => VALUE}, FUNCTION, ARGS)
```

To specify a particular stack size for any individual thread, call C<-E<gt>create()> with a hash reference as the first argument:

```
my $thr = threads->create({'stack_size' => 32*4096}, \&foo, @args);
```

```
=item $thr2 = $thr1->create(FUNCTION, ARGS)
```

This creates a new thread (C<\$thr2>) that inherits the stack size from an existing thread (C<\$thr1>). This is shorthand for the following:

```
my $stack_size = $thr1->get_stack_size();
my $thr2 = threads->create({'stack_size' => $stack_size}, FUNCTION, ARGS);
```

```
=back
```

=head1 THREAD SIGNALLING

When safe signals is in effect (the default behavior - see L</"Unsafe signals"> for more details), then signals may be sent and acted upon by individual threads.

```
=over 4
```

```
=item $thr->kill('SIG...');
```

Sends the specified signal to the thread. Signal names and (positive) signal numbers are the same as those supported by `kill()` or `perlfunc/"kill SIGNAL, LIST">`. For example, 'SIGTERM', 'TERM' and (depending on the OS) 15 are all valid arguments to `kill()`.

Returns the thread object to allow for method chaining:

```
$thr->kill('SIG...')->join();
```

=back

Signal

handlers need to be set up in the threads for the signals they are expected to act upon. Here's an example for cancelling a thread:

```
use threads;

sub thr_func
{
    # Thread 'cancellation' signal handler
    $SIG{'KILL'} = sub { threads->exit(); };

    ...
}

# Create a thread
my $thr = threads->create('thr_func');

...

# Signal the thread to terminate, and then detach
# it so that it will get cleaned up automatically
$thr->kill('KILL')->detach();
```

Here's another simplistic example that illustrates the use of thread signalling in conjunction with a semaphore to provide rudimentary suspend and resume capabilities:

```
use threads;
use Thread::Semaphore;

sub thr_func
{
    my $sema = shift;

    # Thread 'suspend/resume' signal handler
    $SIG{'STOP'} = sub {
```

```

    $sema->down();    # Thread suspended
    $sema->up();      # Thread resumes
};

...
}

# Create
a semaphore and pass it to a thread
my $sema = Thread::Semaphore->new();
my $thr = threads->create('thr_func', $sema);

# Suspend the thread
$sema->down();
$thr->kill('STOP');

...

# Allow the thread to continue
$sema->up();

```

CAVEAT: The thread signalling capability provided by this module does not actually send signals via the OS. It I<emulates> signals at the Perl-level such that signal handlers are called in the appropriate thread. For example, sending C<\$thr->kill('STOP')> does not actually suspend a thread (or the whole process), but does cause a C<SIG{'STOP'}> handler to be called in that thread (as illustrated above).

As such, signals that would normally not be appropriate to use in the C<kill()> command (e.g., C<kill('KILL', \$\$)>) are okay to use with the C<->kill()> method (again, as illustrated above).

Correspondingly, sending a signal to a thread does not disrupt the operation the thread is currently working on: The signal will be acted upon after the current operation has completed. For instance, if the thread is I<stuck> on an I/O call, sending it a signal will not cause the I/O call to be interrupted such that the signal is acted up immediately.

Sending a signal to a terminated/finished thread is ignored.

=head1 WARNINGS

=over 4

=item Perl exited with active threads:

If the program exits without all threads having either been joined or

detached, then this warning will be issued.

NOTE: If the I<main> thread exits, then this warning cannot be suppressed using C<no warnings 'threads';> as suggested below.

=item Thread creation failed: pthread_create returned #

See the appropriate I<man> page for C<pthread_create> to determine the actual cause for the failure.

=item Thread # terminated abnormally: ...

A thread terminated in some manner other than just returning from its entry point function, or by using C<threads-E<gt>exit()>. For example, the thread may have terminated because of an error, or by using C<die>.

=item Using minimum thread stack size of #

Some platforms have a minimum thread stack size. Trying to set the stack size below this value will result in the above warning, and the stack size will be set to the minimum.

=item Thread creation failed: pthread_attr_setstacksize(I<SIZE>) returned 22

The specified I<SIZE> exceeds the system's maximum stack size. Use a smaller value for the stack size.

=back

If needed, thread warnings can be suppressed by using:

```
no warnings 'threads';
```

in the appropriate scope.

=head1 ERRORS

=over 4

=item This Perl not built to support threads

The particular copy of Perl that you're trying to use was not built using the C<useithreads> configuration option.

Having threads support requires all of Perl and all of the XS modules in the Perl installation to be rebuilt; it is not just a question of adding the L<threads> module (i.e., threaded and non-threaded Perls are binary

incompatible).

=item Cannot change stack size of an existing thread

The stack size of currently extant threads cannot be changed, therefore, the following results in the above error:

```
$thr->set_stack_size($size);
```

=item Cannot signal threads without safe signals

Safe signals must be in effect to use the C<-E<gt>kill()> signalling method. See L</"Unsafe signals"> for more details.

=item Unrecognized signal name: ...

The particular copy of Perl that you're trying to use does not support the specified signal being used in a C<-E<gt>kill()> call.

=back

=head1 BUGS AND LIMITATIONS

Before you consider posting a bug report, please consult, and possibly post a message to the discussion forum to see if what you've encountered is a known problem.

=over

=item Thread-safe modules

See L<perlmod/"Making your module threadsafe"> when creating modules that may be used in threaded applications, especially if those modules use non-Perl data, or XS code.

=item Using non-thread-safe modules

Unfortunately, you may encounter Perl modules that are not I<thread-safe>.

For example, they may crash the Perl interpreter during execution, or may dump core on termination. Depending on the module and the requirements of your application, it may be possible to work around such difficulties.

If the module will only be used inside a thread, you can try loading the module from inside the thread entry point function using C<require> (and C<import> if needed):

```

sub thr_func
{
    require Unsafe::Module
    # Unsafe::Module->import(...);

    ....
}

```

If the module is needed inside the `I<main>` thread, try modifying your application so that the module is loaded (again using `C<require>` and `C<-E<gt>import()>`) after any threads are started, and in such a way that no other threads are started afterwards.

If the above does not work, or is not adequate for your application, then file a bug report on [L<http://rt.cpan.org/Public/>](http://rt.cpan.org/Public/) against the problematic module.

=item Memory consumption

On most systems, frequent and continual creation and destruction of threads can lead to ever-increasing growth in the memory footprint of the Perl interpreter. While it is simple to just launch threads and then `C<-E<gt>join()>` or `C<-E<gt>detach()>` them, for long-lived applications, it is better to maintain a pool of threads, and to reuse them for the work needed, using `L<queues|Thread::Queue>` to notify threads of pending work. The CPAN distribution of this module contains a simple example (`F<examples/pool_reuse.pl>`) illustrating the creation, use and monitoring of a pool of `I<reusable>` threads.

=item Current working directory

On all platforms except MSWin32, the setting for the current working directory is shared among all threads such that changing it in one thread (e.g., using `C<chdir()>`) will affect all the threads in the application.

On MSWin32, each thread maintains its own the current working directory setting.

=item Environment variables

Currently, on all platforms except MSWin32, all `I<system>` calls (e.g., using `C<system()>` or back-ticks) made from threads use the environment variable settings from the `I<main>` thread. In other words, changes made to `C<%ENV>` in a thread will not be visible in `I<system>` calls made by that thread.

To work around this, set environment variables as part of the `I<system>` call.

For example:

```
my $msg = 'hello';
system("FOO=$msg; echo \${FOO}"); # Outputs 'hello' to STDOUT
```

On MSWin32, each thread maintains its own set of environment variables.

=item Catching signals

Signals are I<caught> by the main thread (thread ID = 0) of a script. Therefore, setting up signal handlers in threads for purposes other than L</"THREAD SIGNALLING"> as documented above will not accomplish what is intended.

This is especially true if trying to catch C<SIGALRM> in a thread. To handle alarms in threads, set up a signal handler in the main thread, and then use L</"THREAD SIGNALLING"> to relay the signal to the thread:

```
# Create thread with a task that may time out
my $thr->create(sub {
    threads->yield();
    eval {
        $SIG{ALRM} = sub { die("Timeout\n"); };
        alarm(10);
        ... # Do work here
        alarm(0);
    };
    if ($@ =~ /Timeout/) {
        warn("Task in thread timed out\n");
    }
});

# Set signal handler to relay SIGALRM to thread
$SIG{ALRM} = sub { $thr->kill('ALRM') };

... # Main thread continues working
```

=item Parent-child threads

On some platforms, it might not be possible to destroy I<parent> threads while there are still existing I<child> threads.

=item Creating threads inside special blocks

Creating threads inside C<BEGIN>, C<CHECK> or C<INIT> blocks should not be relied upon. Depending on the Perl version and the application code, results may range from success, to (apparently harmless) warnings of leaked scalar, or all the way up to crashing of the Perl interpreter.

=item Unsafe signals

Since Perl 5.8.0, signals have been made safer in Perl by postponing their handling

until the interpreter is in a I<safe> state. See

L<perl58delta/"Safe Signals"> and L<perlipc/"Deferred Signals (Safe Signals)"> for more details.

Safe signals is the default behavior, and the old, immediate, unsafe signalling behavior is only in effect in the following situations:

=over 4

=item * Perl has been built with C<PERL_OLD_SIGNALS> (see C<perl -V>).

=item * The environment variable C<PERL_SIGNALS> is set to C<unsafe> (see L<perlrun/"PERL_SIGNALS">).

=item * The module L<Perl::Unsafe::Signals> is used.

=back

If unsafe signals is in effect, then signal handling is not thread-safe, and the C<-E<gt>kill()> signalling method cannot be used.

=item Returning closures from threads

Returning closures from threads should not be relied upon. Depending on the Perl version and the application code, results may range from success, to (apparently harmless) warnings of leaked scalar, or all the way up to crashing of the Perl interpreter.

=item Returning objects from threads

Returning

objects from threads does not work. Depending on the classes involved, you may be able to work around this by returning a serialized version of the object (e.g., using L<Data::Dumper> or L<Storable>), and then reconstituting it in the joining thread. If you're using Perl 5.10.0 or later, and if the class supports L<shared objects|threads::shared/"OBJECTS">, you can pass them via L<shared queues|Thread::Queue>.

=item END blocks in threads

It is possible to add L<END blocks|perlmod/"BEGIN, UNITCHECK, CHECK, INIT and END"> to threads by using L<require|perlfunc/"require VERSION"> or L<eval|perlfunc/"eval EXPR"> with the appropriate code. These C<END> blocks will then be executed when the thread's interpreter is destroyed (i.e., either during a C<-E<gt>join()> call, or at program termination).

However, calling any L<threads> methods in such an C<END> block will most likely I<fail> (e.g., the application may hang, or generate an error) due to mutexes that are needed to control functionality within the L<threads> module.

For this reason, the use of C<END> blocks in threads is B<strongly> discouraged.

=item Open directory handles

In perl 5.14 and higher, on systems other than Windows that do not support the C<fchdir> C function, directory handles (see L<opendir|perlfunc/"opendir DIRHANDLE,EXPR">) will not be copied to new threads. You can use the C<d_fchdir> variable in L<Config.pm|Config> to determine whether your system supports it.

In prior perl versions, spawning threads with open directory handles would crash the interpreter.

L<[perl #75154]|http://rt.perl.org/rt3/Public/Bug/Display.html?id=75154>

=item Perl Bugs and the CPAN Version of L<threads>

Support for threads extends beyond the code in this module (i.e., F<threads.pm> and F<threads.xs>), and into the Perl interpreter itself. Older versions of Perl contain bugs that may manifest themselves despite using the latest version of L<threads> from CPAN. There is no workaround for this other than upgrading to the latest version of Perl.

Even with the latest version of Perl, it is known that certain constructs with threads may result in warning messages concerning leaked scalars or unreferenced scalars. However, such warnings are harmless, and may safely be ignored.

You can search for L<threads> related bug reports at L<http://rt.cpan.org/Public/>. If needed submit any new bugs, problems, patches, etc. to: L<http://rt.cpan.org/Public/Dist/Display.html?Name=threads>

=back

=head1 REQUIREMENTS

Perl 5.8.0 or later

=head1 SEE ALSO

L<threads> Discussion Forum on CPAN:

L<<http://www.cpanforum.com/dist/threads>>

L<threads::shared>, L<perlthrtut>

L<<http://www.perl.com/pub/a/2002/06/11/threads.html>> and

L<<http://www.perl.com/pub/a/2002/09/04/threads.html>>

Perl threads mailing list:

L<<http://lists.perl.org/list/ithreads.html>>

Stack size discussion:

L<http://www.perlmonks.org/?node_id=532956>

=head1 AUTHOR

Artur Bergman E<lt>sky AT crucially DOT netE<gt>

CPAN version produced by

Jerry D. Hedden <jdhedden AT cpan DOT org>

=head1 LICENSE

threads is released under the same license as Perl.

=head1 ACKNOWLEDGEMENTS

Richard Soderberg E<lt>perl AT crystalflame DOT netE<gt> -

Helping me out tons, trying to find reasons for races and other weird bugs!

Simon Cozens E<lt>simon AT brecon DOT co DOT ukE<gt> -

Being there to answer zillions of annoying questions

Rocco Caputo E<lt>troc AT netrus DOT netE<gt>

Vipul Ved Prakash E<lt>mail AT vipul DOT netE<gt> -

Helping with debugging

Dean Arnold E<lt>darnold AT presicient DOT comE<gt> -

Stack size API

=cut

Found in path(s):

* /opt/cola/permits/1592955636_1678786352.7711432/0/perl-threads-1.87-4.el7-1.src.rpm-cosi-expand-archive-MM4xbzIz/threads-1.87.tar.gz-cosi-expand-archive-Q6zgayxG/threads-1.87/lib/threads.pm

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955636_1678786352.7711432/0/perl-threads-1.87-4.el7-1.src.rpm-cosi-expand-archive-MM4xbzIz/perl-threads.spec

1.281 perl-filter 1.49-3.el7

1.281.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-exgteBPt/perl-Filter.spec

No license file was found, but licenses were detected in source scan.

Source Filters

Version 1.49

2013-04-01 rurban

Copyright (c) 1995-2011 Paul Marquess. All rights reserved.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

DESCRIPTION

This distribution consists of a number of Source Filters.

For more details see the pod documentation embedded in the .pm files.

If you intend using the Filter::Util::Call functionality, I would strongly recommend that you check out Damian Conway's excellent Filter::Simple module. Damian's module provides a much cleaner interface than Filter::Util::Call. Although it doesn't allow the fine control that Filter::Util::Call does, it should be adequate for the majority of applications. It's available at

<http://search.cpan.org/dist/Filter-Simple/>

PREREQUISITES

Before you can build the Source Filters you need to have the following installed on your system:

* Perl 5.005 or better. 5.6.0 or better is recommended for Win32.

If your Perl is less than version 5.004_55, the "order" test harness will be skipped.

BUILDING THE MODULES

Assuming you have met all the prerequisites, building the modules should be relatively straightforward.

The modules can now be built using this sequence of commands:

```
perl Makefile.PL
make
make test
```

The filters have been successfully built and tested on the following systems (at least):

```
linux (gcc or clang)
cygwin 1.7
mingw strawberry 5.14
SunOS 4.1.3 (Sun C compiler & gcc 2.7.2.3)
Solaris 2.3 (Sun C Compiler)
irix 5.3
irix 6.x
Windows XP (Visual C++ 6.0)
```

On Windows tr.exe and cpp.exe should be really the gnu/mingw tools in the path for the testsuite to pass successfully.

INSTALLATION

```
make install
```

UPDATES

The most recent version of the Filters is always available at

<http://www.cpan.org/modules/by-module/Filter>

Found in path(s):

* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-exgteBPT/Filter-1.49.tar.gz-cosi-expand-archive-YqVstY5H/Filter-1.49/README

No license file was found, but licenses were detected in source scan.

=head1 NAME

perlfiter - Source Filters

=head1 DESCRIPTION

This article is about a little-known feature of Perl called I<source filters>. Source filters alter the program text of a module before Perl sees it, much as a C preprocessor alters the source text of a C program before the compiler sees it. This article tells you more about what source filters are, how they work, and how to write your own.

The original purpose of source filters was to let you encrypt your program source to prevent casual piracy. This isn't all they can do, as you'll soon learn. But first, the basics.

=head1 CONCEPTS

Before the Perl interpreter can execute a Perl script, it must first read it from a file into memory for parsing and compilation. If that script itself includes other scripts with a C<use> or C<require> statement, then each of those scripts will have to be read from their respective files as well.

Now think of each logical connection between the Perl parser and an individual file as a I<source stream>. A source stream is created when the Perl parser opens a file, it continues to exist as the source code is read into memory, and it is destroyed when Perl is finished parsing the file. If the parser encounters a C<require> or C<use> statement in a source stream, a new and distinct stream is created just for that file.

The diagram below represents a single source stream, with the flow of source from a Perl script file on the left into the Perl parser on the right. This is how Perl normally operates.

file -----> parser

There are two important points to remember:

=over 5

=item 1.

Although there can be any number of source streams in existence at any given time, only one will be active.

=item 2.

Every source stream is associated with only one file.

=back

A source filter is a special kind of Perl module that intercepts and modifies a source stream before it reaches the parser. A source filter changes

our diagram like this:

```
file ----> filter ----> parser
```

If that doesn't make much sense, consider the analogy of a command pipeline. Say you have a shell script stored in the compressed file I<trial.gz>. The simple pipeline command below runs the script without needing to create a temporary file to hold the uncompressed file.

```
gunzip -c trial.gz | sh
```

In this case, the data flow from the pipeline can be represented as follows:

```
trial.gz ----> gunzip ----> sh
```

With source filters, you can store the text of your script compressed and use a source filter to uncompress it for Perl's parser:

```
compressed      gunzip  
Perl program ---> source filter ---> parser
```

=head1 USING FILTERS

So how do you use a source filter in a Perl script? Above, I said that a source filter is just a special kind of module. Like all Perl modules, a source filter is invoked with a use statement.

Say you want to pass your Perl source through the C preprocessor before execution. As it

happens, the source filters distribution comes with a C preprocessor filter module called Filter::cpp.

Below is an example program, C<cpp_test>, which makes use of this filter. Line numbers have been added to allow specific lines to be referenced easily.

```
1: use Filter::cpp;
2: #define TRUE 1
3: $a = TRUE;
4: print "a = $a\n";
```

When you execute this script, Perl creates a source stream for the file. Before the parser processes any of the lines from the file, the source stream looks like this:

```
cpp_test -----> parser
```

Line 1, C<use Filter::cpp>, includes and installs the C<cpp> filter module. All source filters work this way. The use statement is compiled and executed at compile time, before any more of the file is read, and it attaches the cpp filter to the source stream behind the scenes. Now the data flow looks like this:

```
cpp_test ----> cpp filter ----> parser
```

As the parser reads the second and subsequent lines from the source stream, it feeds those lines through the C<cpp> source filter before processing them. The C<cpp> filter simply passes each line through the real C preprocessor. The output from the C preprocessor is then inserted back into the source stream by the filter.

```
      .-> cpp --.
      |      |
      |      |
      |      <-'
cpp_test ----> cpp filter ----> parser
```

The parser then sees the following code:

```
use Filter::cpp;
$a = 1;
print "a = $a\n";
```

Let's consider what happens when the filtered code includes another module with use:

```
1: use Filter::cpp;
2: #define TRUE 1
```

```
3: use Fred;
4: $a = TRUE;
5: print "a = $a\n";
```

The C<cpp> filter does not apply to the text of the Fred module, only to the text of the file that used it (C<cpp_test>). Although the use statement on line 3 will pass through the cpp filter, the module that gets included (C<Fred>) will not. The source streams look like this after line 3 has been parsed and before line 4 is parsed:

```
cpp_test ---> cpp filter ---> parser (INACTIVE)

Fred.pm ----> parser
```

As you can see, a new stream has been created for reading the source from C<Fred.pm>. This stream will remain active until all of C<Fred.pm> has been parsed. The source stream for C<cpp_test> will still exist, but is inactive. Once the parser has finished reading Fred.pm, the source stream associated with it will be destroyed. The source stream for C<cpp_test> then becomes active again and the parser reads line 4 and subsequent lines from C<cpp_test>.

You can use more than one source filter on a single file. Similarly, you can reuse the same filter in as many files as you like.

For example, if you have a uuencoded and compressed source file, it is possible to stack a uuencode filter and an uncompression filter like this:

```
use Filter::uuencode; use Filter::uncompress;
M'XL("H<US4"V9I;F%L)Q;>7/;1I;_>_I3=&E=%:F*I"T?22Q/
M6]9*<IQCO*XFT"0[PL%'Y+IG?WN^ZYN-$J.[.JES,20/?K=_[>
...
```

Once the first line has been processed, the flow will look like this:

```
file ---> uuencode ---> uncompress ---> parser
      filter      filter
```

Data flows through filters in the same order they appear in the source file. The uuencode filter appeared before the uncompress filter, so the source file will be uuencoded before it's uncompressed.

=head1 WRITING A SOURCE FILTER

There are three ways to write your own source filter. You can write it in C, use an external program as a filter, or write the filter in Perl.

I won't cover the first two in any great detail, so I'll get them out of the way first. Writing the filter in Perl is most convenient, so I'll devote the most space to it.

=head1 WRITING A SOURCE FILTER IN C

The first of the three available techniques is to write the filter completely in C. The external module you create interfaces directly with the source filter hooks provided by Perl.

The advantage of this technique is that you have complete control over the implementation of your filter. The big disadvantage is the increased complexity required to write the filter - not only do you need to understand the source filter hooks, but you also need a reasonable knowledge of Perl guts. One of the few times it is worth going to this trouble is when writing a source scrambler. The C<decrypt> filter (which unscrambles the source before Perl parses it) included with the source filter distribution is an example of a C source filter (see Decryption Filters, below).

=over 5

=item B<Decryption Filters>

All decryption filters work on the principle of "security through obscurity." Regardless of how well you write a decryption filter and how strong your encryption algorithm is, anyone determined enough can retrieve the original source code. The reason is quite simple - once the decryption filter has decrypted the source back to its original form, fragments of it will be stored in the computer's memory as Perl parses it. The source might only be in memory for a short period of time, but anyone possessing a debugger, skill, and lots of patience can eventually reconstruct your program.

That said, there are a number of steps that can be taken to make life difficult for the potential cracker. The most important: Write your decryption filter in C and statically link the decryption module into the Perl binary. For further tips to make life difficult for the potential cracker, see the file I<decrypt.pm> in the source filters distribution.

=back

=head1 CREATING A SOURCE FILTER AS A SEPARATE EXECUTABLE

An alternative to writing the filter in C is to create a separate executable in the language of your choice. The separate executable reads from standard input, does whatever processing is necessary, and writes the filtered data to standard output. C<Filter::cpp> is an example of a source filter implemented as a separate executable - the executable is the C preprocessor bundled with your C compiler.

The source filter distribution includes two modules that simplify this task: C<Filter::exec> and C<Filter::sh>. Both allow you to run any external executable. Both use a coprocess to control the flow of data into and out of the external executable. (For details on coprocesses, see Stephens, W.R., "Advanced Programming in the UNIX Environment." Addison-Wesley, ISBN 0-210-56317-7, pages 441-445.) The difference between them is that C<Filter::exec> spawns the external command directly, while C<Filter::sh> spawns a shell to execute the external command. (Unix uses the Bourne shell; NT uses the cmd shell.) Spawning a shell allows you to make use of the shell metacharacters and redirection facilities.

Here is an example script that uses C<Filter::sh>:

```
use Filter::sh 'tr XYZ PQR';
$a = 1;
print "XYZ a = $a\n";
```

The output you'll get when the script is executed:

```
PQR a = 1
```

Writing a source filter as a separate executable works fine, but a small performance penalty is incurred. For example, if you execute the small example above, a separate subprocess will be created to run the Unix C<tr> command. Each use of the filter requires its own subprocess. If creating subprocesses is expensive on your system, you might want to consider one of the other options for creating source filters.

=head1 WRITING A SOURCE FILTER IN PERL

The easiest and most portable option available for creating your own source filter is to write it completely in Perl. To distinguish this from the previous two techniques, I'll call it a Perl source filter.

To help understand how to write a Perl source filter we need an example to study. Here is a complete source filter that performs rot13 decoding. (Rot13 is a very simple encryption scheme used in Usenet postings to hide the contents of offensive posts. It moves every letter

forward thirteen places, so that A becomes N, B becomes O, and Z becomes M.)

```
package Rot13;

use Filter::Util::Call;

sub import {
    my ($type) = @_;
    my ($ref) = [];
    filter_add(bless
$ref);
}

sub filter {
    my ($self) = @_;
    my ($status);

    tr/n-za-mN-ZA-M/a-zA-Z/
    if ($status = filter_read()) > 0;
    $status;
}

1;
```

All Perl source filters are implemented as Perl classes and have the same basic structure as the example above.

First, we include the C<Filter::Util::Call> module, which exports a number of functions into your filter's namespace. The filter shown above uses two of these functions, C<filter_add()> and C<filter_read()>.

Next, we create the filter object and associate it with the source stream by defining the C<import> function. If you know Perl well enough, you know that C<import> is called automatically every time a module is included with a use statement. This makes C<import> the ideal place to both create and install a filter object.

In the example filter, the object (C<\$ref>) is blessed just like any other Perl object. Our example uses an anonymous array, but this isn't a requirement. Because this example doesn't need to store any context information, we could have used a scalar or hash reference just as well. The next section demonstrates context data.

The association between the filter object and the source stream is made

with the `C<filter_add()>` function. This takes a filter object as a parameter (`C<$ref>` in this case) and installs it in the source stream.

Finally, there is the code that actually does the filtering. For this type of Perl source filter, all the filtering is done in a method called `C<filter()>`. (It is also possible to write a Perl source filter using a closure. See the `C<Filter::Util::Call>` manual page for more details.) It's called every time the Perl parser needs another line of source to process. The `C<filter()>` method, in turn, reads lines from the source stream using the `C<filter_read()>` function.

If a line was available from the source stream, `C<filter_read()>` returns a status value greater than zero and appends the line to `C<$_>`.

A status value of

zero indicates end-of-file, less than zero means an error. The filter function itself is expected to return its status in the same way, and put the filtered line it wants written to the source stream in `C<$_>`. The use of `C<$_>` accounts for the brevity of most Perl source filters.

In order to make use of the rot13 filter we need some way of encoding the source file in rot13 format. The script below, `C<mkrot13>`, does just that.

```
die "usage mkrot13 filename\n" unless @ARGV;
my $in = $ARGV[0];
my $out = "$in.tmp";
open(IN, "<$in") or die "Cannot open file $in: $!\n";
open(OUT, ">$out") or die "Cannot open file $out: $!\n";

print OUT "use Rot13;\n";
while (<IN>) {
    tr/a-zA-Z/n-za-mN-ZA-M/;
    print OUT;
}

close IN;
close OUT;
unlink $in;
rename $out, $in;
```

If we encrypt this with `C<mkrot13>`:

```
print " hello fred \n";
```

the result will be this:

```
use Rot13;
```



```
cevag "uryyb serq\a";
```

Running it produces this output:

```
hello
fred
```

=head1 USING CONTEXT: THE DEBUG FILTER

The rot13 example was a trivial example. Here's another demonstration that shows off a few more features.

Say you wanted to include a lot of debugging code in your Perl script during development, but you didn't want it available in the released product. Source filters offer a solution. In order to keep the example simple, let's say you wanted the debugging output to be controlled by an environment variable, C<DEBUG>. Debugging code is enabled if the variable exists, otherwise it is disabled.

Two special marker lines will bracket debugging code, like this:

```
## DEBUG_BEGIN
if ($year > 1999) {
    warn "Debug: millennium bug in year $year\n";
}
## DEBUG_END
```

The filter ensures that Perl parses the code between the <DEBUG_BEGIN> and C<DEBUG_END> markers only when the C<DEBUG> environment variable exists. That means that when C<DEBUG> does exist, the code above should be passed through the filter unchanged. The marker lines can also be passed through as-is, because the Perl parser will see them as comment lines. When C<DEBUG> isn't set, we need a way to disable the debug code. A simple way to achieve that is to convert the lines between the two markers into comments:

```
## DEBUG_BEGIN
#if ($year > 1999) {
#    warn "Debug: millennium bug in year $year\n";
#}
## DEBUG_END
```

Here is the complete Debug filter:

```
package Debug;

use strict;
```

```

use warnings;
use Filter::Util::Call;

use constant TRUE => 1;
use constant FALSE => 0;

sub import {
    my ($type) = @_ ;
    my (%context) = (
        Enabled => defined $ENV{DEBUG},
        InTraceBlock => FALSE,
        Filename => (caller)[1],
        LineNo => 0,
        LastBegin => 0,
    );
    filter_add(bless \%context);
}

sub Die {
    my ($self) = shift;
    my ($message) = shift;
    my ($line_no) = shift || $self->{LastBegin};
    die "$message at $self->{Filename} line $line_no.\n"
}

sub filter {
    my ($self) = @_ ;
    my ($status);
    $status = filter_read();
    ++ $self->{LineNo};

    # deal with EOF/error first
    if ($status <= 0) {
        $self->Die("DEBUG_BEGIN has no DEBUG_END")
        if $self->{InTraceBlock};
        return $status;
    }

    if ($self->{InTraceBlock}) {
        if (/^\s*##\s*DEBUG_BEGIN/) {
            $self->Die("Nested DEBUG_BEGIN", $self->{LineNo})
        } elsif (/^\s*##\s*DEBUG_END/) {
            $self->{InTraceBlock} = FALSE;
        }
    }

    # comment out the debug lines when the filter is disabled
    s/^\s*##\s*DEBUG_BEGIN/ if ! $self->{Enabled};
} elsif (/^\s*##\s*DEBUG_BEGIN/) {

```

```

    $self->{InTraceBlock} = TRUE;
    $self->{LastBegin} = $self->{LineNo};
} elsif ( /^\\s*##\\s*DEBUG_END/ ) {
    $self->Die("DEBUG_END has no DEBUG_BEGIN", $self->{LineNo});
}
return $status;
}

1;

```

The big difference between this filter and the previous example is the use of context data in the filter object. The filter object is based on a hash reference, and is used to keep various pieces of context information between calls to the filter function. All but two of the hash fields are used for error reporting. The first of those two, Enabled, is used by the filter to determine whether the debugging code should be given to the Perl parser. The second, InTraceBlock, is true when the filter has encountered a C<DEBUG_BEGIN> line, but has not yet encountered the following C<DEBUG_END> line.

If you ignore all the error checking that most of the code does, the essence of the filter is as follows:

```

sub filter {
    my ($self) = @_;
    my ($status);
    $status = filter_read();

    # deal with EOF/error first
    return $status if $status <= 0;
    if ($self->{InTraceBlock}) {
        if ( /^\\s*##\\s*DEBUG_END/ ) {
            $self->{InTraceBlock} = FALSE
        }

        # comment
        out debug lines when the filter is disabled
        s/^/#/ if ! $self->{Enabled};
    } elsif ( /^\\s*##\\s*DEBUG_BEGIN/ ) {
        $self->{InTraceBlock} = TRUE;
    }
    return $status;
}

```

Be warned: just as the C-preprocessor doesn't know C, the Debug filter doesn't know Perl. It can be fooled quite easily:

```
print <<EOM;
##DEBUG_BEGIN
EOM
```

Such things aside, you can see that a lot can be achieved with a modest amount of code.

=head1 CONCLUSION

You now have better understanding of what a source filter is, and you might even have a possible use for them. If you feel like playing with source filters but need a bit of inspiration, here are some extra features you could add to the Debug filter.

First, an easy one. Rather than having debugging code that is all-or-nothing, it would be much more useful to be able to control which specific blocks of debugging code get included. Try extending the syntax for debug blocks to allow each to be identified. The contents of the C<DEBUG> environment variable can then be used to control which blocks get included.

Once you can identify individual blocks, try allowing them to be nested. That isn't difficult either.

Here is an interesting idea that doesn't involve the Debug filter. Currently Perl subroutines have fairly limited support for formal parameter lists. You can specify the number of parameters and their type, but you still have to manually take them out of the C<@_> array yourself. Write a source filter that allows you to have a named parameter list. Such a filter would turn this:

```
sub MySub ($first, $second, @rest) { ... }
```

into this:

```
sub MySub($$@) {
  my ($first) = shift;
  my ($second) = shift;
  my (@rest) = @_;
  ...
}
```

Finally, if you feel like a real challenge, have a go at writing a full-blown Perl macro preprocessor as a source filter. Borrow the useful features from the C preprocessor and any other macro processors you know. The tricky bit will be choosing

how much knowledge of Perl's
syntax you want your filter to have.

=head1 THINGS TO LOOK OUT FOR

=over 5

=item Some Filters Clobber the C<DATA> Handle

Some source filters use the C<DATA> handle to read the calling program. When using these source filters you cannot rely on this handle, nor expect any particular kind of behavior when operating on it. Filters based on Filter::Util::Call (and therefore Filter::Simple) do not alter the C<DATA> filehandle.

=back

=head1 REQUIREMENTS

The Source Filters distribution is available on CPAN, in

CPAN/modules/by-module/Filter

Starting from Perl 5.8 Filter::Util::Call (the core part of the Source Filters distribution) is part of the standard Perl distribution. Also included is a friendlier interface called Filter::Simple, by Damian Conway.

=head1 AUTHOR

Paul Marquess E<lt>Paul.Marquess@btinternet.comE<gt>

=head1 Copyrights

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Found in path(s):

* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-exgteBPT/Filter-1.49.tar.gz-cosi-expand-archive-YqVstY5H/Filter-1.49/perlfilter.pod

No license file was found, but licenses were detected in source scan.

/*

* Filename : Call.xs

*

```
* Author : Paul Marquess
* Date : 2013-03-29 09:04:42 rurban
* Version : 1.49
*
* Copyright (c) 1995-2011 Paul Marquess. All rights reserved.
* This program is free software; you can redistribute it and/or
* modify it under the same terms as Perl itself.
*
*/
```

Found in path(s):

```
* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-
exgteBpt/Filter-1.49.tar.gz-cosi-expand-archive-YqVstY5H/Filter-1.49/Call/Call.xs
```

No license file was found, but licenses were detected in source scan.

```
# Copyright (c) 1995-2011 Paul Marquess. All rights reserved.
# This program is free software; you can redistribute it and/or
# modify it under the same terms as Perl itself.
```

Found in path(s):

```
* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-
exgteBpt/Filter-1.49.tar.gz-cosi-expand-archive-YqVstY5H/Filter-1.49/Call/Call.pm
```

No license file was found, but licenses were detected in source scan.

```
abstract: 'Source Filters'
author:
- 'Paul Marquess <pmqs@cpan.org>'
build_requires:
ExtUtils::MakeMaker: 0
configure_requires:
ExtUtils::MakeMaker: 0
dynamic_config: 1
generated_by: 'ExtUtils::MakeMaker version 6.64, CPAN::Meta::Converter version 2.120630'
license: perl
meta-spec:
url: http://module-build.sourceforge.net/META-spec-v1.4.html
version: 1.4
name: Filter
no_index:
directory:
- t
- inc
recommends:
Filter::Simple: 0.88
Filter::Simple::Compile: 0.02
requires: {}
resources:
```

license: <http://dev.perl.org/licenses/>
repository: <https://github.com/rurban/Filter>
version: 1.49

Found in path(s):

* /opt/cola/permits/1592955669_1678946234.3589108/0/perl-Filter-1.49-3.el7-1.src.rpm-cosi-expand-archive-exgteBPT/Filter-1.49.tar.gz-cosi-expand-archive-YqVstY5H/Filter-1.49/META.yml

1.282 perl-podlators 2.5.1-3.el7

1.282.1 Available under license :

No license file was found, but licenses were detected in source scan.

```
# This program is free software; you may redistribute it and/or modify it  
# under the same terms as Perl itself.
```

Found in path(s):

```
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/man-perlio.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/pod-parser.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/ParseLink.pm  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/Text.pm  
*  
/opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/pod-spelling.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/color.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/man-utf8.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/basic.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/text-options.t  
*  
/opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/parselink.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/filehandle.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/Text/Color.pm  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/pod.t  
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/overstrike.t
```

```

*
/opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/man.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/text.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/text-perlio.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/man-options.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/Man.pm
*
/opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/text-encoding.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/text-utf8.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/termcap.t
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/t/man-heading.t
No license file was found, but licenses were detected in source scan.

```

```
#!perl
```

```

# pod2text -- Convert POD data to formatted ASCII text.
#
# Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013
# Russ Allbery <rra@stanford.edu>
#
# This program is free software; you may redistribute it and/or modify it
# under the same terms as Perl itself.
#
# The driver script for Pod::Text, Pod::Text::Termcap, and Pod::Text::Color,
# invoked by perldoc -t among other things.

```

```
require 5.004;
```

```

use Getopt::Long qw(GetOptions);
use Pod::Text ();
use Pod::Usage qw(pod2usage);

```

```
use strict;
```

```

# Clean up $0 for error reporting.
$0 =~ s%.*%%;

```

```

# Take an initial pass through our options, looking for one of the form
# -<number>. We turn that into -w <number> for compatibility with the

```



```

# original pod2text script.
for (my $i = 0; $i < @ARGV; $i++) {
    last if $ARGV[$i] =~ /^--$/;
    if ($ARGV[$i] =~ /^-(d+)$/) {
        splice (@ARGV, $i++, 1, '-w', $1);
    }
}

# Insert -- into @ARGV before any
single dash argument to hide it from
# Getopt::Long; we want to interpret it as meaning stdin (which Pod::Simple
# does correctly).
my $stdin;
@ARGV = map { $_ eq '-' && !$stdin++ ? ('-', $_) : $_ } @ARGV;

# Parse our options. Use the same names as Pod::Text for simplicity, and
# default to sentence boundaries turned off for compatibility.
my %options;
$options{sentence} = 0;
Getopt::Long::config ('bundling');
GetOptions (%options, 'alt|a', 'code', 'color|c', 'errors=s', 'help|h',
            'indent|i=i', 'loose|l', 'margin|left-margin|m=i', 'nourls',
            'overstrike|o', 'quotes|q=s', 'sentence|s', 'stderr', 'termcap|t',
            'utf8|u', 'width|w=i')
    or exit 1;
pod2usage (1) if $options{help};

# Figure out what formatter we're going to use. -c overrides -t.
my $formatter = 'Pod::Text';
if ($options{color}) {
    $formatter = 'Pod::Text::Color';
    eval { require Term::ANSIColor };
    if ($?) { die "-c (--color) requires Term::ANSIColor be installed\n" }
    require
    Pod::Text::Color;
} elsif ($options{termcap}) {
    $formatter = 'Pod::Text::Termcap';
    require Pod::Text::Termcap;
} elsif ($options{overstrike}) {
    $formatter = 'Pod::Text::Overstrike';
    require Pod::Text::Overstrike;
}
delete @options{'color', 'termcap', 'overstrike'};

# If neither stderr nor errors is set, default to errors = die.
if (!defined $options{stderr} && !defined $options{errors}) {
    $options{errors} = 'die';
}

```

```

# Initialize and run the formatter.
my $parser = $formatter->new (%options);
my $status = 0;
do {
    my ($input, $output) = splice (@ARGV, 0, 2);
    $parser->parse_from_file ($input, $output);
    if ($parser->{CONTENTLESS}) {
        $status = 1;
        warn "$0: unable to format $input\n";
        if (defined ($output) and $output ne '-') {
            unlink $output unless (-s $output);
        }
    }
} while (@ARGV);
exit $status;

```

__END__

=for stopwords

-aclostu --alt --stderr Allbery --overstrike overstrike --termcap --utf8

UTF-8 subclasses

--nourls

=head1 NAME

pod2text - Convert POD data to formatted ASCII text

=head1 SYNOPSIS

```

pod2text [B<-aclostu>] [B<--code>] [B<--errors>=I<style>] [B<-i> I<indent>]
  S<[B<-q> I<quotes>]> [B<--nourls>] [B<--stderr>] S<[B<-w> I<width>]>
  [I<input> [I<output> ...]]

```

pod2text B<-h>

=head1 DESCRIPTION

B<pod2text> is a front-end for Pod::Text and its subclasses. It uses them to generate formatted ASCII text from POD source. It can optionally use either termcap sequences or ANSI color escape sequences to format the text.

I<input> is the file to read for POD source (the POD can be embedded in code). If I<input> isn't given, it defaults to C<STDIN>. I<output>, if given, is the file to which to write the formatted output. If I<output> isn't given, the formatted output is written to C<STDOUT>. Several POD files can be processed in the same B<pod2text> invocation (saving module load and compile times) by providing multiple pairs of I<input> and

I<output> files on the command line.

=head1 OPTIONS

=over 4

=item B<-a>, B<--alt>

Use an alternate output format that, among other things, uses a different heading style and marks C<=item> entries with a colon in the left margin.

=item B<--code>

Include any non-POD text from the input file in the output as well. Useful for viewing code documented with POD blocks with the POD rendered and the code left intact.

=item B<-c>, B<--color>

Format the output with ANSI color escape sequences. Using this option requires that Term::ANSIColor be installed on your system.

=item B<-i> I<indent>, B<--indent=>I<indent>

Set the number of spaces to indent regular text, and the default indentation for C<=over> blocks. Defaults to 4 spaces if this option isn't given.

=item B<-errors>=I<style>

Set the error handling style. C<die> says to throw an exception on any POD formatting error. C<stderr> says to report errors on standard error, but not to throw an exception. C<pod> says to include a POD ERRORS section in the resulting documentation summarizing the errors. C<none> ignores POD errors entirely, as much as possible.

The default is C<die>.

=item B<-h>, B<--help>

Print out usage information and exit.

=item B<-l>, B<--loose>

Print a blank line after a C<=head1> heading. Normally, no blank line is printed after C<=head1>, although one is still printed after C<=head2>, because this is the expected formatting for manual pages; if you're

formatting arbitrary text documents, using this option is recommended.

=item B<-m> I<width>, B<--left-margin>=I<width>, B<--margin>=I<width>

The width of the left margin in spaces. Defaults to 0. This is the margin for all text, including headings, not the amount by which regular text is indented; for the latter, see B<-i> option.

=item B<--nourls>

Normally, LZ<<>> formatting codes with a URL but anchor text are formatted to show both the anchor text and the URL. In other words:

L<foo|http://example.com/>

is formatted as:

foo <http://example.com/>

This

flag, if given, suppresses the URL when anchor text is given, so this example would be formatted as just C<foo>. This can produce less cluttered output in cases where the URLs are not particularly important.

=item B<-o>, B<--overstrike>

Format the output with overstrike printing. Bold text is rendered as character, backspace, character. Italics and file names are rendered as underscore, backspace, character. Many paggers, such as B<less>, know how to convert this to bold or underlined text.

=item B<-q> I<quotes>, B<--quotes>=I<quotes>

Sets the quote marks used to surround CE<lt>> text to I<quotes>. If I<quotes> is a single character, it is used as both the left and right quote; if I<quotes> is two characters, the first character is used as the left quote and the second as the right quoted; and if I<quotes> is four characters, the first two are used as the left quote and the second two as the right quote.

I<quotes> may also be set to the special value C<none>, in which case no quote marks are added around CE<lt>> text.

=item B<-s>, B<--sentence>

Assume each sentence ends with two spaces and try to preserve that spacing. Without this option, all consecutive whitespace in non-verbatim paragraphs

is compressed into a single space.

=item B<--stderr>

By default, B<pod2text> dies if any errors are detected in the POD input. If B<--stderr> is given and no B<--errors> flag is present, errors are sent to standard error, but B<pod2text> does not abort. This is equivalent to C<--errors=stderr> and is supported for backward compatibility.

=item B<-t>, B<--termcap>

Try to determine the width of the screen and the bold and underline sequences for the terminal from termcap, and use that information in formatting the output. Output will be wrapped at two columns less than the width of your terminal device. Using this option requires that your system have a termcap file somewhere where Term::Cap can find it and requires that your system support terminos.

With this option, the output of B<pod2text> will contain terminal control sequences for your current terminal type.

=item B<-u>, B<--utf8>

By default, B<pod2text> tries to use the same output encoding as its input encoding (to be backward-compatible with older versions). This option says to instead force the output encoding to UTF-8.

Be aware that, when using this option, the input encoding of your POD source must be properly declared unless it is US-ASCII or Latin-1. POD input without an C<=encoding> command will be assumed to be in Latin-1, and if it's actually in UTF-8, the output will be double-encoded. See L<perlpod(1)> for more information on the C<=encoding> command.

=item B<-w>, B<--width=>I<width>, B<->I<width>

The column at which to wrap text on the right-hand side. Defaults to 76, unless B<-t> is given, in which case it's two columns less than the width of your terminal device.

=back

=head1 EXIT STATUS

As long as all documents processed result in some output, even if that output includes errata (a C<POD ERRORS> section generated with C<--errors=pod>), B<pod2text> will exit with status 0. If any of the documents being processed do not result in an output document, B<pod2text>

will exit with status 1. If there are syntax errors in a POD document being processed and the error handling style is set to the default of C<die>, B<pod2text> will abort immediately with exit status 255.

=head1 DIAGNOSTICS

If B<pod2text> fails with errors, see L<Pod::Text> and L<Pod::Simple> for information about what those errors might mean. Internally, it can also produce the following diagnostics:

=over 4

=item -c (--color) requires Term::ANSIColor be installed

(F) B<-c> or B<--color> were given, but Term::ANSIColor could not be loaded.

=item Unknown option: %s

(F) An unknown command line option was given.

=back

In addition, other L<Getopt::Long> error messages may result from invalid command-line options.

=head1 ENVIRONMENT

=over 4

=item COLUMNS

If B<-t>

is given, B<pod2text> will take the current width of your screen from this environment variable, if available. It overrides terminal width information in TERMCAP.

=item TERMCAP

If B<-t> is given, B<pod2text> will use the contents of this environment variable if available to determine the correct formatting sequences for your current terminal device.

=back

=head1 SEE ALSO

L<Pod::Text>, L<Pod::Text::Color>, L<Pod::Text::Overstrike>,

L<Pod::Text::Termcap>, L<Pod::Simple>, L<perlpod(1)>

The current version of this script is always available from its web site at L<<http://www.eyrie.org/~eagle/software/podlators/>>. It is also part of the Perl core distribution as of 5.6.0.

=head1 AUTHOR

Russ Allbery <rra@stanford.edu>.

=head1 COPYRIGHT AND LICENSE

Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013 Russ Allbery <rra@stanford.edu>.

This program is free software; you may redistribute it and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

*

/opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/scripts/pod2text

No license file was found, but licenses were detected in source scan.

abstract: 'Convert POD data to various other formats'

author:

- 'Russ Allbery <rra@stanford.edu>'

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

distribution_type: module

dynamic_config: 0

generated_by: 'ExtUtils::MakeMaker version 6.57_05'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: podlators

no_index:

directory:

- t

- inc

requires:

Encode: 0

File::Spec: 0.8
Pod::Simple: 3.06
version: 2.5.1

Found in path(s):

* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/MYMETA.yml

No license file was found, but licenses were detected in source scan.

=head1 NAME

perlpodstyle - Perl POD style guide

=head1 DESCRIPTION

These are general guidelines for how to write POD documentation for Perl scripts and modules, based on general guidelines for writing good UNIX man pages. All of these guidelines are, of course, optional, but following them will make your documentation more consistent with other documentation on the system.

The name of the program being documented is conventionally written in bold (using `BE<lt>E<gt>`) wherever it occurs, as are all program options. Arguments should be written in italics (`IE<lt>E<gt>`). Function names are traditionally written in italics; if you write a function as `function()`, Pod::Man will take care of this for you. Literal code or commands should be in `CE<lt>E<gt>`. References to other man pages should be in the form `C<manpage(section)>` or `C<LE<lt>manpage(section)E<gt>>`, and Pod::Man will automatically format those appropriately.

The second form, with `LE<lt>E<gt>`, is used to request that a POD formatter make a link to the man page if possible. As an exception, one normally omits the section when referring to module documentation since it's not clear what section module documentation will be in; use `C<LE<lt>Module::NameE<gt>>` for module references instead.

References to other programs or functions are normally in the form of man page references so that cross-referencing tools can provide the user with links and the like. It's possible to overdo this, though, so be careful not to clutter your documentation with too much markup. References to other programs that are not given as man page references should be enclosed in `BE<lt>E<gt>`.

The major headers should be set out using a `C<=head1>` directive, and are historically written in the rather startling ALL UPPER CASE format; this is not mandatory, but it's strongly recommended so that sections have consistent naming across different software packages. Minor headers

may
be included using `C<=head2>`, and are typically in mixed case.

The standard sections of a manual page are:

`=over 4`

`=item NAME`

Mandatory section; should be a comma-separated list of programs or functions documented by this POD page, such as:

foo, bar - programs to do something

Manual page indexers are often extremely picky about the format of this section, so don't put anything in it except this line. Every program or function documented by this POD page should be listed, separated by a comma and a space. For a Perl module, just give the module name. A single dash, and only a single dash, should separate the list of programs or functions from the description. Do not use any markup such as `CE<lt>E<gt>` or `BE<lt>E<gt>` anywhere in this line. Functions should not be qualified with `C<()>` or the like. The description should ideally fit on a single line, even if a man program replaces the dash with a few tabs.

`=item SYNOPSIS`

A short usage summary for programs and functions.

This section is mandatory for section 3 pages. For Perl module documentation, it's usually convenient to have the contents of this section be a verbatim block showing some (brief) examples of typical ways the module is used.

`=item DESCRIPTION`

Extended description and discussion of the program or functions, or the body of the documentation for man pages that document something else. If particularly long, it's a good idea to break this up into subsections `C<=head2>` directives like:

`=head2 Normal Usage`

`=head2 Advanced Features`

`=head2 Writing Configuration Files`

or whatever is appropriate for your documentation.

For a module, this is generally where the documentation of the interfaces

provided by the module goes, usually in the form of a list with an C<=item> for each interface. Depending on how many interfaces there are, you may want to put that documentation in separate METHODS, FUNCTIONS, CLASS METHODS, or INSTANCE METHODS sections instead and save the DESCRIPTION section for an overview.

=item OPTIONS

Detailed description of each of the command-line options taken by the program. This should be separate from the description for the use of parsers like L<Pod::Usage>. This is normally presented as a list, with each option as a separate C<=item>. The specific option string should be enclosed in BE<lt>E<gt>. Any values that the option takes should be enclosed in IE<lt>E<gt>. For example, the section for the option B<--section>=I<manext> would be introduced with:

=item B<--section>=I<manext>

Synonymous options (like both the short and long forms) are separated by a comma and a space on the same C<=item> line, or optionally listed as their own item with a reference to the canonical name. For example, since B<--section> can also be written as B<-s>, the above would be:

=item B<-s> I<manext>, B<--section>=I<manext>

Writing the short option first is recommended because it's easier to read. The long option is long enough to draw the eye to it anyway and the short option can otherwise get lost in visual noise.

=item RETURN VALUE

What the program or function returns, if successful. This section can be omitted for programs whose precise exit codes aren't important, provided they return 0 on success and non-zero on failure as is standard. It should always be present for functions. For modules, it may be useful to summarize return values from the module interface here, or it may be more useful to discuss return values separately in the documentation of each function or method the module provides.

=item ERRORS

Exceptions, error return codes, exit statuses, and errno settings. Typically used for function or module documentation; program documentation uses DIAGNOSTICS instead. The general rule of thumb is that errors printed to C<STDOUT> or C<STDERR> and intended for the end user are documented in DIAGNOSTICS while errors passed internal to the calling

program and intended for other programmers are documented in ERRORS. When documenting a function that sets errno, a full list of the possible errno values should be given here.

=item DIAGNOSTICS

All possible messages the program can print out and what they mean. You may wish to follow the same documentation style as the Perl documentation; see perldiag(1) for more details (and look at the POD source as well).

If applicable, please include details on what the user should do to correct the error; documenting an error as indicating "the input buffer is too small" without telling the user how to increase the size of the input buffer (or at least telling them that it isn't possible) aren't very useful.

=item EXAMPLES

Give some example uses of the program or function. Don't skimp; users often find this the most useful part of the documentation. The examples are generally given as verbatim paragraphs.

Don't just present an example without explaining what it does. Adding a short paragraph saying what the example will do can increase the value of the example immensely.

=item ENVIRONMENT

Environment variables that the program cares about, normally presented as a list using C<=over>, C<=item>, and C<=back>. For example:

=over 6

=item HOME

Used to determine the user's home directory. F<.foorc> in this directory is read for configuration details, if it exists.

=back

Since environment variables are normally in all uppercase, no additional special formatting is generally needed; they're glaring enough as it is.

=item FILES

All files used by the program or function, normally presented as a list,

and what it uses them for. File names should be enclosed in FE<lt>E<gt>. It's particularly important to document files that will be potentially modified.

=item CAVEATS

Things to take special care with, sometimes called WARNINGS.

=item BUGS

Things that are broken or just don't work quite right.

=item RESTRICTIONS

Bugs you don't plan to fix. :-)

=item NOTES

Miscellaneous commentary.

=item AUTHOR

Who

wrote it (use AUTHORS for multiple people). It's a good idea to include your current e-mail address (or some e-mail address to which bug reports should be sent) or some other contact information so that users have a way of contacting you. Remember that program documentation tends to roam the wild for far longer than you expect and pick a contact method that's likely to last.

=item HISTORY

Programs derived from other sources sometimes have this. Some people keep a modification log here, but that usually gets long and is normally better maintained in a separate file.

=item COPYRIGHT AND LICENSE

For copyright

Copyright YEAR(s) YOUR NAME(s)

(No, (C) is not needed. No, "all rights reserved" is not needed.)

For licensing the easiest way is to use the same licensing as Perl itself:

This library is free software; you may redistribute it and/or modify it under the same terms as Perl itself.

This makes it easy for people to use your module with Perl. Note that this

licensing example is neither an endorsement or a requirement, you are of course free to choose any licensing.

=item SEE ALSO

Other man pages to check out, like man(1), man(7), makewhatis(8), or catman(8). Normally a simple list of man pages separated by commas, or a paragraph giving the name of a reference work. Man page references, if they use the standard C<name(section)> form, don't have to be enclosed in LE<lt>E<gt> (although it's recommended), but other things in this section probably should be when appropriate.

If the package has a mailing list, include a URL or subscription instructions here.

If the package has a web site, include a URL here.

=back

Documentation of object-oriented libraries or modules may want to use CONSTRUCTORS and METHODS sections, or CLASS METHODS and INSTANCE METHODS sections, for detailed documentation of the parts of the library and save the DESCRIPTION section for an overview. Large modules with a function interface may want to use FUNCTIONS for similar reasons. Some people use OVERVIEW to summarize the description if it's quite long.

Section ordering varies, although NAME must always be the first section (you'll break some man page systems otherwise), and NAME, SYNOPSIS, DESCRIPTION, and OPTIONS generally always occur first and in that order if present. In general, SEE ALSO, AUTHOR, and similar material should be left for last. Some systems also move WARNINGS and NOTES to last. The order given above should be reasonable for most purposes.

Some systems use CONFORMING TO to note conformance to relevant standards and MT-LEVEL to note safeness for use in threaded programs or signal handlers. These headings are primarily useful when documenting parts of a C library.

Finally, as a general note, try not to use an excessive amount of markup. As documented here and in L<Pod::Man>, you can safely leave Perl variables, function names, man page references, and the like unadorned by markup and the POD translators will figure it out for you. This makes it much easier to later edit the documentation. Note that many existing

translators will do the wrong thing with e-mail addresses when wrapped in LE<lt>E<gt>, so don't do that.

=head1 SEE ALSO

For additional information that may be more accurate for your specific system, see either L<man(5)> or L<man(7)> depending on your system manual section numbering conventions.

This documentation is maintained as part of the podlators distribution.

The current version is always available from its web site at

<<http://www.eyrie.org/~eagle/software/podlators/>>.

=head1 AUTHOR

Russ Allbery <rra@stanford.edu>, with large portions of this documentation taken from the documentation of the original B<pod2man> implementation by Larry Wall and Tom Christiansen.

=head1 COPYRIGHT AND LICENSE

Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010 Russ Allbery

<rra@stanford.edu>.

This documentation is free software; you may redistribute it and/or modify it under the same terms as

Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/pod/perlpodstyle.pod

No license file was found, but licenses were detected in source scan.

license: perl

Found in path(s):

* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/META.yml

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/perl-podlators.spec

No license file was found, but licenses were detected in source scan.

```
#!/perl

# pod2man -- Convert POD data to formatted *roff input.
#
# Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013
# Russ Allbery <rra@stanford.edu>
#
# This program is free software; you may redistribute it and/or modify it
# under the same terms as Perl itself.

require 5.004;

use Getopt::Long qw(GetOptions);
use Pod::Man ();
use Pod::Usage qw(pod2usage);

use strict;

# Clean up $0 for error reporting.
$0 =~ s%.*/%%;

# Insert -- into @ARGV before any single dash argument to hide it from
# Getopt::Long; we want to interpret it as meaning stdin.
my $stdin;
@ARGV = map { $_ eq '-' && !$stdin++ ? ('-', $_) : $_ } @ARGV;

# Parse our options, trying to retain backward compatibility with pod2man but
# allowing short forms as well. --lax is currently ignored.
my %options;
Getopt::Long::config ('bundling_override');
GetOptions (\%options, 'center|c=s', 'date|d=s', 'errors=s', 'fixed=s',

'fixedbold=s', 'fixeditalic=s', 'fixedbolditalic=s', 'help|h',
'lax|l', 'name|n=s', 'nourls', 'official|o', 'quotes|q=s',
'release|r:s', 'section|s=s', 'stderr', 'verbose|v', 'utf8|u')
or exit 1;
pod2usage (0) if $options{help};

# Official sets --center, but don't override things explicitly set.
if ($options{official} && !defined $options{center}) {
    $options{center} = 'Perl Programmers Reference Guide';
}

# Verbose is only our flag, not a Pod::Man flag.
my $verbose = $options{verbose};
delete $options{verbose};
```

```

# This isn't a valid Pod::Man option and is only accepted for backward
# compatibility.
delete $options{lax};

# If neither stderr nor errors is set, default to errors = die.
if (!defined $options{stderr} && !defined $options{errors}) {
    $options{errors} = 'die';
}

# Initialize and run the formatter, pulling a pair of input and output off at
# a time. For each file, we check whether the document was completely empty
# and, if so, will remove
# the created file and exit with a non-zero exit
# status.
my $parser = Pod::Man->new (%options);
my $status = 0;
my @files;
do {
    @files = splice (@ARGV, 0, 2);
    print " $files[1]\n" if $verbose;
    $parser->parse_from_file (@files);
    if ($parser->{CONTENTLESS}) {
        $status = 1;
        warn "$0: unable to format $files[0]\n";
        if (defined ($files[1]) and $files[1] ne '-') {
            unlink $files[1] unless (-s $files[1]);
        }
    }
} while (@ARGV);
exit $status;

__END__

```

=for stopwords

en em --stderr stderr --utf8 UTF-8 overdo markup MT-LEVEL Allbery Solaris
URL troff troff-specific formatters uppercased Christiansen --nourls

=head1 NAME

pod2man - Convert POD data to formatted *roff input

=head1 SYNOPSIS

```

pod2man [B<--center>=I<string>] [B<--date>=I<string>] [B<--errors>=I<style>]
[B<--fixed>=I<font>] [B<--fixedbold>=I<font>] [B<--fixeditalic>=I<font>]
[B<--fixedbolditalic>=I<font>] [B<--name>=I<name>] [B<--nourls>]
[B<--official>] [B<--quotes>=I<quotes>]

```


[B<--release>[=I<version>]]
[B<--section>=I<manext>] [B<--stderr>] [B<--utf8>] [B<--verbose>]
[I<input> [I<output>] ...]

pod2man B<--help>

=head1 DESCRIPTION

B<pod2man> is a front-end for Pod::Man, using it to generate *roff input from POD source. The resulting *roff code is suitable for display on a terminal using nroff(1), normally via man(1), or printing using troff(1).

I<input> is the file to read for POD source (the POD can be embedded in code). If I<input> isn't given, it defaults to C<STDIN>. I<output>, if given, is the file to which to write the formatted output. If I<output> isn't given, the formatted output is written to C<STDOUT>. Several POD files can be processed in the same B<pod2man> invocation (saving module load and compile times) by providing multiple pairs of I<input> and I<output> files on the command line.

B<--section>, B<--release>, B<--center>, B<--date>, and B<--official> can be used to set the headers and footers to use;

if not given, Pod::Man will assume various defaults. See below or L<Pod::Man> for details.

B<pod2man> assumes that your *roff formatters have a fixed-width font named C<CW>. If yours is called something else (like C<CR>), use B<--fixed> to specify it. This generally only matters for troff output for printing. Similarly, you can set the fonts used for bold, italic, and bold italic fixed-width output.

Besides the obvious pod conversions, Pod::Man, and therefore pod2man also takes care of formatting func(), func(n), and simple variable references like \$foo or @bar so you don't have to use code escapes for them; complex expressions like C<\$fred{'stuff'}> will still need to be escaped, though. It also translates dashes that aren't used as hyphens into en dashes, makes long dashes--like this--into proper em dashes, fixes "paired quotes," and takes care of several other troff-specific tweaks. See L<Pod::Man> for complete information.

=head1 OPTIONS

=over 4

=item B<-c> I<string>, B<--center>=I<string>

Sets

the centered page header to `I<string>`. The default is "User Contributed Perl Documentation", but also see `B<--official>` below.

=item `B<-d>` `I<string>`, `B<--date>=I<string>`

Set the left-hand footer string to this value. By default, the modification date of the input file will be used, or the current date if input comes from `C<STDIN>`.

=item `B<-errors>=I<style>`

Set the error handling style. `C<die>` says to throw an exception on any POD formatting error. `C<stderr>` says to report errors on standard error, but not to throw an exception. `C<pod>` says to include a POD ERRORS section in the resulting documentation summarizing the errors. `C<none>` ignores POD errors entirely, as much as possible.

The default is `C<die>`.

=item `B<--fixed>=I`

The fixed-width font to use for verbatim text and code. Defaults to `C<CW>`. Some systems may want `C<CR>` instead. Only matters for `troff(1)` output.

=item `B<--fixedbold>=I`

Bold version of the fixed-width font. Defaults to `C<CB>`. Only matters for `troff(1)` output.

=item `B<--fixeditalic>=I`

Italic version of the fixed-width font (actually, something of a misnomer, since most fixed-width fonts only have an oblique version, not an italic version). Defaults to `C<CI>`. Only matters for `troff(1)` output.

=item `B<--fixedbolditalic>=I`

Bold italic (probably actually oblique) version of the fixed-width font. `Pod::Man` doesn't assume you have this, and defaults to `C<CB>`. Some systems (such as Solaris) have this font available as `C<CX>`. Only matters for `troff(1)` output.

=item `B<-h>`, `B<--help>`

Print out usage information.

=item B<-l>, B<--lax>

No longer used. B<pod2man> used to check its input for validity as a manual page, but this should now be done by L<podchecker(1)> instead. Accepted for backward compatibility; this option no longer does anything.

=item B<-n> I<name>, B<--name>=I<name>

Set the name of the manual page to I<name>. Without this option, the manual name is set to the uppercased base name of the file being converted unless the manual section is 3, in which case the path is parsed to see if it is a Perl module path. If it is, a path like C<../lib/Pod/Man.pm> is converted into a name like C<Pod::Man>. This option, if given, overrides any automatic determination of the name.

Note that this option is probably not useful when converting multiple POD files at once. The convention for Unix man pages for commands is for the man page title to be in all-uppercase even if the command isn't.

=item B<--nourls>

Normally, LZ<><> formatting codes with a URL but anchor text are formatted to show both the anchor text and the URL. In other words:

L<foo|http://example.com/>

is formatted as:

foo <http://example.com/>

This flag, if given, suppresses the URL when anchor text is given, so this example would be formatted as just C<foo>. This can produce less cluttered output in cases where the URLs are not particularly important.

=item B<-o>, B<--official>

Set

the default header to indicate that this page is part of the standard Perl release, if B<--center> is not also given.

=item B<-q> I<quotes>, B<--quotes>=I<quotes>

Sets the quote marks used to surround CE<lt>> text to I<quotes>. If I<quotes> is a single character, it is used as both the left and right quote; if I<quotes> is two characters, the first character is used as the left quote and the second as the right quoted; and if I<quotes> is four characters, the first two are used as the left quote and the second two as

the right quote.

I<quotes> may also be set to the special value C<none>, in which case no quote marks are added around CE<lt>> text (but the font is still changed for troff output).

=item B<-r>, B<--release>

Set the centered footer. By default, this is the version of Perl you run B<pod2man> under. Note that some system an macro sets assume that the centered footer will be a modification date and will prepend something like "Last modified: "; if this is the case, you may want to set B<--release> to the last modified date and B<--date> to the version number.

=item B<-s>, B<--section>

Set the section for the C<.TH> macro. The standard section numbering convention is to use 1 for user commands, 2 for system calls, 3 for functions, 4 for devices, 5 for file formats, 6 for games, 7 for miscellaneous information, and 8 for administrator commands. There is a lot of variation here, however; some systems (like Solaris) use 4 for file formats, 5 for miscellaneous information, and 7 for devices. Still others use 1m instead of 8, or some mix of both. About the only section numbers that are reliably consistent are 1, 2, and 3.

By default, section 1 will be used unless the file ends in C<.pm>, in which case section 3 will be selected.

=item B<--stderr>

By default, B<pod2man> dies if any errors are detected in the POD input. If B<--stderr> is given and no B<--errors> flag is present, errors are sent to standard error, but B<pod2man> does not abort. This is equivalent to C<--errors=stderr> and is supported for backward compatibility.

=item B<-u>, B<--utf8>

By default, B<pod2man> produces the most conservative possible *roff output to try to ensure that it will work with as many different *roff implementations as possible. Many *roff implementations cannot handle non-ASCII characters, so this means all non-ASCII characters are converted either to a *roff escape sequence that tries to create a properly accented character (at least for troff output) or to C<X>.

This option says to instead output literal UTF-8 characters. If your *roff implementation can handle it, this is the best output format to use

and avoids corruption of documents containing non-ASCII characters. However, be warned that `*roff` source with literal UTF-8 characters is not supported by many implementations and may even result in segfaults and other bad behavior.

Be aware that, when using this option, the input encoding of your POD source must be properly declared unless it is US-ASCII or Latin-1. POD input without an `C<=encoding>` command will be assumed to be in Latin-1, and if it's actually in UTF-8, the output will be double-encoded. See `L<perlpod(1)>` for more information on the `C<=encoding>` command.

=item B<-v>, B<--verbose>

Print out the name of each output file as it is being generated.

=back

=head1 EXIT STATUS

As long as all documents processed result in some output, even if that output includes errata (a `C<POD ERRORS>` section generated with `C<--errors=pod>`), `B<pod2man>` will exit with status 0. If any of the documents being processed do not result in an output document, `B<pod2man>` will exit with status 1. If there are syntax errors in a POD document being processed and the error handling style is set to the default of `C<die>`, `B<pod2man>` will abort immediately with exit status 255.

=head1 DIAGNOSTICS

If `B<pod2man>` fails with errors, see `L<Pod::Man>` and `L<Pod::Simple>` for information about what those errors might mean.

=head1

EXAMPLES

```
pod2man program > program.1
pod2man SomeModule.pm /usr/perl/man/man3/SomeModule.3
pod2man --section=7 note.pod > note.7
```

If you would like to print out a lot of man page continuously, you probably want to set the C and D registers to set contiguous page numbering and even/odd paging, at least on some versions of `man(7)`.

```
troff -man -rC1 -rD1 perl.1 perldata.1 perlsyn.1 ...
```

To get index entries on `C<STDERR>`, turn on the F register, as in:

troff -man -rF1 perl.1

The indexing merely outputs messages via C<.tm> for each major page, section, subsection, item, and any C<XE<lt>E<gt>> directives. See L<Pod::Man> for more details.

=head1 BUGS

Lots of this documentation is duplicated from L<Pod::Man>.

=head1 SEE ALSO

L<Pod::Man>, L<Pod::Simple>, L<man(1)>, L<nroff(1)>, L<perlpod(1)>, L<podchecker(1)>, L<perlpodstyle(1)>, L<troff(1)>, L<man(7)>

The man page documenting the an macro set may be L<man(5)> instead of L<man(7)> on your system.

The current

version of this script is always available from its web site at L<<http://www.eyrie.org/~eagle/software/podlators/>>. It is also part of the Perl core distribution as of 5.6.0.

=head1 AUTHOR

Russ Allbery <rra@stanford.edu>, based I<very> heavily on the original B<pod2man> by Larry Wall and Tom Christiansen.

=head1 COPYRIGHT AND LICENSE

Copyright 1999, 2000, 2001, 2004, 2006, 2008, 2010, 2012, 2013 Russ Allbery <rra@stanford.edu>.

This program is free software; you may redistribute it and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/scripts/pod2man

No license file was found, but licenses were detected in source scan.

This program is free software; you may redistribute it and/or modify it
under the same terms as Perl itself.
version.

Found in path(s):

```
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/Text/Termcap.pm
* /opt/cola/permits/1592955686_1678786364.6589742/0/perl-podlators-2.5.1-3.el7-1.src.rpm-cosi-expand-archive-
n3TzmyxN/podlators-2.5.1.tar.gz-cosi-expand-archive-GjPyvwbO/podlators-2.5.1/lib/Pod/Text/Overstrike.pm
```

1.283 perl-parent 0.225-244.el7

1.283.1 Available under license :

No license file was found, but licenses were detected in source scan.

=encoding utf8

=head1 NAME

parent - Establish an ISA relationship with base classes at compile time

=head1 SYNOPSIS

```
package Baz;
use parent qw(Foo Bar);
```

=head1 DESCRIPTION

Allows you to both load one or more modules, while setting up inheritance from those modules at the same time. Mostly similar in effect to

```
package Baz;
BEGIN {
    require Foo;
    require Bar;
    push @ISA, qw(Foo Bar);
}
```

By default, every base class needs to live in a file of its own.

If you want to have a subclass and its parent class in the same file, you can tell C<parent> not to load any modules by using the C<-norequire> switch:

```
package Foo;
sub exclaim { "I CAN HAS PERL" }

package DoesNotLoadFooBar;
use parent -norequire, 'Foo', 'Bar';
# will not go looking for Foo.pm or Bar.pm
```

This is equivalent to the following code:

```
package Foo;
```

```
sub exclaim { "I CAN HAS PERL" }
```

```
package DoesNotLoadFooBar;  
push @DoesNotLoadFooBar::ISA, 'Foo', 'Bar';
```

This is also helpful for the case where a package lives within a differently named file:

```
package MyHash;  
use Tie::Hash;  
use parent -norequire, 'Tie::StdHash';
```

This is equivalent to the following code:

```
package MyHash;  
require Tie::Hash;  
push @ISA, 'Tie::StdHash';
```

If you want to load a subclass from a file that C<require> would not consider an eligible filename (that is, it does not end in either C<.pm> or C<.pmc>), use the following code:

```
package MySecondPlugin;  
require './plugins/custom.plugin'; # contains Plugin::Custom  
use parent -norequire, 'Plugin::Custom';
```

=head1 DIAGNOSTICS

=over 4

=item Class 'Foo' tried to inherit from itself

Attempting to inherit from yourself generates a warning.

```
package Foo;  
use parent 'Foo';
```

=back

=head1 HISTORY

This module was forked from L<base> to remove the cruft that had accumulated in it.

=head1 CAVEATS

=head1 SEE ALSO

L<base>

=head1 AUTHORS AND CONTRIBUTORS

Rafaël

Garcia-Suarez, Bart Lateur, Max Maischein, Anno Siegel, Michael Schwern

=head1 MAINTAINER

Max Maischein C< corion@cpan.org >

Copyright (c) 2007-10 Max Maischein C<< <corion@cpan.org> >>

Based on the idea of C<base.pm>, which was introduced with Perl 5.004_04.

=head1 LICENSE

This module is released under the same terms as Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955443_1678786398.143934/0/perl-parent-0.225-244.el7-1.src.rpm-cosi-expand-archive-jlGKHOGs/parent-0.225.tar.gz-cosi-expand-archive-BUFEzKX7/parent-0.225/lib/parent.pm

No license file was found, but licenses were detected in source scan.

license: unknown

Found in path(s):

* /opt/cola/permits/1592955443_1678786398.143934/0/perl-parent-0.225-244.el7-1.src.rpm-cosi-expand-archive-jlGKHOGs/parent-0.225.tar.gz-cosi-expand-archive-BUFEzKX7/parent-0.225/META.yml

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955443_1678786398.143934/0/perl-parent-0.225-244.el7-1.src.rpm-cosi-expand-archive-jlGKHOGs/perl-parent.spec

1.284 perl-pathtools 3.40-5.el7

1.284.1 Available under license :

No license file was found, but licenses were detected in source scan.

=head1 EXIT CODES

If all your tests passed, Test::Builder will exit with zero (which is normal). If anything failed it will exit with how many failed. If

you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Builder will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

=head1 THREADS

In perl 5.8.0 and later, Test::Builder is thread-safe. The test number is shared amongst all threads. This means if one thread sets the test number using current_test() they will all be effected.

Test::Builder
is only thread-aware if threads.pm is loaded I<before>
Test::Builder.

=head1 EXAMPLES

CPAN can provide the best examples. Test::Simple, Test::More, Test::Exception and Test::Differences all use Test::Builder.

=head1 SEE ALSO

Test::Simple, Test::More, Test::Harness

=head1 AUTHORS

Original code by chromatic, maintained by Michael G Schwern
E<lt>schwern@pobox.comE<gt>

=head1 COPYRIGHT

Copyright 2002 by chromatic E<lt>chromatic@wgz.orgE<gt>,
Michael G Schwern E<lt>schwern@pobox.comE<gt>.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/t/lib/Test/Builder.pm

No license file was found, but licenses were detected in source scan.

License: (GPL+ or Artistic) and BSD

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/perl-PathTools.spec

No license file was found, but licenses were detected in source scan.

=back

Test::Simple will start by printing number of tests run in the form "1..M" (so "1..5" means you're going to run 5 tests). This strange format lets Test::Harness know how many tests you plan on running in case something goes horribly wrong.

If all your tests passed, Test::Simple will exit with zero (which is normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Simple will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

This module is by no means trying to be a complete testing system. It's just to get you started. Once you're off the ground its recommended you look at L<Test::More>.

=head1 EXAMPLE

Here's an example of a simple .t file for the fictional Film module.

```

use Test::Simple tests => 5;

use Film; # What you're testing.

my $btaste = Film->new({ Title => 'Bad Taste',
                      Director => 'Peter Jackson',
                      Rating => 'R',
                      NumExplodingSheep => 1
                      });
ok( defined($btaste) and ref $btaste eq 'Film', 'new() works' );

ok( $btaste->Title eq 'Bad Taste', 'Title() get' );
ok( $btaste->Director eq 'Peter Jackson', 'Director() get' );
ok( $btaste->Rating eq 'R', 'Rating() get' );
ok( $btaste->NumExplodingSheep == 1, 'NumExplodingSheep() get' );

```

It will produce output like this:

```

1..5
ok 1 - new() works
ok 2 - Title() get
ok 3 - Director() get
not ok 4 - Rating() get
# Failed test (t/film.t at line 14)
ok 5 - NumExplodingSheep() get
# Looks like you failed 1 tests of 5

```

Indicating the Film::Rating() method is broken.

=head1 CAVEATS

Test::Simple will only report a maximum of 254 failures in its exit code. If this is a problem, you probably have a huge test script. Split it into multiple files. (Otherwise blame the Unix folks for using an unsigned short integer as the exit status).

Because VMS's exit codes are much, much different than the rest of the universe, and perl does horrible mangling to them that gets in my way, it works like this on VMS.

```

0  SS$_NORMAL    all tests successful
4  SS$_ABORT     something went wrong

```

Unfortunately, I can't differentiate any further.

=head1 NOTES

Test::Simple is B<explicitly> tested all the way back to perl 5.004.

Test::Simple is thread-safe in perl 5.8.0 and up.

=head1 HISTORY

This

module was conceived while talking with Tony Bowden in his kitchen one night about the problems I was having writing some really complicated feature into the new Testing module. He observed that the main problem is not dealing with these edge cases but that people hate to write tests B<at all>. What was needed was a dead simple module that took all the hard work out of testing and was really, really easy to learn. Paul Johnson simultaneously had this idea (unfortunately, he wasn't in Tony's kitchen). This is it.

=head1 SEE ALSO

=over 4

=item L<Test::More>

More testing functions! Once you outgrow Test::Simple, look at Test::More. Test::Simple is 100% forward compatible with Test::More (i.e. you can just use Test::More instead of Test::Simple in your programs and things will still work).

=item L<Test>

The original Perl testing module.

=item L<Test::Unit>

Elaborate unit testing.

=item L<Test::Inline>, L<SelfTest>

Embed tests in your code!

=item L<Test::Harness>

Interprets

the output of your test program.

=back

=head1 AUTHORS

Idea by Tony Bowden and Paul Johnson, code by Michael G Schwern
E<lt>schwern@pobox.comE<gt>, wardrobe by Calvin Klein.

=head1 COPYRIGHT

Copyright 2001 by Michael G Schwern E<lt>schwern@pobox.comE<gt>.

This program is free software; you can redistribute it and/or
modify it under the same terms as Perl itself.

See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

```
* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-
EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/t/lib/Test/Simple.pm
No license file was found, but licenses were detected in source scan.
```

=head1 NAME

File::Spec - portably perform operations on file names

=head1 SYNOPSIS

```
use File::Spec;
```

```
$x=File::Spec->catfile('a', 'b', 'c');
```

which returns 'a/b/c' under Unix. Or:

```
use File::Spec::Functions;
```

```
$x = catfile('a', 'b', 'c');
```

=head1 DESCRIPTION

This module is designed to support operations commonly performed on file specifications (usually called "file names", but not to be confused with the contents of a file, or Perl's file handles), such as concatenating several directory and file names into a single path, or determining whether a path is rooted. It is based on code directly taken from MakeMaker 5.17, code written by Andreas KE<ouml>nig, Andy Dougherty, Charles Bailey, Ilya Zakharevich, Paul Schinder, and others.

Since these functions are different for most operating systems, each set of OS specific routines is available in a separate module, including:

```
File::Spec::Unix
File::Spec::Mac
File::Spec::OS2
File::Spec::Win32
File::Spec::VMS
```

The

module appropriate for the current OS is automatically loaded by File::Spec. Since some modules (like VMS) make use of facilities available only under that OS, it may not be possible to load all modules under all operating systems.

Since File::Spec is object oriented, subroutines should not be called directly, as in:

```
File::Spec::catfile('a','b');
```

but rather as class methods:

```
File::Spec->catfile('a','b');
```

For simple uses, L<File::Spec::Functions> provides convenient functional forms of these methods.

```
=head1 METHODS
```

```
=over 2
```

```
=item canonpath
```

```
X<canonpath>
```

No physical check on the filesystem, but a logical cleanup of a path.

```
$cpath = File::Spec->canonpath( $path );
```

Note that this does *not* collapse F<x/./y> sections into F<y>. This is by design. If F</foo> on your system is a symlink to F</bar/baz>, then F</foo/./quux> is actually F</bar/quux>, not F</quux> as a naive F<./>-removal would give you. If you want to do this kind of processing, you probably want C<Cwd>'s C<realpath()> function to actually traverse the filesystem cleaning up paths like this.

=item catdir

X<catdir>

Concatenate two or more directory names to form a complete path ending with a directory. But remove the trailing slash from the resulting string, because it doesn't look good, isn't necessary and confuses OS/2. Of course, if this is the root directory, don't cut off the trailing slash :-)

```
$path = File::Spec->catdir( @directories );
```

=item catfile

X<catfile>

Concatenate one or more directory names and a filename to form a complete path ending with a filename

```
$path = File::Spec->catfile( @directories, $filename );
```

=item curdir

X<curdir>

Returns a string representation of the current directory.

```
$curdir = File::Spec->curdir();
```

=item devnull

X<devnull>

Returns a string representation of the null device.

```
$devnull = File::Spec->devnull();
```

=item rootdir

X<rootdir>

Returns a string representation of the root directory.

```
$rootdir = File::Spec->rootdir();
```

=item tmpdir

X<tmpdir>

Returns a string representation of the first writable directory from a list of possible temporary directories. Returns the current directory if no writable temporary directories are found. The list of directories checked depends on the platform; e.g. File::Spec::Unix checks C<\${ENV{TMPDIR}}>

(unless taint is on) and `File::Spec->tmpdir()`.

```
$tmpdir = File::Spec->tmpdir();
```

=item updir

X<updir>

Returns a string representation of the parent directory.

```
$updir = File::Spec->updir();
```

=item no_upwards

Given a list of file names, strip out those that refer to a parent directory. (Does not strip symlinks, only `'..'`, `'.'`, and equivalents.)

```
@paths = File::Spec->no_upwards( @paths );
```

=item case_tolerant

Returns a true or false value indicating, respectively, that alphabetic case is not or is significant when comparing file specifications. Cygwin and Win32 accept an optional drive argument.

```
$is_case_tolerant =  
File::Spec->case_tolerant();
```

=item file_name_is_absolute

Takes as its argument a path, and returns true if it is an absolute path.

```
$is_absolute = File::Spec->file_name_is_absolute( $path );
```

This does not consult the local filesystem on Unix, Win32, OS/2, or Mac OS (Classic). It does consult the working environment for VMS (see `L<File::Spec::VMS/file_name_is_absolute>`).

=item path

X<path>

Takes no argument. Returns the environment variable `C<PATH>` (or the local platform's equivalent) as a list.

```
@PATH = File::Spec->path();
```

=item join

X<join, path>

join is the same as catfile.

=item splitpath

X<splitpath> X<split, path>

Splits a path in to volume, directory, and filename portions. On systems with no concept of volume, returns "" for volume.

```
($volume,$directories,$file) =  
    File::Spec->splitpath( $path );  
($volume,$directories,$file) =  
    File::Spec->splitpath( $path, $no_file );
```

For systems with no syntax differentiating filenames from directories, assumes that the last file is a path unless C<\$no_file> is true or a trailing separator or F</.> or F</..> is present. On Unix, this means that C<\$no_file> true makes this return ("", \$path, "").

The directory portion may or may not be returned with a trailing '/'.

The results can be passed to L</catpath()> to get back a path equivalent to (usually identical to) the original path.

=item splitdir

X<splitdir> X<split, dir>

The opposite of L</catdir>.

```
@dirs = File::Spec->splitdir( $directories );
```

C<\$directories> must be only the directory portion of the path on systems that have the concept of a volume or that have path syntax that differentiates files from directories.

Unlike just splitting the directories on the separator, empty directory names (C<">) can be returned, because these are significant on some OSes.

=item catpath()

Takes volume, directory and file portions and returns an entire path. Under Unix, C<\$volume> is ignored, and directory and file are concatenated. A '/' is inserted if need be. On other OSes, C<\$volume> is significant.

```
$full_path = File::Spec->catpath( $volume, $directory, $file );
```

=item abs2rel

X<abs2rel> X<absolute, path> X<relative, path>

Takes a destination path and an optional base path returns a relative path from the base path to the destination path:

```
$rel_path = File::Spec->abs2rel( $path ) ;  
$rel_path = File::Spec->abs2rel( $path, $base ) ;
```

If C<\$base> is not present or "", then L<Cwd::cwd()|Cwd> is used. If C<\$base> is relative, then it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

On systems with the concept of volume, if C<\$path> and C<\$base> appear to be on two different volumes, we will not attempt to resolve the two paths, and we will instead simply return C<\$path>. Note that previous versions of this module ignored the volume of C<\$base>, which resulted in garbage results part of the time.

On

systems that have a grammar that indicates filenames, this ignores the C<\$base> filename as well. Otherwise all path components are assumed to be directories.

If C<\$path> is relative, it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

No checks against the filesystem are made. On VMS, there is interaction with the working environment, as logicals and macros are expanded.

Based on code written by Shigio Yamaguchi.

=item rel2abs()

X<rel2abs> X<absolute, path> X<relative, path>

Converts a relative path to an absolute path.

```
$abs_path = File::Spec->rel2abs( $path ) ;  
$abs_path = File::Spec->rel2abs( $path, $base ) ;
```

If C<\$base> is not present or "", then L<Cwd::cwd()|Cwd> is used. If C<\$base> is relative, then it is converted to absolute form using L</rel2abs()>. This means that it is taken to be relative to L<Cwd::cwd()|Cwd>.

On systems with the concept of volume, if C<\$path> and C<\$base> appear to be on

two different volumes, we will not attempt to resolve the two paths, and we will instead simply return C<\$path>. Note that previous versions of this module ignored the volume of C<\$base>, which resulted in garbage results part of the time.

On systems that have a grammar that indicates filenames, this ignores the C<\$base> filename as well. Otherwise all path components are assumed to be directories.

If C<\$path> is absolute, it is cleaned up and returned using L</canonpath>.

No checks against the filesystem are made. On VMS, there is interaction with the working environment, as logicals and macros are expanded.

Based on code written by Shigio Yamaguchi.

=back

For further information, please see L<File::Spec::Unix>, L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, or L<File::Spec::VMS>.

=head1 SEE ALSO

L<File::Spec::Unix>, L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, L<File::Spec::VMS>, L<File::Spec::Functions>, L<ExtUtils::MakeMaker>

=head1

AUTHOR

Currently maintained by Ken Williams C<< <KWILLIAMS@cpan.org> >>.

The vast majority of the code was written by

Kenneth Albanowski C<< <kjahds@kjahds.com> >>,

Andy Dougherty C<< <doughera@lafayette.edu> >>,

Andreas KE<ouml>nig C<< <A.Koenig@franz.ww.TU-Berlin.DE> >>,

Tim Bunce C<< <Tim.Bunce@ig.co.uk> >>.

VMS support by Charles Bailey C<< <bailey@newman.upenn.edu> >>.

OS/2 support by Ilya Zakharevich C<< <ilya@math.ohio-state.edu> >>.

Mac support by Paul Schinder C<< <schinder@pobox.com> >>, and

Thomas Wegner C<< <wegner_thomas@yahoo.com> >>.

abs2rel() and rel2abs() written by Shigio Yamaguchi C<< <shigio@tamacom.com> >>,

modified by Barrie Slaymaker C<< <barries@slaysys.com> >>.

splitpath(), splitdir(), catpath() and catdir() by Barrie Slaymaker.

=head1 COPYRIGHT

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=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec.pm

No license file was found, but licenses were detected in source scan.

=head1 NAME

Cwd - get pathname of current working directory

=head1 SYNOPSIS

```
use Cwd;
my $dir = getcwd;

use Cwd 'abs_path';
my $abs_path = abs_path($file);
```

=head1 DESCRIPTION

This module provides functions for determining the pathname of the current working directory. It is recommended that `getcwd` (or another `*cwd()` function) be used in I<all> code to ensure portability.

By default, it exports the functions `cwd()`, `getcwd()`, `fastcwd()`, and `fastgetcwd()` (and, on Win32, `getdcwd()`) into the caller's namespace.

=head2 `getcwd` and friends

Each of these functions are called without arguments and return the absolute path of the current working directory.

=over 4

=item `getcwd`

```
my $cwd = getcwd();
```

Returns the current working directory.

Exposes the POSIX function `getcwd(3)` or re-implements it if it's not available.

=item `cwd`

```
my $cwd = cwd();
```

The `cwd()` is the most natural form for the current architecture. For most systems it is identical to ``pwd`` (but without the trailing line terminator).

=item `fastcwd`

```
my $cwd = fastcwd();
```

A more dangerous version of `getcwd()`, but potentially faster.

It might conceivably `chdir()` you out of a directory that it can't `chdir()` you back into. If `fastcwd` encounters a problem it will return `undef` but will probably leave you in a different directory. For a measure of extra security, if everything appears to have worked, the `fastcwd()` function will check that it leaves you in the same directory that it started in. If it has changed it will `C<die>` with the message "Unstable directory path, current directory changed unexpectedly". That should never happen.

=item `fastgetcwd`

```
my $cwd = fastgetcwd();
```

The `fastgetcwd()` function is provided as a synonym for `cwd()`.

=item `getdcwd`

```
my $cwd = getdcwd();  
my $cwd = getdcwd('C:');
```

The `getdcwd()` function is also provided on Win32 to get the current working directory on the specified drive, since Windows maintains a separate current working directory for each drive. If no drive is specified then the current drive is assumed.

This function simply calls the Microsoft C library `_getdcwd()` function.

=back

=head2 abs_path and friends

These functions are exported only on request. They each take a single argument and return the absolute pathname for it. If no argument is given they'll use the current working directory.

=over 4

=item abs_path

```
my $abs_path = abs_path($file);
```

Uses the same algorithm as `getcwd()`. Symbolic links and relative-path components (".", "..") are resolved to return the canonical pathname, just like `realpath(3)`.

=item realpath

```
my $abs_path = realpath($file);
```

A synonym for `abs_path()`.

=item fast_abs_path

```
my $abs_path = fast_abs_path($file);
```

A more dangerous, but potentially faster version of `abs_path`.

=back

=head2 \$ENV{PWD}

If you ask to override your `chdir()` built-in function,

```
use Cwd qw(chdir);
```

then your `PWD` environment

variable will be kept up to date. Note that

it will only be kept up to date if all packages which use `chdir` import it from `Cwd`.

=head1 NOTES

=over 4

=item *

Since the path separators are different on some operating systems ('/' on Unix, ':' on MacPerl, etc...) we recommend you use the File::Spec modules wherever portability is a concern.

=item *

Actually, on Mac OS, the C<getcwd()>, C<fastgetcwd()> and C<fastcwd()> functions are all aliases for the C<cwd()> function, which, on Mac OS, calls `pwd`. Likewise, the C<abs_path()> function is an alias for C<fast_abs_path()>.

=back

=head1 AUTHOR

Originally by the perl5-porters.

Maintained by Ken Williams <KWILLIAMS@cpan.org>

=head1 COPYRIGHT

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=head1 SEE ALSO

L<File::chdir>

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/Cwd.pm

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=head1 SEE ALSO

L<File::Spec>

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Unix.pm

No license file was found, but licenses were detected in source scan.

=head1 NAME

Test::Tutorial - A tutorial about writing really basic tests

=head1 DESCRIPTION

I<AHHHHHHH!!!! NOT TESTING! Anything but testing!
Beat me, whip me, send me to Detroit, but don't make
me write tests!>

I<*sob*>

I<Besides, I don't know how to write the damned things.>

Is this you? Is writing tests right up there with writing
documentation and having your fingernails pulled out? Did you open up
a test and read

We start with some black magic

and decide that's quite enough for you?

It's ok. That's all gone now. We've done all the black magic for
you. And here are the tricks...

=head2 Nuts and bolts of testing.

Here's the most basic test program.

```
#!/usr/bin/perl -w

print "1..1\n";

print 1 + 1 == 2 ? "ok 1\n" : "not ok 1\n";
```

since 1 + 1 is 2, it prints:

```
1..1
ok 1
```

What this says is: C<1..1> "I'm going to run one test." [1] C<ok 1> "The first test passed".

And that's about all magic there is to testing. Your basic unit of testing is the I<ok>. For each thing you test, an C<ok> is printed. Simple. B<Test::Harness> interprets your test results to determine if you succeeded or failed (more on that later).

Writing all these print statements rapidly gets tedious. Fortunately, there's B<Test::Simple>. It has one function, C<ok()>.

```
#!/usr/bin/perl -w

use Test::Simple tests => 1;

ok( 1 + 1 == 2 );
```

and that does the same thing as the code above. C<ok()> is the backbone of Perl testing, and we'll be using it instead of roll-your-own from here on. If C<ok()> gets a true value, the test passes. False, it fails.

```
#!/usr/bin/perl -w

use Test::Simple tests => 2;
ok( 1 + 1 == 2 );
ok( 2 + 2 == 5 );
```

from that comes

```
1..2
ok 1
not ok 2
# Failed test (test.pl at line 5)
# Looks like you failed 1 tests of 2.
```

C<1..2> "I'm going to run two tests." This number is used to ensure your test program ran all the way through and didn't die or skip some tests. C<ok 1> "The first test passed." C<not ok 2> "The second test failed". Test::Simple helpfully prints out some extra commentary about your tests.

It's not scary. Come, hold my hand. We're going to give an example of testing a module. For our example, we'll be testing a date library, B<Date::ICal>. It's on CPAN, so download a copy and follow along. [2]

=head2 Where to start?

This is the hardest part of testing, where do you start? People often get overwhelmed at the apparent enormity of the task of testing a whole module. Best place to start is at the beginning. Date::ICal is an object-oriented module, and that means you start by making an object. So we test C<new()>.

```
#!/usr/bin/perl -w

use Test::Simple tests => 2;

use Date::ICal;

my $ical = Date::ICal->new;    # create an object
ok( defined $ical );         # check that we got something
ok( $ical->isa('Date::ICal')
); # and it's the right class
```

run that and you should get:

```
1..2
ok 1
ok 2
```

congratulations, you've written your first useful test.

=head2 Names

That output isn't terribly descriptive, is it? When you have two tests you can figure out which one is #2, but what if you have 102?

Each test can be given a little descriptive name as the second

argument to C<ok()>.

```
use Test::Simple tests => 2;

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
```

So now you'd see...

```
1..2
ok 1 - new() returned something
ok 2 - and it's the right class
```

=head2 Test the manual

Simplest way to build up a decent testing suite is to just test what the manual says it does. [3] Let's pull something out of the L<Date::ICal/SYNOPSIS> and test that all its bits work.

```
#!/usr/bin/perl -w

use Test::Simple tests => 8;

use Date::ICal;

$ical = Date::ICal->new( year => 1964, month
=> 10, day => 16,
                      hour => 16, min => 12, sec => 47,
                      tz => '0530' );

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
ok( $ical->sec == 47,    ' sec()' );
ok( $ical->min == 12,    ' min()' );
ok( $ical->hour == 16,   ' hour()' );
ok( $ical->day == 17,    ' day()' );
ok( $ical->month == 10,  ' month()' );
ok( $ical->year == 1964, ' year()' );
```

run that and you get:

```
1..8
ok 1 - new() returned something
ok 2 - and it's the right class
ok 3 - sec()
ok 4 - min()
ok 5 - hour()
```

```

not ok 6 - day()
# Failed test (- at line 16)
ok 7 - month()
ok 8 - year()
# Looks like you failed 1 tests of 8.

```

Whoops, a failure! [4] Test::Simple helpfully lets us know on what line the failure occurred, but not much else. We were supposed to get 17, but we didn't. What did we get?? Dunno. We'll have to re-run the test in the debugger or throw in some print statements to find out.

Instead, we'll switch from B<Test::Simple> to B<Test::More>. B<Test::More> does everything B<Test::Simple> does, and more! In fact, Test::More does things I<exactly> the way Test::Simple does. You can literally swap Test::Simple out and put Test::More in its place. That's just what we're going to do.

Test::More does more than Test::Simple. The most important difference at this point is it provides more informative ways to say "ok". Although you can write almost any test with a generic C<ok()>, it can't tell you what went wrong. Instead, we'll use the C<is()> function, which lets us declare that something is supposed to be the same as something else:

```

#!/usr/bin/perl -w

use Test::More tests => 8;

use Date::ICal;

$ical = Date::ICal->new( year => 1964, month => 10, day => 16,
                        hour => 16, min
=> 12, sec => 47,
                        tz => '0530' );

ok( defined $ical,      'new() returned something' );
ok( $ical->isa('Date::ICal'), " and it's the right class" );
is( $ical->sec,  47,    ' sec()' );
is( $ical->min,  12,    ' min()' );
is( $ical->hour, 16,    ' hour()' );
is( $ical->day,  17,    ' day()' );
is( $ical->month, 10,   ' month()' );
is( $ical->year, 1964,  ' year()' );

```

"Is C<\$ical-E<gt>sec> 47?" "Is C<\$ical-E<gt>min> 12?" With C<is()> in place, you get some more information

```

1..8
ok 1 - new() returned something
ok 2 - and it's the right class
ok 3 - sec()
ok 4 - min()
ok 5 - hour()
not ok 6 - day()
# Failed test (- at line 16)
# got: '16'
# expected: '17'
ok 7 - month()
ok 8 - year()
# Looks like you failed 1 tests of 8.

```

letting us know that `C<$ical-E<gt;day>` returned 16, but we expected 17. A quick check shows that the code is working fine, we made a mistake when writing up the tests. Just change it to:

```
is( $ical->day, 16, ' day()' );
```

and everything works.

So any time you're doing a "this equals that" sort of test, use `C<is()>`. It even works on arrays. The test is always in scalar context, so you can test how many elements are in a list this way. [5]

```
is( @foo, 5, 'foo has 5 elements' );
```

=head2 Sometimes the tests are wrong

Which brings us to a very important lesson. Code has bugs. Tests are code. Ergo, tests have bugs. A failing test could mean a bug in the code, but don't discount the possibility that the test is wrong.

On the flip side, don't be tempted to prematurely declare a test incorrect just because you're having trouble finding the bug. Invalidating a test isn't something to be taken lightly, and don't use it as a cop out to avoid work.

=head2 Testing lots of values

We're going to be wanting to test a lot of dates here, trying to trick the code with lots of different edge cases. Does it work before 1970? After 2038? Before 1904? Do years after 10,000 give it trouble?

Does it get leap years right? We could keep repeating the code above, or we could set up a little try/expect loop.

```
use Test::More tests => 32;
use Date::ICal;

my %ICal_Dates = (
    # An ICal string    And the year, month, date
    #                hour, minute and second we expect.
    '19971024T120000' => # from the docs.
        [ 1997, 10, 24, 12, 0, 0 ],
    '20390123T232832' => # after the Unix epoch
        [ 2039, 1, 23, 23, 28, 32 ],
    '19671225T000000' => # before the Unix epoch
        [ 1967, 12, 25, 0, 0, 0 ],
    '18990505T232323' => # before the MacOS epoch
        [ 1899, 5, 5, 23, 23, 23 ],
);

while( my($ical_str, $expect)
= each %ICal_Dates ) {
    my $ical = Date::ICal->new( ical => $ical_str );

    ok( defined $ical,      "new(ical => '$ical_str')" );
    ok( $ical->isa('Date::ICal'), " and it's the right class" );

    is( $ical->year,  $expect->[0],  ' year()' );
    is( $ical->month, $expect->[1],  ' month()' );
    is( $ical->day,   $expect->[2],  ' day()' );
    is( $ical->hour,  $expect->[3],  ' hour()' );
    is( $ical->min,   $expect->[4],  ' min()' );
    is( $ical->sec,   $expect->[5],  ' sec()' );
}
}
```

So now we can test bunches of dates by just adding them to `C<%ICal_Dates>`. Now that it's less work to test with more dates, you'll be inclined to just throw more in as you think of them.

Only problem is, every time we add to that we have to keep adjusting the `C<use Test::More tests =E<gt> ##>` line. That can rapidly get annoying. There's two ways to make this work better.

First, we can calculate the plan dynamically using the `C<plan()>` function.

```
use Test::More;
use Date::ICal;
```

```
my %ICal_Dates = (  
    ...same as before...  
);
```

```
# For each key in the hash we're running 8 tests.  
plan tests => keys %ICal_Dates * 8;
```

Or to be even more flexible, we use C<no_plan>. This means we're just running some tests, don't know how many. [6]

```
use Test::More 'no_plan'; # instead of tests => 32
```

now we can just add tests and not have to do all sorts of math to figure out how many we're running.

=head2 Informative names

Take a look at this line here

```
ok( defined $ical,      "new(ical => '$ical_str')");
```

we've added more detail about what we're testing and the ICal string itself we're trying out to the name. So you get results like:

```
ok 25 - new(ical => '19971024T120000')  
ok 26 - and it's the right class  
ok 27 - year()  
ok 28 - month()  
ok 29 - day()  
ok 30 - hour()  
ok 31 - min()  
ok 32 - sec()
```

if something

in there fails, you'll know which one it was and that will make tracking down the problem easier. So try to put a bit of debugging information into the test names.

Describe what the tests test, to make debugging a failed test easier for you or for the next person who runs your test.

=head2 Skipping tests

Poking around in the existing Date::ICal tests, I found this in F<t/01sanity.t> [7]


```

#!/usr/bin/perl -w

use Test::More tests => 7;
use Date::ICal;

# Make sure epoch time is being handled sanely.
my $t1 = Date::ICal->new( epoch => 0 );
is( $t1->epoch, 0,      "Epoch time of 0" );

# XXX This will only work on unix systems.
is( $t1->ical, '19700101Z', " epoch to ical" );

is( $t1->year, 1970,    " year()" );
is( $t1->month, 1,     " month()" );
is( $t1->day, 1,      " day()" );

# like the tests above, but starting with ical instead of epoch
my $t2 = Date::ICal->new( ical => '19700101Z' );
is(
$t2->ical, '19700101Z', "Start of epoch in ICal notation" );

is( $t2->epoch, 0,      " and back to ICal" );

```

The beginning of the epoch is different on most non-Unix operating systems [8]. Even though Perl smooths out the differences for the most part, certain ports do it differently. MacPerl is one off the top of my head. [9] We I<know> this will never work on MacOS. So rather than just putting a comment in the test, we can explicitly say it's never going to work and skip the test.

```

use Test::More tests => 7;
use Date::ICal;

# Make sure epoch time is being handled sanely.
my $t1 = Date::ICal->new( epoch => 0 );
is( $t1->epoch, 0,      "Epoch time of 0" );

SKIP: {
    skip('epoch to ICal not working on MacOS', 6)
    if $^O eq 'MacOS';

is( $t1->ical, '19700101Z', " epoch to ical" );

is( $t1->year, 1970,    " year()" );
is( $t1->month, 1,     " month()" );
is( $t1->day, 1,      "

```

```

day()" );

# like the tests above, but starting with ical instead of epoch
my $t2 = Date::ICal->new( ical => '19700101Z' );
is( $t2->ical, '19700101Z', "Start of epoch in ICal notation" );

is( $t2->epoch, 0, " and back to ICal" );
}

```

A little bit of magic happens here. When running on anything but MacOS, all the tests run normally. But when on MacOS, C<skip()> causes the entire contents of the SKIP block to be jumped over. It's never run. Instead, it prints special output that tells Test::Harness that the tests have been skipped.

```

1..7
ok 1 - Epoch time of 0
ok 2 # skip epoch to ICal not working on MacOS
ok 3 # skip epoch to ICal not working on MacOS
ok 4 # skip epoch to ICal not working on MacOS
ok 5 # skip epoch to ICal not working on MacOS
ok 6 # skip epoch to ICal not working on MacOS
ok 7 # skip epoch to ICal not working on MacOS

```

This means your tests won't fail on MacOS. This means less emails from

MacPerl users telling you about failing tests that you know will never work. You've got to be careful with skip tests. These are for tests which don't work and I<never will>. It is not for skipping genuine bugs (we'll get to that in a moment).

The tests are wholly and completely skipped. [10] This will work.

```

SKIP: {
    skip("I don't wanna die!");

    die, die, die, die, die;
}

```

=head2 Todo tests

Thumbing through the Date::ICal man page, I came across this:

```

ical

$ical_string = $ical->ical;

```

Retrieves, or sets, the date on the object, using any valid iCal date/time string.

"Retrieves or sets". Hmm, didn't see a test for using `C<ical()` to set the date in the `Date::iCal` test suite. So I'll write one.

```
use Test::More tests => 1;
use Date::iCal;

my $ical = Date::iCal->new;
$ical->ical('20201231Z');
is( $ical->ical, '20201231Z', 'Setting via ical()' );
```

run that and I get

```
1..1
not ok 1 - Setting via ical()
# Failed test (- at line 6)
# got: '20010814T233649Z'
# expected: '20201231Z'
# Looks like you failed 1 tests of 1.
```

Whoops! Looks like it's unimplemented. Let's assume we don't have the time to fix this. [11] Normally, you'd just comment out the test and put a note in a todo list somewhere. Instead, we're going to explicitly state "this test will fail" by wrapping it in a `C<TODO>` block.

```
use Test::More tests => 1;

TODO: {
    local $TODO = 'ical($ical) not yet implemented';

    my $ical = Date::iCal->new;
    $ical->ical('20201231Z');

    is( $ical->ical, '20201231Z', 'Setting via ical()' );
}
```

Now when you run, it's a little different:

```
1..1
not ok 1 - Setting via ical() # TODO ical($ical) not yet implemented
# got: '20010822T201551Z'
# expected: '20201231Z'
```

`Test::More` doesn't say "Looks like you failed 1 tests of 1". That `# TODO` tells `Test::Harness` "this is supposed to fail" and it

treats a failure as a successful test. So you can write tests even before you've fixed the underlying code.

If a TODO test passes, Test::Harness will report it "UNEXPECTEDLY SUCCEEDED". When that happens, you simply remove the TODO block with `C<local $TODO>` and turn it into a real test.

=head2 Testing with taint mode.

Taint mode is a funny thing. It's the globalest of all global features. Once you turn it on, it affects I<all> code in your program and I<all> modules used (and all the modules they use). If a single piece of code isn't taint clean, the whole thing explodes. With that in mind, it's very important to ensure your module works under taint mode.

It's very simple to have your tests run under taint mode. Just throw a `C<-T>` into the `C<#!>` line. Test::Harness will read the switches in `C<#!>` and use them to run your tests.

```
#!/usr/bin/perl -Tw
```

```
...test normally here...
```

So when you say `C<make test>` it will be run with taint mode and warnings on.

=head1 FOOTNOTES

=over

4

=item 1

The first number doesn't really mean anything, but it has to be 1. It's the second number that's important.

=item 2

For those following along at home, I'm using version 1.31. It has some bugs, which is good -- we'll uncover them with our tests.

=item 3

You can actually take this one step further and test the manual

itself. Have a look at B<Test::Inline> (formerly B<Pod::Tests>).

=item 4

Yes, there's a mistake in the test suite. What! Me, contrived?

=item 5

We'll get to testing the contents of lists later.

=item 6

But what happens if your test program dies halfway through?! Since we didn't say how many tests we're going to run, how can we know it failed? No problem, Test::More employs some magic to catch that death and turn the test into a failure, even if every test passed up to that point.

=item 7

I cleaned it up a little.

=item 8

Most Operating Systems record time as the number of seconds since a certain date. This date is the beginning of the epoch. Unix's starts at midnight January 1st, 1970 GMT.

=item 9

MacOS's epoch is midnight January 1st, 1904. VMS's is midnight, November 17th, 1858, but vmsperl emulates the Unix epoch so it's not a problem.

=item 10

As long as the code inside the SKIP block at least compiles. Please don't ask how. No, it's not a filter.

=item 11

Do NOT be tempted to use TODO tests as a way to avoid fixing simple bugs!

=back

=head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> and the perl-qa dancers!

=head1 COPYRIGHT

Copyright 2001 by Michael G Schwern E<lt>schwern@pobox.comE<gt>.

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=cut

Found in path(s):

```
* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/t/lib/Test/Tutorial.pod
```

No license file was found, but licenses were detected in source scan.

=head1 NAME

File::Spec::Functions - portably perform operations on file names

=head1 SYNOPSIS

```
use File::Spec::Functions;
$x = catfile('a','b');
```

=head1 DESCRIPTION

This module exports convenience functions for all of the class methods provided by File::Spec.

For a reference of available functions, please consult L<File::Spec::Unix>, which contains the entire set, and which is inherited by the modules for other platforms. For further information, please see L<File::Spec::Mac>, L<File::Spec::OS2>, L<File::Spec::Win32>, or L<File::Spec::VMS>.

=head2 Exports

The following functions are exported by default.

canonpath

catdir
catfile
curdir
rootdir
updir
no_upwards
file_name_is_absolute
path

The following functions are exported only by request.

devnull
tmpdir
splitpath
splitdir
catpath
abs2rel
rel2abs
case_tolerant

All the functions may be imported using the C<:ALL> tag.

=head1 COPYRIGHT

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=head1 SEE ALSO

File::Spec, File::Spec::Unix, File::Spec::Mac, File::Spec::OS2,
File::Spec::Win32, File::Spec::VMS, ExtUtils::MakeMaker

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUfiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Functions.pm
No license file was found, but licenses were detected in source scan.

=head1 NAME

File::Spec::OS2 - methods for OS/2 file specs

=head1 SYNOPSIS

require File::Spec::OS2; # Done internally by File::Spec if needed

=head1 DESCRIPTION

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

Amongst the changes made for OS/2 are...

=over 4

=item tmpdir

Modifies the list of places temp directory information is looked for.

\$ENV{TMPDIR}

\$ENV{TEMP}

\$ENV{TMP}

/tmp

/

=item splitpath

Volumes can be drive letters or UNC sharenames (\\server\share).

=back

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=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/OS2.pm

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

An explanation of VMS file specs can be found at L<http://h71000.www7.hp.com/doc/731FINAL/4506/4506pro_014.html#apps_locating_naming_files>.

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/VMS.pm

No license file was found, but licenses were detected in source scan.

=back

=head1 AUTHORS

See the authors list in I<File::Spec>. Mac OS support by Paul Schinder <schinder@pobox.com> and Thomas Wegner <wegner_thomas@yahoo.com>.

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Mac.pm

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=pod

=head1 AUTHOR

o.flebbe@gmx.de

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the implementation of these methods, not the semantics.

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Epoc.pm

No license file was found, but licenses were detected in source scan.

/* See

* <http://www.xray.mpe.mpg.de/mailling-lists/perl5-porters/2004-11/msg00979.html>

* for the details of why the BSD license is compatible with the

* AL/GPL standard perl license.

*/

/*

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*/

Found in path(s):

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=head2 Note For File::Spec::Win32 Maintainers

Novell NetWare inherits its File::Spec behaviour from File::Spec::Win32.

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=head1 SEE ALSO

See L<File::Spec> and L<File::Spec::Unix>. This package overrides the
implementation of these methods, not the semantics.

=cut

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Win32.pm

No license file was found, but licenses were detected in source scan.

abstract: unknown

author:

- unknown

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.112150'

license: unknown

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: PathTools

no_index:

directory:

- t

- inc

requires:

Carp: 0

File::Basename: 0

Scalar::Util: 0

Test: 0

version: 3.40

Found in path(s):

* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/META.yml

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* /opt/cola/permits/1592955340_1678786364.7552886/0/perl-PathTools-3.40-5.el7-1.src.rpm-cosi-expand-archive-EUFiLB7M/PathTools-3.40.tar.gz-cosi-expand-archive-6Ww13kY1/PathTools-3.40/lib/File/Spec/Cygwin.pm

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=back

=head1 EXIT CODES

If all your tests passed, Test::Builder will exit with zero (which is normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Builder will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0 all tests successful
255 test died
any other number how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

=head1 NOTES

Test::More is B<explicitly> tested all the way back to perl 5.004.

=head1 BUGS and CAVEATS

=over 4

=item Threads

Test::More will only be aware of threads if "use threads" has been done
I<before>

Test::More is loaded. This is ok:

```
use threads;  
use Test::More;
```

This may cause problems:

```
use Test::More  
use threads;
```

=item Making your own ok()

If you are trying to extend Test::More, don't. Use Test::Builder instead.

=item The eq_* family has some caveats.

=item Test::Harness upgrade

no_plan and todo depend on new Test::Harness features and fixes. If you're going to distribute tests that use no_plan or todo your end-users will have to upgrade Test::Harness to the latest one on CPAN. If you avoid no_plan and TODO tests, the stock Test::Harness will work fine.

Installing Test::More should also upgrade Test::Harness.

=back

=head1 HISTORY

This is a case of convergent evolution with Joshua Pritikin's Test module. I was largely unaware of its existence when I'd first written my own ok() routines. This module exists because I can't figure out how to easily wedge test names into Test's interface (along with a few other problems).

The goal here is to have a testing utility that's simple to learn, quick to use and difficult to trip yourself up with while still providing more flexibility than the existing Test.pm. As such, the names of the most common routines are kept tiny, special cases and magic side-effects are kept to a minimum. WYSIWYG.

=head1 SEE ALSO

L<Test::Simple> if all this confuses you and you just want to write some tests. You can upgrade to Test::More later (it's forward compatible).

L<Test> is the old testing module. Its main benefit is that it has been distributed with Perl since 5.004_05.

L<Test::Harness> for details on how your test results are interpreted by Perl.

L<Test::Differences> for more ways to test complex data structures. And it plays well with Test::More.

L<Test::Class> is like XUnit but more perlish.

L<Test::Deep> gives you more powerful complex data structure testing.

L<Test::Unit> is XUnit style testing.

L<Test::Inline> shows the idea of embedded testing.

L<Bundle::Test> installs a whole bunch of useful test modules.

=head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> with much inspiration
from Joshua Pritikin's Test module and lots of help from Barrie
Slaymaker, Tony Bowden, blackstar.co.uk, chromatic and the perl-qa gang.

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See F<http://www.perl.com/perl/misc/Artistic.html>

=cut

Found in path(s):

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1.285 perl-text-parsewords 3.29-4.el7

1.285.1 Available under license :

Return-Path: rt-cpan-org-return@perl.org

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zmail14.collab.prod.int.phx2.redhat.com with LMTP; Mon, 18 Nov 2013

11:06:10 -0500 (EST)

Received: from zmta04.collab.prod.int.phx2.redhat.com (localhost [127.0.0.1])

by zmta04.collab.prod.int.phx2.redhat.com (Postfix) with ESMTP id 9A08BDA0C9

for <mmaslano@redhat.com>; Mon, 18 Nov 2013 11:06:10 -0500 (EST)

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for <mmaslano@mail.corp.redhat.com>; Mon, 18 Nov 2013 11:06:10 -0500 (EST)

Received: from mx1.redhat.com (ext-mx14.extmail.prod.ext.phx2.redhat.com [10.5.110.19])

by int-mx10.intmail.prod.int.phx2.redhat.com (8.14.4/8.14.4) with ESMTP id rAIG6A3W024510

for <mmaslano@redhat.com>; Mon, 18 Nov 2013 11:06:10 -0500

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(rtcpan.developer.com [207.171.7.181])

by mx1.redhat.com (8.14.4/8.14.4) with ESMTP id rAIG69Uk032392

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id D3030FA; Mon, 18 Nov 2013 08:06:08 -0800 (PST)

Precedence: normal

Subject: [rt.cpan.org #90483] missing license file

From: "Alexandr Ciornii via RT" <bug-Text-ParseWords@rt.cpan.org>

Reply-To: bug-Text-ParseWords@rt.cpan.org

In-Reply-To: <rt-4.0.18-4704-1384789048-1647.90483-6-0@rt.cpan.org>
References: <RT-Ticket-90483@rt.cpan.org>
<rt-4.0.18-4704-1384789048-1647.90483-6-0@rt.cpan.org>
Message-ID: <rt-4.0.18-2172-1384790768-1347.90483-6-0@rt.cpan.org>
X-RT-Loop-Prevention: rt.cpan.org
RT-Ticket: rt.cpan.org #90483
Managed-BY: RT 4.0.18 (<http://www.bestpractical.com/rt/>)
RT-Originator: CHORNY@cpan.org
To: mmaslano@redhat.com
MIME-Version: 1.0
Content-Transfer-Encoding: 8bit
Content-Type: text/plain; charset="utf-8"
X-RT-Original-Encoding: utf-8
Date:
Mon, 18 Nov 2013 11:06:08 -0500
X-RedHat-Spam-Score: -1.9 (BAYES_00,SPF_PASS,URIBL_BLOCKED)
X-Scanned-By: MIMEDefang 2.68 on 10.5.11.23
X-Scanned-By: MIMEDefang 2.68 on 10.5.110.19

<URL: <https://rt.cpan.org/Ticket/Display.html?id=90483> >

On Mon Nov 18 10:37:28 2013, mmaslano@redhat.com wrote:

> It would be a big help if you have better defined license. License
> text in .pm file would be enough.

Will do in next version.

> I found Perl license in Makefile.PL,
> so we assumed it's Perl (GPL+ or Artistic). Is it correct?

yes

--

Alexandr Ciornii, <http://chorny.net>

1.286 perl-pod-simple 3.28-4.e17

1.286.1 Available under license :

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::Methody -- turn Pod::Simple events into method calls

=head1 SYNOPSIS

require 5;


```

use strict;
package SomePodFormatter;
use base qw(Pod::Simple::Methody);

sub handle_text {
    my($self, $text) = @_;
    ...
}

sub start_head1 {
    my($self, $attrs) = @_;
    ...
}

sub end_head1 {
    my($self) = @_;
    ...
}

```

...and start_/end_ methods for whatever other events you want to catch.

=head1 DESCRIPTION

This class is of interest to people writing Pod formatters based on Pod::Simple.

This class (which is very small -- read the source) overrides Pod::Simple's `_handle_element_start`, `_handle_text`, and `_handle_element_end` methods so that parser events are turned into method calls. (Otherwise, this is a subclass of L<Pod::Simple> and inherits all its methods.)

You can use this class as the base class for a Pod formatter/processor.

=head1 METHOD CALLING

When Pod::Simple sees a "`=head1 Hi there`", for example, it basically does this:

```

$parser->_handle_element_start( "head1", \%attributes );
$parser->_handle_text( "Hi there" );
$parser->_handle_element_end( "head1" );

```

But if you subclass Pod::Simple::Methody, it will instead do this when it sees a "`=head1 Hi there`":

```

$parser->start_head1( \%attributes ) if $parser->can('start_head1');
$parser->handle_text( "Hi there" ) if $parser->can('handle_text');

```

```
$parser->end_head1()          if $parser->can('end_head1');
```

If Pod::Simple sends an event where the element name has a dash, period, or colon, the corresponding method name will have an underscore in its place. For example, "foo.bar:baz" becomes start_foo_bar_baz and end_foo_bar_baz.

See the source for Pod::Simple::Text for an example of using this class.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Subclassing>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

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Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found

in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/lib/Pod/Simple/Methody.pm

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::Text -- format Pod as plaintext

=head1 SYNOPSIS

```
perl -MPod::Simple::Text -e \  
"exit Pod::Simple::Text->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is a formatter that takes Pod and renders it as wrapped plaintext.

Its wrapping is done by L<Text::Wrap>, so you can change C<\$Text::Wrap::columns> as you like.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::TextContent>, L<Pod::Text>

=head1 SUPPORT

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archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/Text.pm

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::DumpAsText -- dump Pod-parsing events as text

=head1 SYNOPSIS

```
perl -MPod::Simple::DumpAsText -e \  
"exit Pod::Simple::DumpAsText->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is for dumping, as text, the events gotten from parsing a Pod document. This class is of interest to people writing Pod formatters based on Pod::Simple. It is useful for seeing exactly what events you get out of some Pod that you feed in.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple::DumpAsXML>

L<Pod::Simple>

=head1 SUPPORT

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```
* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/DumpAsText.pm
```

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=head1 NAME

Pod::Simple::SimpleTree -- parse Pod into a simple parse tree

=head1 SYNOPSIS

```
% cat ptest.pod
```

=head1 PIE

```
I like B<pie>!
```

```
% perl -MPod::Simple::SimpleTree -MData::Dumper -e \
  "print Dumper(Pod::Simple::SimpleTree->new->parse_file(shift)->root)" \
  ptest.pod
```

```
$VAR1 = [
  'Document',
  { 'start_line' => 1 },
  [
    'head1',
    { 'start_line' => 1 },
    'PIE'
  ],
  [
    'Para',
    { 'start_line' => 3 },
  ]
]
```

```
'I like ',  
[  
  'B',  
  {},  
  'pie'  
],  
'!'  
]  
];
```

=head1 DESCRIPTION

This class is of interest to people writing a Pod processor/formatter.

This class takes Pod and parses it, returning a parse tree made just of arrayrefs, and hashrefs, and strings.

This is a subclass of L<Pod::Simple> and inherits all its methods.

This class is inspired by XML::Parser's "Tree" parsing-style, although it doesn't use exactly the same LoL format.

=head1 METHODS

At the end of the parse, call C<< \$parser->root >> to get the tree's top node.

=head1 Tree Contents

Every element node in the parse tree is represented by an arrayref of the form: C<[I<elementname>, \%attributes, I<...subnodes...>]>. See the example tree dump in the Synopsis, above.

Every text node in the tree is represented by a simple (non-ref) string scalar. So you can test C<ref(\$node)> to see whether you have an element node or just a text node.

The top node in the tree is C<['Document', \%attributes, I<...subnodes...>]>

=head1 SEE ALSO

L<Pod::Simple>

L<perllo!>

L<The "Tree" subsection in XML::Parser|XML::Parser/"Tree">

=head1 SUPPORT

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*

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No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::TextContent -- get the text content of Pod

=head1 SYNOPSIS

TODO

```
perl -MPod::Simple::TextContent -e \  
"exit Pod::Simple::TextContent->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is that parses Pod and dumps just the text content. It is mainly meant for use by the Pod::Simple test suite, but you may find some other use for it.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

=head1 SUPPORT

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=head1 NAME

Pod::Simple::PullParserTextToken -- text-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser>, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item \$token->text

This returns the text that this token holds. For example, parsing CZ<<<foo> will return a C start-token, a text-token, and a C end-token. And if you want to get the "foo" out of the text-token, call C<< \$token->text >>

=item \$token->text(I<somestring>)

This changes the string that this token holds. You probably won't need to do this.

=item \$token->text_r()

This returns a scalar reference to the string that this token holds. This can be useful if you don't want to memory-copy the potentially large text value (well, as large as a paragraph or a verbatim block) as calling \$token->text would do.

Or, if you want to alter the value, you can even do things like this:

```
for ( ${ $token->text_r } ) { # Aliases it with $_ !!
```

```
s/ The / the /g; # just for example
```

```
if( 'A' eq chr(65) ) { # (if in an ASCII world)
  tr/\xA0/ /;
  tr/\xAD//d;
}
```

```
...or however you want to alter the value...
```

```
}
```

=back

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

```
C<<
Pod::Simple::PullParserTextToken->new( I<text> )
>>
```

=head1 SEE ALSO

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

=head1 SUPPORT

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NAME

perlfaq3 - Programming Tools (\$Revision: 1.38 \$, \$Date: 1999/05/23 16:08:30 \$)

DESCRIPTION

This section of the FAQ answers questions related to programmer tools and programming support.

How do I do (anything)?

Have you looked at CPAN (see perlfaq2)? The chances are that someone has already written a module that can solve your problem. Have you read the appropriate man pages? Here's a brief index:

Basics	perldata, perlvar, perlsyn, perlop, perlsub
Execution	perlrun, perldebug
Functions	perlfunc
Objects	perlref, perlmod, perlobj, perltie
Data Structures	perlref, perllool, perldsc
Modules	perlmod, perlmodlib, perlsub
Regexes	perlre, perlfunc, perlop, perllocale
Moving to perl5	perltrap, perl
Linking w/C	perlxs, perlcalls, perlguts, perlembed
Various	http://www.perl.com/CPAN/doc/FMTEYEWTK/index.html (not a man-page but still useful)

A crude table of contents for the Perl man page set is found in perltoc.

How can I use Perl interactively?

The typical approach uses the Perl debugger, described in the perldebug(1) man page, on an ``empty" program, like this:

```
perl -de 42
```

Now just type in any legal Perl code, and it will be immediately evaluated. You can also examine the symbol table, get stack backtraces, check variable values, set breakpoints, and other operations typically found in symbolic debuggers.

Is there a Perl shell?

In general, no. The Shell.pm module (distributed with Perl) makes Perl try commands which aren't part of the Perl language as shell commands. perlsh from the source distribution is simplistic and uninteresting, but may still be what you want.

How do I debug my Perl programs?

Have you tried use warnings or used -w? They enable warnings to detect dubious practices.

Have you tried use strict? It prevents you from

using symbolic references, makes you predeclare any subroutines that you call as bare words, and (probably most importantly) forces you to predeclare your variables with my, our, or use vars.

Did you check the return values of each and every system call? The operating system (and thus Perl) tells you whether they worked, and if not why.

```
open(FH, "> /etc/cantwrite")  
or die "Couldn't write to /etc/cantwrite: $!\n";
```

Did you read perltrap? It's full of gotchas for old and new Perl programmers and even has sections for those of you who are upgrading from languages like awk and C.

Have you tried the Perl debugger, described in perldebug? You can step through your program and see what it's doing and thus work out why what it's doing isn't what it should be doing.

How do I profile my Perl programs?

You should get the Devel::DProf module from the standard distribution (or separately on CPAN) and also use Benchmark.pm from the standard distribution. The Benchmark module lets you time specific portions of your code, while Devel::DProf gives detailed breakdowns of where your code spends its time.

Here's a sample use of Benchmark:

```

use Benchmark;
@junk = `cat /etc/motd`;
$count = 10_000;
timethese($count, {
    'map' => sub { my @a = @junk;
        map { s/a/b/ } @a;
        return @a
    },
    'for' => sub { my @a = @junk;
        local $_;
        for (@a) { s/a/b/ };
        return @a },
});

```

This is what it prints (on one machine--your results will be dependent on your hardware, operating system, and the load on your machine):

```

Benchmark: timing 10000 iterations of for, map...
for: 4 secs ( 3.97 usr 0.01 sys = 3.98 cpu)
map: 6 secs ( 4.97 usr 0.00 sys = 4.97 cpu)

```

Be aware that a good benchmark is very hard to write. It only tests the data you give it and proves little about the differing complexities of contrasting algorithms.

How do I cross-reference my Perl programs?

The B::Xref module, shipped with the new, alpha-release Perl compiler (not the general distribution prior to the 5.005 release), can be used to generate cross-reference reports for Perl programs.

```
perl -MO=Xref[,OPTIONS] scriptname.plx
```

Is there a pretty-printer (formatter) for Perl?

There is no program that will reformat Perl as much as `indent(1)` does for C. The complex feedback between the scanner and the parser (this feedback is what confuses the `vgrind` and `emacs` programs) makes it challenging at best to write a stand-alone Perl parser.

Of course, if you simply follow the guidelines in `perlstyle`, you shouldn't need to reformat. The habit of formatting your code as you write it will help prevent bugs. Your editor can and should help you with this. The `perl-mode` or newer `cperl-mode` for `emacs` can provide remarkable amounts of help with most (but not all) code, and even less programmable editors can provide

significant assistance. Tom swears by the following settings in `vi` and its clones:

```

set ai sw=4
map! ^O {^M}^[O^T

```

Now put that in your `.exrc` file (replacing the caret characters with control characters) and away you go. In insert mode, `^T` is for indenting, `^D` is for unindenting, and `^O` is for blockdenting-- as it were. If you haven't used the last one, you're missing a lot. A more complete example, with comments, can be found at <http://www.perl.com/CPAN-local/authors/id/TOMC/scripts/toms.exrc.gz>

If you are used to using the `vgrind` program for printing out nice code to a laser printer, you can take a stab at this using <http://www.perl.com/CPAN/doc/misc/tips/working.vgrind.entry>, but the results are not particularly satisfying for sophisticated code.

The `a2ps` at <http://www.infres.enst.fr/%7Edemaille/a2ps/> does lots of things related to generating nicely printed output of documents.

Is there a `ctags` for Perl?

There's a simple one at <http://www.perl.com/CPAN/authors/id/TOMC/scripts/ptags.gz>

which may do the trick. And if not, it's easy to hack into what you want.

Is there an IDE or Windows Perl Editor?

Perl programs are just plain text, so any editor will do.

If you're on Unix, you already have an IDE--Unix itself. The UNIX philosophy is the philosophy of several small tools that each do one thing and do it well. It's like a carpenter's toolbox.

If you want a Windows IDE, check the following:

CodeMagicCD

<http://www.codemagiccd.com/>

Komodo

ActiveState's cross-platform, multi-language IDE has Perl support, including a regular expression debugger and remote debugging (<http://www.ActiveState.com/Products/Komodo/index.html>). (Visual Perl, a Visual Studio.NET plug-in is currently (early 2001) in beta (<http://www.ActiveState.com/Products/VisualPerl/index.html>)).

The Object System

(http://www.castlelink.co.uk/object_system/) is a Perl web applications development IDE.

PerlBuilder

(<http://www.solutionsoft.com/perl.htm>) is an integrated development environment for Windows that supports Perl development.

Perl code magic

(<http://www.petes-place.com/codemagic.html>).

visiPerl+

<http://helpconsulting.net/visiperl/>, from Help Consulting.

For editors: if you're on Unix you probably have vi or a vi clone already, and possibly an emacs too, so you may not need to download anything. In any emacs the cperl-mode (M-x cperl-mode) gives you perhaps the best available Perl editing mode in any editor.

For Windows editors: you can download an Emacs

GNU Emacs

<http://www.gnu.org/software/emacs/windows/ntemacs.html>

MicroEMACS

<http://members.nbc.com/uemacs/>

XEmacs

<http://www.xemacs.org/Download/index.html>

or a vi clone such as

Elvis

<ftp://ftp.cs.pdx.edu/pub/elvis/> <http://www.fh-wedel.de/elvis/>

Vile

<http://vile.cx/>

Vim

<http://www.vim.org/>

win32: <http://www.cs.vu.nl/%7Etmgil/vi.html>

For vi lovers in general, Windows or elsewhere: <http://www.thomer.com/thomer/vi/vi.html>.

nvi (<http://www.bostic.com/vi/>, available from CPAN in `src/misc/`) is yet another vi clone, unfortunately not available for Windows, but in UNIX platforms you might be interested in trying it out, firstly because strictly speaking it is not a vi clone, it is the real vi, or the new incarnation of it, and secondly because you can embed Perl inside it to use Perl as the scripting language. nvi is not alone in this, though: at least also vim and vile offer an embedded Perl.

The following are Win32 multilanguage editor/IDESs that support Perl:

Codewright

<http://www.starbase.com/>

MultiEdit

<http://www.MultiEdit.com/>

SlickEdit

<http://www.slickedit.com/>

There is also a `toyedit` Text widget based editor written in Perl that is distributed with the Tk module on CPAN. The `ptkdb` (<http://world.std.com/~aep/ptkdb/>) is a Perl/tk based debugger that acts as a development environment of sorts. Perl Composer (<http://perlcomposer.sourceforge.net/vperl.html>) is an IDE for Perl/Tk GUI creation.

In addition to an editor/IDE you might be interested in a more powerful shell environment for Win32. Your options include

Bash

from

the Cygwin package (<http://sources.redhat.com/cygwin/>)

Ksh

from the MKS Toolkit (<http://www.mks.com/>), or the Bourne shell of the U/WIN environment

(<http://www.research.att.com/sw/tools/uwin/>)

Tcsh

<ftp://ftp.astron.com/pub/tcsh/>, see also <http://www.primite.wisc.edu/software/csh-tcsh-book/>

Zsh

<ftp://ftp.blarg.net/users/amol/zsh/>, see also <http://www.zsh.org/>

MKS and U/WIN are commercial (U/WIN is free for educational and research purposes), Cygwin is covered by the GNU Public License (but that shouldn't matter for Perl use). The Cygwin, MKS, and U/WIN all contain (in addition to the shells) a comprehensive set of standard UNIX toolkit utilities.

If you're transferring text files between Unix and Windows using FTP be sure to transfer them in ASCII mode so the ends of lines are appropriately converted.

On Mac OS the MacPerl Application comes with a simple 32k text editor that behaves like a rudimentary IDE. In contrast to the MacPerl Application the MPW Perl tool can make use of

the MPW Shell itself as an editor (with no 32k limit).

BEdit and BEdit Lite

are text editors for Mac OS that have a Perl sensitivity mode (<http://web.barebones.com/>).

Alpha

is an editor, written and extensible in Tcl, that nonetheless has built in support for several popular markup and programming languages including Perl and HTML (<http://alpha.olm.net/>).

Pepper and Pe are programming language sensitive text editors for Mac OS X and BeOS respectively

(<http://www.hekkelman.com/>).

Where can I get Perl macros for vi?

For a complete version of Tom Christiansen's vi configuration file, see

http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/toms.exrc.gz, the standard benchmark file for vi emulators. The file runs best with `nvi`, the current version of vi out of Berkeley, which incidentally can be built with an embedded Perl interpreter--see <http://www.perl.com/CPAN/src/misc>.

Where can I get perl-mode for emacs?

Since Emacs version 19 patchlevel 22 or so, there have been both a `perl-mode.el`

and support for the Perl debugger built in. These should come with the standard Emacs 19 distribution.

In the Perl source directory, you'll find a directory called "emacs", which contains a `cperl-mode` that color-codes keywords, provides context-sensitive help, and other nifty things.

Note that the `perl-mode` of emacs will have fits with "main'foo" (single quote), and mess up the indentation and highlighting. You are probably using "main::foo" in new Perl code anyway, so this shouldn't be an issue.

How can I use curses with Perl?

The Curses module from CPAN provides a dynamically loadable object module interface to a curses library. A

small demo can be found at the directory http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/rep; this program repeats a command and updates the screen as needed, rendering `rep ps axu` similar to `top`.

How can I use X or Tk with Perl?

Tk is a completely Perl-based, object-oriented interface to the Tk toolkit that doesn't force you to use Tcl just to get at Tk. Sx is an interface to the Athena Widget set. Both are available from CPAN. See the directory http://www.perl.com/CPAN/modules/by-category/08_User_Interfaces/

Invaluable for Perl/Tk programming are the Perl/Tk FAQ at <http://w4.lns.cornell.edu/%7Epvh/ptk/ptkTOC.html> , the Perl/Tk Reference Guide available at http://www.perl.com/CPAN-local/authors/Stephen_O_Lidie/ , and the online manpages at <http://www-users.cs.umn.edu/%7Eamundson/perl/perlTk/toc.html> .

How can I generate simple menus without using CGI or Tk?

The <http://www.perl.com/CPAN/authors/id/SKUNZ/perlmenu.v4.0.tar.gz> module, which is curses-based, can help with this.

What is undump?

See the next question on ``How can I make my Perl program run faster?''

How can I make my Perl program run faster?

The best way to do this is to come up with a better algorithm. This can often make a dramatic difference. Jon Bentley's book ``Programming Pearls'' (that's not a misspelling!) has some good tips on optimization, too. Advice on benchmarking boils down to: benchmark and profile to make sure you're optimizing the right part, look for better algorithms instead of microtuning your code, and when all else fails consider just buying faster hardware.

A different approach is to autoload seldom-used Perl code. See the `AutoSplit` and `AutoLoader` modules in the standard distribution for that. Or you could locate the bottleneck and think about writing just that part in C, the way we used to take bottlenecks in C code and write them in assembler. Similar to rewriting in C, modules that have critical sections can be written in C (for instance, the `PDL` module from CPAN).

In some cases, it may be worth it to use the backend compiler to produce byte code (saving compilation time) or compile into C, which will certainly save compilation time and sometimes a small amount (but not much) execution time. See the question about compiling your Perl programs for more on the compiler--the wins aren't as obvious as you'd hope.

If

you're currently linking your perl executable to a shared `libc.so`, you can often gain a 10-25% performance benefit by rebuilding it to link with a static `libc.a` instead. This will make a bigger perl executable, but your Perl programs (and programmers) may thank you for it. See the `INSTALL` file in the source distribution for more information. Unsubstantiated reports allege that Perl interpreters that use `sfio` outperform those that don't (for I/O intensive applications). To try this, see the `INSTALL` file in the source distribution, especially the ``Selecting File I/O mechanisms'' section.

The `undump` program was an old attempt to speed up your Perl program by storing the already-compiled form to disk. This is no longer a viable option, as it only worked on a few architectures, and wasn't a good solution anyway.

How can I make my Perl program take less memory?

When it comes to time-space tradeoffs, Perl nearly always prefers to throw memory at a problem. Scalars in Perl use more memory than

strings in C, arrays take more than that, and hashes use even more. While there's still a lot to be done, recent releases have been addressing these issues. For example, as of 5.004, duplicate hash keys are shared amongst all hashes using them, so require no reallocation.

In some cases, using `substr()` or `vec()` to simulate arrays can be highly beneficial. For example, an array of a thousand booleans will take at least 20,000 bytes of space, but it can be turned into one 125-byte bit vector--a considerable memory savings. The standard `Tie::SubstrHash` module can also help for certain types of data structure. If you're working with specialist data structures (matrices, for instance) modules that implement these in C may use less memory than equivalent Perl modules.

Another thing to try is learning whether your Perl was compiled with the system `malloc` or with Perl's builtin `malloc`.

Whichever one it is, try using the other one and see whether this makes a difference. Information about malloc is in the INSTALL file in the source distribution. You can find out whether you are using perl's malloc by typing `perl -V:usemymalloc`.

Is it unsafe to return a pointer to local data?

No, Perl's garbage collection system takes care of this.

```
sub makeone {
    my @a = ( 1 .. 10 );
    return \@a;
}
for $i ( 1 .. 10 ) {
    push @many, makeone();
}
print $many[4][5], "\n";
print "@many\n";
```

How can I free an array or hash so my program shrinks?

You can't. On most operating systems, memory allocated to a program can never be returned to the system. That's why long-running programs sometimes re-exec themselves. Some operating systems (notably, FreeBSD and Linux) allegedly reclaim large chunks of memory that is no longer used, but it doesn't appear to happen with Perl (yet). The Mac appears to be the only platform that will reliably (albeit, slowly) return memory to the OS.

We've had reports that on Linux (Redhat 5.1) on Intel, `undef $scalar` will return memory to the system, while on Solaris 2.6 it won't. In general, try it yourself and see.

However, judicious use of `my()` on your variables will help make sure that they go out of scope so that Perl can free up that space for use in other parts of your program. A global variable, of course, never goes out of scope, so you can't get its space automatically reclaimed, although `undef()`ing and/or `delete()`ing it will achieve the same effect. In general, memory allocation and de-allocation isn't something you can or should be worrying about much in Perl, but even this capability (preallocation of data types) is in the works.

How can I make my CGI script more efficient?

Beyond the normal measures described to make general Perl programs faster or smaller, a CGI program has additional issues. It may be run several times per second. Given that each time it runs it will need to be re-compiled and will often allocate a megabyte or more of system memory, this can be a killer. Compiling into C isn't going to help you because the process start-up overhead is where the bottleneck is.

There are two popular ways to avoid this overhead. One solution involves running the Apache HTTP server (available from <http://www.apache.org/>) with either of the `mod_perl` or `mod_fastcgi` plugin modules.

With `mod_perl` and the `Apache::Registry` module (distributed with `mod_perl`), `httpd` will run with an embedded Perl interpreter which pre-compiles your script and then executes it within the same address space without forking. The Apache extension also gives Perl access to the internal server API, so modules written in Perl can do just about anything a module written in C can. For more on `mod_perl`, see <http://perl.apache.org/>

With the `FCGI` module (from CPAN) and the `mod_fastcgi` module (available from <http://www.fastcgi.com/>) each of your Perl programs becomes a permanent CGI daemon process.

Both of these solutions can have far-reaching effects on your system and on the way you write your CGI programs, so investigate them with care.

See http://www.perl.com/CPAN/modules/by-category/15_World_Wide_Web_HTML_HTTP_CGI/.

A non-free, commercial product, ``The Velocity Engine for Perl'', (<http://www.binevolve.com/> or <http://www.binevolve.com/velocigen/>) might also be worth looking at. It will allow you to increase the performance of your Perl programs, running programs up to 25 times faster than normal CGI Perl when running in persistent Perl mode or 4 to 5 times faster without any modification to your existing CGI programs. Fully functional evaluation copies are available from the web site.

How can I hide the source for my Perl program?

Delete it. :-) Seriously, there are a number of (mostly unsatisfactory) solutions with varying levels of "security". First of all, however, you can't take away read permission, because the source code has to be readable in order to be compiled and interpreted. (That doesn't mean that a CGI script's source is readable by people on the web, though-- only by people

with access to the filesystem.) So you have to leave the permissions at the socially friendly 0755 level.

Some people regard this as a security problem. If your program does insecure things and relies on people not knowing how to exploit those insecurities, it is not secure. It is often possible for someone to determine the insecure things and exploit them without viewing the source. Security through obscurity, the name for hiding your bugs instead of fixing them, is little security indeed.

You can try using encryption via source filters (Filter::* from CPAN), but any decent programmer will be able to decrypt it. You can try using the byte code compiler and interpreter described below, but the curious might still be able to de-compile it. You can try using the native-code compiler described below, but crackers might be able to disassemble it. These pose varying degrees of difficulty to people wanting to get at your code, but none can definitively conceal it (true of every language, not just Perl).

If you're concerned about people profiting from your code, then the bottom line is that nothing but a restrictive license will give you legal security. License your software and pepper it with threatening statements like "This is unpublished proprietary software of XYZ Corp. Your access to it does not give you permission to use it blah blah blah." We are not lawyers, of course, so you should see a lawyer if you want to be sure your license's wording will stand up in court.

How can I compile my Perl program into byte code or C?

Malcolm Beattie has written a multifunction backend compiler, available from CPAN, that can do both these things. It is included in the perl5.005 release, but is still considered experimental. This means it's fun to play with if you're a programmer but not really for people looking for turn-key solutions.

Merely compiling into C does not in and of itself guarantee that your code will run very much faster. That's because except for lucky cases where

a lot of native type inferencing is possible, the normal Perl run-time system is still present and so your program will take just as long to run and be just as big. Most programs save little more than compilation time, leaving execution no more than 10-30% faster. A few rare programs actually benefit significantly (even running several times faster), but this takes some tweaking of your code.

You'll probably be astonished to learn that the current version of the compiler generates a compiled form of your script whose executable is just as big as the original perl executable, and then some. That's because as currently written, all programs are prepared for a full eval() statement. You can tremendously reduce this cost by building a shared libperl.so library and linking against that. See the INSTALL podfile in the Perl source distribution for details. If you link your main perl binary with this, it will make it minuscule. For example, on one author's system, /usr/bin/perl is only 11k in size!

In general, the compiler will do nothing to make a Perl program smaller, faster, more portable, or more secure. In fact, it can make your situation worse. The executable will be bigger, your VM system may take longer to load the whole thing, the binary is fragile and hard to fix, and compilation never stopped software piracy in the form of crackers, viruses, or bootleggers. The real advantage of the compiler is merely packaging, and once you see the size of what it makes (well, unless you use a shared libperl.so), you'll probably want a complete Perl install anyway.

How can I compile Perl into Java?

You can also integrate Java and Perl with the Perl Resource Kit from O'Reilly and Associates. See <http://www.oreilly.com/catalog/prkunix/>.

Perl 5.6 comes with Java Perl Lingo, or JPL. JPL, still in development, allows Perl code to be called from Java. See [jpl/README](#) in the Perl source tree.

How can I get #!perl to work on [MS-DOS,NT,...]?

For OS/2 just use

```
extproc perl -S -your_switches
```

as

the first line in *.cmd file (-S due to a bug in cmd.exe's `extproc' handling). For DOS one should first invent a corresponding batch file and codify it in ALTERNATIVE_SHEBANG (see the INSTALL file in the source distribution for more information).

The Win95/NT installation, when using the ActiveState port of Perl, will modify the Registry to associate the .pl extension with the perl interpreter. If you install another port, perhaps even building your own Win95/NT Perl from the standard sources by using a Windows port of gcc (e.g., with cygwin or mingw32), then you'll have to modify the Registry yourself. In addition to associating .pl with the interpreter, NT people can use: SET

PATHEXT=%PATHEXT%;PL to let them run the program install-linux.pl merely by typing install-linux.

Macintosh Perl programs will have the appropriate Creator and Type, so that double-clicking them will invoke the Perl application.

IMPORTANT!: Whatever you do, PLEASE don't get frustrated, and just throw

the perl interpreter into your cgi-bin directory, in order to get your programs working for a web server. This is an EXTREMELY big security risk. Take the time to figure out how to do it correctly.

Can I write useful Perl programs on the command line?

Yes. Read perlrun for more information. Some examples follow. (These assume standard Unix shell quoting rules.)

```
# sum first and last fields
perl -lane 'print $F[0] + $F[-1]' *
# identify text files
perl -le 'for(@ARGV) {print if -f && -T _}' *
# remove (most) comments from C program
perl -0777 -pe 's{/\*.*?/*}/}gs' foo.c
# make file a month younger than today, defeating reaper daemons
perl -e '$X=24*60*60; utime(time(),time() + 30 * $X,@ARGV)' *
# find first unused uid
perl -le '$i++ while getpwuid($i); print $i'
# display reasonable manpath
echo $PATH | perl -nl -072 -e '
    s![^/+]*$!man!&&-d&&!$s{$_}++&&push@m,$_;END{print"@m"}'
```

OK, the last one was actually an Obfuscated Perl Contest

entry. :-)

Why don't Perl one-liners work on my DOS/Mac/VMS system?

The problem is usually that the command interpreters on those systems have rather different ideas about quoting than the Unix shells under which the one-liners were created. On some systems, you may have to change single-quotes to double ones, which you must NOT do on Unix or Plan9 systems. You might also have to change a single % to a %%.

For example:

```
# Unix
perl -e 'print "Hello world\n"'
# DOS, etc.
perl -e "print \"Hello world\n\""
# Mac
print "Hello world\n"
(then Run "Myscript" or Shift-Command-R)
# VMS
```

```
perl -e "print ""Hello world\n"""
```

The problem is that none of these examples are reliable: they depend on the command interpreter. Under Unix, the first two often work. Under DOS, it's entirely possible that neither works. If 4DOS was the command shell, you'd probably have better luck like this:

```
perl -e "print <Ctrl-x>"Hello world\n<Ctrl-x>"
```

Under the Mac, it depends

which environment you are using. The MacPerl shell, or MPW, is much like Unix shells in its support for several quoting variants, except that it makes free use of the Mac's non-ASCII characters as control characters.

Using qq(), q(), and qx(), instead of "double quotes", 'single quotes', and `backticks`, may make one-liners easier to write.

There is no general solution to all of this. It is a mess, pure and simple. Sucks to be away from Unix, huh? :-)

[Some of this answer was contributed by Kenneth Albanowski.]

Where can I learn about CGI or Web programming in Perl?

For modules, get the CGI or LWP modules from CPAN. For textbooks, see the two especially dedicated to web stuff in the question on books. For problems and questions related to the web, like ``Why do I get 500 Errors" or ``Why doesn't it run from the browser right when it runs fine on the command line", see these sources:

WWW Security FAQ

<http://www.w3.org/Security/Faq/>

Web FAQ

<http://www.boutell.com/faq/>

CGI FAQ

<http://www.webthing.com/tutorials/cgifaq.html>

HTTP Spec

<http://www.w3.org/pub/WWW/Protocols/HTTP/>

HTML Spec

<http://www.w3.org/TR/REC-html40/>

<http://www.w3.org/pub/WWW/MarkUp/>

CGI Spec

<http://www.w3.org/CGI/>

CGI Security FAQ

<http://www.go2net.com/people/paulp/cgi-security/safe-cgi.txt>

Where can I learn about object-oriented Perl programming?

A good place to start is perltoot, and you can use perlobj, perlboot, and perlbot for reference. Perltoot didn't come out until the 5.004 release; you can get a copy (in pod, html, or postscript) from

<http://www.perl.com/CPAN/doc/FMTEYEWTK/>.

Where can I learn about linking C with Perl? [h2xs, xsubpp]

If you want to call C from Perl, start with perlxsstut, moving on to perlxs, xsubpp, and perlguits. If you want to call Perl from C, then read perlembed, perllcall, and perlguits. Don't forget that you can learn a lot from looking at how the authors of existing extension modules

wrote their code and solved their problems.

I've read perlembed, perlguits, etc., but I can't embed perl in my C program; what am I doing wrong?

Download the ExtUtils::Embed kit from CPAN and run `make test'. If the tests pass, read the pods again and again and again. If they fail, see perlbug and send a bug report with the output of make test TEST_VERBOSE=1 along with perl -V.

When I tried to run my script, I got this message. What does it mean?

A complete list of Perl's error messages and warnings with explanatory text can be found in perldiag. You can also use the splain program (distributed with Perl) to explain the error messages:

```
perl program 2>diag.out
```

splain [-v] [-p] diag.out
or change your program to explain the messages for you:
use diagnostics;
or
use diagnostics -verbose;

What's MakeMaker?

This module (part of the standard Perl distribution) is designed to write a Makefile for an extension module from a Makefile.PL. For more information, see ExtUtils::MakeMaker.

AUTHOR

AND COPYRIGHT

Copyright (c) 1997-1999 Tom Christiansen and Nathan Torkington. All rights reserved.

When included as an integrated part of the Standard Distribution of Perl or of its documentation (printed or otherwise), this works is covered under Perl's Artistic License. For separate distributions of all or part of this FAQ outside of that, see perlfaq.

Irrespective of its distribution, all code examples here are in the public domain. You are permitted and encouraged to use this code and any derivatives thereof in your own programs for fun or for profit as you see fit. A simple comment in the code giving credit to the FAQ would be courteous but is not required.

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/t/perlfaq.txt
No license file was found, but licenses were detected in source scan.

=head1 Pod::Simple version 3.28

Pod::Simple is a Perl library for parsing text in the Pod ("plain old documentation") markup language that is typically used for writing documentation for Perl and for Perl modules. The Pod format is explained L<perlpod>; the most common formatter is called C<perldoc>.

Pod formatters can use Pod::Simple to parse Pod documents and render them into plain text, HTML, or any number of other formats.

=head2 Installation

To install this module, type the following:

```
perl Makefile.PL
make
make test
make install
```

=head2 Support

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository,
L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or
to clone L<<git://github.com/theory/pod-simple.git>>
and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to
<bug-pod-simple@rt.cpan.org>.

=head1 copyright and Disclaimers

Copyright (c) 2002 Sean M. Burke. All rights reserved.

This library is free software; you can redistribute it and/or modify it
under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but
without any warranty; without even the implied warranty of
merchantability or fitness for a particular purpose.

=head1 Author

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>.
But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/README
No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/perl-Pod-Simple.spec

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::Checker -- check the Pod syntax of a document

=head1 SYNOPSIS

```
perl -MPod::Simple::Checker -e \  
"exit Pod::Simple::Checker->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

This class is for checking the syntactic validity of Pod.
It works by basically acting like a simple-minded version of
L<Pod::Simple::Text> that formats only the "Pod Errors" section
(if Pod::Simple even generates one for the given document).

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Checker>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the
pod-people@perl.org mail list. Send an empty email to
pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository,
L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or
to
clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to
<bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it
under the same terms as Perl itself.

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without any warranty; without even the implied warranty of

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=back

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No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple - framework for parsing Pod

=head1 SYNOPSIS

TODO

=head1 DESCRIPTION

Pod::Simple is a Perl library for parsing text in the Pod ("plain old documentation") markup language that is typically used for writing documentation for Perl and for Perl modules. The Pod format is explained L<perlpod>; the most common formatter is called C<perldoc>.

Be sure to read L<ENCODING> if your Pod contains non-ASCII characters.

Pod formatters can use Pod::Simple to parse Pod documents and render them into plain text, HTML, or any number of other formats. Typically, such formatters will be subclasses of Pod::Simple, and so they will inherit its methods, like C<parse_file>.

If you're reading this document just because you have a Pod-processing subclass that you want to use, this document (plus the documentation for the subclass) is probably all you need to read.

If you're reading this document because you want to write a formatter subclass, continue reading it and then read L<Pod::Simple::Subclassing>, and then possibly even read L<perlpodspec> (some of which is for parser-writers, but much of which is notes to formatter-writers).

=head1 MAIN METHODS

=over

=item C<< \$parser = I<SomeClass>->new(); >>

This returns a new parser object, where I<C<SomeClass>> is a subclass of Pod::Simple.

=item C<< \$parser->output_fh(*OUT); >>

This sets the filehandle that C<\$parser>'s output will be written to. You can pass C<*STDOUT>, otherwise you should probably do something like this:

```
my $outfile = "output.txt";
open TXTOUT, ">$outfile" or die "Can't write to $outfile: $!";
$parser->output_fh(*TXTOUT);
```

...before you call one of the C<< \$parser->parse_I<whatever> >> methods.

=item C<< \$parser->output_string(\somestring); >>

This sets the string that C<\$parser>'s output will be sent to, instead of any filehandle.

=item C<< \$parser->parse_file(I<\$some_filename>); >>

=item C<<
\$parser->parse_file(*INPUT_FH); >>

This reads the Pod content of the file (or filehandle) that you specify, and processes it with that C<\$parser> object, according to however C<\$parser>'s class works, and according to whatever parser options you have set up for this C<\$parser> object.

```
=item C<< $parser->parse_string_document( I<$all_content> ); >>
```

This works just like C<parse_file> except that it reads the Pod content not from a file, but from a string that you have already in memory.

```
=item C<< $parser->parse_lines( I<...@lines...>, undef ); >>
```

This processes the lines in C<@lines> (where each list item must be a defined value, and must contain exactly one line of content -- so no items like C<"foo\nbar"> are allowed). The final C<undef> is used to indicate the end of document being parsed.

The other C<parser_I<whatever>> methods are meant to be called only once per C<\$parser> object; but C<parse_lines> can be called as many times per C<\$parser> object as you want, as long as the last call (and only the last call) ends with an C<undef> value.

```
=item C<< $parser->content_seen >>
```

This returns true only if there has been any real content seen for this document. Returns false in cases where the document contains content, but does not make use of any Pod markup.

```
=item C<< I<SomeClass>->filter( I<$filename> ); >>
```

```
=item C<< I<SomeClass>->filter( I<*INPUT_FH> ); >>
```

```
=item C<< I<SomeClass>->filter( I<\$document_content> ); >>
```

This is a shortcut method for creating a new parser object, setting the output handle to STDOUT, and then processing the specified file (or filehandle, or in-memory document). This is handy for one-liners like this:

```
perl -MPod::Simple::Text -e "Pod::Simple::Text->filter('thingy.pod')"
```

```
=back
```

=head1 SECONDARY METHODS

Some of these methods might be of interest to general users, as well as of interest to formatter-writers.

Note that the general pattern here is that the accessor-methods read the attribute's value with `C<< $value = $parser->I<attribute>`

`>>`

and set the attribute's value with

`C<< $parser->I<attribute>(I<newvalue>) >>`. For each accessor, I typically only mention one syntax or another, based on which I think you are actually most likely to use.

=over

=item `C<< $parser->parse_characters(I<SOMEVALUE>) >>`

The Pod parser normally expects to read octets and to convert those octets to characters based on the `C<=encoding>` declaration in the Pod source. Set this option to a true value to indicate that the Pod source is already a Perl character stream. This tells the parser to ignore any `C<=encoding>` command and to skip all the code paths involving decoding octets.

=item `C<< $parser->no_whining(I<SOMEVALUE>) >>`

If you set this attribute to a true value, you will suppress the parser's complaints about irregularities in the Pod coding. By default, this attribute's value is false, meaning that irregularities will be reported.

Note that turning this attribute to true won't suppress one or two kinds of complaints about rarely occurring unrecoverable errors.

=item `C<< $parser->no_errata_section(I<SOMEVALUE>) >>`

If you set this attribute to a true value, you will stop the parser from generating a "POD ERRORS" section at the end of the document. By default, this attribute's value is false, meaning that an errata section will be generated, as necessary.

=item `C<< $parser->complain_stderr(I<SOMEVALUE>) >>`

If you set this attribute to a true value, it will send reports of parsing errors to `STDERR`. By default, this attribute's value is false, meaning that no output is sent to `STDERR`.

Setting `C<complain_stderr>` also sets `C<no_errata_section>`.

=item C<< \$parser->source_filename >>

This returns the filename that this parser object was set to read from.

=item C<< \$parser->doc_has_started >>

This returns true if C<\$parser> has read from a source, and has seen Pod content in it.

=item C<< \$parser->source_dead >>

This returns true if C<\$parser> has read from a source, and come to the end of that source.

=item C<< \$parser->strip_verbatim_indent(I<SOMEVALUE>) >>

The perlpod spec for a Verbatim paragraph is "It should be reproduced exactly...", which means that the whitespace you've used to indent your verbatim blocks will be preserved in the output. This can be annoying for outputs such as HTML, where that whitespace will remain in front of every line. It's an unfortunate case where syntax is turned into semantics.

If the POD your parsing adheres to a consistent indentation policy, you can have such indentation stripped from the beginning of every line of your verbatim blocks. This method tells Pod::Simple what to strip. For two-space indents, you'd use:

```
$parser->strip_verbatim_indent(' ');
```

For tab indents, you'd use a tab character:

```
$parser->strip_verbatim_indent("\t");
```

If the POD is inconsistent about the indentation of verbatim blocks, but you have figured out a heuristic to determine how much a particular verbatim block is indented, you can pass

a code reference instead. The code reference will be executed with one argument, an array reference of all the lines in the verbatim block, and should return the value to be stripped from each line. For example, if you decide that you're fine to use the first line of the verbatim block to set the standard for indentation of the rest of the block, you can look at the first line and return the appropriate value, like so:

```
$new->strip_verbatim_indent(sub {  
    my $lines = shift;
```

```
(my $indent = $lines->[0]) =~ s/\s.*//;
return $indent;
});
```

If you'd rather treat each line individually, you can do that, too, by just transforming them in-place in the code reference and returning C<undef>. Say that you don't want I<any> lines indented. You can do something like this:

```
$new->strip_verbatim_indent(sub {
    my $lines = shift;
    sub { s/^\s+// for @{$lines} },
    return undef;
});
```

=back

=head1 TERTIARY METHODS

=over

=item C<< \$parser->abandon_output_fh() >>X<abandon_output_fh>

Cancel

output to the file handle. Any POD read by the C<\$parser> is not effected.

=item C<< \$parser->abandon_output_string() >>X<abandon_output_string>

Cancel output to the output string. Any POD read by the C<\$parser> is not effected.

=item C<< \$parser->accept_code(@codes) >>X<accept_code>

Alias for L<< accept_codes >>.

=item C<< \$parser->accept_codes(@codes) >>X<accept_codes>

Allows C<\$parser> to accept a list of L<perlpod/Formatting Codes>. This can be used to implement user-defined codes.

=item C<< \$parser->accept_directive_as_data(@directives) >>X<accept_directive_as_data>

Allows C<\$parser> to accept a list of directives for data paragraphs. A directive is the label of a L<perlpod/Command Paragraph>. A data paragraph is one delimited by C<< =begin/=for/=end >> directives. This can be used to implement user-defined directives.

=item C<< \$parser->accept_directive_as_processed(@directives) >>X<accept_directive_as_processed>

Allows C<\$parser> to accept a list of directives for processed paragraphs. A directive is the label of a L<perlpod/Command Paragraph>. A processed paragraph is also known as L<perlpod/Ordinary Paragraph>. This can be used to implement user-defined directives.

=item C<< \$parser->accept_directive_as_verbatim(@directives) >>X<accept_directive_as_verbatim>

Allows C<\$parser> to accept a list of directives for L<perlpod/Verbatim Paragraph>. A directive is the label of a L<perlpod/Command Paragraph>. This can be used to implement user-defined directives.

=item C<< \$parser->accept_target(@targets) >>X<accept_target>

Alias for L<< accept_targets >>.

=item C<< \$parser->accept_target_as_text(@targets) >>X<accept_target_as_text>

Alias for L<< accept_targets_as_text >>.

=item C<< \$parser->accept_targets(@targets) >>X<accept_targets>

Accepts targets for C<< =begin/=for/=end >> sections of the POD.

=item C<< \$parser->accept_targets_as_text(@targets) >>X<accept_targets_as_text>

Accepts targets for C<< =begin/=for/=end >> sections that should be parsed as POD. For details, see L<< perlpodspec/About Data Paragraphs >>.

=item C<< \$parser->any_errata_seen() >>X<any_errata_seen>

Used to check if any errata was seen.

I<Example:>

```
die "too many errors\n" if $parser->any_errata_seen();
```

=item C<< \$parser->detected_encoding() >>X<detected_encoding>

Return the encoding corresponding to C<< =encoding >>, but only if the encoding was recognized and handled.

=item C<< \$parser->encoding() >>X<encoding>

Return encoding of the document, even if the encoding is not correctly handled.

=item C<< \$parser->parse_from_file(\$source, \$to) >>X<parse_from_file>

Parses from C<\$source> file to C<\$to> file. Similar to L<< Pod::Parser/parse_from_file >>.

=item C<< \$parser->scream(@error_messages) >>X<scream>

Log an error that can't be ignored.

=item C<< \$parser->unaccept_code(@codes) >>X<unaccept_code>

Alias for L<< unaccept_codes >>.

=item C<< \$parser->unaccept_codes(@codes) >>X<unaccept_codes>

Removes

C<< @codes >> as valid codes for the parse.

=item C<< \$parser->unaccept_directive(@directives) >>X<unaccept_directive>

Alias for L<< unaccept_directives >>.

=item C<< \$parser->unaccept_directives(@directives) >>X<unaccept_directives>

Removes C<< @directives >> as valid directives for the parse.

=item C<< \$parser->unaccept_target(@targets) >>X<unaccept_target>

Alias for L<< unaccept_targets >>.

=item C<< \$parser->unaccept_targets(@targets) >>X<unaccept_targets>

Removes C<< @targets >> as valid targets for the parse.

=item C<< \$parser->version_report() >>X<version_report>

Returns a string describing the version.

=item C<< \$parser->whine(@error_messages) >>X<whine>

Log an error unless C<< \$parser->no_whining(TRUE); >>.

=back

=head1 ENCODING

The Pod::Simple parser expects to read B<octets>. The parser will decode the

octets into Perl's internal character string representation using the value of the C<=<encoding> declaration in the POD source.

If

the POD source does not include an C<=<encoding> declaration, the parser will attempt to guess the encoding (selecting one of UTF-8 or Latin-1) by examining the first non-ASCII bytes and applying the heuristic described in L<perlpodspec>.

If you set the C<parse_characters> option to a true value the parser will expect characters rather than octets; will ignore any C<=<encoding>; and will make no attempt to decode the input.

=head1 CAVEATS

This is just a beta release -- there are a good number of things still left to do. Notably, support for EBCDIC platforms is still half-done, an untested.

=head1 SEE ALSO

L<Pod::Simple::Subclassing>

L<perlpod|perlpod>

L<perlpodspec|perlpodspec>

L<Pod::Escapes|Pod::Escapes>

L<perldoc>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>.

Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>. But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

Documentation has been contributed by:

=over

=item * Gabor Szabo C<szabgab@gmail.com>

=item * Shawn H Corey C<SHCOREY
at cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/lib/Pod/Simple.pod

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=head1 NAME

Pod::Simple::Debug -- put Pod::Simple into trace/debug mode

=head1 SYNOPSIS

```
use Pod::Simple::Debug (5); # or some integer
```

Or:

```
my $debuglevel;
use Pod::Simple::Debug (\$debuglevel, 0);
..some stuff that uses Pod::Simple to do stuff, but which
you don't want debug output from...
```

```
$debug_level = 4;
..some stuff that uses Pod::Simple to do stuff, but which
you DO want debug output from...
```

```
$debug_level = 0;
```

=head1 DESCRIPTION

This is an internal module for controlling the debug level (a.k.a. trace level) of Pod::Simple. This is of interest only to Pod::Simple developers.

=head1 CAVEATS

Note that you should load this module I<before> loading Pod::Simple (or any Pod::Simple-based class). If you try loading Pod::Simple::Debug after &Pod::Simple::DEBUG is already defined, Pod::Simple::Debug will throw a fatal error to the effect that "it's too late to call Pod::Simple::Debug".

Note that the C<use Pod::Simple::Debug (\\$x, I<somenum>)> mode will make Pod::Simple (et al) run rather slower, since &Pod::Simple::DEBUG won't be a constant sub anymore, and so Pod::Simple (et al) won't compile with constant-folding.

=head1 GUTS

Doing this:

```
use Pod::Simple::Debug (5); # or some integer
```

is basically equivalent to:

```
BEGIN { sub Pod::Simple::DEBUG () {5} } # or some integer
```

```
use Pod::Simple ();
```

And this:

```
use Pod::Simple::Debug (\$debug_level,0); # or some integer
```

is basically equivalent to this:

```
my $debug_level;  
BEGIN { $debug_level = 0 }  
BEGIN { sub Pod::Simple::DEBUG () { $debug_level }  
use Pod::Simple ();
```

=head1 SEE ALSO

L<Pod::Simple>

The article "Constants in Perl", in I<The Perl Journal> issue
21. See L<<http://interglacial.com/tpj/21/>>

=head1 SUPPORT

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pod-people@perl.org mail list. Send an empty email to
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=back

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No license file was found, but licenses were detected in source scan.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

=head1 SUPPORT

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merchantability or fitness for a particular purpose.

=head1

ACKNOWLEDGEMENTS

Thanks to L<Hurricane Electric|<http://he.net/>> for permission to use its L<Linux man pages online|<http://man.he.net/>> site for man page links.

Thanks to L<search.cpan.org|<http://search.cpan.org/>> for permission to use the site for Perl module links.

=head1 AUTHOR

Pod::Simple::XHTML was created by Allison Randal <allison@perl.org>.

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>. But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

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=back

=cut

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=head1 NAME

perlfaq3 - Programming Tools (\$Revision: 1.38 \$, \$Date: 1999/05/23 16:08:30 \$)

=head1 DESCRIPTION

This section of the FAQ answers questions related to programmer tools and programming support.

=head2 How do I do (anything)?

Have you looked at CPAN (see L<perlfqa2>)? The chances are that someone has already written a module that can solve your problem. Have you read the appropriate man pages? Here's a brief index:

Basics perldata, perlvar, perlsyn, perlop, perlsub
Execution perlrun, perldebug
Functions perlfunc
Objects perlref, perlmod, perlobj, perltie
Data Structures perlref, perllol, perldsc
Modules perlmod, perlmodlib, perlsub
Regexes perlre, perlfunc, perlop, perllocale
Moving to perl5 perltrap, perl
Linking w/C perlxs, perlcall, perlguts, perlembed
Various <http://www.perl.com/CPAN/doc/FMTEYEWTK/index.html>
(not a man-page but still useful)

A crude table of contents for the Perl man page set is found in L<perltoc>.

=head2 How can I use Perl interactively?

The typical approach uses the Perl debugger, described in the perldebug(1) man page, on an ``empty" program, like this:

```
perl -de 42
```

Now just type in any legal Perl code, and it will be immediately evaluated. You can also examine the symbol table, get stack backtraces, check variable values, set breakpoints, and other operations typically found in symbolic debuggers.

=head2 Is there a Perl shell?

In general, no. The Shell.pm module (distributed with Perl) makes Perl try commands which aren't part of the Perl language as shell commands. perlsh from the source distribution is simplistic and uninteresting, but may still be what you want.

=head2 How do I debug my Perl programs?

Have you tried C<use warnings> or used C<-w>? They enable warnings to detect dubious practices.

Have you tried C<use strict>? It prevents you from using symbolic references, makes you predeclare any subroutines that you call as bare words, and (probably most importantly) forces you to predeclare your

variables with C<my>, C<our>, or C<use vars>.

Did you check the return values of each and every system call? The operating system (and thus Perl) tells you whether they worked, and if not why.

```
open(FH, "> /etc/cantwrite")
  or die "Couldn't write to /etc/cantwrite: $!\n";
```

Did you read L<perltrap>? It's full of gotchas for old and new Perl programmers and even has sections for those of you who are upgrading from languages like I<awk> and I<C>.

Have you tried the Perl debugger, described in L<perldebug>? You can step through your program and see what it's doing and thus work out why what it's doing isn't what it should be doing.

=head2 How do I profile my Perl programs?

You should get the Devel::DProf module from the standard distribution (or separately on CPAN) and also use Benchmark.pm from the standard distribution. The Benchmark module lets you time specific portions of your code, while Devel::DProf gives detailed breakdowns of where your code spends its time.

Here's a sample use of Benchmark:

```
use Benchmark;

@junk = `cat /etc/motd`;
$count = 10_000;

timethese($count, {
    'map' => sub { my @a = @junk;
        map { s/a/b/ } @a;
        return @a
    },
    'for' => sub { my @a = @junk;
        local $_;
        for (@a) { s/a/b/ };
        return @a },
    });
```

This is what it prints (on one machine--your results will be dependent on your hardware, operating system, and the load on your machine):

Benchmark: timing 10000 iterations of for, map...


```
for: 4 secs ( 3.97 usr 0.01 sys = 3.98 cpu)
map: 6 secs ( 4.97 usr 0.00 sys = 4.97 cpu)
```

Be aware that a good benchmark is very hard to write. It only tests the data you give it and proves little about the differing complexities of contrasting algorithms.

=head2 How do I cross-reference my Perl programs?

The B::Xref module, shipped with the new, alpha-release Perl compiler (not the general distribution prior to the 5.005 release), can be used to generate cross-reference reports for Perl programs.

```
perl -MO=Xref[,OPTIONS] scriptname.plx
```

=head2 Is there a pretty-printer (formatter) for Perl?

There is no program that will reformat Perl as much as indent(1) does for C. The complex feedback between the scanner and the parser (this feedback is what confuses the vgrind and emacs programs) makes it challenging at best to write a stand-alone Perl parser.

Of course, if you simply follow the guidelines in L<perlstyle>, you shouldn't need to reformat. The habit of formatting your code as you write it will help prevent bugs. Your editor can and should help you with this. The perl-mode or newer cperl-mode for emacs can provide remarkable amounts of help with most (but not all) code, and even less programmable editors can provide significant assistance. Tom swears by the following settings in vi and its clones:

```
set ai sw=4
```

```
map! ^O {^M}^[O^T
```

Now put that in your F<.exerc> file (replacing the caret characters with control characters) and away you go. In insert mode, ^T is for indenting, ^D is for undenting, and ^O is for blockdenting-- as it were. If you haven't used the last one, you're missing a lot. A more complete example, with comments, can be found at <http://www.perl.com/CPAN-local/authors/id/TOMC/scripts/toms.exerc.gz>

If you are used to using the I<vgrind> program for printing out nice code to a laser printer, you can take a stab at this using <http://www.perl.com/CPAN/doc/misc/tips/working.vgrind.entry>, but the results are not particularly satisfying for sophisticated code.

The a2ps at <http://www.infres.enst.fr/%7Edemaille/a2ps/> does lots of things

related to generating nicely printed output of documents.

=head2 Is there a ctags for Perl?

There's a simple one at <http://www.perl.com/CPAN/authors/id/TOMC/scripts/ptags.gz> which may do the trick. And if not, it's easy to hack into what you want.

=head2

Is there an IDE or Windows Perl Editor?

Perl programs are just plain text, so any editor will do.

If you're on Unix, you already have an IDE--Unix itself. The UNIX philosophy is the philosophy of several small tools that each do one thing and do it well. It's like a carpenter's toolbox.

If you want a Windows IDE, check the following:

=over 4

=item CodeMagicCD

<http://www.codemagiccd.com/>

=item Komodo

ActiveState's cross-platform, multi-language IDE has Perl support, including a regular expression debugger and remote debugging (<http://www.ActiveState.com/Products/Komodo/index.html>). (Visual Perl, a Visual Studio.NET plug-in is currently (early 2001) in beta (<http://www.ActiveState.com/Products/VisualPerl/index.html>)).

=item The Object System

(http://www.castlelink.co.uk/object_system/) is a Perl web applications development IDE.

=item PerlBuilder

(<http://www.solutionsoft.com/perl.htm>) is an integrated development environment for Windows that supports Perl development.

=item

Perl code magic

(<http://www.petes-place.com/codemagic.html>).

=item visiPerl+

<http://helpconsulting.net/visiperl/>, from Help Consulting.

=back

For editors: if you're on Unix you probably have vi or a vi clone already, and possibly an emacs too, so you may not need to download anything.

In any emacs the cperl-mode (M-x cperl-mode) gives you perhaps the best available Perl editing mode in any editor.

For Windows editors: you can download an Emacs

=over 4

=item GNU Emacs

<http://www.gnu.org/software/emacs/windows/ntemacs.html>

=item MicroEMACS

<http://members.nbci.com/uemacs/>

=item XEmacs

<http://www.xemacs.org/Download/index.html>

=back

or a vi clone such as

=over 4

=item Elvis

<ftp://ftp.cs.pdx.edu/pub/elvis/> <http://www.fh-wedel.de/elvis/>

=item Vile

<http://vile.cx/>

=item Vim

<http://www.vim.org/>

win32: <http://www.cs.vu.nl/%7Etmgil/vi.html>

=back

For vi lovers in general, Windows or elsewhere:

<http://www.thomer.com/thomer/vi/vi.html>.

nvi (<http://www.bostic.com/vi/>,

available from CPAN in src/misc/) is

yet another vi clone, unfortunately not available for Windows, but in UNIX platforms you might be interested in trying it out, firstly because strictly speaking it is not a vi clone, it is the real vi, or the new incarnation of it, and secondly because you can embed Perl inside it to use Perl as the scripting language. nvi is not alone in this, though: at least also vim and vile offer an embedded Perl.

The following are Win32 multilanguage editor/IDESs that support Perl:

=over 4

=item Codewright

<http://www.starbase.com/>

=item MultiEdit

<http://www.MultiEdit.com/>

=item SlickEdit

<http://www.slickedit.com/>

=back

There is also a toedit Text widget based editor written in Perl that is distributed with the Tk module on CPAN. The ptkdb (<http://world.std.com/~aep/ptkdb/>) is a Perl/tk based debugger that acts as a development environment of sorts. Perl Composer (<http://perlcomposer.sourceforge.net/vperl.html>) is an IDE for Perl/Tk GUI creation.

In

addition to an editor/IDE you might be interested in a more powerful shell environment for Win32. Your options include

=over 4

=item Bash

from the Cygwin package (<http://sources.redhat.com/cygwin/>)

=item Ksh

from the MKS Toolkit (<http://www.mks.com/>), or the Bourne shell of the U/WIN environment (<http://www.research.att.com/sw/tools/uwin/>)

=item Tcsh

<ftp://ftp.astron.com/pub/tcsh/>, see also
<http://www.primite.wisc.edu/software/csh-tcsh-book/>

=item Zsh

<ftp://ftp.blarg.net/users/amol/zsh/>, see also <http://www.zsh.org/>

=back

MKS and U/WIN are commercial (U/WIN is free for educational and research purposes), Cygwin is covered by the GNU Public License (but that shouldn't matter for Perl use). The Cygwin, MKS, and U/WIN all contain (in addition to the shells) a comprehensive set of standard UNIX toolkit utilities.

If you're transferring text files between Unix and Windows using FTP be sure to transfer them in ASCII mode so the ends of lines are appropriately converted.

On

Mac OS the MacPerl Application comes with a simple 32k text editor that behaves like a rudimentary IDE. In contrast to the MacPerl Application the MPW Perl tool can make use of the MPW Shell itself as an editor (with no 32k limit).

=over 4

=item BBEdit and BBEdit Lite

are text editors for Mac OS that have a Perl sensitivity mode (<http://web.barebones.com/>).

=item Alpha

is an editor, written and extensible in Tcl, that nonetheless has built in support for several popular markup and programming languages including Perl and HTML (<http://alpha.olm.net/>).

=back

Pepper and Pe are programming language sensitive text editors for Mac

OS X and BeOS respectively (<http://www.hekkelman.com/>).

=head2 Where can I get Perl macros for vi?

For a complete version of Tom Christiansen's vi configuration file, see http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/toms.exrc.gz, the standard benchmark file for vi emulators. The file runs best with nvi, the current version of vi out of Berkeley, which incidentally can be built with an embedded Perl interpreter--see <http://www.perl.com/CPAN/src/misc>.

=head2 Where can I get perl-mode for emacs?

Since Emacs version 19 patchlevel 22 or so, there have been both a perl-mode.el and support for the Perl debugger built in. These should come with the standard Emacs 19 distribution.

In the Perl source directory, you'll find a directory called "emacs", which contains a cperl-mode that color-codes keywords, provides context-sensitive help, and other nifty things.

Note that the perl-mode of emacs will have fits with C<"main'foo"> (single quote), and mess up the indentation and highlighting. You are probably using C<"main::foo"> in new Perl code anyway, so this shouldn't be an issue.

=head2 How can I use curses with Perl?

The Curses module from CPAN provides a dynamically loadable object module interface to a curses library. A small demo can be found at the directory http://www.perl.com/CPAN/authors/Tom_Christiansen/scripts/rep; this program repeats a command and updates the screen as needed, rendering B<rep ps axu> similar to B<top>.

=head2 How can I use X or Tk with Perl?

Tk is a completely Perl-based, object-oriented interface to the Tk toolkit that doesn't force you to use Tcl just to get at Tk. Sx is an interface to the Athena Widget set. Both are available from CPAN. See the directory http://www.perl.com/CPAN/modules/by-category/08_User_Interfaces/

Invaluable for Perl/Tk programming are the Perl/Tk FAQ at <http://w4.lns.cornell.edu/%7Epvh/ptk/ptkTOC.html>, the Perl/Tk Reference Guide available at http://www.perl.com/CPAN-local/authors/Stephen_O_Lidie/, and the online manpages at <http://www-users.cs.umn.edu/%7Eamundson/perl/perlTk/toc.html>.

=head2 How can I generate simple menus without using CGI or Tk?

The <http://www.perl.com/CPAN/authors/id/SKUNZ/perlmenu.v4.0.tar.gz> module, which is curses-based, can help with this.

=head2 What is undump?

See the next question on "How can I make my Perl program run faster?"

=head2 How can I make my Perl program run faster?

The best way to do this is to come up with a better algorithm. This can often make a dramatic difference. Jon Bentley's book "Programming Pearls" (that's not a misspelling!) has some good tips on optimization, too. Advice on benchmarking boils down to: benchmark and profile to make sure you're optimizing the right part, look for better algorithms instead of microtuning your code, and when all else fails consider just buying faster hardware.

A different approach is to autoload seldom-used Perl code. See the `AutoSplit` and `AutoLoader` modules in the standard distribution for that. Or you could locate the bottleneck and think about writing just that part in C, the way we used to take bottlenecks in C code and write them in assembler. Similar to rewriting in C, modules that have critical sections can be written in C (for instance, the `PDL` module from CPAN).

In some cases, it may be worth it to use the backend compiler to produce byte code (saving compilation time) or compile into C, which will certainly save compilation time and sometimes a small amount (but not much) execution time. See the question about compiling your Perl programs for more on the compiler--the wins aren't as obvious as you'd hope.

If you're currently linking your perl executable to a shared `libc.so`, you can often gain a 10-25% performance benefit by rebuilding it to link with a static `libc.a` instead. This will make a bigger perl executable, but your Perl programs (and programmers) may thank you for it. See the `INSTALL` file in the source distribution for more information.

Unsubstantiated reports allege that Perl interpreters that use `sfio` outperform those that don't (for I/O intensive applications). To try this, see the `INSTALL` file in the source distribution, especially the "Selecting File I/O mechanisms" section.

The undump program was an old attempt to speed up your Perl program by storing the already-compiled form to disk. This is no longer a viable option, as it only worked on a few architectures, and wasn't a good solution anyway.

=head2 How can I make my Perl program take less memory?

When it comes to time-space tradeoffs, Perl nearly always prefers to throw memory at a problem. Scalars in Perl use more memory than strings in C, arrays take more than that, and hashes use even more. While there's still a lot to be done, recent releases have been addressing these issues. For example, as of 5.004, duplicate hash keys are shared amongst all hashes using them, so require no reallocation.

In some cases, using substr() or vec() to simulate arrays can be highly beneficial. For example, an array of a thousand booleans will take at least 20,000 bytes of space, but it can be turned into one 125-byte bit vector--a considerable memory savings. The standard Tie::SubstrHash module can also help for certain types of data structure. If you're working with specialist data structures (matrices, for instance) modules that implement these in C may use less memory than equivalent Perl modules.

Another thing to try is learning whether your Perl was compiled with the system malloc or with Perl's builtin malloc. Whichever one it is, try using the other one and see whether this makes a difference. Information about malloc is in the F<INSTALL> file in the source distribution. You can find out whether you are using perl's malloc by typing C<perl -V:usemymalloc>.

=head2 Is it unsafe to return a pointer to local data?

No, Perl's garbage collection system takes care of this.

```
sub makeone {
my @a = ( 1 .. 10 );
return \@a;
}

for $i ( 1 .. 10 ) {
    push @many, makeone();
}

print $many[4][5], "\n";
```



```
print "@many\n";
```

=head2 How can I free an array or hash so my program shrinks?

You can't. On most operating systems, memory allocated to a program can never be returned to the system. That's why long-running programs sometimes re-exec

themselves. Some operating systems (notably, FreeBSD and Linux) allegedly reclaim large chunks of memory that is no longer used, but it doesn't appear to happen with Perl (yet). The Mac appears to be the only platform that will reliably (albeit, slowly) return memory to the OS.

We've had reports that on Linux (Redhat 5.1) on Intel, C<undef \$scalar> will return memory to the system, while on Solaris 2.6 it won't. In general, try it yourself and see.

However, judicious use of my() on your variables will help make sure that they go out of scope so that Perl can free up that space for use in other parts of your program. A global variable, of course, never goes out of scope, so you can't get its space automatically reclaimed, although undef()ing and/or delete()ing it will achieve the same effect. In general, memory allocation and de-allocation isn't something you can or should be worrying about much in Perl, but even this capability (preallocation of data types) is in the works.

=head2

How can I make my CGI script more efficient?

Beyond the normal measures described to make general Perl programs faster or smaller, a CGI program has additional issues. It may be run several times per second. Given that each time it runs it will need to be re-compiled and will often allocate a megabyte or more of system memory, this can be a killer. Compiling into C B<isn't going to help you> because the process start-up overhead is where the bottleneck is.

There are two popular ways to avoid this overhead. One solution involves running the Apache HTTP server (available from <http://www.apache.org/>) with either of the mod_perl or mod_fastcgi plugin modules.

With mod_perl and the Apache::Registry module (distributed with mod_perl), httpd will run with an embedded Perl interpreter which pre-compiles your script and then executes it within the same address space without forking. The Apache extension also gives Perl access to the internal server API, so modules written in Perl can

do just about

anything a module written in C can. For more on mod_perl, see

<http://perl.apache.org/>

With the FCGI module (from CPAN) and the mod_fastcgi module (available from <http://www.fastcgi.com/>) each of your Perl programs becomes a permanent CGI daemon process.

Both of these solutions can have far-reaching effects on your system and on the way you write your CGI programs, so investigate them with care.

See http://www.perl.com/CPAN/modules/by-category/15_World_Wide_Web_HTML_HTTP_CGI/.

A non-free, commercial product, ``The Velocity Engine for Perl'', (<http://www.binevolve.com/> or <http://www.binevolve.com/velocigen/>) might also be worth looking at. It will allow you to increase the performance of your Perl programs, running programs up to 25 times faster than normal CGI Perl when running in persistent Perl mode or 4 to 5 times faster without any modification to your existing CGI programs. Fully functional evaluation copies are available from the web site.

=head2 How can I
hide the source for my Perl program?

Delete it. :-) Seriously, there are a number of (mostly unsatisfactory) solutions with varying levels of ``security''.

First of all, however, you I<can't> take away read permission, because the source code has to be readable in order to be compiled and interpreted. (That doesn't mean that a CGI script's source is readable by people on the web, though--only by people with access to the filesystem.) So you have to leave the permissions at the socially friendly 0755 level.

Some people regard this as a security problem. If your program does insecure things and relies on people not knowing how to exploit those insecurities, it is not secure. It is often possible for someone to determine the insecure things and exploit them without viewing the source. Security through obscurity, the name for hiding your bugs instead of fixing them, is little security indeed.

You can try using encryption via source filters (Filter::* from CPAN), but any decent programmer will be able to decrypt it. You can try using the byte code compiler and interpreter described below, but the curious might still be able to de-compile it. You can try using the native-code compiler described below, but crackers might be able to disassemble it. These pose varying degrees of difficulty to people wanting to get at

your code, but none can definitively conceal it (true of every language, not just Perl).

If you're concerned about people profiting from your code, then the bottom line is that nothing but a restrictive license will give you legal security. License your software and pepper it with threatening statements like ``This is unpublished proprietary software of XYZ Corp. Your access to it does not give you permission to use it blah blah blah." We are not lawyers, of course, so you should see a lawyer if you want to be sure your license's wording will stand up in court.

=head2 How can I compile my Perl program into byte code or C?

Malcolm Beattie has written a multifunction backend compiler, available from CPAN, that can do both these things. It is included in the perl5.005 release, but is still considered experimental. This means it's fun to play with if you're a programmer but not really for people looking for turn-key solutions.

Merely compiling into C does not in and of itself guarantee that your code will run very much faster. That's because except for lucky cases where a lot of native type inferencing is possible, the normal Perl run-time system is still present and so your program will take just as long to run and be just as big. Most programs save little more than compilation time, leaving execution no more than 10-30% faster. A few rare programs actually benefit significantly (even running several times faster), but this takes some tweaking of your code.

You'll probably be astonished to learn that the current version of the compiler generates a compiled form of your script whose executable is just as big as the original perl executable, and then some. That's because as currently written, all programs are prepared for a full eval() statement. You can tremendously reduce this cost by building a shared I<libperl.so> library and linking against that. See the F<INSTALL> podfile in the Perl source distribution for details. If you link your main perl binary with this, it will make it minuscule. For example, on one author's system, F</usr/bin/perl> is only 11k in size!

In general, the compiler will do nothing to make a Perl program smaller, faster, more portable, or more secure. In fact, it can make your situation worse. The executable will be bigger, your VM system may take longer to load the whole thing, the binary is fragile and hard to fix, and compilation never stopped software piracy in the form of crackers, viruses, or bootleggers. The real advantage of the compiler is merely packaging, and once you see the size of what it makes (well, unless

you use a shared I<libperl.so>), you'll probably want a complete Perl install anyway.

=head2 How can I compile Perl into Java?

You can also integrate Java and Perl with the Perl Resource Kit from O'Reilly and Associates. See <http://www.oreilly.com/catalog/prkunix/>.

Perl 5.6 comes with Java Perl Lingo, or JPL. JPL, still in development, allows Perl code to be called from Java. See [jpl/README](#) in the Perl source tree.

=head2 How can I get C<#!perl> to work on [MS-DOS,NT,...]?

For OS/2 just use

```
extproc perl -S -your_switches
```

as the first line in C<*.cmd> file (C<-S> due to a bug in cmd.exe's 'extproc' handling). For DOS one should first invent a corresponding batch file and codify it in C<ALTERNATIVE_SHEBANG> (see the F<INSTALL> file in the source distribution for more information).

The Win95/NT installation, when using the ActiveState port of Perl, will modify the Registry to associate the C<.pl> extension with the perl interpreter. If you install another port, perhaps even building your own Win95/NT Perl from the standard sources by using a Windows port of gcc (e.g., with cygwin or mingw32), then you'll have to modify the Registry yourself. In addition to associating C<.pl> with the interpreter, NT people can use: C<SET PATHEXT=%PATHEXT%;.PL> to let them run the program C<install-linux.pl> merely by typing C<install-linux>.

Macintosh Perl programs will have the appropriate Creator and Type, so that double-clicking them will invoke the Perl application.

I<IMPORTANT!>: Whatever you do, PLEASE don't get frustrated, and just throw the perl interpreter into your cgi-bin directory, in order to get your programs working for a web server. This is an EXTREMELY big security risk. Take the time to figure out how to do it correctly.

=head2 Can I write useful Perl programs on the command line?

Yes. Read L<perlrn> for more information. Some examples follow. (These assume standard Unix shell quoting rules.)

```

# sum first and last fields
perl -lane 'print $F[0] + $F[-1]' *

# identify text files
perl -le 'for(@ARGV) {print if -f && -T _}' *

# remove (most) comments from C program
perl -0777 -pe 's/{\^*.*?\^*}/{}gs' foo.c

# make file a month younger than today, defeating reaper daemons
perl -e '$X=24*60*60; utime(time(),time() + 30 * $X,@ARGV)' *

# find first unused uid
perl -le '$i++ while getpwuid($i); print $i'

# display reasonable manpath
echo $PATH | perl -nl -072 -e '
s![^/+]*$!man!&&-d&&!$s{$_}++&&push@m,$_;END{print"@m"}'

```

OK, the last one was actually an Obfuscated Perl Contest entry. :-)

=head2 Why don't Perl one-liners work on my DOS/Mac/VMS system?

The problem is usually that the command interpreters on those systems have rather different ideas about quoting than the Unix shells under which the one-liners were created. On some systems, you may have to change single-quotes to double ones, which you must I<NOT> do on Unix or Plan9 systems. You might also have to change a single % to a %%.

For example:

```

# Unix
perl
-e 'print "Hello world\n"'

# DOS, etc.
perl -e "print \"Hello world\n\""

# Mac
print "Hello world\n"
(then Run "Myscript" or Shift-Command-R)

# VMS
perl -e "print ""Hello world\n""

```

The problem is that none of these examples are reliable: they depend on the command interpreter. Under Unix, the first two often work. Under DOS, it's entirely possible that neither works. If 4DOS was the command shell,

you'd probably have better luck like this:

```
perl -e "print <Ctrl-x>"Hello world\n<Ctrl-x>"
```

Under the Mac, it depends which environment you are using. The MacPerl shell, or MPW, is much like Unix shells in its support for several quoting variants, except that it makes free use of the Mac's non-ASCII characters as control characters.

Using qq(), q(), and qx(), instead of "double quotes", 'single quotes', and `backticks`, may make one-liners easier to write.

There is no general solution to all of this. It is a mess, pure and simple. Sucks to be away from Unix, huh? :-)

[Some of this answer was contributed by Kenneth Albanowski.]

=head2 Where can I learn about CGI or Web programming in Perl?

For modules, get the CGI or LWP modules from CPAN. For textbooks, see the two especially dedicated to web stuff in the question on books. For problems and questions related to the web, like ``Why do I get 500 Errors" or ``Why doesn't it run from the browser right when it runs fine on the command line", see these sources:

WWW Security FAQ

<http://www.w3.org/Security/Faq/>

Web FAQ

<http://www.boutell.com/faq/>

CGI FAQ

<http://www.webthing.com/tutorials/cgifaq.html>

HTTP Spec

<http://www.w3.org/pub/WWW/Protocols/HTTP/>

HTML Spec

<http://www.w3.org/TR/REC-html40/>

<http://www.w3.org/pub/WWW/MarkUp/>

CGI Spec

<http://www.w3.org/CGI/>

CGI Security FAQ

<http://www.go2net.com/people/paulp/cgi-security/safe-cgi.txt>

=head2 Where can I learn about object-oriented Perl programming?

A good place to start is [L<perltoot>](#), and you can use [L<perlobj>](#), [L<perlboot>](#), and [L<perlbot>](#) for reference. Perltoot didn't come out until the 5.004 release; you can get a copy (in pod, html, or postscript) from <http://www.perl.com/CPAN/doc/FMTEYEWTK/>.

=head2 Where can I learn about linking C with Perl? [h2xs, xsubpp]

If you want to call C from Perl, start with [L<perlxstut>](#), moving on to [L<perlxs>](#), [L<xsubpp>](#), and [L<perlguts>](#). If you want to call Perl from C, then read [L<perlembed>](#), [L<perlcall>](#), and [L<perlguts>](#). Don't forget that you can learn a lot from looking at how the authors of existing extension modules wrote their code and solved their problems.

=head2 I've read perlembed, perlguts, etc., but I can't embed perl in my C program; what am I doing wrong?

Download the ExtUtils::Embed kit from CPAN and run `make test'. If the tests pass, read the pods again and again and again. If they fail, see [L<perlbug>](#) and send a bug report with the output of `C<make test TEST_VERBOSE=1>` along with `C<perl -V>`.

=head2 When I tried to run my script, I got this message. What does it mean?

A complete list of Perl's error messages and warnings with explanatory text can be found in [L<perldiag>](#). You can also use the `splain` program (distributed with Perl) to explain the error messages:

```
perl program 2>diag.out
splain [-v] [-p] diag.out
```

or change your program to explain the messages for you:

```
use diagnostics;
```

or

```
use diagnostics -verbose;
```

=head2 What's MakeMaker?

This module (part of the standard Perl distribution) is designed to write a Makefile for an extension module from a Makefile.PL. For more

information, see L<ExtUtils::MakeMaker>.

=head1 AUTHOR AND COPYRIGHT

Copyright (c) 1997-1999 Tom Christiansen and Nathan Torkington.
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Irrespective of its distribution, all code examples here are in the public domain. You are permitted and encouraged to use this code and any derivatives thereof in your own programs for fun or for profit as you see fit. A simple comment in the code giving credit to the FAQ would be courteous but is not required.

Found in path(s):

```
* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-  
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/t/perlfaq.pod  
No license file was found, but licenses were detected in source scan.
```

=head1 NAME

Pod::Simple::Subclassing -- write a formatter as a Pod::Simple subclass

=head1 SYNOPSIS

```
package Pod::SomeFormatter;  
use Pod::Simple;  
@ISA = qw(Pod::Simple);  
$VERSION = '1.01';  
use strict;  
  
sub _handle_element_start {  
    my($parser, $element_name, $attr_hash_r) = @_;  
    ...  
}  
  
sub _handle_element_end {  
    my($parser, $element_name, $attr_hash_r) = @_;  
    # NOTE: $attr_hash_r is only present when $element_name is "over" or "begin"  
    # The remaining code excerpts will mostly ignore this $attr_hash_r, as it is  
    # mostly useless. It is documented where "over-*" and "begin" events are  
    # documented.  
    ...  
}
```



```

}

sub _handle_text {
my($parser, $text) = @_ ;
...
}
1;

```

=head1 DESCRIPTION

This document is about using Pod::Simple to write a Pod processor, generally a Pod formatter. If you just want to know about using an existing Pod formatter, instead see its documentation and see also the docs in L<Pod::Simple>.

The

zeroeth step in writing a Pod formatter is to make sure that there isn't already a decent one in CPAN. See L<<http://search.cpan.org/>>, and run a search on the name of the format you want to render to. Also consider joining the Pod People list L<<http://lists.perl.org/showlist.cgi?name=pod-people>> and asking whether anyone has a formatter for that format -- maybe someone cobbled one together but just hasn't released it.

The first step in writing a Pod processor is to read L<[perlpodspec](#)>, which contains notes information on writing a Pod parser (which has been largely taken care of by Pod::Simple), but also a lot of requirements and recommendations for writing a formatter.

The second step is to actually learn the format you're planning to format to -- or at least as much as you need to know to represent Pod, which probably isn't much.

The third step is to pick which of Pod::Simple's interfaces you want to use -- the basic interface via Pod::Simple or L<Pod::Simple::Methody> is event-based, sort of like L<HTML::Parser>'s interface, or sort of like L<XML::Parser>'s "Handlers" interface), but L<Pod::Simple::PullParser> provides a token-stream interface, sort of like L<HTML::Tokenizer>'s interface; L<Pod::Simple::SimpleTree> provides a simple tree interface, rather like XML::Parser's "Tree" interface. Users familiar with XML-handling will find one of these styles relatively familiar; but if you would be even more at home with XML, there are classes that produce an XML representation of the Pod stream, notably L<Pod::Simple::XMLOutputStream>; you can feed the output of such a class to whatever XML parsing system you are most at home with.

The last step is to write your code based on how the events (or tokens,

or tree-nodes, or the XML, or however you're parsing) will map to constructs in the output format. Also sure to consider how to escape text nodes containing arbitrary text, and also what to do with text nodes that represent preformatted text (from verbatim sections).

=head1 Events

TODO intro... mention that events are supplied for implicits, like for missing >'s

In the following section, we use XML to represent the event structure associated with a particular construct. That is, TODO

=over

=item C<< \$parser->_handle_element_start(I<element_name>, I<attr_hashref>) >>

=item C<< \$parser->_handle_element_end(I<element_name>) >>

=item C<< \$parser->_handle_text(I<text_string>) >>

=back

TODO describe

=over

=item events with an element_name of Document

Parsing a document produces this event structure:

```
<Document start_line="543">
...all events...
</Document>
```

The value of the I<start_line> attribute will be the line number of the first Pod directive in the document.

If there is no Pod in the given document, then the event structure will be this:

```
<Document contentless="1" start_line="543">
</Document>
```

In that case, the value of the `I<start_line>` attribute will not be meaningful; under current implementations, it will probably be the line number of the last line in the file.

=item events with an `element_name` of `Para`

Parsing a plain (non-verbatim, non-directive, non-data) paragraph in a Pod document produces this event structure:

```
<Para start_line="543">
  ...all events in this paragraph...
</Para>
```

The value of the `I<start_line>` attribute will be the line number of the start of the paragraph.

For example, parsing this paragraph of Pod:

The value of the `I<start_line>` attribute will be the line number of the start of the paragraph.

produces this event structure:

```
<Para start_line="129">
  The value of the
  <I>
  start_line
  </I>
  attribute will be the line number of the first Pod directive
  in the document.
</Para>
```

=item events with an `element_name` of `B`, `C`, `F`, or `I`.

Parsing a `BE<lt>...E<gt>` formatting code (or of course any of its semantically identical syntactic variants

`S<BE<lt>E<lt> ... E<gt>E<gt>>`,

or `S<BE<lt>E<lt>E<lt>E<lt> ... E<gt>E<gt>E<gt>E<gt>>`, etc.)

produces this event structure:

```
<B>
...stuff...
</B>
```

Currently, there are no attributes conveyed.

Parsing C, F, or I codes produce the same structure, with only a different element name.

If your parser object has been set to accept other formatting codes, then they will be presented like these B/C/F/I codes -- i.e., without any attributes.

=item events with an element_name of S

Normally, parsing an SE<lt>...E<gt> sequence produces this event structure, just as if it were a B/C/F/I code:

```
<S>
...stuff...
</S>
```

However, Pod::Simple (and presumably all derived parsers) offers the C<nbsp_for_S> option which, if enabled, will suppress all S events, and instead change all spaces in the content to non-breaking spaces. This is intended for formatters that output to a format that has no code that means the same as SE<lt>...E<gt>, but which has a code/character that means non-breaking space.

=item events with an element_name of X

Normally, parsing an XE<lt>...E<gt> sequence produces this event structure, just as if it were a B/C/F/I code:

```
<X>
...stuff...
</X>
```

However, Pod::Simple (and presumably all derived parsers) offers the C<nix_X_codes> option which, if enabled, will suppress all X events and ignore their content. For formatters/processors that don't use X events, this is presumably quite useful.

=item events with an element_name of L

Because the LE<lt>...E<gt> is the most complex construct in the language, it should not surprise you that the events it generates are the most complex in the language. Most of complexity is hidden away in the attribute values, so for those of you writing a Pod formatter that produces a non-hypertextual format, you can just ignore the attributes and treat an L event structure like a formatting element that

(presumably) doesn't actually produce a change in formatting. That is, the content of the L event structure (as opposed to its attributes) is always what text should be displayed.

There are, at first glance, three kinds of L links: URL, man, and pod.

When a LE<lt>I<some_url>E<gt> code is parsed, it produces this event structure:

```
<L content-implicit="yes" raw="that_url" to="that_url" type="url">
that_url
</L>
```

The C<type="url"> attribute is always specified for this type of L code.

For example, this Pod source:

```
L<http://www.perl.com/CPAN/authors/>
```

produces this event structure:

```
<L content-implicit="yes" raw="http://www.perl.com/CPAN/authors/" to="http://www.perl.com/CPAN/authors/"
type="url">
http://www.perl.com/CPAN/authors/
</L>
```

When a LE<lt>I<manpage(section)>E<gt> code is parsed (and these are fairly rare and not terribly useful), it produces this event structure:

```
<L content-implicit="yes" raw="manpage(section)" to="manpage(section)" type="man">
manpage(section)
</L>
```

The C<type="man"> attribute is always specified for this type of L code.

For example, this Pod source:

```
L<crontab(5)>
```

produces this event structure:

```
<L content-implicit="yes" raw="crontab(5)"
to="crontab(5)" type="man">
crontab(5)
</L>
```

In the rare cases where a man page link has a specified, that text appears in a `I<section>` attribute. For example, this Pod source:

```
L<crontab(5)/"ENVIRONMENT">
```

will produce this event structure:

```
<L content-implicit="yes" raw="crontab(5)/&quot;ENVIRONMENT&quot;" section="ENVIRONMENT"
to="crontab(5)" type="man">
"ENVIRONMENT" in crontab(5)
</L>
```

In the rare case where the Pod document has code like `LE<lt>I<sometext>|I<manpage(section)>E<gt>`, then the `I<sometext>` will appear as the content of the element, the `I<manpage(section)>` text will appear only as the value of the `I<to>` attribute, and there will be no `C<content-implicit="yes">` attribute (whose presence means that the Pod parser had to infer what text should appear as the link text -- as opposed to cases where that attribute is absent, which means that the Pod parser did `I<not>` have to infer the link text, because that L code explicitly specified some link text.)

For example, this Pod source:

```
L<hell itself!|crontab(5)>
```

will produce this event structure:

```
<L raw="hell itself!|crontab(5)" to="crontab(5)" type="man">
hell itself!
</L>
```

The last type of L structure is for links to/within Pod documents. It is the most complex because it can have a `I<to>` attribute, `I<or>` a `I<section>` attribute, or both. The `C<type="pod">` attribute is always specified for this type of L code.

In the most common case, the simple case of a `LE<lt>podpageE<gt>` code produces this event structure:

```
<L content-implicit="yes" raw="podpage" to="podpage" type="pod">
podpage
</L>
```

For example, this Pod source:

L<Net::Ping>

produces this event structure:

```
<L content-implicit="yes" raw="Net::Ping" to="Net::Ping" type="pod">
Net::Ping
</L>
```

In cases where there is link-text explicitly specified, it is to be found in the content of the element (and not the attributes), just as with the LE<lt>I<sometxt>|I<manpage(section)>E<gt> case discussed above. For example, this Pod source:

L<Perl Error Messages|perldiag>

produces this event structure:

```
<L raw="Perl Error Messages|perldiag" to="perldiag" type="pod">
Perl Error Messages
</L>
```

In cases of links to a section in the current Pod document, there is a I<section> attribute instead of a I<to> attribute. For example, this Pod source:

L</"Member Data">

produces this event structure:

```
<L content-implicit="yes" raw="/&quot;Member Data&quot;" section="Member Data" type="pod">
"Member Data"
</L>
```

As another example, this Pod source:

L<the various attributes/"Member Data">

produces this event structure:

```
<L raw="the various attributes/"&quot;Member Data&quot;" section="Member Data" type="pod">
the various attributes
</L>
```

In cases of links to a section in a different Pod document, there are both a I<section> attribute and a L<to> attribute. For example, this Pod source:

```
L<perlsyn/"Basic BLOCKs and Switch Statements">
```

produces this event structure:

```
<L content-implicit="yes"
raw="perlsyn/&quot;Basic BLOCKs and Switch Statements&quot;" section="Basic BLOCKs and Switch
Statements" to="perlsyn" type="pod">
"Basic BLOCKs and Switch Statements" in perlsyn
</L>
```

As another example, this Pod source:

```
L<SWITCH statements|perlsyn/"Basic BLOCKs and Switch Statements">
```

produces this event structure:

```
<L raw="SWITCH statements|perlsyn/&quot;Basic BLOCKs and Switch Statements&quot;" section="Basic
BLOCKs and Switch Statements" to="perlsyn" type="pod">
SWITCH statements
</L>
```

Incidentally, note that we do not distinguish between these syntaxes:

```
L</"Member Data">
L<"Member Data">
L</Member Data>
L<Member Data> [deprecated syntax]
```

That is, they all produce the same event structure (for the most part), namely:

```
<L content-implicit="yes" raw="$depends_on_syntax" section="Member Data" type="pod">
&#34;Member Data&#34;
</L>
```

The `I<raw>` attribute depends on what the raw content of the `C<LE<lt>E<gt>>` is, so that is why the event structure is the same "for the most part".

If you have not guessed it yet, the `I<raw>` attribute contains the raw, original, unescaped content of the `C<LE<lt>E<gt>>` formatting code. In addition to the examples above, take notice of the following event structure produced by the following `C<LE<lt>E<gt>>` formatting code.

```
L<click B<here>|page/About the C<-M> switch>
```

```
<L raw="click B<here>|page/About the C<-M> switch" section="About the -M switch" to="page" type="pod">
click B<here>
</L>
```


Specifically, notice that the formatting codes are present and unescaped in I<raw>.

There is a known bug in the I<raw> attribute where any surrounding whitespace is condensed into a single ' '. For example, given LE<60> linkE<62>, I<raw> will be " link".

=item events with an element_name of E or Z

While there are Pod codes EE<lt>...E<gt> and ZE<lt>E<gt>, these I<do not> produce any E or Z events -- that is, there are no such events as E or Z.

=item events with an element_name of Verbatim

When a Pod verbatim paragraph (AKA "codeblock") is parsed, it produces this event structure:

```
<Verbatim start_line="543" xml:space="preserve">
...text...
</Verbatim>
```

The value of the I<start_line> attribute will be the line number of the first line of this verbatim block. The I<xml:space> attribute is always present, and always has the value "preserve".

The text content will have tabs already expanded.

=item events with an element_name of head1 .. head4

When a "=head1 ..." directive is parsed, it produces this event structure:

```
<head1>
...stuff...
</head1>
```

For example, a directive consisting of this:

```
=head1 Options to C<new> et al.
```

will produce this event structure:

```
<head1 start_line="543">
Options to
```

```
<C>
  new
</C>
et al.
</head1>
```

"=head2" thru "=head4" directives are the same, except for the element names in the event structure.

=item events with an element_name of encoding

In the default case, the events corresponding to C<=encoding> directives are not emitted.

They are emitted if C<keep_encoding_directive> is true.

In that case they produce event structures like

L</"events with an element_name of head1 .. head4"> above.

=item events with an element_name of over-bullet

When an "=over ... Z<>=back" block is parsed where the items are a bulleted list, it will produce this event structure:

```
<over-bullet indent="4" start_line="543">
<item-bullet start_line="545">
  ...Stuff...
</item-bullet>
...more item-bullets...
</over-bullet fake-closer="1">
```

The attribute I<fake-closer> is only present if it is a true value; it is not present if it is a false value. It is shown in the above example to illustrate where the attribute is (in the B<closing> tag). It signifies that the C<=over> did not have a matching C<=back>, and thus Pod::Simple had to create a fake closer.

For example, this Pod source:

```
=over

=item *

Something

=back
```

Would produce an event structure that does B<not> have the I<fake-closer> attribute, whereas this Pod source:

=over

=item *

Gasp! An unclosed =over block!

would. The rest of the over-* examples will not demonstrate this attribute, but they all can have it. See L<Pod::Checker>'s source for an example of this attribute being used.

The value of the I<indent> attribute is whatever value is after the "=over" directive, as in "=over 8". If no such value is specified in the directive, then the I<indent> attribute has the value "4".

For example, this Pod source:

=over

=item *

Stuff

=item *

Bar I<baz>!

=back

produces this event structure:

```
<over-bullet indent="4" start_line="10">  
<item-bullet start_line="12">  
  Stuff  
</item-bullet>  
<item-bullet start_line="14">  
  Bar <I>baz</I>!  
</item-bullet>  
</over-bullet>
```

=item events with an element_name of over-number

When an "=over ... Z<>=back" block is parsed where the items are a numbered list, it will produce this event structure:

```
<over-number indent="4" start_line="543">  
<item-number number="1" start_line="545">
```

```
...Stuff...
</item-number>
...more item-number...
</over-bullet>
```

This is like the "over-bullet" event structure; but note that the contents are "item-number" instead of "item-bullet", and note that they will have a "number" attribute, which some formatters/processors may ignore (since, for example, there's no need for it in HTML when producing an "......" structure), but which any processor may use.

Note that the values for the I<number> attributes of "item-number" elements in a given "over-number" area I<will> start at 1 and go up by one each time. If the Pod source doesn't follow that order (even though it really should!), whatever numbers it has will be ignored (with the correct values being put in the I<number> attributes), and an error message might be issued to the user.

=item events with an element_name of over-text

These events are somewhat unlike the other over-* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where the items are a list of text "subheadings", it will produce this event structure:

```
<over-text indent="4" start_line="543">
<item-text>
...stuff...
</item-text>
...stuff (generally Para or Verbatim elements)...
<item-text>
...more item-text and/or stuff...
</over-text>
```

The I<indent> and I<fake-closer> attributes are as with the other over-* events.

For example, this Pod source:

```
=over

=item Foo

Stuff

=item Bar I<baz>!

Quux
```

=back

produces this event structure:

```
<over-text indent="4" start_line="20">
<item-text start_line="22">
  Foo
</item-text>
<Para start_line="24">
  Stuff
</Para>
<item-text start_line="26">
  Bar
  <I>
    baz
  </I>
  !
</item-text>
<Para start_line="28">
  Quux
</Para>
</over-text>
```

=item events with an element_name of over-block

These events are somewhat unlike the other over-* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where there are no items, it will produce this event structure:

```
<over-block indent="4" start_line="543">
...stuff (generally Para or Verbatim elements)...
</over-block>
```

The I<indent> and I<fake-closer> attributes are as with the other over-* events.

For example, this Pod source:

```
=over
```

For cutting off our trade with all parts of the world

For transporting us beyond seas to be tried for pretended offenses

He is at this time transporting large armies of foreign mercenaries to complete the works of death, desolation and tyranny, already begun with circumstances of cruelty and perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the head of a civilized nation.

=back

will produce this event structure:

```
<over-block indent="4" start_line="2">  
<Para start_line="4">  
  For cutting off our trade with all parts of the world  
</Para>  
<Para start_line="6">  
  For transporting us beyond seas to be tried for pretended offenses  
</Para>  
<Para start_line="8">
```

```
  He is at this time transporting large armies of [...more text...]  
</Para>  
</over-block>
```

=item events with an element_name of over-empty

B<Note: These events are only triggered if C<parse_empty_lists()> is set to a true value.>

These events are somewhat unlike the other over-* structures, as far as what their contents are. When an "=over ... Z<>=back" block is parsed where there is no content, it will produce this event structure:

```
<over-empty indent="4" start_line="543">  
</over-empty>
```

The I<indent> and I<fake-closer> attributes are as with the other over-* events.

For example, this Pod source:

```
=over  
  
=over  
  
=back  
  
=back
```

will produce this event structure:

```
<over-block indent="4" start_line="1">
<over-empty indent="4" start_line="3">
</over-empty>
</over-block>
```

Note that the outer C<=over> is a block because it has no C<=item>s but still has content: the inner C<=over>. The inner C<=over>, in turn, is completely empty, and is treated as such.

```
=item events
with an element_name of item-bullet
```

See L</"events with an element_name of over-bullet">, above.

```
=item events with an element_name of item-number
```

See L</"events with an element_name of over-number">, above.

```
=item events with an element_name of item-text
```

See L</"events with an element_name of over-text">, above.

```
=item events with an element_name of for
```

TODO...

```
=item events with an element_name of Data
```

TODO...

```
=back
```

```
=head1 More Pod::Simple Methods
```

Pod::Simple provides a lot of methods that aren't generally interesting to the end user of an existing Pod formatter, but some of which you might find useful in writing a Pod formatter. They are listed below. The first several methods (the `accept_*` methods) are for declaring the capabilities of your parser, notably what C<=for I<targetname>> sections it's interested in, what extra NE<lt>...E<gt> codes it accepts beyond the ones described in the I<perlpod>.

```
=over
```

```
=item C<< $parser->accept_targets( I<SOMEVALUE> ) >>
```

As the parser
sees sections like:

```
=for html 
```

or

```
=begin html
```

```

```

```
=end html
```

...the parser will ignore these sections unless your subclass has specified that it wants to see sections targeted to "html" (or whatever the formatter name is).

If you want to process all sections, even if they're not targeted for you, call this before you start parsing:

```
$parser->accept_targets('*');
```

```
=item C<< $parser->accept_targets_as_text( I<SOMEVALUE> ) >>
```

This is like `accept_targets`, except that it specifies also that the content of sections for this target should be treated as Pod text even if the target name in "`=for I<targetname>`" doesn't start with a ":".

At time of writing, I don't think you'll need to use this.

```
=item C<< $parser->accept_codes( I<Codename>, I<Codename>... ) >>
```

This tells the parser that you accept additional formatting codes, beyond just the standard ones (I B C L F S X, plus the two weird ones you don't actually see in the parse tree, Z and E). For example, to also accept codes "N", "R", and "W":

```
$parser->accept_codes( qw( N R W ) );
```

B<TODO: document how this interacts with `=extend`, and long element names>

```
=item C<< $parser->accept_directive_as_data( I<directive_name> ) >>
```

```
=item C<< $parser->accept_directive_as_verbatim( I<directive_name> ) >>
```



```
=item C<< $parser->accept_directive_as_processed( I<directive_name> ) >>
```

In the unlikely situation that you need to tell the parser that you will accept additional directives ("=foo" things), you need to first set the parser to treat its content as data (i.e., not really processed at all), or as verbatim (mostly just expanding tabs), or as processed text (parsing formatting codes like BE<lt>...E<gt>).

For example, to accept a new directive "=method", you'd presumably use:

```
$parser->accept_directive_as_processed("method");
```

so that you could have Pod lines like:

```
=method I<$whatever> thing B<um>
```

Making up your own directives breaks compatibility with other Pod formatters,

in a way that using "=for I<target> ..." lines doesn't;

however, you may find this useful if you're making a Pod superset format where you don't need to worry about compatibility.

```
=item C<< $parser->nbsp_for_S( I<BOOLEAN> ); >>
```

Setting this attribute to a true value (and by default it is false) will turn "SE<lt>...E<gt>" sequences into sequences of words separated by C<\xA0> (non-breaking space) characters. For example, it will take this:

```
I like S<Dutch apple pie>, don't you?
```

and treat it as if it were:

```
I like DutchE<nbsp>appleE<nbsp>pie, don't you?
```

This is handy for output formats that don't have anything quite like an "SE<lt>...E<gt>" code, but which do have a code for non-breaking space.

There is currently no method for going the other way; but I can probably provide one upon request.

```
=item C<< $parser->version_report() >>
```

This returns a string reporting the \$VERSION value from your module (and its classname) as well as the \$VERSION value of Pod::Simple. Note

that

L<perlpodspec> requires output formats (wherever possible) to note this detail in a comment in the output format. For example, for some kind of SGML output format:

```
print OUT "<!-- \n", $parser->version_report, "\n -->";
```

```
=item C<< $parser->pod_para_count() >>
```

This returns the count of Pod paragraphs seen so far.

```
=item C<< $parser->line_count() >>
```

This is the current line number being parsed. But you might find the "line_number" event attribute more accurate, when it is present.

```
=item C<< $parser->nix_X_codes( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (and it is false by default) ignores any "XE<lt>...E<gt>" sequences in the document being parsed. Many formats don't actually use the content of these codes, so have no reason to process them.

```
=item C<< $parser->keep_encoding_directive( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (it is false by default) will keep C<=encoding> and its content in the event structure. Most formats don't actually need to process the content of an C<=encoding> directive, even when this directive sets the encoding and the processor makes use of the encoding information. Indeed, it is possible to know the encoding without processing the directive content.

```
=item C<< $parser->merge_text( I<SOMEVALUE> ) >>
```

This attribute, when set to a true value (and it is false by default) makes sure that only one event (or token, or node) will be created for any single contiguous sequence of text. For example, consider this somewhat contrived example:

```
I just LOVE Z<>hotE<32>apple pie!
```

When that is parsed and events are about to be called on it, it may actually seem to be four different text events, one right after another:

one event for "I just LOVE ", one for "hot", one for " ", and one for "apple pie!". But if you have `merge_text` on, then you're guaranteed that it will be fired as one text event: "I just LOVE hot apple pie!".

```
=item C<< $parser->code_handler( I<CODE_REF> ) >>
```

This specifies code that should be called when a code line is seen (i.e., a line outside of the Pod). Normally this is `undef`, meaning that no code should be called. If you provide a routine, it should start out like this:

```
sub get_code_line { # or whatever you'll call it
  my($line, $line_number, $parser) = @_;
  ...
}
```

Note, however, that sometimes the Pod events aren't processed in exactly the same order as the code lines are -- i.e., if you have a file with Pod, then code, then more Pod, sometimes the code will be processed (via whatever you have `code_handler` call) before the all of the preceding Pod has been processed.

```
=item C<< $parser->cut_handler( I<CODE_REF> ) >>
```

This is just like the `code_handler` attribute, except that it's for `"=cut"` lines, not code lines. The same caveats apply. `"=cut"` lines are unlikely to be interesting, but this is included for completeness.

```
=item C<< $parser->pod_handler( I<CODE_REF> ) >>
```

This is just like the `code_handler` attribute, except that it's for `"=pod"` lines, not code lines. The same caveats apply. `"=pod"` lines are unlikely to be interesting, but this is included for completeness.

```
=item C<< $parser->whiteline_handler( I<CODE_REF> ) >>
```

This is just like the `code_handler` attribute, except that it's for lines that are seemingly blank but have whitespace (" " and/or "\t") on them, not code lines. The same caveats apply. These lines are unlikely to be interesting, but this is included for completeness.

=item C<< \$parser->whine(I<linenumber>, I<complaint string>) >>

This notes a problem in the Pod, which will be reported to in the "Pod Errors" section of the document and/or send to STDERR, depending on the values of the attributes C<no_whining>, C<no_errata_section>, and C<complain_stderr>.

=item C<< \$parser->scream(I<linenumber>, I<complaint string>) >>

This notes an error like C<whine> does, except that it is not suppressible with C<no_whining>. This should be used only for very serious errors.

=item C<< \$parser->source_dead(1)

>>

This aborts parsing of the current document, by switching on the flag that indicates that EOF has been seen. In particularly drastic cases, you might want to do this. It's rather nicer than just calling C<die>!

=item C<< \$parser->hide_line_numbers(I<SOMEVALUE>) >>

Some subclasses that indiscriminately dump event attributes (well, except for ones beginning with "~") can use this object attribute for refraining to dump the "start_line" attribute.

=item C<< \$parser->no_whining(I<SOMEVALUE>) >>

This attribute, if set to true, will suppress reports of non-fatal error messages. The default value is false, meaning that complaints I<are> reported. How they get reported depends on the values of the attributes C<no_errata_section> and C<complain_stderr>.

=item C<< \$parser->no_errata_section(I<SOMEVALUE>) >>

This attribute, if set to true, will suppress generation of an errata section. The default value is false -- i.e., an errata section will be generated.

=item

C<< \$parser->complain_stderr(I<SOMEVALUE>) >>

This attribute, if set to true will send complaints to STDERR. The default value is false -- i.e., complaints do not go to STDERR.

=item C<< \$parser->bare_output(I<SOMEVALUE>) >>

Some formatter subclasses use this as a flag for whether output should have prologue and epilogue code omitted. For example, setting this to true for an HTML formatter class should omit the "`<html><head><title>...</title><body>...`" prologue and the "`</body></html>`" epilogue.

If you want to set this to true, you should probably also set `C<no_whining>` or at least `C<no_errata_section>` to true.

=item C<< \$parser->preserve_whitespace(I<SOMEVALUE>) >>

If you set this attribute to a true value, the parser will try to preserve whitespace in the output. This means that such formatting conventions as two spaces after periods will be preserved by the parser. This is primarily useful for output formats that treat whitespace as significant (such as text or *roff, but not HTML).

=item C<< \$parser->parse_empty_lists(I<SOMEVALUE>) >>

If this attribute is set to true, the parser will not ignore empty `C<=over>/C<=back>` blocks. The type of `C<=over>` will be `I<empty>`, documented above, `L<events with an element_name of over-empty>`.

=back

=head1 SEE ALSO

`L<Pod::Simple>` -- event-based Pod-parsing framework

`L<Pod::Simple::Methody>` -- like `Pod::Simple`, but each sort of event calls its own method (like `C<start_head3>`)

`L<Pod::Simple::PullParser>` -- a Pod-parsing framework like `Pod::Simple`, but with a token-stream interface

`L<Pod::Simple::SimpleTree>` -- a Pod-parsing framework like `Pod::Simple`, but with a tree interface

`L<Pod::Simple::Checker>` -- a simple `Pod::Simple` subclass that reads documents, and then makes a plaintext report of any errors found in the document

`L<Pod::Simple::DumpAsXML>` -- for dumping Pod documents as tidily indented XML, showing each event on its own line

`L<Pod::Simple::XMLOutputStream>` -- dumps a Pod document as XML (without

introducing
extra whitespace as Pod::Simple::DumpAsXML does).

L<Pod::Simple::DumpAsText> -- for dumping Pod documents as tidily indented text, showing each event on its own line

L<Pod::Simple::LinkSection> -- class for objects representing the values of the TODO and TODO attributes of LE<lt>...E<gt> elements

L<Pod::Escapes> -- the module the Pod::Simple uses for evaluating EE<lt>...E<gt> content

L<Pod::Simple::Text> -- a simple plaintext formatter for Pod

L<Pod::Simple::TextContent> -- like Pod::Simple::Text, but makes no effort for indent or wrap the text being formatted

L<Pod::Simple::HTML> -- a simple HTML formatter for Pod

L<perlpod|perlpod>

L<perlpodspec|perlpodspec>

L<perldoc>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of

merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>.
But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=for notes

Hm, my old podchecker version (1.2) says:

*** WARNING: node 'http://search.cpan.org/' contains non-escaped | or / at line 38 in file Subclassing.pod

*** WARNING: node 'http://lists.perl.org/showlist.cgi?name=pod-people' contains non-escaped | or / at line 41 in
file Subclassing.pod

Yes, L<...> is hard.

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/Subclassing.pod

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::XMLOutputStream -- turn Pod into XML

=head1 SYNOPSIS

```
perl -MPod::Simple::XMLOutputStream -e \  
"exit Pod::Simple::XMLOutputStream->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

Pod::Simple::XMLOutputStream is a subclass of L<Pod::Simple> that parses

Pod and turns it into XML.

Pod::Simple::XMLOutputStream inherits methods from L<Pod::Simple>.

=head1 SEE ALSO

L<Pod::Simple::DumpAsXML> is rather like this class; see its documentation for a discussion of the differences.

L<Pod::Simple>, L<Pod::Simple::DumpAsXML>, L<Pod::SAX>

L<Pod::Simple::Subclassing>

The older (and possibly obsolete) libraries L<Pod::PXML>, L<Pod::XML>

=head1 ABOUT EXTENDING POD

TODO: An example or two of =extend, then point to Pod::Simple::Subclassing

=head1 ASK ME!

If you actually want to use Pod as a format that you want to render to XML (particularly if to an XML instance with more elements than normal Pod has), please email me (C<sburke@cpan.org>) and I'll probably have some recommendations.

For reasons of concision and energetic laziness, some methods and options in this module (and the dozen modules it depends on) are undocumented; but one of those undocumented bits might be just what you're looking for.

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::Text>, L<Pod::Spell>

=head1 SUPPORT

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to clone L<git://github.com/theory/pod-simple.git> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002-2004 Sean M. Burke.

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This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

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Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/lib/Pod/Simple/XMLOutputStream.pm

No license file was found, but licenses were detected in source scan.

```
sub dump { '[' . _esc( @{$ $_[0] } ) . ' ] }
```

```
# JUNK:
```

```
sub _esc {  
    return " unless @_;
```

```

my @out;
foreach my $in (@_) {
    push @out, "" . $in . "";
    $out[-1] =~ s/([^\.:|\,|\>|<|"|'|=|?|+|\\[\\]{}|}_a-zA-Z0-9_'\~|!|#|%^\&|*(\))/
        sprintf( (ord($1) < 256) ? "\\x%02X" : "\\x{%X}", ord($1))
    /eg;
}
return join ' ', @out;
}

```

__END__

=head1 NAME

Pod::Simple::PullParserToken -- tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

Given a \$parser that's an object of class Pod::Simple::PullParser
(or a subclass)...

```

while(my $token = $parser->get_token) {
    $DEBUG and print "Token: ", $token->dump, "\n";
    if($token->is_start) {
        ...access $token->tagname, $token->attr, etc...

    } elsif($token->is_text) {
        ...access $token->text, $token->text_r, etc...

    } elsif($token->is_end) {
        ...access $token->tagname...

    }
}

```

(Also see L<Pod::Simple::PullParser>)

=head1

DESCRIPTION

When you do \$parser->get_token on a L<Pod::Simple::PullParser>, you should
get an object of a subclass of Pod::Simple::PullParserToken.

Subclasses will add methods, and will also inherit these methods:

=over

=item \$token->type

This returns the type of the token. This will be either the string "start", the string "text", or the string "end".

Once you know what the type of an object is, you then know what subclass it belongs to, and therefore what methods it supports.

Yes, you could probably do the same thing with code like `$token->isa('Pod::Simple::PullParserEndToken')`, but that's not so pretty as using just `$token->type`, or even the following shortcuts:

=item \$token->is_start

This is a shortcut for `C<< $token->type() eq "start" >>`

=item \$token->is_text

This is a shortcut for `C<< $token->type() eq "text" >>`

=item \$token->is_end

This is a shortcut for `C<< $token->type() eq "end" >>`

=item \$token->dump

This returns a handy stringified value of this object.

This is useful for debugging, as in:

```
while(my $token = $parser->get_token) {  
    $DEBUG and print "Token: ", $token->dump, "\n";  
    ...  
}
```

=back

=head1 SEE ALSO

My subclasses:

L<Pod::Simple::PullParserStartToken>,
L<Pod::Simple::PullParserTextToken>, and
L<Pod::Simple::PullParserEndToken>.

L<Pod::Simple::PullParser> and L<Pod::Simple>

=head1 SUPPORT

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=head1 NAME

Pod::Simple::Search - find POD documents in directory trees

=head1 SYNOPSIS

```
use Pod::Simple::Search;
my $name2path = Pod::Simple::Search->new->limit_glob('LWP:*')->survey;
print "Looky see what I found: ",
    join(' ', sort keys %$name2path), "\n";

print "LWPUA docs = ",
    Pod::Simple::Search->new->find('LWP::UserAgent') || "?",
    "\n";
```

=head1 DESCRIPTION

B<Pod::Simple::Search> is a class that you use for running searches for Pod files. An object of this class has several attributes (mostly options for controlling search options), and some methods for searching based on those attributes.

The way to use this class is to make a new object of this class, set any options, and then call one of the search options (probably C<survey> or C<find>). The sections below discuss the syntaxes for doing all that.

=head1 CONSTRUCTOR

This class provides the one constructor, called C<new>.

It takes

no parameters:

```
use Pod::Simple::Search;
my $search = Pod::Simple::Search->new;
```

=head1 ACCESSORS

This class defines several methods for setting (and, occasionally, reading) the contents of an object. With two exceptions (discussed at the end of this section), these attributes are just for controlling the way searches are carried out.

Note that each of these return C<\$self> when you call them as C<< \$self->I<whatever(value)>>>. That's so that you can chain together set-attribute calls like this:

```
my $name2path =
  Pod::Simple::Search->new
  -> inc(0) -> verbose(1) -> callback(\&blab)
  ->survey(@there);
```

...which works exactly as if you'd done this:

```
my $search = Pod::Simple::Search->new;
$search->inc(0);
$search->verbose(1);
$search->callback(\&blab);
my $name2path = $search->survey(@there);
```

=over

```
=item $search->inc( I<true-or-false> );
```

This attribute, if set to a true value, means that searches should implicitly add perl's I<@INC> paths. This automatically

considers paths specified in the C<PERL5LIB> environment as this is prepended to I<@INC> by the Perl interpreter itself. This attribute's default value is B<TRUE>. If you want to search only specific directories, set \$self->inc(0) before calling \$inc->survey or \$inc->find.

```
=item $search->verbose( I<nonnegative-number> );
```

This attribute, if set to a nonzero positive value, will make searches output (via C<warn>) notes about what they're doing as they do it.

This option may be useful for debugging a pod-related module.

This attribute's default value is zero, meaning that no C<warn> messages are produced. (Setting verbose to 1 turns on some messages, and setting it to 2 turns on even more messages, i.e., makes the following search(es) even more verbose than 1 would make them.)

```
=item $search->limit_glob( I<some-glob-string> );
```

This option means that you want to limit the results just to items whose podnames match the given glob/wildcard expression. For example, you might limit

your search to just "LWP::*", to search only for modules starting with "LWP::*" (but not including the module "LWP" itself); or you might limit your search to "LW*" to see only modules whose (full) names begin with "LW"; or you might search for "*Find*" to search for all modules with "Find" somewhere in their full name. (You can also use

"?" in a glob expression; so "DB?" will match "DBI" and "DBD".)

```
=item $search->callback( I<\&some_routine> );
```

This attribute means that every time this search sees a matching Pod file, it should call this callback routine. The routine is called with two parameters: the current file's filespec, and its pod name. (For example: C<("/etc/perljunk/File/Crunk.pm", "File::Crunk")> would be in C<@_>.)

The callback routine's return value is not used for anything.

This attribute's default value is false, meaning that no callback is called.

```
=item $search->laborious( I<true-or-false> );
```

Unless you set this attribute to a true value, Pod::Search will apply Perl-specific heuristics to find the correct module PODs quickly. This attribute's default value is false. You won't normally need to set this to true.

Specifically: Turning on this option will disable the heuristics for seeing only files with Perl-like extensions, omitting subdirectories that are numeric but do I<not> match the current Perl interpreter's version ID, suppressing F<site_perl> as a module hierarchy name, etc.

```
=item $search->shadows( I<true-or-false> );
```

Unless you set this attribute to a true value, Pod::Simple::Search will consider only the first file of a given modulename as it looks thru the specified directories; that is, with this option off, if Pod::Simple::Search has seen a C<somepathdir/Foo/Bar.pm> already in this search, then it won't bother looking at a C<somelaterpathdir/Foo/Bar.pm> later on in that search, because that file is merely a "shadow". But if you turn on C<< \$self->shadows(1) >>, then these "shadow" files are inspected too, and are noted in the pathname2podname return hash.

This attribute's default value is false; and normally you won't need to turn it on.

```
=item $search->limit_re( I<some-regexp> );
```

Setting this attribute (to a value that's a regexp) means that you want to limit the results just to items whose podnames match the given regexp. Normally this option is not needed, and the more efficient C<limit_glob> attribute is used instead.

```
=item $search->dir_prefix( I<some-string-value> );
```

Setting this attribute to a string value means that the searches should begin in the specified subdirectory name (like "Pod" or "File::Find", also expressible as "File/Find"). For example, the search option C<< \$search->limit_glob("File::Find::R*") >> is the same as the combination of the search options C<< \$search->limit_re("^File::Find::R") -> dir_prefix("File::Find") >>.

Normally you don't need to know about the C<dir_prefix> option, but I include it in case it might prove useful for someone somewhere.

(Implementationally, searching with limit_glob ends up setting limit_re and usually dir_prefix.)

```
=item $search->progress( I<some-progress-object> );
```

If you set a value for this attribute, the value is expected to be an object (probably of a class that you define) that has a C<reach> method and a C<done> method. This is meant for reporting progress during the search, if you don't want to use a simple callback.

Normally you don't need to know about the C<progress> option, but I include it in case it might prove useful for someone somewhere.

While a search is in progress, the progress object's C<reach> and C<done> methods are called like this:

```
# Every time a file is being scanned for pod:
$progress->reach($count, "Scanning $file"); ++$count;

# And then at the end of the search:
$progress->done("Noted $count Pod files total");
```

Internally, we often set this to an object of class Pod::Simple::Progress. That class is probably undocumented, but you may wish to look at its source.


```
=item $name2path
= $self->name2path;
```

This attribute is not a search parameter, but is used to report the result of C<survey> method, as discussed in the next section.

```
=item $path2name = $self->path2name;
```

This attribute is not a search parameter, but is used to report the result of C<survey> method, as discussed in the next section.

```
=back
```

```
=head1 MAIN SEARCH METHODS
```

Once you've actually set any options you want (if any), you can go ahead and use the following methods to search for Pod files in particular ways.

```
=head2 C<< $search->survey( @directories ) >>
```

The method C<survey> searches for POD documents in a given set of files and/or directories. This runs the search according to the various options set by the accessors above. (For example, if the C<inc> attribute is on, as it is by default, then the perl @INC directories are implicitly added to the list of directories (if any) that you specify.)

The return value of C<survey> is two hashes:

```
=over
```

```
=item C<name2path>
```

A hash that maps from each pod-name to the filespec (like "Stuff::Thing" => "/whatever/plib/Stuff/Thing.pm")

```
=item C<path2name>
```

A hash that maps from each Pod filespec to its pod-name (like "/whatever/plib/Stuff/Thing.pm" => "Stuff::Thing")

```
=back
```

Besides saving these hashes as the hashref attributes C<name2path> and C<path2name>, calling this function also returns these hashrefs. In list context, the return value of

C<< \$search->survey >> is the list C<(\%name2path, \%path2name)>.

In scalar context, the return value is C<\%name2path>.

Or you can just call this in void context.

Regardless of calling context, calling C<survey> saves its results in its C<name2path> and C<path2name> attributes.

E.g., when searching in F<\$HOME/perl5lib>, the file F<\$HOME/perl5lib/MyModule.pm> would get the POD name I<MyModule>, whereas F<\$HOME/perl5lib/Myclass/Subclass.pm> would be I<Myclass::Subclass>. The name information can be used for POD translators.

Only text files containing at least one valid POD command are found.

In

verbose mode, a warning is printed if shadows are found (i.e., more than one POD file with the same POD name is found, e.g. F<CPAN.pm> in different directories). This usually indicates duplicate occurrences of modules in the I<@INC> search path, which is occasionally inadvertent (but is often simply a case of a user's path dir having a more recent version than the system's general path dirs in general.)

The options to this argument is a list of either directories that are searched recursively, or files. (Usually you wouldn't specify files, but just dirs.) Or you can just specify an empty-list, as in \$name2path; with the C<inc> option on, as it is by default, teh

The POD names of files are the plain basenames with any Perl-like extension (.pm, .pl, .pod) stripped, and path separators replaced by C<::>'s.

Calling Pod::Simple::Search->search(...) is short for Pod::Simple::Search->new->search(...). That is, a throwaway object with default attribute values is used.

```
=head2 C<<
$search->simplify_name( $str ) >>
```

The method B<simplify_name> is equivalent to B<basename>, but also strips Perl-like extensions (.pm, .pl, .pod) and extensions like F<.bat>, F<.cmd> on Win32 and OS/2, or F<.com> on VMS, respectively.

```
=head2 C<< $search->find( $pod ) >>
```

```
=head2 C<< $search->find( $pod, @search_dirs ) >>
```

Returns the location of a Pod file, given a Pod/module/script name (like "Foo::Bar" or "perlvar" or "perldoc"), and an idea of what files/directories to look in.

It searches according to the various options set by the accessors above. (For example, if the C<inc> attribute is on, as it is by default, then the perl @INC directories are implicitly added to the list of directories (if any) that you specify.)

This returns the full path of the first occurrence to the file.

Package names (eg 'A::B') are automatically converted to directory names in the selected directory. Additionally, '.pm', '.pl' and '.pod' are automatically appended to the search as required.

(So, for

example, under Unix, "A::B" is converted to "somedir/A/B.pm", "somedir/A/B.pod", or "somedir/A/B.pl", as appropriate.)

If no such Pod file is found, this method returns undef.

If any of the given search directories contains a F<pod/> subdirectory, then it is searched. (That's how we manage to find F<perlfunc>, for example, which is usually in F<pod/perlfunc> in most Perl dists.)

The C<verbose> and C<inc> attributes influence the behavior of this search; notably, C<inc>, if true, adds @INC I<and also \$Config::Config{'scriptdir'}> to the list of directories to search.

It is common to simply say C<< \$filename = Pod::Simple::Search->new->find("perlvar") >> so that just the @INC (well, and scriptdir) directories are searched. (This happens because the C<inc> attribute is true by default.)

Calling Pod::Simple::Search->find(...) is short for Pod::Simple::Search->new->find(...). That is, a throwaway object with default attribute values is used.

```
=head2 C<< $self->contains_pod( $file  
) >>
```

Returns true if the supplied filename (not POD module) contains some Pod documentation.

```
=head1 SUPPORT
```

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke
<sburke@cpan.org> with code borrowed
from Marek Rouchal's L<Pod::Find>, which in turn heavily borrowed code from
Nick Ing-Simmons' C<PodToHtml>.

But don't bother him, he's retired.

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=back

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3.28/lib/Pod/Simple/Search.pm

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TODO: let it be an option whether a given subclass even wants little treelets?

__END__

=head1 NAME

Pod::Simple::LinkSection -- represent "section" attributes of L codes

=head1 SYNOPSIS

a long story

=head1 DESCRIPTION

This class is not of interest to general users.

Pod::Simple uses this class for representing the value of the "section" attribute of "L" start-element events. Most applications can just use the normal stringification of objects of this class; they stringify to just the text content of the section, such as "foo" for C<< LZ<><Stuff/foo> >>, and "bar" for C<< LZ<><Stuff/bIZ<><ar>> >>.

However, anyone particularly interested in getting the full value of the treelet, can just traverse the content of the treelet @\$treelet_object. To wit:

```
% perl -MData::Dumper -e
"use base qw(Pod::Simple::Methody);
sub start_L { print Dumper($_[1]{'section'}) }
__PACKAGE__->new->parse_string_document('=head1
L<Foo/bI<ar>baz>>')
"
```

Output:

```
$VAR1 = bless( [
    ",
    {},
    'b',
    bless( [
        'I',
        {},
        'ar'
    ], 'Pod::Simple::LinkSection' ),
    'baz'
], 'Pod::Simple::LinkSection' );
```

But stringify it and you get just the text content:

```
% perl -MData::Dumper -e
"use base qw(Pod::Simple::Methody);
sub start_L { print Dumper(" . $_[1]{ 'section' } ) }
__PACKAGE__->new->parse_string_document('=head1 L<Foo/bI<ar>baz>>')
"
```

Output:

```
$VAR1 = 'barbaz';
```

=head1 SEE ALSO

L<Pod::Simple>

=head1 SUPPORT

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=head1 NAME

Pod::Simple::PullParserEndToken -- end-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser>, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item `$token->tagname`

This returns the tagname for this end-token object.
For example, parsing a "`=head1 ...`" line will give you a start-token with the tagname of "head1", token(s) for its content, and then an end-token with the tagname of "head1".

=item `$token->tagname(I<somestring>)`

This changes the tagname for this end-token object.
You probably won't need to do this.

=item \$token->tag(...)

A shortcut for \$token->tagname(...)

=item \$token->is_tag(I<somestring>) or \$token->is_tagname(I<somestring>)

These are shortcuts for C<< \$token->tag()

eq I<somestring> >>

=back

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

C<<

Pod::Simple::PullParserEndToken->new(I<tagname>)

>>

=head1 SEE ALSO

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

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=head1 NAME

Pod::Simple::PullParserStartToken -- start-tokens from Pod::Simple::PullParser

=head1 SYNOPSIS

(See L<Pod::Simple::PullParser>)

=head1 DESCRIPTION

When you do `$parser->get_token` on a L<Pod::Simple::PullParser> object, you might get an object of this class.

This is a subclass of L<Pod::Simple::PullParserToken> and inherits all its methods, and adds these methods:

=over

=item `$token->>tagname`

This returns the tagname for this start-token object.

For example, parsing a "`=head1 ...`" line will give you a start-token with the tagname of "head1", token(s) for its content, and then an end-token with the tagname of "head1".

```
=item $token->tagname(I<somestring>)
```

This changes the tagname for this start-token object.
You probably won't need
to do this.

```
=item $token->tag(...)
```

A shortcut for `$token->tagname(...)`

```
=item $token->is_tag(I<somestring>) or $token->is_tagname(I<somestring>)
```

These are shortcuts for
`C<< $token->tag() eq I<somestring> >>`

```
=item $token->attr(I<attrname>)
```

This returns the value of the `I<attrname>` attribute for this start-token object, or `undef`.

For example, parsing a `LZ<><Foo/"Bar">` link will produce a start-token with a "to" attribute with the value "Foo", a "type" attribute with the value "pod", and a "section" attribute with the value "Bar".

```
=item $token->attr(I<attrname>, I<newvalue>)
```

This sets the `I<attrname>` attribute for this start-token object to `I<newvalue>`. You probably won't need to do this.

```
=item $token->attr_hash
```

This returns the hashref that is the attribute set for this start-token. This is useful if (for example) you want to ask what all the attributes are -- you can just do `C<< keys %{$token->attr_hash} >>`

```
=back
```

You're unlikely to ever need to construct an object of this class for yourself, but if you want to, call

```
C<<  
Pod::Simple::PullParserStartToken->new( I<tagname>, I<attrhash> )  
>>
```

```
=head1 SEE ALSO
```

```
L<Pod::Simple::PullParserToken>, L<Pod::Simple>,
```

L<Pod::Simple::Subclassing>

=head1 SEE ALSO

L<Pod::Simple::PullParserToken>, L<Pod::Simple>, L<Pod::Simple::Subclassing>

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple
was created by Sean M. Burke <sburke@cpan.org>.
But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/lib/Pod/Simple/PullParserStartToken.pm

No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::DumpAsXML -- turn Pod into XML

=head1 SYNOPSIS

```
perl -MPod::Simple::DumpAsXML -e \  
"exit Pod::Simple::DumpAsXML->filter(shift)->any_errata_seen" \  
thingy.pod
```

=head1 DESCRIPTION

Pod::Simple::DumpAsXML is a subclass of L<Pod::Simple> that parses Pod and turns it into indented and wrapped XML. This class is of interest to people writing Pod formatters based on Pod::Simple.

Pod::Simple::DumpAsXML inherits methods from L<Pod::Simple>.

=head1 SEE ALSO

L<Pod::Simple::XMLOutputStream> is rather like this class.

Pod::Simple::XMLOutputStream's output is space-padded in a way that's better for sending to an XML processor (that is, it has no ignorable whitespace). But

Pod::Simple::DumpAsXML's output is much more human-readable, being (more-or-less) one token per line, with line-wrapping.

L<Pod::Simple::DumpAsText> is rather like this class, except that it doesn't dump with XML syntax. Try them and see which one you like best!

L<Pod::Simple>, L<Pod::Simple::DumpAsXML>

The older libraries L<Pod::PXML>, L<Pod::XML>, L<Pod::SAX>

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Found in path(s):

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No license file was found, but licenses were detected in source scan.

ChangeLog for Pod::Simple dist

#-----

2013-05-04 David E. Wheeler <david@justatheory.org>

* Release 3.28

Removed use of 'done_testing' in t/white.t, which was added in v3.27. Thanks to Paul Howarth for the catch.

Fixed improperly calculated number of skipped tests in t/xhtml101.t when HTML::Entities is not installed.

2013-05-03 David E. Wheeler <david@justatheory.org>

* Release 3.27

Added new warnings as defined by Pod::Checker, thanks to RJBS:

+ "=over" without "=back"

+ "L<>" starts or ends with whitespace

+ raw "|" or "/" in "L<text|link>" text

Added ->keep_encoding_directive, which is false by default, to prevent formatters from emitting a document's '=encoding' directive in most cases. That they emitted the encoding was a bug introduced in v3.26 (RT #84093). Now, only the DumpAsText and DumpAsXML formats set it to true.

Patch from Patrice Dumas.

2013-02-27 David E. Wheeler <david@justatheory.org>

* Release 3.26

Fixed another test script to skip all tests when Encode is not installed.

Added 'encoding()' and 'detected_encoding()' to return the current encoding and the encoding actually to decode the input file. The value from "=encoding" is also now kept in the output tree. Patch from Patrice Dumas (RT #74390).

2013-02-16 David E. Wheeler <david@justatheory.org>

* Release 3.25

Improved the warning when "=item" types mismatch within one "=over"/"=back" block.

2013-02-14 David E. Wheeler <david@justatheory.org>

* Release 3.24

Fixed corner case bug for unlikely scenario in which non-UTF-8

text could be parsed as UTF-8. Grant McLean.

XHTML IDs can no longer end with punctuation. Thanks to Smylers for the patch.

Fixed test failure on Perl 5.6.2.

Changed the default installation location from "perl" to "site" on 5.12 and higher, since as of that version of Perl, dual-life modules no longer need to be installed in "perl" to replace in-core versions. Patch from tzccinct.

Fixed hash order dependency test failures on Perl 5.17. Thanks to Yves Orton for the patch.

Inlined the code that tries to guess a Pod file's encoding. This reduces the time Pod::Simple takes to build the core Perl documentation by 15-20%. Thanks to Dagfinn Ilmari Mannsåker for the patch!

Added a warning when "=item" types mismatch within one "=over"/"=back" block. Marc Green/Google Summer of Code, with assist from RJBS.

Fixed regression introduced in 3.22 in which "C<>" tags were incorrectly treated as verbatim text in table of contents items emitted by Pod::Simple::XHTML. Thanks to Randy Stauner for the report and to Thomas Sibley for the fix!

Loosened up the matching of "L<>" tags for man pages so that they allow names with dots, underscores, and any other characters other than "/", just so long as they end in '([[-a-zA-Z0-9]+)]'. Thanks to Dave Rolsky and Kevin Ryde for the reports (RT #82975 & RT #82972).

Fixed inverted mapping of "keyboard" to "kbd" in Pod::Simple::HTML. Thanks to Robert Boisvert for the bug report (RT #79201).

Added two new Tagmap entries to Pod::Simple::HTML: "preformat" maps to "pre", and "teletype" maps to "tt". Suggested by Robert Boisvert (RT #79201).

"X<>" tags are now ignored by the pull parser when it searches for titles, as is any trailing whitespace. Thanks to Patrice Dumas for the report (RT #74389).

2012-08-14 David E. Wheeler <david@justatheory.org>

* Release 3.23

Eliminated nested elements in table of contents (index) items output of Pod::Simple::XHTML. This was especially problematic for headers that included links, as the TOC then got nested anchor elements, which simply would not work. Thanks to Ben Bullock for the report and test case (RT #77686).

Fixed semantically invalid nested XHTML generated by Pod::Simple::XHTML since v3.21. Gisle Aas.

Improved support for nested "C<>" tags in Pod::Simple::XHTML. Gisle Aas.

No longer tries to decode a string with the "utf8" flag set, as the double-decoding only triggered an error. Grant McLean.

Added documentation note that the API expects encoded text (octets). Grant McLean.

Added "parse_characters()" option to specify that strings to are already decoded from octets into characters. Grant McLean.

2012-05-27 David E. Wheeler <david@justatheory.org>

* Release 3.22

Fix but where Pod::Simple would whine about non-ASCII bytes in code or comments. Now only does so for Pod (in the absence of an "=encoding" tag. Broken in 3.21. Grant McLean.

2012-05-23 David E. Wheeler <david@justatheory.org>

* Release 3.21

NOTE: COMPATABILITY CHANGE: The 'codes_in_verbatim' option in Pod::Simple::XHTML is no longer enabled by default. This brings it agreement with the other formatting classes, and eliminates unexpected behavior in XHTML-formatted Pod. Users who depended on this functionality can still get it by enabling 'codes_in_verbatim' in their code.

Fixed some typos in the documentation. Thanks to Jonathan Yu via the Debian packagers via Florian Ragwitz (RT #75532).

Now emit a warning the first time a non-ASCII byte is encountered

when no "`=encoding`" has been seen. Grant McLean.

When a non-ASCII byte is encountered before an "`=encoding`" line has been seen, a heuristic (as described in `perlpodspec`) is applied to select UTF-8 encoding if the non-ASCII bytes form a valid UTF-8 byte sequence, or Latin-1 otherwise. Grant McLean.

Added `handle_code` method to `Pod::Simple::XHTML`. This allows subclasses to override the handling of verbatim blocks, and makes for a more cohesive interface, to boot. Gisle Aas.

Subsequent text segments are now joined together and passed as a single unit to text handling code. This makes it easier for custom handlers to process complete blocks of text in a single call to `handle_text`, rather than in dribs and drabs. Gisle Aas.

Replaced naive text wrapping code in `Pod::Simple::DumpAsXML` with `Text::Wrap`, which was already used for similar purposes elsewhere in `Pod::Simple`. Gisle Aas.

2012-03-01 David E. Wheeler <david@justatheory.org>

* Release 3.20

Removed use of `done_testing` in `t/xhtml15.t`, which was added in v3.19. Thanks to Paul Howarth for the catch.

Fixed quoting of links in a regular expression `Pod::Simple::Text`. Reported by Father Chrysostomos.

Fix test failure on case-insensitive, non-case-preserving file systems (VMS I'm looking at `*you*`). Patch from Craig A. Berry.

`Pod::Simple::HTML` no longer emits "`href='#__top'`" if a TOC (index) is not output. Patch from Rick Myers.

Fixed links in the TOC of XHTML output to use IDs derived from encoded text, rather than raw Pod, so that it will link to the ID actually generated for the section. Thanks to Randy Stauner for the report (with test case!) (RT #72544).

`PullParser` now throws an exception on an attempt to set a source more than once. Necessary because data from the previous source will be cached, so the new source would be ignored anyway. Create a new `PullParser`, instead. Thanks to Paul Boldra for the report (RT #74265).

2011-08-23 David E. Wheeler <david@justatheory.org>

* Release 3.19

Fixed occasional test failure when tests are run in parallel (HARNESS_OPTIONS=j6:c). Thanks to Alexei Znamensky for the report and Marc Green for the fix.

Added "pod_handler" option. This is a callback that can be used to inspect the content on a "=pod" line. Marc Green/Google Summer of Code.

Added tests for proper line-ending parsing from the previous release. The tests were in the repository, but didn't make it into the MANIFEST or, therefore, the release. Reported by Marc Green.

Added the "parse_empty_lists" option. When enabled, Pod::Simple will recognize empty lists (that is, a blocks with '=over' and '=back' but nothing in between). Disabled by default. Marc Green/Google Summer of Code.

Added the "whiteline_handler" attribute. It's much like "code_handler", "cut_handler", and "pod_handler", except it's triggered on lines that contain only whitespace characters. Marc Green/Google Summer of Code.

Added "raw" attribute to L<> treelet that contains the L<>'s raw contents. Marc Green/Google Summer of Code.

Pod directives autoclosed by Pod::Simple are now denoted as such by the new "fake_closer" attribute. Marc Green/Google Summer of Code.

Fixed incompatibility with Pod::Simple::HTMLBatch in Pod::Simple::XHTML. Patch by Eric Johnson.

2011-07-16 David E. Wheeler <david@justatheory.org>

* Release 3.18

Pod::Simple now properly parses Pod files using Mac OS Classic line-endings (r). Marc Green/Google Summer of Code.

Fixed test failure in 't/search50.t' when the test finds a .pod but the module is in a .pm. Thanks to the cpan-testers who reported this when the test searched for Capture::Tiny.

2011-07-09 David E. Wheeler <david@justatheory.org>

* Release 3.17

Documented

tertiary methods. Patch from Shawn H Corey.

Added "backlink" option to Pod::Simple::XHTML. Thanks to Marc Green/Google Summer of Code for the pull request.

Typos fixed in Pod::Simple::HTMLBatch. Reported by Shawn H Corey.

Fixed quoting of value returned by a "strip_verbatim_indent()" code reference so that regex meta characters are properly escaped.

Added "anchor_items" option to Pod::Simple::XHMTL. This allows text items (which are output as <dt> elements) to have IDs that can be referenced in the "#" part of a URL. Marc Green/Google Summer of Code.

Added "recurse" option to Pod::Simple::Search. It's enabled by default; disable it to turn off recursion into subdirectories. Marc Green/Google Summer of Code.

Added documentation to clarify the behavior of the "content_seen" method. Thanks to Olaf Alders for the pull request.

2011-03-14 David E. Wheeler <david@justatheory.org>

* Release 3.16

Fixed invalid HTML generated for nested lists by Pod::Simple::XHTML (Fitz Elliott).

Replaced the invalid "<nobr>" tag -- created for "S<>" -- with '' (Fitz Elliott).

Fixed some nerbles in our own Pod (Michael Stevens)

Improved the "Minimal code" example in Pod::Simple::HTML. The key is to use `pase_file()`, not `parse_from_file()` (which should otherwise be undocumented, and is just there for Pod::Parser compatibility. Thanks to prodding from Ævar Arnfjörð Bjarmason (RT #65428).

Added the `html_charset()` and `html_encode_chars()` attributes to Pod::Simple::XHTML. Inspired by a bug report from Agent Zhang () (RT #29587).

Added "Minimal code" example to the Pod::Simple::XHTML documentation.

Fixed misspelling of the "=encoding" markup in the parser (it was spelled "=encode"). Thanks to "TTY" for the patch. (RT #24820).

2010-11-11 David E. Wheeler <david@justatheory.org>

* Release 3.15

Removed "perlpod.pod" and "perlpodspec.pod". These now just live in the Perl core.

Fixed stylesheet names output by HTMLBatch to match the names of the actual stylesheet files (broken in 3.09). Thanks to Kevin Ryde for the report (RT #56725).

Added missing closing slash to the CSS links in the XHTML output. Thanks to HarleyPig for the patch!

Added parens around bar "qw(...)" in t/xhtml05.t. Thanks to Jerry D. Hedden for the patch.

Improved the Pod::Simple::HTML docs. Thanks to Gabor Szabo for the patch.

Pod::Simple::XHTML now properly encodes entities in URLs in the anchor tag. Thanks to John McNamara for the report (RT-60249).

Pod::Simple::HTML and XHTML now strip whitespace from the end of section names that appear as anchor names for headers (in HTML) and IDs (in XHTML). Such whitespace appeared when "X<>" entities were stripped out but not the space between them (RT-56572).

Make test "t/search50.t" always pass on case-insensitive file systems rather than just skip VMS.

2009-04-27

* Release 3.14

Removed explicit loading of UNIVERSAL. RJBS.

Reversed the change applied in release 3.09 to fix RT #12239. POD tag found inside a complex POD tag (e.g., "C<<< I<foo> >>>") is again parsed as a tag embedded in a tag instead of text and entities. The previous interpretation of `perldoc perlpod` was mistaken. (RT #55602 from Christopher J. Madsen).

2009-12-17 David E. Wheeler <david@justatheory.org>

* Release 3.13

Removed deleted test file from MANIFEST.

2009-12-17 David E. Wheeler <david@justatheory.org>

* Release 3.12

Removed "All rights reserved" from all files.

Added acknowledgements to man.he.net and search.cpan.org for permission to link man pages and Perl module links to their sites in the output of Pod::Simple::HTML and Pod::Simple::XHTML.

Add "html_h_level" option to Pod::Simple::XHTML and ::HTML to allow a =head1 to become an <h2> and so on. RJBS.

Add batch_mode_page_object_init() method to Pod::Simple::XHTML. This allows it to be used by Pod::Simple::HTMLBatch.

Fixed a regression in Pod::Simple::XHTML where '=begin html' blocks were incorrectly escaped rather than simply passed through unmolested. RJBS.

Removed the undocumented "fullstop_space_harden" attribute, which apparently was only used by Pod::Text a very long time ago.

2009-12-09 David E. Wheeler <david@justatheory.org>

* Release 3.11

Restored code to HTMLBatch that allows the TOC (index) to be created in batch jobs (RT #52324 from Martin J. Evans).

Added resources to META.yml, including bug tracker, license, and repository.

Turned man page links into links to man.he.net in Pod::Simple::HTML and Pod::Simple::XHTML output. Subclass and override resolve_man_page_link() to use a different URL.

Added the resolve_pod_page_link() and resolve_man_page_link() methods to Pod::Simple::XHTML to make it easier for subclasses to change the URLs created for POD and man page links.

Fixed the output of entities in L<> tags by Pod::Simple::XHTML.

Fixed the output of POD links from Pod::Simple::XHTML so that the section part (/foo) is

turned into a proper fragment identifier (#foo)
in the resulting search.cpan.org link.

Pod::Simple::Text now outputs URLs for links created in the
L<text|URL> format. For example, L<Perl|http://perl.org> is now
output as "Perl <http://perl.org>" rather than just as "Perl".

Updated perlpod.pod and perlpodspec.pod to sync up with Perl core
(and to be released in Perl 5.12). Changes include:

- * Removing the prohibition against L<text|href>
- * Deprecation of L<section> and L<"section">
- * Legalization of "=begin formatname parameter"

A couple of bug fixes in Pod::Simple::HTML from Graham Barr.

Added the do_section() method to Pod::Simple::HTML. Graham Barr.

Word-smithed the "DESCRIPTION" a bit and wrote the README.

Synced up all module version numbers to 3.11 except for
Pod::Simple::HTMLLegacy, which is at 5.01 and should not have its
version number lowered.

2009-11-12 David E. Wheeler <david@justatheory.org>

* Release 3.10

Converted test files that had DOS endings
to have Unix endings
(RT #50922 from Steve Hay).

Skip tests on VMS where the lack of filename case preservation can
wreak havoc (RT #51184 from Craig A. Berry).

Fix nested definition list format in the XHTML output
(RT #51187 from Lars D).

Added some files missing from the MANIFEST (and therefore the
distribution) in the last two releases.

2009-10-27 Allison Randal <allison@perl.org>

* Release 3.09

Add support for an index (TOC) in the XHTML output from David E.
Wheeler.

Add strip_verbatim_indent() from David E. Wheeler.

Added the "nocase" option to PullParser's get_title(),

get_version(), get_description(), and get_author() methods. This allows one to fetch the contents of those sections regardless of the case of the labels (e.g., "NAME" and "Name" and "name" are all valid). Graham Barr.

Added the search_class() accessor to Pod::Simple::HTMLBatch.
David E. Wheeler.

XHTML output now properly encodes entities in all places, not just in verbatim blocks and code spans. David E. Wheeler.

Fixed XHTML to output definition lists when it should, rather than (broken) unordered lists. David E. Wheeler.

Fixed XHTML so that multiparagraph list items work correctly.
David E. Wheeler.

Fixed XHTML ordered list output so that it does not include the number specified in the POD in the output. This is on a par with out the HTML output works. David E. Wheeler.

Applied URL patch from Leon Brocard for The Perl Journal archives.

Fixed test failures with older versions of HTML::Entities (RT #43903 from Salvador Tercia).

Changed CSS files generated by HTMLBatch to be no more than 8.3 characters long. (RT #40450 from Renee Baecker)

Added entity handling for E<sol> and E<verbar> to Pod::Simple::XHTML. (RT #49615 from Chas Owens.)

Fixed a bug in Pod::Simple::HTML where a definition term item with no corresponding definition item would be output with no closing </dt>. (RT # 37107 from Kevin Ryde).

Added entity handling for numeric entities to Pod::Simple::XHTML, following perlpod specification.

A POD tag found inside a complex POD tag (e.g., "C<<< C<foo> >>>") is now properly parsed as text and entities instead of a tag embedded in a tag. This is in compliance with `perldoc perlpod` (RT #12239 from Michael Schwern).

Thanks to David E. Wheeler for applying patches, resolving bugs, and generally getting ready for the release.

2009-07-16 Allison Randal <allison@perl.org>

* Release 3.08

Fix installdirs for Perl versions where Pod::Simple was core;
RT#36446 & RT#39709, thanks to Jerry Hedden.

Fix encoding handling for code in paragraphs; RT#45829, thanks
to David Wheeler.

2008-06-04 Allison Randal <allison@perl.org>

* Release 3.07

Fix module dependencies, make HTML::Entities optional and require
Test::More.

2008-06-03 Allison Randal <allison@perl.org>

* Release 3.06

Fix bugs related to passing \$1 to File::Spec, reported by Andrew Hamlin and
John McNamara.

Applied a suggested
fix from Kevin Ryde to return a successful exit
code when Pod::Simple::HTML is run from the command line.

Fix handling of complex L<URL> entries, thanks to tests supplied in RT#4896.

Fix incorrect handling of S<> entries made up of entirely whitespace, thanks
to test case from Andreas Koenig.

Launch Pod::Simple::XHTML, an XHTML compliant, more easily extensible
HTML formatter.

Add feature to parse additional text after =begin target as a block
title, requested by Adam Kennedy.

Thanks to Hans Dieter Pearcey for applying patches, resolving bugs,
and generally getting ready for the release.

2007-03-03 Allison Randal <allison@perl.org>

* Release 3.05

Standardized all test files on 8.3 naming scheme for Perl core.

Applied test patches from Jerry Hedden for Perl core when
Encode not installed.

Applied test patch from Ken Williams for 5.005_04 compatibility.

Applied a patch from Christopher Madsen to fix architecture directory searches on Gentoo.

Fixed a failing search test on Debian-based distributions caused by Debian stripping Pod documentation out of core modules. (Three cheers to the CPAN testers and James Ponza for sending enough reports that I could work out the pattern.)

2006-01-18 Allison Randal <allison@perl.org>
* Release 3.04

Applied test patches for Perl core integration from Steve Peters.

Added a 'reinit' method to Pod::Simple::BlackBox for Russ Allbery so Pod::Man can provide backward compatibility to existing users (such as Module::Build and ExtUtils::MakeMaker).

Applied patch for extracting case-preserved package names on VMS from Craig Berry.

2005-11-21 Allison Randal <allison@perl.org>
* Release 3.03

Applied whitespace patches for Pod::Man and Pod::Text from Russ Allbery.

Applied validation patches to Pod::Simple::HTML from Graham Barr.

2004-05-24 Sean M. Burke <sburke@cpan.org>
* Release 3.02

Just fixing some typos in the CSS generated by Pod::Simple::HTMLBatch.

2004-05-24 Sean M. Burke <sburke@cpan.org>
*
Release 3.01

No big changes to the main modules, but there's many changes to the important Pod::Simple::HTML module.

Also, new modules:

Pod::Simple::HTMLBatch
Pod::Simple::HTMLLegacy
Pod::Simple::Progress
Pod::Simple::Search

and tests for these (well, most).

Some prettying up of the Makefile.PL.

The test 00about.t is a bit more careful and verbose now.

The docs are still incomplete, esp. for Pod::Simple::HTML and Pod::Simple::HTMLBatch, which I hope to improve quite soon.

2004-05-07 Sean M. Burke <sburke@cpan.org>
* Release 2.06

Allison Randal brilliantly refactors a huge monolithic sub in Blackbox.pm. Code is now actually sanely readable!

I add the new option-attributes fullstop_space_harden and codes_in_verbatim, and the two methods abandon_output_string and abandon_output_fh. Not yet documented.

New test fullstop_spaces.t and new corpus document greek_iso_8859_7.pod.

Another version should be forthcoming in a few days that has the new Pod::Simple::HTML stuff in it.

Note to self: document =extend and =encoding in perlpodspec ASAP!

2003-11-04 Sean M. Burke <sburke@cpan.org>
* Release 2.05 -- bugfix version

In an attempt to stop Perl 5.6 versions from going completely crazy, I've tried to basically turn off all Unicode/utf8 support under 5.6. Under 5.8 and above, Unicode should work fine, and under 5.6, all Unicode characters should be replaced with a little "can't render" symbol, either a "␣" or a "?".

Many many thanks to Jarkko Hietaniemi for helping out.

(Works under 5.005 now too?)

2003-10-10 Sean M. Burke <sburke@cpan.org>
* Release 2.04 -- minor bugfix version

* Added some code to insulate Pod::Simple to runtime changes in the value of \$/. Thanks to Iain Truskett for catching this.

* Added FILENO method to TiedOutFH.pm, to work quietly under some perls. Thanks to Jochen Stenzel for catching this.
* Fixed some tests that erroneously failed under some 5.6's because of chdir(s) in *.t files messing up @INC Thanks to many who caught this, including Rocco Caputo.

2003-09-07 Sean M. Burke <sburke@cpan.org>

* Release 2.03 -- minor upgrade
* A =head[1234] command now closes any currently open =over, and warns.
* Fixing a few obscure bugs, including one to do with the Makefile.
* Added some tests for those bugs.

2003-09-02 Sean M. Burke <sburke@cpan.org>

* Release 2.02 -- fixing a testing bug
* Autrijus Tang found a silly bug of mine in corpustest.t's testing of corpus/t/nonesuch.txt. Fixed,
* I add encoding_nonesuch.t to test corpus/t/nonesuch.txt better.

2003-09-01 Sean M. Burke <sburke@cpan.org>

* Release 2.01
* Moved all version numbers up to 2.01 for reasons of Tibetan numerology.

* Implemented =encoding. Thanks a million to Jarkko, Autrijus, Dan Kogai, and many others for their help, patience, and encouragement.

It's not yet documented, but see ./t/corpus/*.txt for examples at least.

* Added 'use utf8' to all the modules. Byebye perl-5.005 compatibility, hello decent perl-5.6 compatibility.

2003-09-01 Sean M. Burke <sburke@cpan.org>

* Release 0.98
* At Michael Schwern's suggestion, a list that begins with a "=item [number]" line where number isn't a 1, is no longer treated as an error, but instead is silently coerced into being a text-item list, just as if it were "=item wubble" or whatever.

2003-08-12 Sean M. Burke <sburke@cpan.org>

- * Release 0.97
- * Looking goooooood. Not smelling so much like beta anymore!
- * I think this might be the last version before I go putting "use utf8" all over the place.

- * Added placeholders for "=encoding" support. If you use "=encoding", you'll get an error about "not yet implemented" instead of "unknown directive".

- * Rewrote Pod::Simple::PullParser's get_title, and added get_version, get_author, and get_description. Documented them. Thanks to Graham Barr for contributing an initial get_title and then being patient while I seemed to do nothing with it for months on end!

- * More tests.

Otherwise just minor changes since last version:

- * Fixed error in Pod::Simple::RTF.
- * Added new but undocumented methods to Pod::Simple:
 - unaccept_directive(s) unaccept_target(s) unaccept_code(s)
- * Corrected '=back without =open' error to '=back without =over'
- * A little tweaking to the _verbatim_format code.
- * Dump routines may use \x{NN} instead of \xNN format.
- * Pod::Simple::HTML now uses VerbatimFormatted
- * A few changes of DEBUG messages -- nothing you'd normally see.

2002-11-19 Sean M. Burke <sburke@cpan.org>

- * Release 0.96
- * Still kinda sorta beta.

- * Much much more docs in this version. Only a few feature changes:

- * Added any_errata_seen to Pod::Simple. Should've been in there ages ago. Oops!
- * Fixed some errors in the experimental VerbatimFormatted code.
- * Added is_tagname / is_tag to Pod::Simple::PullParserStartToken and Pod::Simple::PullParserEndToken
- * Added RTFDEFLANG stuff to Pod::Simple::RTF.

2002-11-10 Sean M. Burke <sburke@cpan.org>

- * Release 0.95
- * Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

* Now including perlpod and perlpodspec in the dist.

* Pod::Simple -- added parse_from_file

* Pod::Simple::RTF -- minor style changes, and minor change to the RTF-wrapping logic.

* Pod::Simple::BlackBox -- a =cut opening a block is no longer a fatal(ish) error.

* Pod::Simple::BlackBox -- added experimental new VerbatimFormatted stuff.

2002-10-16 Sean M. Burke <sburke@cpan.org>

* Release 0.94

* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

* Pod::Simple::RTF -- minor style tweaks

* Pod::Simple::PullParserEndToken and ::PullParserStartToken -- added ->tag as an alias for ->tagname.

* Pod::Simple and Pod::Simple::BlackBox -- added tolerance for

"=item * Foo" as a variant syntax for "=item *\n\nFoo". Tests added/changed accordingly.

* Pod::Simple::HTML -- added stuff, and a hack at doing something with X<...>'s.

2002-09-29 Sean M. Burke <sburke@cpan.org>

* Release 0.93

* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

* Pod::Simple -- added errors_seen attribute

* Pod::Simple::HTML -- added support for =for HTML ... directives, and =extend directives.

* Oh, and I added Pod::Simple::RTF in 0.92 but forgot to note it until now.

2002-09-29 Sean M. Burke <sburke@cpan.org>

* Release 0.92

* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

* Fixing bungled distribution.

2002-09-29 Sean M. Burke <sburke@cpan.org>

* Release 0.91

* Beta release. Much documentation still to write, many features

still to

add. The APIs might change in future versions.

* Pod::Simple::PullParserTextToken -- added 'text_r'

* Pod::Simple::PullParser -- added 'get_title' and 'get_title_short' to

* Pod::Simple -- corrected wording of "Format for second =extend parameter" error message.

* Pod::PullParser -- made its filter() run as intended, like Pod::Simple's filter.

* Pod::Subclassing -- more docs

2002-09-11 Sean M. Burke <sburke@cpan.org>

* Release 0.90

* Beta release. Much documentation still to write, many features still to add. The APIs might change in future versions.

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/ChangeLog
No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::HTMLBatch - convert several Pod files to several HTML files

=head1 SYNOPSIS

```
perl -MPod::Simple::HTMLBatch -e 'Pod::Simple::HTMLBatch::go' in out
```

=head1 DESCRIPTION

This module is used for running batch-conversions of a lot of HTML documents

This class is NOT a subclass of Pod::Simple::HTML (nor of bad old Pod::Html) -- although it uses Pod::Simple::HTML for doing the conversion of each document.

The normal use of this class is like so:

```
use Pod::Simple::HTMLBatch;  
my $batchconv = Pod::Simple::HTMLBatch->new;
```

```
$batchconv->some_option( some_value );  
$batchconv->some_other_option( some_other_value );  
$batchconv->batch_convert( \@search_dirs, $output_dir );
```

=head2 FROM THE COMMAND LINE

Note that this class also provides
(but does not export) the function `Pod::Simple::HTMLBatch::go`.
This is basically just a shortcut for `C<<`
`Pod::Simple::HTMLBatch->batch_convert(@ARGV) >>`.
It's
meant to be handy for calling from the command line.

However, the shortcut requires that you specify exactly two command-line
arguments, `C<indirs>` and `C<outdir>`.

Example:

```
% mkdir out_html  
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go @INC out_html  
  (to convert the pod from Perl's @INC  
  files under the directory ./out_html)
```

(Note that the command line there contains a literal `atsign-I-N-C`. This
is handled as a special case by `batch_convert`, in order to save you having
to enter the odd-looking `""` as the first command-line parameter when you
mean "just use whatever's in `@INC`".)

Example:

```
% mkdir ../seekrut  
% chmod og-rx ../seekrut  
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go . ../seekrut  
  (to convert the pod under the current dir into HTML  
  files under the directory ./seekrut)
```

Example:

```
% perl -MPod::Simple::HTMLBatch -e Pod::Simple::HTMLBatch::go happydocs .  
  (to convert all pod from happydocs into the current  
  directory)
```

=head1 MAIN METHODS

=over

```
=item $batchconv = Pod::Simple::HTMLBatch->new;
```

This TODO

```
=item $batchconv->batch_convert( I<indirs>, I<outdir> );
```

this TODO

```
=item $batchconv->batch_convert( undef , ...);
```

```
=item $batchconv->batch_convert( q{ @INC}, ...);
```

These two values for I<indirs> specify that the normal Perl @INC

```
=item $batchconv->batch_convert( \@dirs , ...);
```

This specifies that the input directories are the items in the arrayref C<\@dirs>.

```
=item $batchconv->batch_convert( "somedir" , ...);
```

This specifies that the director "somedir" is the input. (This can be an absolute or relative path, it doesn't matter.)

A common value you might want would be just "." for the current directory:

```
    $batchconv->batch_convert( ".", ...);
```

```
=item $batchconv->batch_convert( 'somedir:someother:also' , ...);
```

This specifies that you want the dirs "somedir", "someother", and "also" scanned, just as if you'd passed the arrayref C<[qw(somedir someother also)]>. Note that a ":"-separator is normal under Unix, but Under MSWin, you'll need C<'somedir;someother;also'> instead, since the pathsep on MSWin is ";" instead of ":". (And I<that> is because ":" often comes up in paths, like C<"c:/perl/lib">.)

(Exactly what separator character should be used, is gotten from C<\$Config::Config{'path_sep'}>, via the L<Config> module.)

```
=item $batchconv->batch_convert( ... , undef );
```

This specifies that you want the HTML output to go into the current

directory.

(Note that a missing or undefined value means a different thing in the first slot than in the second. That's so that `C->batch_convert()` with no arguments (or undef arguments) means "go from @INC, into the current directory.")

```
=item $batchconv->batch_convert( ... , 'somedir' );
```

This specifies that you want the HTML output to go into the directory 'somedir'.

(This can be an absolute or relative path, it doesn't matter.)

```
=back
```

Note that you can also call `C->batch_convert` as a class method, like so:

```
Pod::Simple::HTMLBatch->batch_convert(
... );
```

That is just short for this:

```
Pod::Simple::HTMLBatch->new->batch_convert(...);
```

That is, it runs a conversion with default options, for whatever inputdirs and output dir you specify.

```
=head2 ACCESSOR METHODS
```

The following are all accessor methods -- that is, they don't do anything on their own, but just alter the contents of the conversion object, which comprises the options for this particular batch conversion.

We show the "put" form of the accessors below (i.e., the syntax you use for setting the accessor to a specific value). But you can also call each method with no parameters to get its current value. For example, `C->>contents_file()` returns the current value of the `contents_file` attribute.

```
=over
```

```
=item $batchconv->verbose( I<nonnegative_integer> );
```

This controls how verbose to be during batch conversion, as far as

notes to STDOUT (or whatever is C<select>'d) about how the conversion is going. If 0, no progress information is printed.
If 1 (the default value), some progress information is printed.
Higher values print more information.

```
=item $batchconv->index( I<true-or-false> );
```

This controls whether or not each HTML page is liable to have a little table of contents at the top (which we call an "index" for historical reasons). This is true by default.

```
=item $batchconv->contents_file( I<filename> );
```

If set, should be the name of a file (in the output directory) to write the HTML index to. The default value is "index.html".
If you set this to a false value, no contents file will be written.

```
=item $batchconv->contents_page_start( I<HTML_string> );
```

This specifies what string should be put at the beginning of the contents page.

The default is a string more or less like this:

```
<html>
<head><title>Perl Documentation</title></head>
<body class='contentspage'>
<h1>Perl Documentation</h1>
```

```
=item $batchconv->contents_page_end( I<HTML_string> );
```

This specifies what string should be put at the end of the contents page.

The default is a string more or less like this:

```
<p class='contentsfooty'>Generated by
Pod::Simple::HTMLBatch v3.01 under Perl v5.008
<br>At Fri May 14 22:26:42 2004 GMT,
which is Fri May 14 14:26:42 2004 local time.</p>
```

```
=item $batchconv->add_css( $url );
```

TODO

```
=item $batchconv->add_javascript( $url );
```

TODO

```
=item $batchconv->css_flurry( I<true-or-false> );
```

If true (the default value), we autogenerate some CSS files in the output directory, and set our HTML files to use those.

TODO: continue

```
=item $batchconv->javascript_flurry( I<true-or-false> );
```

If true (the default value), we autogenerate a JavaScript in the output directory, and set our HTML files to use it. Currently, the JavaScript is used only to get the browser to remember what stylesheet it prefers.

TODO: continue

```
=item $batchconv->no_contents_links( I<true-or-false> );
```

TODO

```
=item $batchconv->html_render_class( I<classname> );
```

This sets what class is used for rendering the files.

The

default is "Pod::Simple::HTML". If you set it to something else, it should probably be a subclass of Pod::Simple::HTML, and you should C<require> or C<use> that class so that's it's loaded before Pod::Simple::HTMLBatch tries loading it.

```
=item $batchconv->search_class( I<classname> );
```

This sets what class is used for searching for the files.

The default is "Pod::Simple::Search". If you set it to something else, it should probably be a subclass of Pod::Simple::Search, and you should C<require> or C<use> that class so that's it's loaded before Pod::Simple::HTMLBatch tries loading it.

```
=back
```

```
=head1 NOTES ON CUSTOMIZATION
```

TODO

call `add_css($someurl)` to add stylesheet as alternate
call `add_css($someurl,1)` to add as primary stylesheet

call `add_javascript`

subclass `Pod::Simple::HTML` and set `$batchconv->html_render_class` to
that classname
and maybe override
`$page->batch_mode_page_object_init($self, $module, $infile, $outfile, $depth)`
or maybe override

`$batchconv->batch_mode_page_object_init($page, $module, $infile, $outfile, $depth)`
subclass `Pod::Simple::Search` and set `$batchconv->search_class` to
that classname

=head1 ASK ME!

If you want to do some kind of big pod-to-HTML version with some particular kind of option that you don't see how to achieve using this module, email me (C<sburke@cpan.org>) and I'll probably have a good idea how to do it. For reasons of concision and energetic laziness, some methods and options in this module (and the dozen modules it depends on) are undocumented; but one of those undocumented bits might be just what you're looking for.

=head1 SEE ALSO

[L<Pod::Simple>](#), [L<Pod::Simple::HTMLBatch>](#), [L<perlpod>](#), [L<perlpodspec>](#)

=head1 SUPPORT

Questions or discussion about POD and `Pod::Simple` should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository,
[L<https://github.com/theory/pod-simple/>](https://github.com/theory/pod-simple/).

Feel free to fork and contribute, or
to clone [L<git://github.com/theory/pod-simple.git>](https://github.com/theory/pod-simple.git) and send patches!

Patches against `Pod::Simple` are welcome. Please send bug reports to
[<bug-pod-simple@rt.cpan.org>](mailto:bug-pod-simple@rt.cpan.org).

=head1 COPYRIGHT AND DISCLAIMERS

Copyright (c) 2002 Sean M. Burke.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but without any warranty; without even the implied warranty of merchantability or fitness for a particular purpose.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>. But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-3.28/lib/Pod/Simple/HTMLBatch.pm

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=head1 NAME

Pod::Simple::PullParser -- a pull-parser interface to parsing Pod

=head1 SYNOPSIS

```
my $parser = SomePodProcessor->new;  
$parser->set_source( "whatever.pod" );  
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( $some_filehandle_object );
```

```
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( \ $document_source );  
$parser->run;
```

Or:

```
my $parser = SomePodProcessor->new;  
$parser->set_source( \@document_lines );  
$parser->run;
```

And elsewhere:

```
require 5;  
package SomePodProcessor;  
use strict;  
use base qw(Pod::Simple::PullParser);  
  
sub run {  
    my $self = shift;  
    Token:  
    while(my $token = $self->get_token) {  
        ...process each token...  
    }  
}
```

=head1 DESCRIPTION

This class is for using Pod::Simple to build a Pod processor -- but one that uses an interface based on a stream of token objects, instead of based on events.

This is a subclass of L<Pod::Simple>
and inherits all its methods.

A subclass of Pod::Simple::PullParser should define a C<run> method that calls C<< \$token = \$parser->get_token >> to pull tokens.

See the source for Pod::Simple::RTF for an example of a formatter that uses Pod::Simple::PullParser.

=head1 METHODS

=over

=item my \$token = \$parser->get_token

This returns the next token object (which will be of a subclass of L<Pod::Simple::PullParserToken>), or undef if the parser-stream has hit the end of the document.

=item \$parser->unget_token(\$token)

=item \$parser->unget_token(\$token1, \$token2, ...)

This restores the token object(s) to the front of the parser stream.

=back

The source has to be set before you can parse anything. The lowest-level way is to call C<set_source>:

=over

=item \$parser->set_source(\$filename)

=item \$parser->set_source(\$filehandle_object)

=item \$parser->set_source(\document_source)

=item \$parser->set_source(\@document_lines)

=back

Or you can call these methods,
which Pod::Simple::PullParser has defined
to work just like Pod::Simple's same-named methods:

=over

=item \$parser->parse_file(...)

=item \$parser->parse_string_document(...)

=item \$parser->filter(...)

=item \$parser->parse_from_file(...)

=back

For those to work, the Pod-processing subclass of Pod::Simple::PullParser has to have defined a \$parser->run method -- so it is advised that all Pod::Simple::PullParser subclasses do so.

See the Synopsis above, or the source for Pod::Simple::RTF.

Authors of formatter subclasses might find these methods useful to call on a parser object that you haven't started pulling tokens from yet:

```
=over
```

```
=item my $title_string = $parser->get_title
```

This tries to get the title string out of \$parser, by getting some tokens, and scanning them for the title, and then ungetting them so that you can process the token-stream from the beginning.

For example, suppose you have a document that starts out:

```
=head1 NAME
```

```
Hoo::Boy::Wowza -- Stuff B<wow> yeah!
```

\$parser->get_title on that document will return "Hoo::Boy::Wowza -- Stuff wow yeah!". If the document starts with:

```
=head1 Name
```

```
Hoo::Boy::W00t -- Stuff B<w00t> yeah!
```

Then you'll need to pass the C<nocase> option in order to recognize "Name":

```
$parser->get_title(nocase => 1);
```

In cases where get_title can't find the title, it will return empty-string ("").

```
=item my $title_string = $parser->get_short_title
```

This is just like get_title, except that it returns just the modulename, if the title seems to be of the form "SomeModuleName -- description".

For example, suppose you have a document that starts out:

```
=head1 NAME
```

```
Hoo::Boy::Wowza -- Stuff B<wow> yeah!
```

then \$parser->get_short_title on that document will return "Hoo::Boy::Wowza".

But if the document starts out:

```
=head1 NAME
```

Hooboy, stuff B<wow> yeah!

then `$parser->get_short_title` on that document will return "Hooboy, stuff wow yeah!". If the document starts with:

```
=head1 Name
```

```
Hoo::Boy::W00t -- Stuff B<w00t>
yeah!
```

Then you'll need to pass the `C<nocase>` option in order to recognize "Name":

```
$parser->get_short_title(nocase => 1);
```

If the title can't be found, then `get_short_title` returns empty-string ("").

```
=item $author_name = $parser->get_author
```

This works like `get_title` except that it returns the contents of the "`=head1 AUTHOR\n\nParagraph...\n`" section, assuming that that section isn't terribly long. To recognize a "`=head1 Author\n\nParagraph\n`" section, pass the `C<nocase>` option:

```
$parser->get_author(nocase => 1);
```

(This method tolerates "AUTHORS" instead of "AUTHOR" too.)

```
=item $description_name = $parser->get_description
```

This works like `get_title` except that it returns the contents of the "`=head1 DESCRIPTION\n\nParagraph...\n`" section, assuming that that section isn't terribly long. To recognize a "`=head1 Description\n\nParagraph\n`" section, pass the `C<nocase>` option:

```
$parser->get_description(nocase => 1);
```

```
=item $version_block = $parser->get_version
```

This works like

`get_title` except that it returns the contents of the "`=head1 VERSION\n\n[BIG BLOCK]\n`" block. Note that this does NOT return the module's `C<$VERSION>!!` To recognize a

"=head1 Version\n\n[BIG BLOCK]\n" section, pass the C<nocase> option:

```
$parser->get_version(nocase => 1);
```

=back

=head1 NOTE

You don't actually I<have> to define a C<run> method. If you're writing a Pod-formatter class, you should define a C<run> just so that users can call C<parse_file> etc, but you don't I<have> to.

And if you're not writing a formatter class, but are instead just writing a program that does something simple with a Pod::PullParser object (and not an object of a subclass), then there's no reason to bother subclassing to add a C<run> method.

=head1 SEE ALSO

L<Pod::Simple>

L<Pod::Simple::PullParserToken> -- and its subclasses

L<Pod::Simple::PullParserStartToken>,

L<Pod::Simple::PullParserTextToken>, and

L<Pod::Simple::PullParserEndToken>.

L<HTML::TokeParser>, which inspired this.

=head1 SUPPORT

Questions

or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

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Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

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=head1 AUTHOR

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Randal C<allison@perl.org>

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=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

JUNK:

```
sub _old_get_title { # some witchery in here
my $self = $_[0];
my $title;
my @to_unget;

while(1) {
push @to_unget, $self->get_token;
unless(defined $to_unget[-1]) { # whoops, short doc!
pop @to_unget;
last;
}

DEBUG and print "-Got token ", $to_unget[-1]->dump, "\n";

(DEBUG and print "Too much in the buffer.\n"),
last if @to_unget > 25; # sanity

my $pattern = ";
if( # $to_unget[-1]->type eq 'end'
#and $to_unget[-1]->tagname eq 'Para'
#and
```

```

($pattern = join(
  map {
    ($_->type eq 'start') ? ("<" . $_->tagname . ">")
    : ($_->type eq 'end' ) ? ("</" . $_->tagname . ">")
    : ($_->type eq 'text' ) ? ($_->text =~ m<^[A-Z]+>$>s ? $1 : 'X')
    : "BLORP"
  } @to_unget
)) =~ m{<head1>NAME</head1><Para>(X|</?[BCIFLS]>)+</Para>$}s
) {
  # Whee, it fits the pattern
  DEBUG and print "Seems to match =head1 NAME pattern.\n";
  $title = "";
  foreach my $t (reverse @to_unget) {
    last if $t->type eq 'start' and $t->tagname eq 'Para';
    $title = $t->text . $title if $t->type eq 'text';
  }
  undef $title if $title =~ m<^\s*$>; # make sure it's contentful!
  last;

} elsif ($pattern =~ m{<head(\d)>(.)</head\d>$}
and !( $1 eq '1' and $2 eq 'NAME' )
) {
  # Well, it fits a fallback pattern
  DEBUG and print "Seems to match NAMEless pattern.\n";
  $title = "";
  foreach my $t (reverse @to_unget) {
    last if $t->type eq 'start' and $t->tagname =~ m/^head\d$/s;
    $title = $t->text . $title if $t->type eq 'text';
  }
  undef $title if $title =~ m<^\s*$>; # make sure it's contentful!
  last;

} else {
  DEBUG and $pattern and print "Leading pattern: $pattern\n";
}
}

# Put it all back:
$self->unget_token(@to_unget);

if(DEBUG) {
  if(defined $title) { print " Returning title <$title>\n" }
  else { print "Returning title <>\n" }
}

return " unless defined $title;
return $title;
}

```

Found in path(s):

```
* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/PullParser.pm
```

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=head1 NAME

Pod::Simple::HTML - convert Pod to HTML

=head1 SYNOPSIS

```
perl -MPod::Simple::HTML -e Pod::Simple::HTML::go thingy.pod
```

=head1 DESCRIPTION

This class is for making an HTML rendering of a Pod document.

This is a subclass of L<Pod::Simple::PullParser> and inherits all its methods (and options).

Note that if you want to do a batch conversion of a lot of Pod documents to HTML, you should see the module L<Pod::Simple::HTMLBatch>.

=head1 CALLING FROM THE COMMAND LINE

TODO

```
perl -MPod::Simple::HTML -e Pod::Simple::HTML::go Thing.pod Thing.html
```

=head1 CALLING FROM PERL

=head2 Minimal code

```
use Pod::Simple::HTML;
my $p = Pod::Simple::HTML->new;
$p->output_string(\my $html);
$p->parse_file('path/to/Module/Name.pm');
open my $out, '>', 'out.html' or die "Cannot open 'out.html': $!\n";
print $out $html;
```

=head2 More detailed example

```
use Pod::Simple::HTML;
```

Set the content type:

```
$Pod::Simple::HTML::Content_decl  
= q{<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" >};
```

```
my $p = Pod::Simple::HTML->new;
```

Include a single javascript source:

```
$p->html_javascript('http://abc.com/a.js');
```

Or insert multiple javascript source in the header
(or for that matter include anything, though this is not recommended)

```
$p->html_javascript(  
  <script type="text/javascript" src="http://abc.com/b.js"></script>  
  <script type="text/javascript" src="http://abc.com/c.js"></script>');
```

Include a single css source in the header:

```
$p->html_css('/style.css');
```

or insert multiple css sources:

```
$p->html_css(  
  <link rel="stylesheet" type="text/css" title="pod_stylesheet" href="http://remote.server.com/jquery.css">  
  <link rel="stylesheet" type="text/css" title="pod_stylesheet" href="/style.css">);
```

Tell the parser where should the output go. In this case it will be placed in the \$html variable:

```
my $html;  
$p->output_string(\$html);
```

Parse and
process a file with pod in it:

```
$p->parse_file('path/to/Module/Name.pm');
```

=head1 METHODS

TODO

all (most?) accessorized methods

The following variables need to be set B<before> the call to the ->new constructor.

Set the string that is included before the opening <html> tag:

```
$Pod::Simple::HTML::Doctype_decl = qq{<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01  
Transitional//EN"  
"http://www.w3.org/TR/html4/loose.dtd">\n};
```

Set the content-type in the HTML head: (defaults to ISO-8859-1)

```
$Pod::Simple::HTML::Content_decl = q{<meta http-equiv="Content-Type" content="text/html; charset=UTF-8"  
>};
```

Set the value that will be ebedded in the opening tags of F, C tags and verbatim text.

F maps to , C maps to <code>, Verbatim text maps to <pre> (Computerese defaults to "")

```
$Pod::Simple::HTML::Computerese = ' class="some_class_name";
```

```
=head2 html_css
```

```
=head2 html_javascript
```

```
=head2 title_prefix
```

```
=head2 title_postfix
```

```
=head2 html_header_before_title
```

This includes everything before

the <title> opening tag including the Document type

and including the opening <title> tag. The following call will set it to be a simple HTML file:

```
$p->html_header_before_title('<html><head><title>');
```

```
=head2 html_h_level
```

Normally =head1 will become <h1>, =head2 will become <h2> etc.

Using the html_h_level method will change these levels setting the h level of =head1 tags:

```
$p->html_h_level(3);
```

Will make sure that =head1 will become <h3> and =head2 will become <h4> etc...

```
=head2 index
```

Set it to some true value if you want to have an index (in reality a table of contents) to be added at the top of the generated HTML.

```
$p->index(1);
```

```
=head2 html_header_after_title
```

Includes the closing tag of </title> and through the rest of the head till the opening of the body

```
$p->html_header_after_title('</title>...</head><body id="my_id">');
```

```
=head2 html_footer
```

The very end of the document:

```
$p->html_footer( qq[\n<!-- end doc -->\n\n</body></html>\n] );
```

```
=head1 SUBCLASSING
```

Can

use any of the methods described above but for further customization one needs to override some of the methods:

```
package My::Pod;
```

```
use strict;
```

```
use warnings;
```

```
use base 'Pod::Simple::HTML';
```

```
# needs to return a URL string such
```

```
# http://some.other.com/page.html
```

```
# #anchor_in_the_same_file
```

```
# /internal/ref.html
```

```
sub do_pod_link {
```

```
    # My::Pod object and Pod::Simple::PullParserStartToken object
```

```
    my ($self, $link) = @_;
```

```
    say $link->tagname;      # will be L for links
```

```
    say $link->attr('to');   #
```

```
    say $link->attr('type'); # will be 'pod' always
```

```
    say $link->attr('section');
```

```
# Links local to our web site
```

```
if ($link->tagname eq 'L' and $link->attr('type') eq 'pod') {
```

```
    my $to = $link->attr('to');
```

```
    if ($to =~ /^Padre::/) {
```

```
        $to =~ s{::}{/}g;
```

```
        return "/docs/Padre/$to.html";
```

```
    }
```



```
}

# all other links are generated by the parent class
my $ret = $self->SUPER::do_pod_link($link);
return $ret;
}

1;
```

Meanwhile
in script.pl:

```
use My::Pod;

my $p = My::Pod->new;

my $html;
$p->output_string(\$html);
$p->parse_file('path/to/Module/Name.pm');
open my $out, '>', 'out.html' or die;
print $out $html;
```

TODO

maybe override do_beginning do_end

=head1 SEE ALSO

L<Pod::Simple>, L<Pod::Simple::HTMLBatch>

TODO: a corpus of sample Pod input and HTML output? Or common idioms?

=head1 SUPPORT

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open GitHub repository, L<<https://github.com/theory/pod-simple>>. Feel free to fork and contribute, or to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to <bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

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This library is free software; you can redistribute it
and/or modify it
under the same terms as Perl itself.

This program is distributed in the hope that it will be useful, but
without any warranty; without even the implied warranty of
merchantability or fitness for a particular purpose.

=head1 ACKNOWLEDGEMENTS

Thanks to L<Hurricane Electric|<http://he.net/>> for permission to use its
L<Linux man pages online|<http://man.he.net/>> site for man page links.

Thanks to L<search.cpan.org|<http://search.cpan.org/>> for permission to use the
site for Perl module links.

=head1 AUTHOR

Pod::Simple was created by Sean M. Burke <sburke@cpan.org>.
But don't bother him, he's retired.

Pod::Simple is maintained by:

=over

=item * Allison Randal C<allison@perl.org>

=item * Hans Dieter Pearcey C<hdp@cpan.org>

=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/HTML.pm

No license file was found, but licenses were detected in source scan.

abstract: 'framework for parsing Pod'

author:

- 'Allison Randal <allison@perl.org>'

build_requires:

ExtUtils::MakeMaker: 0
configure_requires:
ExtUtils::MakeMaker: 0
dynamic_config: 1
generated_by: 'ExtUtils::MakeMaker version 6.6302, CPAN::Meta::Converter version 2.120921'
license: perl
meta-spec:
url: <http://module-build.sourceforge.net/META-spec-v1.4.html>
version: 1.4
name: Pod-Simple
no_index:
directory:
- t
- inc
requires:
Carp: 0
Config: 0
Cwd: 0
File::Basename: 0
File::Find: 0
File::Spec: 0
Pod::Escapes: 1.04
Symbol: 0
Test: 1.25
Test::More: 0
Text::Wrap: 98.112902
constant: 0
integer: 0
overload: 0
strict: 0
resources:
homepage: <http://search.cpan.org/dist/Pod-Simple/>
license: <http://dev.perl.org/licenses/>
repository: <git://github.com/theory/pod-simple.git>
version: 3.28

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNfCW/Pod-Simple-3.28/META.yml
No license file was found, but licenses were detected in source scan.

=head1 NAME

Pod::Simple::RTF -- format Pod as RTF

=head1 SYNOPSIS

perl -MPod::Simple::RTF -e \

```
"exit Pod::Simple::RTF->filter(shift)->any_errata_seen" \  
thingy.pod > thingy.rtf
```

=head1 DESCRIPTION

This class is a formatter that takes Pod and renders it as RTF, good for viewing/printing in MSWord, WordPad/write.exe, TextEdit, etc.

This is a subclass of L<Pod::Simple> and inherits all its methods.

=head1 FORMAT CONTROL ATTRIBUTES

You can set these attributes on the parser object before you call C<parse_file> (or a similar method) on it:

=over

```
=item $parser->head1_halfpoint_size( I<halfpoint_integer> );
```

```
=item $parser->head2_halfpoint_size( I<halfpoint_integer> );
```

```
=item $parser->head3_halfpoint_size( I<halfpoint_integer> );
```

```
=item $parser->head4_halfpoint_size( I<halfpoint_integer> );
```

These methods set the size (in half-points, like 52 for 26-point) that these heading levels will appear as.

```
=item $parser->codeblock_halfpoint_size(  
I<halfpoint_integer> );
```

This method sets the size (in half-points, like 21 for 10.5-point) that codeblocks ("verbatim sections") will appear as.

```
=item $parser->header_halfpoint_size( I<halfpoint_integer> );
```

This method sets the size (in half-points, like 15 for 7.5-point) that the header on each page will appear in. The header is usually just "I<modulename> p. I<pagenumber>".

```
=item $parser->normal_halfpoint_size( I<halfpoint_integer> );
```

This method sets the size (in half-points, like 26 for 13-point) that normal paragraphic text will appear in.

```
=item $parser->no_proofing_exemptions( I<true_or_false> );
```

Set this value to true if you don't want the formatter to try

putting a hidden code on all Perl symbols (as best as it can notice them) that labels them as being not in English, and so not worth spellchecking.

```
=item $parser->doc_lang( I<microsoft_decimal_language_code> )
```

This sets the language code to tag this document as being in. By default, it is currently the value of the environment variable C<RTFDEFLANG>, or if that's not set, then the value 1033 (for US English).

Setting this appropriately is useful if you want to use the RTF to spellcheck, and/or if you want it to hyphenate right.

Here are some notable values:

- 1033 US English
- 2057 UK English
- 3081 Australia English
- 4105 Canada English
- 1034 Spain Spanish
- 2058 Mexico Spanish
- 1031 Germany German
- 1036 France French
- 3084 Canada French
- 1035 Finnish
- 1044 Norwegian (Bokmal)
- 2068 Norwegian (Nynorsk)

```
=back
```

If you are particularly interested in customizing this module's output even more, see the source and/or write to me.

```
=head1 SEE ALSO
```

L<Pod::Simple>, L<RTF::Writer>, L<RTF::Cookbook>, L<RTF::Document>, L<RTF::Generator>

```
=head1 SUPPORT
```

Questions or discussion about POD and Pod::Simple should be sent to the pod-people@perl.org mail list. Send an empty email to pod-people-subscribe@perl.org to subscribe.

This module is managed in an open

GitHub repository,
L<<https://github.com/theory/pod-simple/>>. Feel free to fork and contribute, or
to clone L<[git://github.com/theory/pod-simple.git](https://github.com/theory/pod-simple.git)> and send patches!

Patches against Pod::Simple are welcome. Please send bug reports to
<bug-pod-simple@rt.cpan.org>.

=head1 COPYRIGHT AND DISCLAIMERS

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merchantability or fitness for a particular purpose.

=head1 AUTHOR

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=item * David E. Wheeler C<dwheeler@cpan.org>

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955617_1678786391.3824205/0/perl-Pod-Simple-3.28-4.el7-1.src.rpm-cosi-expand-
archive-mqCFBGcS/Pod-Simple-3.28.tar.gz-cosi-expand-archive-EJVPNFcW/Pod-Simple-
3.28/lib/Pod/Simple/RTF.pm

1.287 perl-time-hires 1.9725-3.el7

1.287.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

```
* /opt/cola/permits/1592955609_1678946289.7826262/0/perl-Time-HiRes-1.9725-3.el7-1.src.rpm-cosi-expand-  
archive-zfFhtElZ/perl-Time-HiRes.spec
```

No license file was found, but licenses were detected in source scan.

```
/*
```

```
*
```

```
* Copyright (c) 1996-2002 Douglas E. Wegscheid. All rights reserved.
```

```
*
```

```
* Copyright (c) 2002-2010 Jarkko Hietaniemi.
```

```
* All rights reserved.
```

```
*
```

```
* Copyright (C) 2011, 2012 Andrew Main (Zefram) <zefram@fysh.org>
```

```
*
```

```
* This program is free software; you can redistribute it and/or modify
```

```
* it under the same terms as Perl itself.
```

```
*/
```

Found in path(s):

```
* /opt/cola/permits/1592955609_1678946289.7826262/0/perl-Time-HiRes-1.9725-3.el7-1.src.rpm-cosi-expand-  
archive-zfFhtElZ/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-qKyrLiTQ/Time-HiRes-1.9725/HiRes.xs
```

No license file was found, but licenses were detected in source scan.

Time::HiRes module: High resolution time, sleep, and alarm.

Implement usleep, ualarm, and gettimeofday for Perl, as well as wrappers to implement time, sleep, and alarm that know about non-integral seconds.

Note: the tests of this module are by definition time sensitive: under heavy loads the tests may fail. Reasonable relaxed criteria are being used for the tests but sometimes you may still see transient failures. Rerun the tests (make test) a couple of times, preferably with less load on the testing machine.

Also, older versions of Perl do not support '-nolinenumbers' on the XSUBPP command, however, 5.004_03 requires it (on my box, anyway) since the #line generating code in XSUBPP appears to have problems with #ifdef'd .xs code. If xsubpp complains about usage when you do a make, look at the top of the Makefile.PL and comment out the "\$XSOPT=" line. Or upgrade to a newer version of Perl.

POD documentation is embedded.

Copyright

(c) 1996, 1997, 1998, 1999, 2000, 2001, 2002 Douglas E. Wegscheid.

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Copyright (C) 2011, 2012 Andrew Main (Zefram) <zefram@fysh.org>

All rights reserved. This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1592955609_1678946289.7826262/0/perl-Time-HiRes-1.9725-3.el7-1.src.rpm-cosi-expand-
archive-zfFhtElZ/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-qKyrLiTQ/Time-HiRes-1.9725/README
No license file was found, but licenses were detected in source scan.
```

abstract: 'High resolution alarm, sleep, gettimeofday, interval timers'

author:

- 'Jarkko Hietaniemi <jhi@iki.fi>'

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.62, CPAN::Meta::Converter version 2.112621'

license: unknown

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Time-HiRes

no_index:

directory:

- t

- inc

requires:

Carp: 0

Config: 0

DynaLoader: 0

Exporter: 0

ExtUtils::MakeMaker: 0

Test::More: 0.82

strict: 0

version: 1.9725

Found in path(s):

```
* /opt/cola/permits/1592955609_1678946289.7826262/0/perl-Time-HiRes-1.9725-3.el7-1.src.rpm-cosi-expand-
archive-zfFhtElZ/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-qKyrLiTQ/Time-HiRes-1.9725/META.yml
```


No license file was found, but licenses were detected in source scan.

=head1 NAME

Time::HiRes - High resolution alarm, sleep, gettimeofday, interval timers

=head1 SYNOPSIS

```
use Time::HiRes qw( usleep ualarm gettimeofday tv_interval nanosleep
    clock_gettime clock_getres clock_nanosleep clock
        stat );

usleep ($microseconds);
nanosleep ($nanoseconds);

ualarm ($microseconds);
ualarm ($microseconds, $interval_microseconds);

$t0 = [gettimeofday];
($seconds, $microseconds) = gettimeofday;

$elapsed = tv_interval ( $t0, [$seconds, $microseconds]);
$elapsed = tv_interval ( $t0, [gettimeofday]);
$elapsed = tv_interval ( $t0 );

use Time::HiRes qw ( time alarm sleep );

$now_fractions = time;
sleep ($floating_seconds);
alarm ($floating_seconds);
alarm ($floating_seconds, $floating_interval);

use Time::HiRes qw( setitimer getitimer );

setitimer ($which, $floating_seconds, $floating_interval );
getitimer ($which);

use Time::HiRes
qw( clock_gettime clock_getres clock_nanosleep
    ITIMER_REAL ITIMER_VIRTUAL ITIMER_PROF ITIMER_REALPROF );

$realtime = clock_gettime(CLOCK_REALTIME);
$resolution = clock_getres(CLOCK_REALTIME);

clock_nanosleep(CLOCK_REALTIME, 1.5e9);
clock_nanosleep(CLOCK_REALTIME, time()*1e9 + 10e9, TIMER_ABSTIME);

my $sticktock = clock();
```

```
use Time::HiRes qw( stat );
```

```
my @stat = stat("file");
```

```
my @stat = stat(FH);
```

=head1 DESCRIPTION

The C<Time::HiRes> module implements a Perl interface to the C<usleep>, C<nanosleep>, C<ualarm>, C<gettimeofday>, and C<setitimer>/C<getitimer> system calls, in other words, high resolution time and timers. See the L<EXAMPLES> section below and the test scripts for usage; see your system documentation for the description of the underlying C<nanosleep> or C<usleep>, C<ualarm>, C<gettimeofday>, and C<setitimer>/C<getitimer> calls.

If your system lacks C<gettimeofday()> or an emulation of it you don't get C<gettimeofday()> or the one-argument form of C<tv_interval()>.

If your system lacks all of C<nanosleep()>, C<usleep()>, C<select()>, and C<poll>, you don't get C<Time::HiRes::usleep()>, C<Time::HiRes::nanosleep()>, or C<Time::HiRes::sleep()>.

If your system lacks both C<ualarm()> and C<setitimer()> you don't get C<Time::HiRes::ualarm()> or C<Time::HiRes::alarm()>.

If you try to import an unimplemented function in the C<use> statement it will fail at compile time.

If your subsecond sleeping is implemented with C<nanosleep()> instead of C<usleep()>, you can mix subsecond sleeping with signals since C<nanosleep()> does not use signals. This, however, is not portable, and you should first check for the truth value of C<&Time::HiRes::d_nanosleep> to see whether you have nanosleep, and then carefully read your C<nanosleep()> C API documentation for any peculiarities.

If you are using C<nanosleep> for something else than mixing sleeping with signals, give some thought to whether Perl is the tool you should be using for work requiring nanosecond accuracies.

Remember that unless you are working on a I<hard realtime> system, any clocks and timers will be imprecise, especially so if you are working in a pre-emptive multiuser system. Understand the difference between I<wallclock time> and process time (in UNIX-like systems the sum of I<user> and I<system> times). Any attempt to sleep for X seconds will most probably end up sleeping B<more> than that, but don't be surprised if you end up sleeping slightly B<less>.

The following functions can be imported from this module.

No functions are exported by default.

=over 4

=item gettimeofday ()

In array context returns a two-element array with the seconds and microseconds since the epoch. In scalar context returns floating seconds like C<Time::HiRes::time()> (see below).

=item usleep (\$useconds)

Sleeps for the number of microseconds (millionths of a second) specified. Returns the number of microseconds actually slept.

Can sleep for more than one second, unlike the C<usleep> system call.

Can also sleep for zero seconds, which often works like a I<thread yield>.

See also C<Time::HiRes::usleep()>, C<Time::HiRes::sleep()>, and C<Time::HiRes::clock_nanosleep()>.

Do not expect usleep() to be exact down to one microsecond.

=item nanosleep (\$nanoseconds)

Sleeps for the number of nanoseconds (1e9ths of a second) specified.

Returns the number of nanoseconds actually slept (accurate only to microseconds, the nearest thousand of them). Can sleep for more than one second. Can also sleep for zero seconds, which often works like a I<thread yield>. See also C<Time::HiRes::sleep()>,

C<Time::HiRes::usleep()>, and C<Time::HiRes::clock_nanosleep()>.

Do not expect nanosleep() to be exact down to one nanosecond.

Getting even accuracy of one thousand nanoseconds is good.

=item ualarm (\$useconds [, \$interval_useconds])

Issues a C<ualarm> call; the C<\$interval_useconds> is optional and will be zero if unspecified, resulting in C<alarm>-like behaviour.

Returns

the remaining time in the alarm in microseconds, or C<undef> if an error occurred.

ualarm(0) will cancel an outstanding ualarm().

Note that the interaction between alarms and sleeps is unspecified.

=item tv_interval

tv_interval (\$ref_to_gettimeofday [, \$ref_to_later_gettimeofday])

Returns the floating seconds between the two times, which should have been returned by C<gettimeofday()>. If the second argument is omitted, then the current time is used.

=item time ()

Returns a floating seconds since the epoch. This function can be imported, resulting in a nice drop-in replacement for the C<time> provided with core Perl; see the L</EXAMPLES> below.

B<NOTE 1>: This higher resolution timer can return values either less or more than the core C<time()>, depending on whether your platform rounds the higher resolution timer values up, down, or to the nearest second to get the core C<time()>, but naturally the difference should be never more than half a second. See also L</clock_getres>, if available in your system.

B<NOTE 2>: Since Sunday, September 9th, 2001 at 01:46:40 AM GMT, when the C<time()> seconds since epoch rolled over to 1_000_000_000, the default floating point format of Perl and the seconds since epoch have conspired to produce an apparent bug: if you print the value of C<Time::HiRes::time()> you seem to be getting only five decimals, not six as promised (microseconds). Not to worry, the microseconds are there (assuming your platform supports such granularity in the first place). What is going on is that the default floating point format of Perl only outputs 15 digits. In this case that means ten digits before the decimal separator and five after. To see the microseconds you can use either C<printf>/C<sprintf> with C< "%.6f">, or the C<gettimeofday()> function in list context, which will give you the seconds and microseconds as two separate values.

=item sleep (\$floating_seconds)

Sleeps for the specified amount of seconds. Returns the number of seconds actually slept (a floating point value). This function can be imported, resulting in a nice drop-in replacement for the C<sleep> provided with perl, see the L</EXAMPLES> below.

Note that the interaction between alarms and sleeps is unspecified.

=item alarm (\$floating_seconds [, \$interval_floating_seconds])

The C<SIGALRM> signal is sent after the specified number of seconds. Implemented using C<setitimer()> if available, C<ualarm()> if not. The C<\$interval_floating_seconds> argument is optional and will be zero if unspecified, resulting in C<alarm()>-like behaviour. This function can be imported, resulting in a nice drop-in replacement for the C<alarm> provided with perl, see the L</EXAMPLES> below.

Returns the remaining time in the alarm in seconds, or C<undef> if an error occurred.

B<NOTE 1>: With some combinations of operating systems and Perl releases C<SIGALRM> restarts C<select()>, instead of interrupting it. This means that an C<alarm()> followed by a C<select()> may together take the sum of the times specified for the C<alarm()> and the C<select()>, not just the time of the C<alarm()>.

Note that the interaction between alarms and sleeps is unspecified.

```
=item setitimer ( $which, $floating_seconds [, $interval_floating_seconds ] )
```

Start up an interval timer: after a certain time, a signal (\$which) arrives, and more signals may keep arriving at certain intervals. To disable an "itimer", use C<\$floating_seconds> of zero. If the C<\$interval_floating_seconds> is set to zero (or unspecified), the timer is disabled B<after> the next delivered signal.

Use of interval timers may interfere with C<alarm()>, C<sleep()>, and C<usleep()>. In standard-speak the "interaction is unspecified", which means that I<anything> may happen: it may work, it may not.

In scalar context, the remaining time in the timer is returned.

In list context, both the remaining time and the interval are returned.

There are usually three or four interval timers (signals) available: the C<\$which> can be C<ITIMER_REAL>, C<ITIMER_VIRTUAL>, C<ITIMER_PROF>, or C<ITIMER_REALPROF>. Note that which ones are available depends: true UNIX platforms usually have the first three, but only Solaris seems to have C<ITIMER_REALPROF> (which is used to profile multithreaded programs). Win32 unfortunately does not have interval timers.

C<ITIMER_REAL> results in C<alarm()>-like behaviour. Time is counted in I<real time>; that is, wallclock time. C<SIGALRM> is delivered when the timer expires.

C<ITIMER_VIRTUAL> counts time in (process) I<virtual time>; that is, only when the process is running. In multiprocessor/user/CPU systems this may be more or less than real or wallclock time. (This time is also known as the I<user time>.) C<SIGVTALRM> is delivered when the timer expires.

C<ITIMER_PROF> counts time when either the process virtual time or when the operating system is running on behalf of the process (such as I/O). (This time is also known as the I<system time>.) (The sum of user I<system time>.) (The sum of user time and system time is known as the I<CPU time>.) C<SIGPROF> is delivered when the timer expires. C<SIGPROF> can interrupt system calls.

The semantics of interval timers for multithreaded programs are system-specific, and some systems may support additional interval timers. For example, it is unspecified which thread gets the signals. See your C<setitimer()> documentation.

=item getitimer (\$which)

Return the remaining time in the interval timer specified by C<\$which>.

In scalar context, the remaining time is returned.

In list context, both the remaining time and the interval are returned. The interval is always what you put in using C<setitimer()>.

=item clock_gettime (\$which)

Return as seconds the current value of the POSIX high resolution timer specified by C<\$which>. All implementations that support POSIX high resolution timers are supposed to support at least the C<\$which> value of C<CLOCK_REALTIME>, which is supposed to return results close to the results of C<gettimeofday>, or the number of seconds since 00:00:00:00 January 1, 1970 Greenwich Mean Time (GMT). Do not assume that CLOCK_REALTIME is zero, it might be one, or something else. Another potentially useful (but not available everywhere) value is C<CLOCK_MONOTONIC>, which guarantees a monotonically increasing time value (unlike time() or gettimeofday(), which can be adjusted). See your system documentation for other possibly supported values.

=item clock_getres (\$which)

Return as seconds the resolution of the POSIX high resolution timer specified by C<\$which>. All implementations that support POSIX high resolution timers are supposed to support at least the C<\$which> value of C<CLOCK_REALTIME>, see L</clock_gettime>.

=item clock_nanosleep (\$which, \$nanoseconds, \$flags = 0)

Sleeps for the number of nanoseconds (1e9ths of a second) specified. Returns the number of nanoseconds actually slept. The \$which is the "clock id", as with clock_gettime() and clock_getres(). The flags default to zero but C<TIMER_ABSTIME> can specified (must be exported explicitly) which means that C<\$nanoseconds> is not a time interval (as is the default) but instead an absolute time. Can sleep for more than one second. Can also sleep for zero seconds, which often works like a I<thread yield>. See also C<Time::HiRes::sleep()>, C<Time::HiRes::usleep()>, and C<Time::HiRes::nanosleep()>.

Do not expect clock_nanosleep() to be exact down to one nanosecond. Getting even accuracy of one thousand nanoseconds is good.

=item clock()

Return as seconds the I<process time> (user + system time) spent by the process since the first call to clock() (the definition is B<not> "since the start of the process", though if you are lucky these times may be quite close to each other, depending on the system). What this means is that you probably need to store the result of your first call to clock(), and subtract that value from the following results of clock().

The time

returned also includes the process times of the terminated child processes for which wait() has been executed. This value is somewhat like the second value returned by the times() of core Perl, but not necessarily identical. Note that due to backward compatibility limitations the returned value may wrap around at about 2147 seconds or at about 36 minutes.

=item stat

=item stat FH

=item stat EXPR

As L<perlfunc/stat> but with the access/modify/change file timestamps in subsecond resolution, if the operating system and the filesystem both support such timestamps. To override the standard stat():

```
use Time::HiRes qw(stat);
```

Test for the value of &Time::HiRes::d_hires_stat to find out whether the operating system supports subsecond file timestamps: a value

larger than zero means yes. There are unfortunately no easy ways to find out whether the filesystem supports such timestamps. UNIX filesystems often do; NTFS does; FAT doesn't (FAT timestamp granularity is B<two> seconds).

A

zero return value of `&Time::HiRes::d_hires_stat` means that `Time::HiRes::stat` is a no-op passthrough for `CORE::stat()`, and therefore the timestamps will stay integers. The same thing will happen if the filesystem does not do subsecond timestamps, even if the `&Time::HiRes::d_hires_stat` is non-zero.

In any case do not expect nanosecond resolution, or even a microsecond resolution. Also note that the modify/access timestamps might have different resolutions, and that they need not be synchronized, e.g. if the operations are

```
write
stat # t1
read
stat # t2
```

the access time stamp from t2 need not be greater-than the modify time stamp from t1: it may be equal or I<less>.

=back

=head1 EXAMPLES

```
use Time::HiRes qw(usleep ualarm gettimeofday tv_interval);
```

```
$microseconds = 750_000;
usleep($microseconds);
```

```
# signal alarm in 2.5s & every .1s thereafter
ualarm(2_500_000, 100_000);
# cancel that ualarm
ualarm(0);
```

```
# get seconds and microseconds since the epoch
($s, $usec) = gettimeofday();
```

```
# measure elapsed time
# (could also do by subtracting 2 gettimeofday return values)
$t0 = [gettimeofday];
# do bunch of stuff here
$t1 = [gettimeofday];
# do more stuff here
```



```

$t0_t1 = tv_interval $t0, $t1;

$elapsed = tv_interval ($t0, [gettimeofday]);
$elapsed = tv_interval ($t0); # equivalent code

#
# replacements for time, alarm and sleep that know about
# floating seconds
#
use Time::HiRes;
$now_fractions = Time::HiRes::time;
Time::HiRes::sleep (2.5);
Time::HiRes::alarm (10.6666666);

use Time::HiRes qw ( time alarm sleep );
$now_fractions = time;
sleep (2.5);
alarm (10.6666666);

# Arm an interval timer to go off first at 10 seconds and
# after that every 2.5 seconds, in process virtual time

use Time::HiRes qw ( setitimer ITIMER_VIRTUAL time );

$SIG{VTALRM} = sub { print time, "\n" };
setitimer(ITIMER_VIRTUAL, 10, 2.5);

use Time::HiRes qw( clock_gettime clock_getres CLOCK_REALTIME );
# Read
the POSIX high resolution timer.
my $high = clock_getres(CLOCK_REALTIME);
# But how accurate we can be, really?
my $reso = clock_getres(CLOCK_REALTIME);

use Time::HiRes qw( clock_nanosleep TIMER_ABSTIME );
clock_nanosleep(CLOCK_REALTIME, 1e6);
clock_nanosleep(CLOCK_REALTIME, 2e9, TIMER_ABSTIME);

use Time::HiRes qw( clock );
my $clock0 = clock();
... # Do something.
my $clock1 = clock();
my $clockd = $clock1 - $clock0;

use Time::HiRes qw( stat );
my ($atime, $mtime, $ctime) = (stat("istics"))[8, 9, 10];

=head1 C API

```

In addition to the perl API described above, a C API is available for extension writers. The following C functions are available in the modglobal hash:

name	C prototype
Time::NVtime	double (*)()
Time::U2time	void (*)(pTHX_ UV ret[2])

Both functions return equivalent information (like C<gettimeofday>) but with different representations. The names C<NVtime> and C<U2time> were selected mainly because they are operating system independent. (C<gettimeofday> is Unix-centric, though some platforms like Win32 and VMS have emulations for it.)

Here is an example of using C<NVtime> from C:

```
double (*myNVtime)(); /* Returns -1 on failure. */
SV **svp = hv_fetch(PL_modglobal, "Time::NVtime", 12, 0);
if (!svp) croak("Time::HiRes is required");
if (!SvIOK(*svp)) croak("Time::NVtime isn't a function pointer");
myNVtime = INT2PTR(double(*)(), SvIV(*svp));
printf("The current time is: %f\n", (*myNVtime)());
```

=head1 DIAGNOSTICS

=head2 useconds or interval more than ...

In ualarm() you tried to use number of microseconds or interval (also in microseconds) more than 1_000_000 and setitimer() is not available in your system to emulate that case.

=head2 negative time not invented yet

You tried to use a negative time argument.

=head2 internal error: useconds < 0 (unsigned ... signed ...)

Something went horribly wrong-- the number of microseconds that cannot become negative just became negative. Maybe your compiler is broken?

=head2 useconds or uinterval equal to or more than 1000000

In some platforms it is not possible to get an alarm with subsecond resolution and later than one second.

=head2 unimplemented in this platform

Some calls simply aren't available, real or emulated, on every platform.

=head1 CAVEATS

Notice that the core C<time()> maybe rounding rather than truncating. What this means is that the core C<time()> may be reporting the time as one second later than C<gettimeofday()> and C<Time::HiRes::time()>.

Adjusting the system clock (either manually or by services like ntp) may cause problems, especially for long running programs that assume a monotonously increasing time (note that all platforms do not adjust time as gracefully as UNIX ntp does). For example in Win32 (and derived platforms like Cygwin and MinGW) the Time::HiRes::time() may temporarily drift off from the system clock (and the original time())

by up to 0.5

seconds. Time::HiRes will notice this eventually and recalibrate.

Note that since Time::HiRes 1.77 the clock_gettime(CLOCK_MONOTONIC) might help in this (in case your system supports CLOCK_MONOTONIC).

Some systems have APIs but not implementations: for example QNX and Haiku have the interval timer APIs but not the functionality.

=head1 SEE ALSO

Perl modules L<BSD::Resource>, L<Time::TAI64>.

Your system documentation for C<clock>, C<clock_gettime>, C<clock_getres>, C<clock_nanosleep>, C<clock_settime>, C<getitimer>, C<gettimeofday>, C<setitimer>, C<sleep>, C<stat>, C<ualarm>.

=head1 AUTHORS

D. Wegscheid <wegscd@whirlpool.com>

R. Schertler <roderick@argon.org>

J. Hietaniemi <jhi@iki.fi>

G. Aas <gisle@aas.no>

=head1 COPYRIGHT AND LICENSE

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Copyright (C) 2011, 2012 Andrew Main (Zefram) <zefram@fysh.org>

This
program is free software; you can redistribute it and/or modify
it under the same terms as Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955609_1678946289.7826262/0/perl-Time-HiRes-1.9725-3.el7-1.src.rpm-cosi-expand-
archive-zfFhtElZ/Time-HiRes-1.9725.tar.gz-cosi-expand-archive-qKyrLiTQ/Time-HiRes-1.9725/HiRes.pm

1.288 perl-carp 1.26-244.el7

1.288.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955514_1678786361.9482284/0/perl-Carp-1.26-244.el7-1.src.rpm-cosi-expand-archive-
gtMDaq3K/perl-Carp.spec

No license file was found, but licenses were detected in source scan.

abstract: 'alternative warn and die for modules'

author:

- unknown

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.6302, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Carp

no_index:

directory:

- t

- inc

requires:

Exporter: 0

IPC::Open3: 1.0103

Test::More: 0

strict: 0

warnings: 0
version: 1.26

Found in path(s):

* /opt/cola/permits/1592955514_1678786361.9482284/0/perl-Carp-1.26-244.el7-1.src.rpm-cosi-expand-archive-gtMDaq3K/Carp-1.26.tar.gz-cosi-expand-archive-ov6BS5Rx/Carp-1.26/META.yml

No license file was found, but licenses were detected in source scan.

NAME

Carp - alternative warn and die for modules

DESCRIPTION

The Carp routines are useful in your own modules because they act like die() or warn(), but with a message which is more likely to be useful to a user of your module. In the case of cluck, confess, and longmess that context is a summary of every call in the call-stack. For a shorter message you can use carp or croak which report the error as being from where your module was called. There is no guarantee that that is where the error was, but it is a good educated guess.

You can also alter the way the output and logic of Carp works, by changing some global variables in the Carp namespace.

INSTALLATION

```
perl Makefile.PL
make
make test
make install
```

AUTHOR

The Carp module first appeared in Larry Wall's perl 5.000 distribution. Since then it has been modified by several of the perl 5 porters. Andrew Main (Zefram) <zefram@fysh.org> divested Carp into an independent distribution.

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Copyright (C) 1994-2012 Larry Wall

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LICENSE

This module is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1592955514_1678786361.9482284/0/perl-Carp-1.26-244.el7-1.src.rpm-cosi-expand-archive-gtMDaq3K/Carp-1.26.tar.gz-cosi-expand-archive-ov6BS5Rx/Carp-1.26/README
```

No license file was found, but licenses were detected in source scan.

=head1 NAME

Carp - alternative warn and die for modules

=head1 SYNOPSIS

```
use Carp;

# warn user (from perspective of caller)
carp "string trimmed to 80 chars";

# die of errors (from perspective of caller)
croak "We're outta here!";

# die of errors with stack backtrace
confess "not implemented";

# cluck not exported by default
use Carp qw(cluck);
cluck "This is how we got here!";
```

=head1 DESCRIPTION

The Carp routines are useful in your own modules because they act like die() or warn(), but with a message which is more likely to be useful to a user of your module. In the case of cluck, confess, and longmess that context is a summary of every call in the call-stack. For a shorter message you can use C<carp> or C<croak> which report the error as being from where your module was called. There is no guarantee that that is where the error was, but it is a good educated guess.

You

can also alter the way the output and logic of C<Carp> works, by changing some global variables in the C<Carp> namespace. See the section on C<GLOBAL VARIABLES> below.

Here is a more complete description of how C<carp> and C<croak> work.

What they do is search the call-stack for a function call stack where they have not been told that there shouldn't be an error. If every

call is marked safe, they give up and give a full stack backtrace instead. In other words they presume that the first likely looking potential suspect is guilty. Their rules for telling whether a call shouldn't generate errors work as follows:

=over 4

=item 1.

Any call from a package to itself is safe.

=item 2.

Packages claim that there won't be errors on calls to or from packages explicitly marked as safe by inclusion in `C<@CARP_NOT>`, or (if that array is empty) `C<@ISA>`. The ability to override what `@ISA` says is new in 5.8.

=item 3.

The trust in item 2 is transitive. If A trusts B, and B trusts C, then A trusts C. So if you do not override `C<@ISA>` with `C<@CARP_NOT>`, then this trust relationship is identical to, "inherits from".

=item 4.

Any call from an internal Perl module is safe. (Nothing keeps user modules from marking themselves as internal to Perl, but this practice is discouraged.)

=item 5.

Any call to Perl's warning system (eg Carp itself) is safe. (This rule is what keeps it from reporting the error at the point where you call `C<carp>` or `C<croak>`.)

=item 6.

`C<$Carp::CarpLevel>` can be set to skip a fixed number of additional call levels. Using this is not recommended because it is very difficult to get it to behave correctly.

=back

=head2 Forcing a Stack Trace

As a debugging aid, you can force Carp to treat a croak as a confess and a carp as a cluck across I<all> modules. In other words, force a detailed stack trace to be given. This can be very helpful when trying to understand why, or from where, a warning or error is being generated.

This feature is enabled by 'importing' the non-existent symbol 'verbose'. You would typically enable it by saying

```
perl -MCarp=verbose script.pl
```

or by including the string C<-MCarp=verbose> in the PERL5OPT environment variable.

Alternately, you can set the global variable C<\$Carp::Verbose> to true. See the C<GLOBAL VARIABLES> section below.

=head1 GLOBAL VARIABLES

=head2 \$Carp::MaxEvalLen

This variable determines how many characters of a string-eval are to be shown in the output. Use a value of C<0> to show all text.

Defaults to C<0>.

=head2 \$Carp::MaxArgLen

This variable determines how many characters of each argument to a function to print. Use a value of C<0> to show the full length of the argument.

Defaults to C<64>.

=head2 \$Carp::MaxArgNums

This variable determines how many arguments to each function to show. Use a value of C<0> to show all arguments to a function call.

Defaults to C<8>.

=head2 \$Carp::Verbose

This variable makes C<carp> and C<croak> generate stack backtraces just like

C<cluck> and C<confess>. This is how C<use Carp 'verbose'> is implemented internally.

Defaults to C<0>.

```
=head2 @CARP_NOT
```

This variable, I<in your package>, says which packages are I<not> to be considered as the location of an error. The C<carp()> and C<cluck()> functions will skip over callers when reporting where an error occurred.

NB: This variable must be in the package's symbol table, thus:

```
# These work
our @CARP_NOT; # file scope
use vars qw(@CARP_NOT); # package scope
@My::Package::CARP_NOT = ... ; # explicit package variable

# These don't work
sub xyz { ... @CARP_NOT = ... } # w/o declarations above
my @CARP_NOT; # even at top-level
```

Example of use:

```
package My::Carping::Package;
use Carp;
our @CARP_NOT;
sub bar { ... or _error('Wrong input') }
sub _error {
    # temporary control of where'ness, __PACKAGE__ is implicit
    local @CARP_NOT = qw(My::Friendly::Caller);
    carp(@_)
}
```

This would make C<Carp> report the error as coming from a caller not in C<My::Carping::Package>, nor from C<My::Friendly::Caller>.

Also read the L</DESCRIPTION> section above, about how C<Carp> decides where the error is reported from.

Use C<@CARP_NOT>, instead of C<\$Carp::CarpLevel>.

Overrides C<Carp>'s use of C<@ISA>.

```
=head2 %Carp::Internal
```

This says what packages are internal to Perl. C<Carp> will never report an error as being from a line in a package that is internal to Perl. For example:

```
$Carp::Internal{ (__PACKAGE__) }++;  
# time passes...  
sub foo { ... or confess("whatever") };
```

would give a full stack backtrace starting from the first caller outside of `__PACKAGE__`. (Unless that package was also internal to Perl.)

```
=head2 %Carp::CarpInternal
```

This says which packages are internal to Perl's warning system. For generating a full stack backtrace this is the same as being internal to Perl, the stack backtrace will not start inside packages that are listed in `C<%Carp::CarpInternal>`.

But it is slightly different for the summary message generated by `C<carp>` or `C<croak>`. There errors will not be reported on any lines that are calling packages in `C<%Carp::CarpInternal>`.

For example `C<Carp>` itself is listed in `C<%Carp::CarpInternal>`. Therefore the full stack backtrace from `C<confess>` will not start inside of `C<Carp>`, and the short message from calling `C<croak>` is not placed on the line where `C<croak>` was called.

```
=head2 $Carp::CarpLevel
```

This variable determines how many additional call frames are to be skipped that would not otherwise be when reporting where an error occurred on a call to one of `C<Carp>`'s functions. It is fairly easy to count these call frames on calls that generate a full stack backtrace. However it is much harder to do this accounting for calls that generate a short message. Usually people skip too many call frames. If they are lucky they skip enough that `C<Carp>` goes all of the way through the call stack, realizes that something is wrong, and then generates a full stack backtrace. If they are unlucky then the error is reported from somewhere misleading very high in the call stack.

Therefore it is best to avoid `C<$Carp::CarpLevel>`. Instead use `C<@CARP_NOT>`, `C<%Carp::Internal>` and `C<%Carp::CarpInternal>`.

Defaults to `C<0>`.

```
=head1 BUGS
```

The Carp routines don't handle exception objects currently. If called with a first argument that is a reference, they simply

call die() or warn(), as appropriate.

=head1 SEE ALSO

L<Carp::Always>,

L<Carp::Clan>

=head1 AUTHOR

The Carp module first appeared in Larry Wall's perl 5.000 distribution.

Since then it has been modified by several of the perl 5 porters.

Andrew Main (Zefram) <zefram@fysh.org> divested Carp into an independent distribution.

=head1 COPYRIGHT

Copyright (C) 1994-2012 Larry Wall

Copyright (C) 2011, 2012 Andrew Main (Zefram) <zefram@fysh.org>

=head1 LICENSE

This module is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found

in path(s):

* /opt/cola/permits/1592955514_1678786361.9482284/0/perl-Carp-1.26-244.el7-1.src.rpm-cosi-expand-archive-gtMDaq3K/Carp-1.26.tar.gz-cosi-expand-archive-ov6BS5Rx/Carp-1.26/lib/Carp.pm

1.289 perl-encode 2.51-7.el7

1.289.1 Available under license :

No license file was found, but licenses were detected in source scan.

abstract: unknown

author:

- unknown

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.66, CPAN::Meta::Converter version 2.130880'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>
version: 1.4
name: Encode
no_index:
directory:
- t
- inc
requires: {}
version: 2.51

Found in path(s):

* /opt/cola/permits/1592955672_1678943490.7676501/0/perl-Encode-2.51-7.el7-1.src.rpm-cosi-expand-archive-fimyrDg/Encode-2.51.tar.gz-cosi-expand-archive-upch6pzI/Encode-2.51/META.yml

No license file was found, but licenses were detected in source scan.

=head1 NAME

Encode::Supported -- Encodings supported by Encode

=head1 DESCRIPTION

=head2 Encoding Names

Encoding names are case insensitive. White space in names is ignored. In addition, an encoding may have aliases.

Each encoding has one "canonical" name. The "canonical" name is chosen from the names of the encoding by picking the first in the following sequence (with a few exceptions).

=over 2

=item *

The name used by the Perl community. That includes 'utf8' and 'ascii'. Unlike aliases, canonical names directly reach the method so such frequently used words like 'utf8' don't need to do alias lookups.

=item *

The MIME name as defined in IETF RFCs. This includes all "iso-"s.

=item *

The name in the IANA registry.

=item *

The name used by the organization that defined it.

=back

In case I<de jure> canonical names differ from that of the Encode module, they are always aliased if it ever be implemented.

So you can safely tell if a given encoding is implemented or not just by passing the canonical name.

Because of all the alias issues, and because in the general case encodings have state, "Encode" uses an encoding object internally once an operation is in progress.

=head1 Supported Encodings

As of Perl 5.8.0, at least the following encodings are recognized. Note that unless otherwise specified, they are all case insensitive (via alias) and all occurrence of spaces are replaced with '-'. In other words, "ISO 8859 1" and "iso-8859-1" are identical.

Encodings are categorized and implemented in several different modules but you don't have to C<use Encode::XX> to make them available for most cases. Encode.pm will automatically load those modules on demand.

=head2 Built-in Encodings

The following encodings are always available.

Canonical	Aliases	Comments & References
ascii	US-ascii	
ISO-646-US		[ECMA]
ascii-ctrl		Special Encoding
iso-8859-1	latin1	[ISO]
null		Special Encoding
utf8	UTF-8	[RFC2279]

I<null> and I<ascii-ctrl> are special. "null" fails for all character so when you set fallback mode to PERLQQ, HTMLCREF or XMLCREF, ALL CHARACTERS will fall back to character references. Ditto for "ascii-ctrl" except for control characters. For fallback modes, see L<Encode>.

=head2 Encode::Unicode -- other Unicode encodings

Unicode coding schemes other than native utf8 are supported by Encode::Unicode, which will be autoloaded on demand.

UCS-2BE	UCS-2, iso-10646-1	[IANA, UC]
UCS-2LE		[UC]
UTF-16		
	[UC]	
UTF-16BE		[UC]
UTF-16LE		[UC]
UTF-32		[UC]
UTF-32BE UCS-4		[UC]
UTF-32LE		[UC]
UTF-7		[RFC2152]

To find how (UCS-2|UTF-(16|32))(LE|BE)? differ from one another, see L<Encode::Unicode>.

UTF-7 is a special encoding which "re-encodes" UTF-16BE into a 7-bit encoding. It is implemented separately by Encode::Unicode::UTF7.

=head2 Encode::Byte -- Extended ASCII

Encode::Byte implements most single-byte encodings except for Symbols and EBCDIC. The following encodings are based on single-byte encodings implemented as extended ASCII. Most of them map \x80-\xff (upper half) to non-ASCII characters.

=over 2

=item ISO-8859 and corresponding vendor mappings

Since there are so many, they are presented in table format with languages and corresponding encoding names by vendors. Note that the table is sorted in order of ISO-8859 and the corresponding vendor mappings are slightly different from that of ISO. See L<<http://czyborra.com/charsets/iso8859.html>> for details.

Lang/Regions	ISO/Other	Std.	DOS	Windows	Macintosh	Others

N. America	(ASCII)		cp437	AdobeStandardEncoding		
			cp863	(DOSCanadaF)		
W. Europe	iso-8859-1		cp850	cp1252	MacRoman	nextstep
				hp-roman8		
			cp860	(DOSPortuguese)		
Cntrl. Europe	iso-8859-2		cp852	cp1250	MacCentralEurRoman	
				MacCroatian		

MacRomanian

MacRumanian

Latin3[1] iso-8859-3
Latin4[2] iso-8859-4
Cyrillics iso-8859-5 cp855 cp1251 MacCyrillic
(See also next section) cp866 MacUkrainian
Arabic iso-8859-6 cp864 cp1256 MacArabic
cp1006 MacFarsi
Greek iso-8859-7 cp737 cp1253 MacGreek
cp869 (DOSGreek2)
Hebrew iso-8859-8 cp862 cp1255 MacHebrew
Turkish iso-8859-9 cp857 cp1254 MacTurkish
Nordics iso-8859-10 cp865
cp861 MacIcelandic
MacSami
Thai iso-8859-11[3] cp874 MacThai
(iso-8859-12 is nonexistent. Reserved for Indics?)
Baltics iso-8859-13 cp775 cp1257
Celtics iso-8859-14
Latin9 [4] iso-8859-15
Latin10 iso-8859-16
Vietnamese viscii cp1258 MacVietnamese

[1] Esperanto, Maltese, and Turkish. Turkish is now on 8859-9.

[2] Baltics. Now on 8859-10, except for Latvian.

[3] TIS 620 + Non-Breaking Space (0xA0 / U+00A0)

[4] Nicknamed Latin0; the Euro sign as well as French and Finnish letters that are missing from 8859-1 were added.

All cp* are also available as ibm-*, ms-*, and windows-*. See also
L<<http://czyborra.com/charsets/codepages.html>>.

Macintosh encodings don't seem to be registered in such entities as IANA. "Canonical" names in Encode are based upon Apple's Tech Note 1150. See L<<http://developer.apple.com/technotes/tn/tn1150.html>> for details.

=item KOI8 - De Facto Standard for the Cyrillic world

Though ISO-8859 does have ISO-8859-5, the KOI8 series is far more popular in the Net. L<Encode> comes with the following KOI charsets. For gory details, see
L<<http://czyborra.com/charsets/cyrillic.html>>

koi8-f

koi8-r cp878

[RFC1489]

 =back

=head2 gsm0338 - Hentai Latin 1

GSM0338 is for GSM handsets. Though it shares alphanumerals with ASCII, control character ranges and other parts are mapped very differently, mainly to store Greek characters. There are also escape sequences (starting with 0x1B) to cover e.g. the Euro sign.

This was once handled by L<Encode::Bytes> but because of all those unusual specifications, Encode 2.20 has relocated the support to L<Encode::GSM0338>. See L<Encode::GSM0338> for details.

=over 2

=item gsm0338 support before 2.19

Some special cases like a trailing 0x00 byte or a lone 0x1B byte are not well-defined and decode()

will return an empty string for them.

One possible workaround is

```
$gsm =~ s/\x00\z/\x00\x00/;
$uni = decode("gsm0338", $gsm);
$uni .= "\xA0" if $gsm =~ /\x1B\z/;
```

Note that the Encode implementation of GSM0338 does not implement the reuse of Latin capital letters as Greek capital letters (for example, the 0x5A is U+005A (LATIN CAPITAL LETTER Z), not U+0396 (GREEK CAPITAL LETTER ZETA)).

The GSM0338 is also covered in Encode::Byte even though it is not an "extended ASCII" encoding.

=back

=head2 CJK: Chinese, Japanese, Korean (Multibyte)

Note that Vietnamese is listed above. Also read "Encoding vs Charset" below. Also note that these are implemented in distinct modules by countries, due to the size concerns (simplified Chinese is mapped to 'CN', continental China, while traditional Chinese is mapped to 'TW', Taiwan). Please refer to their respective documentation pages.

=over 2

=item Encode::CN -- Continental China

Standard	DOS/Win Macintosh	Comment/Reference

euc-cn [1]	MacChineseSimp	
(gbk)	cp936 [2]	
gb12345-raw		{ GB12345 without CES }
gb2312-raw		{ GB2312 without CES }
hz		
iso-ir-165		

[1] GB2312 is aliased to this. See L<Microsoft-related naming mess>

[2] gbk is aliased to this. See L<Microsoft-related naming mess>

=item Encode::JP -- Japan

Standard	DOS/Win Macintosh	Comment/Reference

euc-jp		
shiftjis	cp932 macJapanese	
7bit-jis		
iso-2022-jp		[RFC1468]
iso-2022-jp-1		[RFC2237]
jis0201-raw		{ JIS X 0201 (roman + halfwidth kana) without CES }
jis0208-raw		{ JIS X 0208 (Kanji + fullwidth kana) without CES }
jis0212-raw		{ JIS X 0212
(Extended Kanji)		without CES }

=item Encode::KR -- Korea

Standard	DOS/Win Macintosh	Comment/Reference

euc-kr	MacKorean	[RFC1557]
	cp949 [1]	
iso-2022-kr		[RFC1557]
johab		[KS X 1001:1998, Annex 3]
ksc5601-raw		{ KSC5601 without CES }

[1] ks_c_5601-1987, (x-)?windows-949, and uhc are aliased to this.
See below.

=item Encode::TW -- Taiwan

Standard	DOS/Win Macintosh	Comment/Reference
----------	-------------------	-------------------

big5-eten cp950 MacChineseTrad {big5 aliased to big5-eten}
big5-hkscs

=item Encode::HanExtra -- More Chinese via CPAN

Due to the size concerns, additional Chinese encodings below are distributed separately on CPAN, under the name Encode::HanExtra.

Standard	DOS/Win Macintosh	Comment/Reference
big5ext		CMEX's Big5e Extension
big5plus		CMEX's Big5+ Extension
cccii	Chinese Character Code for Information Interchange	
euc-tw		EUC (Extended Unix Character)
gb18030		GBK with Traditional Characters

=item Encode::JIS2K -- JIS X 0213 encodings via CPAN

Due to size concerns, additional Japanese encodings below are distributed separately on CPAN, under the name Encode::JIS2K.

Standard	DOS/Win Macintosh	Comment/Reference
----------	-------------------	-------------------

euc-jisx0213		
shiftjisx0123		
iso-2022-jp-3		
jis0213-1-raw		
jis0213-2-raw		

=back

=head2 Miscellaneous encodings

=over 2

=item Encode::EBCDIC

See L<perlebcdic> for details.

cp37
cp500

cp875
cp1026
cp1047
posix-bc

=item Encode::Symbols

For symbols and dingbats.

symbol
dingbats
MacDingbats
AdobeZdingbat
AdobeSymbol

=item Encode::MIME::Header

Strictly speaking, MIME header encoding documented in RFC 2047 is more of encapsulation than encoding. However, their support in modern world is imperative so they are supported.

MIME-Header [RFC2047]
MIME-B [RFC2047]
MIME-Q [RFC2047]

=item Encode::Guess

This one is not a name of encoding but a utility that lets you pick up the most appropriate encoding for a data out of given I<suspects>. See L<Encode::Guess> for details.

=back

=head1 Unsupported encodings

The following encodings are not supported as yet; some because they are rarely used, some because of technical difficulties. They may be supported by external modules via CPAN in the future, however.

=over 2

=item ISO-2022-JP-2 [RFC1554]

Not very popular yet. Needs Unicode Database or equivalent to implement encode() (because it includes JIS X 0208/0212, KSC5601, and GB2312 simultaneously, whose code points in Unicode overlap. So you need to lookup the database to determine to what character set a given Unicode character should belong).

=item ISO-2022-CN [RFC1922]

Not very popular. Needs CNS 11643-1 and -2 which are not available in this module. CNS 11643 is supported (via euc-tw) in Encode::HanExtra. Autrijus Tang may add support for this encoding in his module in future.

=item Various HP-UX encodings

The following are unsupported due to the lack of mapping data.

'8' - arabic8, greek8, hebrew8, kana8, thai8, and turkish8

'15' - japanese15, korean15, and roi15

=item Cyrillic encoding ISO-IR-111

Anton Tagunov doubts its usefulness.

=item ISO-8859-8-1 [Hebrew]

None of the Encode team knows Hebrew enough (ISO-8859-8, cp1255 and MacHebrew are supported because and just because there were mappings available at [L<http://www.unicode.org/>](http://www.unicode.org/)). Contributions welcome.

=item ISIRI 3342, Iran System, ISIRI 2900 [Farsi]

Ditto.

=item Thai encoding TCVN

Ditto.

=item Vietnamese encodings VPS

Though

Jungshik Shin has reported that Mozilla supports this encoding, it was too late before 5.8.0 for us to add it. In the future, it may be available via a separate module. See

[L<http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.uf>](http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.uf)

and

[L<http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.ut>](http://lxr.mozilla.org/seamonkey/source/intl/uconv/ucvlatin/vps.ut)

if you are interested in helping us.

=item Various Mac encodings

The following are unsupported due to the lack of mapping data.

MacArmenian, MacBengali, MacBurmese, MacEthiopic
MacExtArabic, MacGeorgian, MacKannada, MacKhmer
MacLaotian, MacMalayalam, MacMongolian, MacOriya
MacSinhalese, MacTamil, MacTelugu, MacTibetan
MacVietnamese

The rest which are already available are based upon the vendor mappings at L<<http://www.unicode.org/Public/MAPPINGS/VENDORS/APPLE/>> .

=item (Mac) Indic encodings

The maps for the following are available at L<<http://www.unicode.org/>> but remain unsupported because those encodings need an algorithmical approach, currently unsupported by F<enc2xs>:

MacDevanagari
MacGurmukhi
MacGujarati

For details, please see C<Unicode mapping issues and notes:> at L<<http://www.unicode.org/Public/MAPPINGS/VENDORS/APPLE/DEVANAGA.TXT>> .

I believe this issue is prevalent not only for Mac Indics but also in other Indic encodings, but the above were the only Indic encodings maps that I could find at L<<http://www.unicode.org/>> .

=back

=head1 Encoding vs. Charset -- terminology

We are used to using the term (character) I<encoding> and I<character set> interchangeably. But just as confusing the terms byte and character is dangerous and the terms should be differentiated when needed, we need to differentiate I<encoding> and I<character set>.

To understand that, here is a description of how we make computers grok our characters.

=over 2

=item *

First we start with which characters to include. We call this collection of characters I<character repertoire>.

=item *

Then we have to give each character a unique ID so your computer can tell the difference between 'a' and 'A'. This itemized character repertoire is now a I<character set>.

=item *

If your computer can grow the character set without further processing, you can go ahead and use it. This is called a I<coded character set> (CCS) or I<raw character encoding>. ASCII is used this way for most cases.

=item *

But in many cases, especially multi-byte CJK encodings, you have to tweak a little more. Your network connection may not accept any data with the Most Significant Bit set, and your computer may not be able to tell if a given byte is a whole character or just half of it. So you have to I<encode> the character set to use it.

A I<character encoding scheme> (CES) determines how to encode a given character set, or a set of multiple character sets. 7bit ISO-2022 is an example of a CES. You switch between character sets via I<escape sequences>.

=back

Technically, or mathematically, speaking, a character set encoded in such a CES that maps character by character may form a CCS. EUC is such an example. The CES of EUC is as follows:

=over 2

=item *

Map ASCII unchanged.

=item *

Map such a character set that consists of 94 or 96 members by adding 0x80 to each byte.

=item *

You can also use 0x8e and 0x8f to indicate that the following sequence of characters belongs to yet another character set. To each following byte is added the value 0x80.

=back

By carefully looking at the encoded byte sequence, you can find that the byte sequence conforms to a unique number. In that sense, EUC is a CCS generated by a CES above from up to four CCS (complicated?). UTF-8 falls into this category. See [L<perlUnicode/"UTF-8">](#) to find out how UTF-8 maps Unicode to a byte sequence.

You may also have found out by now why 7bit ISO-2022 cannot comprise a CCS. If you look at a byte sequence `\x21\x21`, you can't tell if it is two '!'s or IDEOGRAPHIC SPACE. EUC maps the latter to `\xA1\xA1` so you have no trouble differentiating between "!!". and `S<" ">`.

=head1 Encoding Classification (by Anton Tagunov and Dan Kogai)

This section tries to classify the supported encodings by their applicability for information exchange over the Internet and to choose the most suitable aliases to name them in the context of such communication.

=over 2

=item *

To (en|de)code encodings marked by `C<(*)>`, you need `C<Encode::HanExtra>`, available from CPAN.

=back

Encoding names

US-ASCII UTF-8 ISO-8859-* KOI8-R
Shift_JIS EUC-JP ISO-2022-JP ISO-2022-JP-1
EUC-KR Big5 GB2312

are registered with IANA as preferred MIME names and may be used over the Internet.

`C<Shift_JIS>` has been officialized by JIS X 0208:1997.
`L<Microsoft-related naming mess>` gives details.

C<GB2312> is the IANA name for C<EUC-CN>.

See L<Microsoft-related naming mess> for details.

C<GB_2312-80> I<raw> encoding is available as C<gb2312-raw> with Encode. See L<Encode::CN> for details.

EUC-CN

KOI8-U

[RFC2319]

have not been registered with IANA (as of March 2002) but seem to be supported by major web browsers.

The IANA name for C<EUC-CN> is C<GB2312>.

KS_C_5601-1987

is heavily misused.

See L<Microsoft-related naming mess> for details.

C<KS_C_5601-1987> I<raw> encoding is available as C<kcs5601-raw> with Encode. See L<Encode::KR> for details.

UTF-16 UTF-16BE UTF-16LE

are IANA-registered C<charset>s. See [RFC 2781] for details.

Jungshik Shin reports that UTF-16 with a BOM is well accepted by MS IE 5/6 and NS 4/6. Beware however that

=over 2

=item *

C<UTF-16> support in any software you're going to be using/interoperating with has probably been less tested than C<UTF-8> support

=item *

C<UTF-8> coded data seamlessly passes traditional command piping (C<cat>, C<more>, etc.) while C<UTF-16> coded data is likely to cause confusion (with its zero bytes, for example)

=item *

it is beyond the power of words to describe the way HTML browsers encode non-C<ASCII> form

data. To get a general impression, visit
L<<http://www.alanflavell.org.uk/charset/form-118n.html>>.
While encoding of form data has stabilized for C<UTF-8> encoded pages
(at least IE 5/6, NS 6, and Opera 6 behave consistently), be sure to
expect fun (and cross-browser discrepancies) with C<UTF-16> encoded
pages!

=back

The rule of thumb is to use C<UTF-8> unless you know what
you're doing and unless you really benefit from using C<UTF-16>.

ISO-IR-165 [RFC1345]
VISCII
GB 12345
GB 18030 (**) (see links bellow)
EUC-TW (**)

are totally valid encodings but not registered at IANA.
The names under which they are listed here are probably the
most widely-known names for these encodings and are recommended
names.

BIG5PLUS (**)

is a proprietary name.

=head2 Microsoft-related naming mess

Microsoft products misuse the following names:

=over 2

=item KS_C_5601-1987

Microsoft extension to C<EUC-KR>.

Proper names: C<CP949>, C<UHC>, C<x-windows-949> (as used by Mozilla).

See

L<<http://lists.w3.org/Archives/Public/ietf-charsets/2001AprJun/0033.html>>
for details.

Encode aliases C<KS_C_5601-1987> to C<cp949> to reflect this common
misusage. I<Raw> C<KS_C_5601-1987> encoding is available as
C<kcs5601-raw>.

See L<Encode::KR> for details.

=item GB2312

Microsoft extension to C<EUC-CN>.

Proper names: C<CP936>, C<GBK>.

C<GB2312> has been registered in the C<EUC-CN> meaning at IANA. This has partially repaired the situation: Microsoft's C<GB2312> has become a superset of the official C<GB2312>.

Encode aliases C<GB2312> to C<euc-cn> in full agreement with IANA registration. C<cp936> is supported separately. I<Raw> C<GB_2312-80> encoding is available as C<gb2312-raw>.

See L<Encode::CN> for details.

=item Big5

Microsoft extension to C<Big5>.

Proper name: C<CP950>.

Encode separately supports C<Big5> and C<cp950>.

=item Shift_JIS

Microsoft's understanding of C<Shift_JIS>.

JIS has not endorsed the full Microsoft standard however. The official C<Shift_JIS> includes only JIS X 0201 and JIS X 0208 character sets, while Microsoft has always used C<Shift_JIS> to encode a wider character repertoire. See C<IANA> registration for C<Windows-31J>.

As a historical predecessor, Microsoft's variant probably has more rights for the name, though it may be objected that Microsoft shouldn't have used JIS as part of the name in the first place.

Unambiguous name: C<CP932>. C<IANA> name (also used by Mozilla, and provided as an alias by Encode): C<Windows-31J>.

Encode separately supports C<Shift_JIS> and C<cp932>.

=back

=head1 Glossary

=over 2

=item character repertoire

A collection of unique characters. A I<character> set in the strictest sense. At this stage, characters are not numbered.

=item coded character set (CCS)

A character set that is mapped in a way computers can use directly. Many character encodings, including EUC, fall in this category.

=item character encoding scheme (CES)

An algorithm to map a character set to a byte sequence.

You don't have to be able to tell which character set a given byte sequence belongs to. 7-bit ISO-2022 is a CES but it cannot be a CCS. EUC is an example of being both a CCS and CES.

=item charset (in MIME context)

has long been used in the meaning of C<encoding>, CES.

While the word combination C<character set> has lost this meaning in MIME context since [RFC 2130], the C<charset> abbreviation has retained it. This is how [RFC 2277] and [RFC 2278] bless C<charset>:

This document uses the term "charset" to mean a set of rules for mapping from a sequence of octets to a sequence of characters, such as the combination of a coded character set and a character encoding scheme; this is also what is used as an identifier in MIME "charset=" parameters, and registered in the IANA charset registry ... (Note that this is NOT a term used by other standards bodies, such as ISO). [RFC 2277]

=item EUC

Extended Unix Character. See ISO-2022.

=item ISO-2022

A CES that was carefully designed to coexist with ASCII. There are a 7 bit version and an 8 bit version.

The 7 bit version switches character set via escape sequence so it cannot form a CCS. Since this is more difficult to handle in programs than the 8 bit version, the 7 bit version is not very popular except for iso-2022-jp, the I<de facto> standard CES for e-mails.

The 8 bit version can form a CCS. EUC and ISO-8859 are two examples thereof. Pre-5.6 perl could use them as string literals.

=item UCS

Short for I<Universal Character Set>. When you say just UCS, it means I<Unicode>.

=item UCS-2

ISO/IEC 10646 encoding form: Universal Character Set coded in two octets.

=item Unicode

A character set that aims to include all character repertoires of the world. Many character sets in various national as well as industrial standards have become, in a way, just subsets of Unicode.

=item UTF

Short for I<Unicode Transformation Format>. Determines how to map a Unicode character into a byte sequence.

=item

UTF-16

A UTF in 16-bit encoding. Can either be in big endian or little endian. The big endian version is called UTF-16BE (equal to UCS-2 + surrogate support) and the little endian version is called UTF-16LE.

=back

=head1 See Also

L<Encode>,

L<Encode::Byte>,

L<Encode::CN>, L<Encode::JP>, L<Encode::KR>, L<Encode::TW>,

L<Encode::EBCDIC>, L<Encode::Symbol>

L<Encode::MIME::Header>, L<Encode::Guess>

=head1 References

=over 2

=item ECMA

European Computer Manufacturers Association

L<<http://www.ecma.ch>>

=over 2

=item ECMA-035 (eq C<ISO-2022>)

L<<http://www.ecma.ch/ecma1/STAND/ECMA-035.HTM>>

The specification of ISO-2022 is available from the link above.

=back

=item IANA

Internet Assigned Numbers Authority

L<<http://www.iana.org/>>

=over 2

=item Assigned Charset Names by IANA

L<<http://www.iana.org/assignments/character-sets>>

Most of the C<canonical names> in Encode derive from this list so you can directly apply the string you have extracted from MIME header of mails and web pages.

=back

=item ISO

International Organization for Standardization

L<<http://www.iso.ch/>>

=item RFC

Request For Comments -- need I say more?

L<<http://www.rfc-editor.org/>>, L<<http://www.ietf.org/rfc.html>>,

L<<http://www.faqs.org/rfcs/>>

=item UC

Unicode Consortium

L<<http://www.unicode.org/>>

=over 2

=item Unicode Glossary

L<<http://www.unicode.org/glossary/>>

The glossary of this document is based upon this site.

=back

=back

=head2 Other Notable Sites

=over 2

=item czyborra.com

L<<http://czyborra.com/>>

Contains a lot of useful information, especially gory details of ISO vs. vendor mappings.

=item CJK.inf

L<<http://examples.oreilly.com/cjkvinfo/doc/cjk.inf>>

Somewhat obsolete (last update in 1996), but still useful. Also try

L<ftp://ftp.oreilly.com/pub/examples/nutshell/cjkv/pdf/GB18030_Summary.pdf>

You will find brief info on C<EUC-CN>, C<GBK> and mostly on C<GB 18030>.

=item Jungshik Shin's Hangul FAQ

L<<http://jshin.net/faq>>

And especially its subject 8.

L<<http://jshin.net/faq/qa8.html>>

A

comprehensive overview of the Korean (C<KS *>) standards.

=item debian.org: "Introduction to i18n"

A brief description for most of the mentioned CJK encodings is contained in
L<<http://www.debian.org/doc/manuals/intro-i18n/ch-codes.en.html>>

=back

=head2 Offline sources

=over 2

=item C<CJKV Information Processing> by Ken Lunde

CJKV Information Processing
1999 O'Reilly & Associates, ISBN : 1-56592-224-7

The modern successor of C<CJK.inf>.

Features a comprehensive coverage of CJKV character sets and encodings along with many other issues faced by anyone trying to better support CJKV languages/scripts in all the areas of information processing.

To purchase this book, visit
L<<http://oreilly.com/catalog/9780596514471/>>
or your favourite bookstore.

=back

=cut

Found in path(s):

* /opt/cola/permits/1592955672_1678943490.7676501/0/perl-Encode-2.51-7.el7-1.src.rpm-cosi-expand-archive-fimyrDg/Encode-2.51.tar.gz-cosi-expand-archive-upch6pZl/Encode-2.51/lib/Encode/Supported.pod

No license file was found, but licenses were detected in source scan.

Encode::\$_Name_ version 0.1

=====

NAME

Encode::\$_Name_ - <describe encoding>

SYNOPSIS

use Encode::\$_Name_;
#<put more words here>

ABSTRACT

<fill this in>

INSTALLATION

To install this module type the following:

```
perl Makefile.PL
make
make test
make install
```

DEPENDENCIES

This module requires perl version 5.7.3 or later.

COPYRIGHT AND LICENCE

Copyright (C) 2002 Your Name <your@address.domain>

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1592955672_1678943490.7676501/0/perl-Encode-2.51-7.el7-1.src.rpm-cosi-expand-archive-fimyrDg/Encode-2.51.tar.gz-cosi-expand-archive-upch6pzI/Encode-2.51/Encode/README.e2x
```

No license file was found, but licenses were detected in source scan.

=head1 NAME

Encode - character encodings in Perl

=head1 SYNOPSIS

```
use Encode qw(decode encode);
$characters = decode('UTF-8', $octets, Encode::FB_CROAK);
$octets     = encode('UTF-8', $characters, Encode::FB_CROAK);
```

=head2 Table of Contents

Encode consists of a collection of modules whose details are too extensive to fit in one document. This one itself explains the top-level APIs and general topics at a glance. For other topics and more details, see the documentation for these modules:

=over 2

=item L<Encode::Alias> - Alias definitions to encodings

=item L<Encode::Encoding> - Encode Implementation Base Class

=item L<Encode::Supported> - List of Supported Encodings

=item L<Encode::CN> - Simplified Chinese Encodings

=item L<Encode::JP> - Japanese Encodings

=item L<Encode::KR> - Korean Encodings

=item L<Encode::TW> - Traditional Chinese Encodings

=back

=head1 DESCRIPTION

The C<Encode> module provides the interface between Perl strings and the rest of the system. Perl strings are sequences of I<characters>.

The repertoire of characters that Perl can represent is a superset of those defined by the Unicode Consortium. On most platforms the ordinal values of a character as returned by C<ord(I<S>)> is the I<Unicode codepoint> for that character. The exceptions are platforms where the legacy encoding is some variant of EBCDIC rather than a superset of ASCII; see L<perlebcdic>.

During recent history, data is moved around a computer in 8-bit chunks, often called "bytes" but also known as "octets" in standards documents. Perl is widely used to manipulate data of many types: not only strings of characters representing human or computer languages, but also "binary" data, being the machine's representation of numbers, pixels in an image, or just about anything.

When Perl is processing "binary data", the programmer wants Perl to process "sequences of bytes". This is not a problem for Perl: because a byte has 256 possible values, it easily fits in Perl's much larger "logical character".

This document mostly explains the I<how>. L<perlunitut> and L<perlunifaq> explain the I<why>.

=head2 TERMINOLOGY

=head3 character

A character in the range 0 .. 2**32-1 (or more); what Perl's strings are made of.

=head3 byte

A character in the range 0..255;
a special case of a Perl character.

=head3 octet

8 bits of data, with ordinal values 0..255;
term for bytes passed to or from a non-Perl context, such as a disk file,
standard I/O stream, database, command-line argument, environment variable,
socket etc.

=head1 THE PERL ENCODING API

=head2 Basic methods

=head3 encode

```
$octets = encode(ENCODING, STRING[, CHECK])
```

Encodes the scalar value I<STRING> from Perl's internal form into I<ENCODING> and returns a sequence of octets. I<ENCODING> can be either a canonical name or an alias. For encoding names and aliases, see L</"Defining Aliases">. For CHECK, see L</"Handling Malformed Data">.

For example, to convert a string from Perl's internal format into ISO-8859-1, also known as Latin1:

```
$octets = encode("iso-8859-1", $string);
```

B<CAVEAT>: When you run C<\$octets = encode("utf8", \$string)>, then \$octets I<might not be equal to> \$string. Though both contain the same data, the UTF8 flag for \$octets is I<always> off. When you encode anything, the UTF8 flag on the result is always off, even when it contains a completely valid utf8 string. See L</"The UTF8 flag"> below.

If the \$string is C<undef>, then C<undef> is returned.

=head3 decode

```
$string = decode(ENCODING, OCTETS[, CHECK])
```

This function returns the string that results from decoding the scalar value I<OCTETS>, assumed to be a sequence of octets in I<ENCODING>, into Perl's internal form. The returns the resulting string. As with encode(), I<ENCODING> can be either a canonical name or an alias. For encoding names and aliases, see L</"Defining Aliases">; for I<CHECK>, see L</"Handling

Malformed

Data">.

For example, to convert ISO-8859-1 data into a string in Perl's internal format:

```
$string = decode("iso-8859-1", $octets);
```

B<CAVEAT>: When you run `C<$string = decode("utf8", $octets)>`, then `$string` I<might not be equal to> `$octets`. Though both contain the same data, the UTF8 flag for `$string` is on unless `$octets` consists entirely of ASCII data on ASCII machines or EBCDIC on EBCDIC machines. See L</"The UTF8 flag"> below.

If the `$string` is `C<undef>`, then `C<undef>` is returned.

```
=head3 find_encoding
```

```
[$obj =] find_encoding(ENCODING)
```

Returns the I<encoding object> corresponding to I<ENCODING>. Returns `C<undef>` if no matching I<ENCODING> is found. The returned object is what does the actual encoding or decoding.

```
$utf8 = decode($name, $bytes);
```

is in fact

```
$utf8 = do {  
    $obj = find_encoding($name);  
    croak qq(encoding "$name" not found) unless ref $obj;  
    $obj->decode($bytes);  
};
```

with more error checking.

You can therefore save time by reusing this object as follows;

```
my $enc = find_encoding("iso-8859-1");  
while(<>) {  
    my $utf8 = $enc->decode($_);  
    ... # now do something with $utf8;  
}
```

Besides L</decode> and L</encode>, other methods are available as well. For instance, `C<name()>` returns the canonical name of the encoding object.

```
find_encoding("latin1")->name; # iso-8859-1
```

See [L<Encode::Encoding>](#) for details.

```
=head3 from_to
```

```
[$length =] from_to($octets, FROM_ENC, TO_ENC [, CHECK])
```

Converts [I<in-place>](#) data between two encodings. The data in `$octets` must be encoded as octets and [I<not>](#) as characters in Perl's internal format. For example, to convert ISO-8859-1 data into Microsoft's CP1250 encoding:

```
from_to($octets, "iso-8859-1", "cp1250");
```

and to convert it back:

```
from_to($octets, "cp1250", "iso-8859-1");
```

Because the conversion happens in place, the data to be converted cannot be a string constant: it must be a scalar variable.

`C<from_to()>` returns the length of the converted string in octets on success, and `C<undef>` on error.

B<CAVEAT>: The following operations may look the same, but are not:

```
from_to($data, "iso-8859-1", "utf8"); #1
$data = decode("iso-8859-1", $data); #2
```

Both `#1` and `#2` make `$data` consist of a completely valid UTF-8 string, but only `#2` turns the UTF8 flag on. `#1` is equivalent to:

```
$data = encode("utf8", decode("iso-8859-1", $data));
```

See [L</"The UTF8 flag">](#) below.

Also note that:

```
from_to($octets, $from, $to, $check);
```

is equivalent to:

```
$octets = encode($to, decode($from, $octets), $check);
```

Yes, it does [I<not>](#) respect the `$check` during decoding. It is

deliberately done that way. If you need minute control, use `C<decode>` followed by `C<encode>` as follows:

```
$octets = encode($to, decode($from, $octets, $check_from), $check_to);
```

```
=head3 encode_utf8
```

```
$octets = encode_utf8($string);
```

Equivalent to `C<$octets = encode("utf8", $string)>`. The characters in `$string` are encoded in Perl's internal format, and the result is returned as a sequence of octets. Because all possible characters in Perl have a (loose, not strict) UTF-8 representation, this function cannot fail.

```
=head3 decode_utf8
```

```
$string = decode_utf8($octets [, CHECK]);
```

Equivalent to `C<$string = decode("utf8", $octets [, CHECK])>`.

The sequence of octets represented by `$octets` is decoded from UTF-8 into a sequence of logical characters.

Because not all sequences of octets are valid UTF-8, it is quite possible for this function to fail.

For `CHECK`, see [L<"Handling Malformed Data">](#).

```
=head2 Listing available encodings
```

```
use Encode;
@list = Encode->encodings();
```

Returns a list of canonical names of available encodings that have already been loaded. To get a list of all available encodings including those that have not yet been loaded, say:

```
@all_encodings = Encode->encodings(":all");
```

Or you can give the name of a specific module:

```
@with_jp = Encode->encodings("Encode::JP");
```

When `"C<::>"` is not in the name, `"C<Encode::>"` is assumed.

```
@ebcdic = Encode->encodings("EBCDIC");
```

To find out in detail which encodings are supported by this package, see [L<Encode::Supported>](#).

=head2 Defining Aliases

To add a new alias to a given encoding, use:

```
use Encode;
use Encode::Alias;
define_alias(NEWNAME => ENCODING);
```

After that, I<NEWNAME> can be used as an alias for I<ENCODING>. I<ENCODING> may be either the name of an encoding or an I<encoding object>.

Before you do that, first make sure the alias is nonexistent using C<resolve_alias()>, which returns the canonical name thereof.

For example:

```
Encode::resolve_alias("latin1") eq "iso-8859-1" # true
Encode::resolve_alias("iso-8859-12") # false; nonexistent
Encode::resolve_alias($name) eq $name # true if $name is canonical
```

C<resolve_alias()> does not need C<use Encode::Alias>; it can be imported via C<use Encode qw(resolve_alias)>.

See L<Encode::Alias> for details.

=head2 Finding IANA Character Set Registry names

The canonical name of a given encoding does not necessarily agree with IANA Character Set Registry, commonly seen as C<< Content-Type: text/plain; charset=I<WHATEVER> >>. For most cases, the canonical name works, but sometimes it does not, most notably with "utf-8-strict".

As of C<Encode> version 2.21, a new method C<mime_name()> is therefore added.

```
use Encode;
my $enc = find_encoding("UTF-8");
warn $enc->name; # utf-8-strict
warn $enc->mime_name; # UTF-8
```

See also: L<Encode::Encoding>

=head1 Encoding via PerlIO

If your perl supports C<PerlIO> (which is the default), you can use a C<PerlIO> layer to decode and encode directly via a filehandle. The following two examples are fully identical in functionality:

```

### Version 1 via PerlIO
open(INPUT, "< :encoding(shiftjis)", $infile)
    || die "Can't open < $infile for reading: $!";
open(OUTPUT, "> :encoding(euc-jp)", $outfile)
    || die "Can't open > $output for writing: $!";
while (<INPUT>) { # auto decodes $_
    print OUTPUT;
# auto encodes $_
}
close(INPUT) || die "can't close $infile: $!";
close(OUTPUT) || die "can't close $outfile: $!";

```

```

### Version 2 via from_to()
open(INPUT, "< :raw", $infile)
    || die "Can't open < $infile for reading: $!";
open(OUTPUT, "> :raw", $outfile)
    || die "Can't open > $output for writing: $!";

while (<INPUT>) {
    from_to($_, "shiftjis", "euc-jp", 1); # switch encoding
    print OUTPUT; # emit raw (but properly encoded) data
}
close(INPUT) || die "can't close $infile: $!";
close(OUTPUT) || die "can't close $outfile: $!";

```

In the first version above, you let the appropriate encoding layer handle the conversion. In the second, you explicitly translate from one encoding to the other.

Unfortunately, it may be that encodings are C<PerlIO>-savvy. You can check to see whether your encoding is supported by C<PerlIO> by invoking the C<perlio_ok> method on it:

```

Encode::perlio_ok("hz");          # false
find_encoding("euc-cn")->perlio_ok;
# true wherever PerlIO is available

use Encode qw(perlio_ok);        # imported upon request
perlio_ok("euc-jp")

```

Fortunately, all encodings that come with C<Encode> core are C<PerlIO>-savvy except for C<hz> and C<ISO-2022-kr>. For the gory details, see L<Encode::Encoding> and L<Encode::PerlIO>.

=head1 Handling Malformed Data

The optional I<CHECK> argument tells C<Encode> what to do when encountering malformed data. Without I<CHECK>, C<Encode::FB_DEFAULT>

(== 0) is assumed.

As of version 2.12, C<Encode> supports coderef values for C<CHECK>; see below.

B<NOTE:> Not all encodings support this feature.

Some encodings ignore the I<CHECK> argument. For example, L<Encode::Unicode> ignores I<CHECK> and it always croaks on error.

=head2 List of I<CHECK> values

=head3 FB_DEFAULT

I<CHECK> = Encode::FB_DEFAULT (== 0)

If I<CHECK> is 0, encoding and decoding replace any malformed character with a I<substitution character>. When you encode, I<SUBCHAR> is used.

When you decode, the Unicode REPLACEMENT CHARACTER, code point U+FFFD, is used. If the data is supposed to be UTF-8, an optional lexical warning of warning category C<"utf8"> is given.

=head3 FB_CROAK

I<CHECK> = Encode::FB_CROAK (== 1)

If I<CHECK> is 1, methods immediately die with an error message. Therefore, when I<CHECK> is 1, you should trap exceptions with C<eval{ }>, unless you really want to let it C<die>.

=head3 FB_QUIET

I<CHECK> = Encode::FB_QUIET

If I<CHECK> is set to C<Encode::FB_QUIET>, encoding and decoding immediately return the portion of the data that has been processed so far when an error occurs. The data argument is overwritten with everything after that point; that is, the unprocessed portion of the data. This is handy when you have to call C<decode> repeatedly in the case where your source data may contain partial multi-byte character sequences, (that is, you are reading with a fixed-width buffer). Here's some sample code to do exactly that:

```
my($buffer, $string) = ("", "");
while (read($fh, $buffer, 256, length($buffer))) {
    $string .= decode($encoding, $buffer, Encode::FB_QUIET);
    # $buffer now contains the unprocessed partial character
```



```
}
```

```
=head3 FB_WARN
```

```
I<CHECK> = Encode::FB_WARN
```

This is the same as C<FB_QUIET> above, except that instead of being silent on errors, it issues a warning. This is handy for when you are debugging.

```
=head3 FB_PERLQQ FB_HTMLCREF FB_XMLCREF
```

```
=over 2
```

```
=item perlqq mode (I<CHECK> = Encode::FB_PERLQQ)
```

```
=item HTML charref mode (I<CHECK> = Encode::FB_HTMLCREF)
```

```
=item XML charref mode (I<CHECK> = Encode::FB_XMLCREF)
```

```
=back
```

For encodings that are implemented by the C<Encode::XS> module, C<CHECK> C<===> C<Encode::FB_PERLQQ> puts C<encode> and C<decode> into C<perlqq> fallback mode.

When you decode, C<\xI<HH>> is inserted for a malformed character, where I<HH> is the hex representation of the octet that could not be decoded to utf8. When you encode, C<\x{I<HHHH>}> will be inserted, where I<HHHH> is the Unicode code point (in any number of hex digits) of the character that cannot be found in the character repertoire of the encoding.

The HTML/XML character reference modes are about the same. In place of C<\x{I<HHHH>}>, HTML uses C<&#I<NNN>;> where I<NNN> is a decimal number, and XML uses C<&#xI<HHHH>;> where I<HHHH> is the hexadecimal number.

In C<Encode> 2.10 or later, C<LEAVE_SRC> is also implied.

```
=head3 The bitmask
```

These modes are all actually set via a bitmask. Here is how the C<FB_I<XXX>> constants are laid out. You can import the C<FB_I<XXX>> constants via C<use Encode qw(:fallbacks)>, and you can import the generic bitmask constants via C<use Encode qw(:fallback_all)>.

```
          FB_DEFAULT FB_CROAK FB_QUIET FB_WARN FB_PERLQQ
DIE_ON_ERR 0x0001      X
WARN_ON_ERR 0x0002          X
RETURN_ON_ERR 0x0004      X   X
```

```
LEAVE_SRC  0x0008
           X
PERLQQ     0x0100           X
HTMLCREF   0x0200
XMLCREF    0x0400
```

=head3 LEAVE_SRC

Encode::LEAVE_SRC

If the C<Encode::LEAVE_SRC> bit is I<not> set but I<CHECK> is set, then the source string to encode() or decode() will be overwritten in place.

If you're not interested in this, then bitwise-OR it with the bitmask.

=head2 coderef for CHECK

As of C<Encode> 2.12, C<CHECK> can also be a code reference which takes the ordinal value of the unmapped character as an argument and returns a string that represents the fallback character. For instance:

```
$ascii = encode("ascii", $utf8, sub{ sprintf "<U+%04X>", shift });
```

Acts like C<FB_PERLQQ> but U+I<XXXX> is used instead of C<\x{I<XXXX>}>.

=head1 Defining Encodings

To define a new encoding, use:

```
use Encode qw(define_encoding);
define_encoding($object, CANONICAL_NAME [, alias...]);
```

I<CANONICAL_NAME> will be associated with I<\$object>. The object should provide the interface described in L<Encode::Encoding>.

If more than two arguments are provided, additional arguments are considered aliases for I<\$object>.

See L<Encode::Encoding> for details.

=head1 The UTF8 flag

Before the introduction of Unicode support in Perl, The C<eq> operator just compared the strings represented by two scalars. Beginning with Perl 5.8, C<eq> compares two strings with simultaneous consideration of I<the UTF8 flag>. To explain why we made it so, I quote from page 402 of I<Programming Perl, 3rd ed.>

=over 2

=item Goal #1:

Old byte-oriented programs should not spontaneously break on the old byte-oriented data they used to work on.

=item Goal #2:

Old byte-oriented programs should magically start working on the new character-oriented data when appropriate.

=item Goal #3:

Programs should run just as fast in the new character-oriented mode as in the old byte-oriented mode.

=item Goal #4:

Perl should remain one language, rather than forking into a byte-oriented Perl and a character-oriented Perl.

=back

When I<Programming Perl, 3rd ed.> was written, not even Perl 5.6.0 had been born yet, many features documented in the book remained unimplemented for a long time. Perl 5.8 corrected much of this, and the introduction of the UTF8 flag is one of them. You can think of there being two fundamentally different kinds of strings and string-operations in Perl: one a byte-oriented mode for when the internal UTF8 flag is off, and the other a character-oriented mode for when the internal UTF8 flag is on.

Here is how C<Encode> handles the UTF8 flag.

=over 2

=item *

When you I<encode>, the resulting UTF8 flag is always B<off>.

=item *

When you I<decode>, the resulting UTF8 flag is B<on>--I<unless> you can unambiguously represent data. Here is what we mean by "unambiguously". After C<\$utf8 = decode("foo", \$octet)>,

When \$octet is... The UTF8 flag in \$utf8 is

In ASCII only (or EBCDIC only) OFF

In ISO-8859-1 ON

In any other Encoding ON

As you see, there is one exception: in ASCII. That way you can assume Goal #1. And with C<Encode>, Goal #2 is assumed but you still have to be careful in the cases mentioned in the B<CAVEAT> paragraphs above.

This UTF8 flag is not visible in Perl scripts, exactly for the same reason you cannot (or rather, you I<don't have to>) see whether a scalar contains a string, an integer, or a floating-point number. But you can still peek and poke these if you will. See the next section.

=back

=head2 Messing with Perl's Internals

The following API uses parts of Perl's internals in the current implementation. As such, they are efficient but may change in a future release.

=head3 is_utf8

is_utf8(STRING [, CHECK])

[INTERNAL] Tests whether the UTF8 flag is turned on in the I<STRING>. If I<CHECK> is true, also checks whether I<STRING> contains well-formed UTF-8.

Returns true if successful, false otherwise.

As of Perl 5.8.1, L<utf8> also has the C<utf8::is_utf8> function.

=head3 _utf8_on

_utf8_on(STRING)

[INTERNAL] Turns the I<STRING>'s internal UTF8 flag B<on>. The I<STRING> is I<not> checked for containing only well-formed UTF-8. Do not use this unless you I<know with absolute certainty> that the STRING holds only well-formed UTF-8. Returns the previous state of the UTF8 flag (so please don't treat the return value as indicating success or failure), or C<undef> if I<STRING> is not a string.

B<NOTE>: For security reasons, this function does not work on tainted values.

=head3 _utf8_off

`_utf8_off(STRING)`

[INTERNAL] Turns the I<STRING>'s internal UTF8 flag B<off>. Do not use frivolously. Returns the previous state of the UTF8 flag, or C<undef> if I<STRING> is not a string. Do not treat the return value as indicative of success or failure, because that isn't what it means: it is only the previous setting.

B<NOTE>:

For security reasons, this function does not work on tainted values.

=head1 UTF-8 vs. utf8 vs. UTF8

...We now view strings not as sequences of bytes, but as sequences of numbers in the range 0 .. 2**32-1 (or in the case of 64-bit computers, 0 .. 2**64-1) -- Programming Perl, 3rd ed.

That has historically been Perl's notion of UTF-8, as that is how UTF-8 was first conceived by Ken Thompson when he invented it. However, thanks to later revisions to the applicable standards, official UTF-8 is now rather stricter than that. For example, its range is much narrower (0 .. 0x10_FFFF to cover only 21 bits instead of 32 or 64 bits) and some sequences are not allowed, like those used in surrogate pairs, the 31 non-character code points 0xFDD0 .. 0xFDEF, the last two code points in I<any> plane (0xI<XX>_FFFE and 0xI<XX>_FFFF), all non-shortest encodings, etc.

The former default in which Perl would always use a loose interpretation of UTF-8 has now been overruled:

From: Larry Wall

<larry@wall.org>

Date: December 04, 2004 11:51:58 JST

To: perl-unicode@perl.org

Subject: Re: Make Encode.pm support the real UTF-8

Message-Id: <20041204025158.GA28754@wall.org>

On Fri, Dec 03, 2004 at 10:12:12PM +0000, Tim Bunce wrote:

: I've no problem with 'utf8' being perl's unrestricted uft8 encoding,
: but "UTF-8" is the name of the standard and should give the
: corresponding behaviour.

For what it's worth, that's how I've always kept them straight in my head.

Also for what it's worth, Perl 6 will mostly default to strict but make it easy to switch back to lax.

Larry

Got that? As of Perl 5.8.7, `B<"UTF-8">` means UTF-8 in its current sense, which is conservative and strict and security-conscious, whereas `B<"utf8">` means UTF-8 in its former sense, which was liberal and loose and lax. `C<Encode>` version 2.10 or later thus groks this subtle but critically important distinction between `C<"UTF-8">` and `C<"utf8">`.

```
encode("utf8", "\x{FFFF_FFFF}", 1); #  
okay  
encode("UTF-8", "\x{FFFF_FFFF}", 1); # croaks
```

In the `C<Encode>` module, `C<"UTF-8">` is actually a canonical name for `C<"utf-8-strict">`. That hyphen between the `C<"UTF">` and the `C<"8">` is critical; without it, `C<Encode>` goes "liberal" and (perhaps overly-)permissive:

```
find_encoding("UTF-8")->name # is 'utf-8-strict'  
find_encoding("utf-8")->name # ditto. names are case insensitive  
find_encoding("utf_8")->name # ditto. "_" are treated as "-"  
find_encoding("UTF8")->name # is 'utf8'.
```

Perl's internal UTF8 flag is called "UTF8", without a hyphen. It indicates whether a string is internally encoded as "utf8", also without a hyphen.

=head1 SEE ALSO

`L<Encode::Encoding>`,
`L<Encode::Supported>`,
`L<Encode::PerlIO>`,
`L<encoding>`,
`L<perlebcdic>`,
`L<perlfunc/open>`,
`L<perlunicode>`, `L<perluniintro>`, `L<perlunifaq>`, `L<perlunitut>`
`L<utf8>`,
the Perl Unicode Mailing List `L<http://lists.perl.org/list/perl-unicode.html>`

=head1 MAINTAINER

This project was originated by the late Nick Ing-Simmons and later maintained by Dan Kogai `I<< <dankogai@cpan.org> >>`. See `AUTHORS` for a full list of people involved. For any questions, send mail to `I<< <perl-unicode@perl.org> >>` so that we can all share.

While Dan Kogai retains the copyright as a maintainer, credit should go to all those involved. See `AUTHORS` for a list of those who submitted code to the project.

=head1 COPYRIGHT

Copyright 2002-2013 Dan Kogai I<< <dankogai@cpan.org> >>.

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

=cut

Found in path(s):

* /opt/cola/permits/1592955672_1678943490.7676501/0/perl-Encode-2.51-7.el7-1.src.rpm-cosi-expand-archive-fimyrdDg/Encode-2.51.tar.gz-cosi-expand-archive-upch6pZl/Encode-2.51/Encode.pm

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955672_1678943490.7676501/0/perl-Encode-2.51-7.el7-1.src.rpm-cosi-expand-archive-fimyrdDg/perl-Encode.spec

1.290 perl-constant 1.27-2.el7

1.290.1 Available under license :

No license file was found, but licenses were detected in source scan.

abstract: 'Perl pragma to declare constants'

author:

- 'SÃ©bastien Aperghis-Tramoni <sebastien@aperghis.net>'

build_requires:

Test::More: 0

configure_requires:

Module::Build: 0.2808

dynamic_config: 1

generated_by: 'Module::Build version 0.4003, CPAN::Meta::Converter version 2.120921'

license: perl

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: constant

provides:

constant:

file: lib/constant.pm

version: 1.27

resources:

license: <http://dev.perl.org/licenses/>

version: 1.27

Found in path(s):

* /opt/cola/permits/1592955624_1678786350.193206/0/perl-constant-1.27-2.el7-1.src.rpm-cosi-expand-archive-xclKcctA/constant-1.27.tar.gz-cosi-expand-archive-ju2aihpd/constant-1.27/META.yml

No license file was found, but licenses were detected in source scan.

License: GPL+ or Artistic

Found in path(s):

* /opt/cola/permits/1592955624_1678786350.193206/0/perl-constant-1.27-2.el7-1.src.rpm-cosi-expand-archive-xclKcctA/perl-constant.spec

No license file was found, but licenses were detected in source scan.

NAME

constant - Perl pragma to declare constants

DESCRIPTION

This pragma allows you to declare constants at compile-time.

When a constant is used in an expression, Perl replaces it with its value at compile time, and may then optimize the expression further. In particular, any code in an "if (CONSTANT)" block will be optimized away if the constant is false.

INSTALLATION

To install this module, run the following commands:

```
perl Makefile.PL
make
make test
make install
```

Alternatively, to install with Module::Build, you can use the following commands:

```
perl Build.PL
./Build
./Build test
./Build install
```

SUPPORT AND DOCUMENTATION

After installing, you can find documentation for this module with the perldoc command.

perldoc constant

You can also look for information at:

Search CPAN

<http://search.cpan.org/dist/constant>

CPAN Request Tracker:

<http://rt.cpan.org/Dist/Display.html?Name=constant>

AnnoCPAN, annotated CPAN documentation:

<http://annocpan.org/dist/constant>

CPAN Ratings:

<http://cpanratings.perl.org/d/constant>

COPYRIGHT AND LICENCE

Copyright (C) 1997, 1999 Tom Phoenix.

This program is free software; you can redistribute it and/or modify it under the same terms as Perl itself.

Found in path(s):

```
* /opt/cola/permits/1592955624_1678786350.193206/0/perl-constant-1.27-2.el7-1.src.rpm-cosi-expand-archive-xclKcctA/constant-1.27.tar.gz-cosi-expand-archive-ju2aihpd/constant-1.27/README
```

No license file was found, but licenses were detected in source scan.

=head1 NAME

constant - Perl pragma to declare constants

=head1 SYNOPSIS

```
use constant PI => 4 * atan2(1, 1);
```

```
use constant DEBUG => 0;
```

```
print "Pi equals ", PI, "...\n" if DEBUG;
```

```
use constant {  
    SEC => 0,  
    MIN => 1,  
    HOUR => 2,  
    MDAY => 3,
```

```

MON => 4,
YEAR => 5,
WDAY => 6,
YDAY => 7,
ISDST => 8,
};

use constant WEEKDAYS => qw(
    Sunday Monday Tuesday Wednesday Thursday Friday Saturday
);

print "Today is ", (WEEKDAYS)[ (localtime)[WDAY] ], ".\n";

```

=head1 DESCRIPTION

This pragma allows you to declare constants at compile-time.

When you declare a constant such as C<PI> using the method shown above, each machine your script runs upon can have as many digits of accuracy as it can use. Also, your program will be easier to read, more likely to be maintained (and maintained correctly), and far less likely to send a space probe to the wrong planet because nobody noticed the one equation in which you wrote C<3.14195>.

When a constant is used in an expression, Perl replaces it with its value at compile time, and may then optimize the expression further. In particular, any code in an C<if (CONSTANT)> block will be optimized away if the constant is false.

=head1 NOTES

As with all C<use> directives, defining a constant happens at compile time. Thus, it's probably not correct to put a constant declaration inside of a conditional statement (like C<if (\$foo) { use constant ... }>).

Constants defined using this module cannot be interpolated into strings like variables. However, concatenation works just fine:

```

print "Pi equals PI...\n";    # WRONG: does not expand "PI"
print "Pi equals ".PI."...\n"; # right

```

Even though a reference may be declared as a constant, the reference may point to data which may be changed, as this code shows.

```

use constant ARRAY => [ 1,2,3,4 ];

```

```
print ARRAY->[1];
ARRAY->[1] = " be changed";
print ARRAY->[1];
```

Dereferencing constant references incorrectly (such as using an array subscript on a constant hash reference, or vice versa) will be trapped at compile time.

Constants belong to the package they are defined in. To refer to a constant defined in another package, specify the full package name, as in `C<Some::Package::CONSTANT>`. Constants may be exported by modules, and may also be called as either class or instance methods, that is, as `C<< Some::Package->CONSTANT >>` or as `C<< $obj->CONSTANT >>` where `C<$obj>` is an instance of `C<Some::Package>`. Subclasses may define their own constants to override those in their base class.

The use of all caps for constant names is merely a convention, although it is recommended in order to make constants stand out and to help avoid collisions with other barewords, keywords, and subroutine names. Constant names must begin with a letter or underscore. Names beginning with a double underscore are reserved. Some poor choices for names will generate warnings, if warnings are enabled at compile time.

=head2 List constants

Constants may be lists of more (or less) than one value. A constant with no values evaluates to `C<undef>` in scalar context. Note that constants with more than one value do `I<not>` return their last value in scalar context as one might expect. They currently return the number of values, but `B<this may change in the future>`. Do not use constants with multiple values in scalar context.

`B<NOTE:>` This implies that the expression defining the value of a constant is evaluated in list context. This may produce surprises:

```
use constant TIMESTAMP => localtime;      # WRONG!
use constant TIMESTAMP => scalar localtime; # right
```

The first line above defines `C<TIMESTAMP>` as a 9-element list, as returned by `C<localtime()>` in list context. To set it to the string returned by `C<localtime()>` in scalar context, an explicit `C<scalar>` keyword is required.

List constants are lists, not arrays. To index or slice them, they must be placed in parentheses.

```
my @workdays = WEEKDAYS[1 .. 5];      # WRONG!
my @workdays = (WEEKDAYS)[1 .. 5];    # right
```

=head2 Defining multiple constants at once

Instead of writing multiple C<use constant> statements, you may define multiple constants in a single statement by giving, instead of the constant name, a reference to a hash where the keys are the names of the constants to be defined. Obviously, all constants defined using this method must have a single value.

```
use constant {
    FOO => "A single value",
    BAR => "This", "won't", "work!",    # Error!
};
```

This is a fundamental limitation of the way hashes are constructed in Perl. The error messages produced when this happens will often be quite cryptic -- in the worst case there may be none at all, and you'll only later find that something is broken.

When defining multiple constants, you cannot use the values of other constants defined in the same declaration. This is because the calling package doesn't know about any constant within that group until I<after> the C<use> statement is finished.

```
use constant {
    BITMASK => 0xAFBAEBA8,
    NEGMASK => ~BITMASK,          # Error!
};
```

=head2 Magic constants

Magical values and references can be made into constants at compile time, allowing for way cool stuff like this. (These error numbers aren't totally portable, alas.)

```
use constant E2BIG => ($! = 7);
print E2BIG, "\n";    # something like "Arg list too long"
print 0+E2BIG, "\n"; # "7"
```

You can't produce a tied constant by giving a tied scalar as the value. References to tied variables, however, can be used as constants without any problems.

=head1 TECHNICAL NOTES

In the current implementation, scalar constants are actually inlinable subroutines. As of version 5.004 of Perl, the appropriate scalar constant is inserted directly in place of some subroutine calls, thereby saving the overhead of a subroutine call. See L<perlsub/"Constant Functions"> for details about how and when this happens.

In the rare case in which you need to discover at run time whether a particular constant has been declared via this module, you may use this function to examine the hash C<%constant::declared>. If the given constant name does not include a package name, the current package is used.

```
sub declared ($) {
    use constant 1.01;      # don't omit this!
    my $name = shift;
    $name =~ s/^\s*/main::/;
    my $pkg = caller;
    my $full_name = $name =~ /::/ ? $name : "${pkg}::$name";
    $constant::declared{$full_name};
}
```

=head1 CAVEATS

In the current version of Perl, list constants are not inlined and some symbols may be redefined without generating a warning.

It is not possible to have a subroutine or a keyword with the same name as a constant in the same package. This is probably a Good Thing.

A constant with a name in the list C<STDIN STDOUT STDERR ARGV ARGVOUT ENV INC SIG> is not allowed anywhere but in package C<main::>, for technical reasons.

Unlike constants in some languages, these cannot be overridden on the command line or via environment variables.

You can get into trouble if you use constants in a context which automatically quotes barewords (as is true for any subroutine call). For example, you can't say C<\$hash{CONSTANT}> because C<CONSTANT> will be interpreted as a string. Use C<\$hash{CONSTANT()}> or C<\$hash{+CONSTANT}> to prevent the bareword quoting mechanism from kicking in. Similarly, since the C<<=>>> operator quotes a bareword immediately to its left, you have to say C<< CONSTANT() => 'value' >> (or simply use a comma in place of the big arrow) instead of

C<< CONSTANT => 'value' >>.

=head1 SEE ALSO

L<Readonly> - Facility for creating read-only scalars, arrays, hashes.

L<Attribute::Constant> - Make read-only variables
via attribute

L<Scalar::Readonly> - Perl extension to the C<SvREADONLY> scalar flag

L<Hash::Util> - A selection of general-utility hash subroutines (mostly
to lock/unlock keys and values)

=head1 BUGS

Please report any bugs or feature requests via the `perlbug(1)` utility.

=head1 AUTHORS

Tom Phoenix, E<lt>F<rootbeer@redcat.com>E<gt>, with help from
many other folks.

Multiple constant declarations at once added by Casey West,
E<lt>F<casey@geeknest.com>E<gt>.

Documentation mostly rewritten by Ilmari Karonen,
E<lt>F<perl@itz.pp.sci.fi>E<gt>.

This program is maintained by the Perl 5 Porters.
The CPAN distribution is maintained by SE<eacute>bastien Aperghis-Tramoni
E<lt>F<sebastien@aperghis.net>E<gt>.

=head1 COPYRIGHT & LICENSE

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=cut

Found in path(s):

* /opt/cola/permits/1592955624_1678786350.193206/0/perl-constant-1.27-2.el7-1.src.rpm-cosi-expand-archive-xclKcctA/constant-1.27.tar.gz-cosi-expand-archive-ju2aihpd/constant-1.27/lib/constant.pm

1.291 perl-storable 2.45-3.el7

1.291.1 Available under license :

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Found in path(s):

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* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-p75jAUEh/perl-Storable.spec

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=back

=head1 NOTES

Test::More is B<explicitly> tested all the way back to perl 5.004.

Test::More is thread-safe for perl 5.8.0 and up.

=head1 BUGS and CAVEATS

=over 4

=item Making your own ok()

If you are trying to extend Test::More, don't. Use Test::Builder instead.

=item The eq_* family has some caveats.

=item Test::Harness upgrades

no_plan and todo depend on new Test::Harness features and fixes. If you're going to distribute tests that use no_plan or todo your end-users will have to upgrade Test::Harness to the latest one on CPAN. If you avoid no_plan and TODO tests, the stock Test::Harness will work fine.

If you simply depend on Test::More, its own dependencies will cause a Test::Harness upgrade.

=back

=head1 HISTORY

This is a case of convergent evolution with Joshua Pritikin's Test module. I was largely unaware of its existence when I'd first written my own ok() routines. This module exists because I can't figure out how to easily wedge test names into Test's interface (along with a few other problems).

The goal here is to have a testing utility that's simple to learn, quick to use and difficult to trip yourself up with while still providing more flexibility than the existing Test.pm. As such, the names of the most common routines are kept tiny, special cases and magic side-effects are kept to a minimum. WYSIWYG.

=head1 SEE ALSO

L<Test::Simple> if all this confuses you and you just want to write some tests. You can upgrade to Test::More later (it's forward compatible).

L<Test::Differences> for more ways to test complex data structures. And it plays well with Test::More.

L<Test> is the old testing module. Its main benefit is that it has been distributed with Perl since 5.004_05.

L<Test::Harness> for details on how your test results are interpreted by Perl.

L<Test::Unit> describes a very featureful unit testing interface.

L<Test::Inline> shows the idea of embedded testing.

L<SelfTest> is another approach to embedded testing.

=head1 AUTHORS

Michael G Schwern E<lt>schwern@pobox.comE<gt> with much inspiration

from Joshua Pritikin's Test module and lots of help from Barrie Slaymaker, Tony Bowden, chromatic and the perl-qa gang.

=head1 COPYRIGHT

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=cut

Found in path(s):

* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-p75jAUEh/Storable-2.45.tar.gz-cosi-expand-archive-EAI2rTY3/Storable-2.45/t/compat/Test/More.pm

No license file was found, but licenses were detected in source scan.

=back

Test::Simple will start by printing number of tests run in the form "1..M" (so "1..5" means you're going to run 5 tests). This strange format lets Test::Harness know how many tests you plan on running in case something goes horribly wrong.

If all your tests passed, Test::Simple will exit with zero (which is normal). If anything failed it will exit with how many failed. If you run less (or more) tests than you planned, the missing (or extras) will be considered failures. If no tests were ever run Test::Simple will throw a warning and exit with 255. If the test died, even after having successfully completed all its tests, it will still be considered a failure and will exit with 255.

So the exit codes are...

0	all tests successful
255	test died
any other number	how many failed (including missing or extras)

If you fail more than 254 tests, it will be reported as 254.

This module is by no means trying to be a complete testing system. It's just to get you started. Once you're off the ground its recommended you look at L<Test::More>.

=head1 EXAMPLE

Here's an example of a simple .t file for the fictional Film module.

```
use Test::Simple tests => 5;

use Film; # What you're testing.

my $btaste = Film->new({ Title => 'Bad Taste',
                        Director => 'Peter Jackson',
                        Rating => 'R',
                        NumExplodingSheep => 1
                      });
ok( defined($btaste) and ref $btaste eq 'Film', 'new() works' );

ok( $btaste->Title eq 'Bad Taste', 'Title() get' );
ok( $btaste->Director eq 'Peter Jackson', 'Director() get' );
ok( $btaste->Rating eq 'R', 'Rating() get' );
ok( $btaste->NumExplodingSheep == 1, 'NumExplodingSheep() get' );
```

It will produce output like this:

```
1..5
ok 1 - new() works
ok 2 - Title() get
ok 3 - Director() get
not ok 4 - Rating() get
# Failed test (t/film.t at line 14)
ok 5 - NumExplodingSheep() get
# Looks like you failed 1 tests of 5
```

Indicating the Film::Rating() method is broken.

=head1 CAVEATS

Test::Simple will only report a maximum of 254 failures in its exit code. If this is a problem, you probably have a huge test script. Split it into multiple files. (Otherwise blame the Unix folks for using an unsigned short integer as the exit status).

Because VMS's exit codes are much, much different than the rest of the universe, and perl does horrible mangling to them that gets in my way, it works like this on VMS.

```
0  SS$_NORMAL    all tests successful
4  SS$_ABORT     something went wrong
```

Unfortunately, I can't differentiate any further.

=head1 NOTES

Test::Simple is B<explicitly> tested all the way back to perl 5.004.

Test::Simple is thread-safe in perl 5.8.0 and up.

=head1 HISTORY

This

module was conceived while talking with Tony Bowden in his kitchen one night about the problems I was having writing some really complicated feature into the new Testing module. He observed that the main problem is not dealing with these edge cases but that people hate to write tests B<at all>. What was needed was a dead simple module that took all the hard work out of testing and was really, really easy to learn. Paul Johnson simultaneously had this idea (unfortunately, he wasn't in Tony's kitchen). This is it.

=head1 SEE ALSO

=over 4

=item L<Test::More>

More testing functions! Once you outgrow Test::Simple, look at Test::More. Test::Simple is 100% forward compatible with Test::More (i.e. you can just use Test::More instead of Test::Simple in your programs and things will still work).

=item L<Test>

The original Perl testing module.

=item L<Test::Unit>

Elaborate unit testing.

=item L<Test::Inline>, L<SelfTest>

Embed tests in your code!

=item L<Test::Harness>

Interprets
the output of your test program.

=back

=head1 AUTHORS

Idea by Tony Bowden and Paul Johnson, code by Michael G Schwern
E<lt>schwern@pobox.comE<gt>, wardrobe by Calvin Klein.

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=cut

Found in path(s):

* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-
p75jAUEh/Storable-2.45.tar.gz-cosi-expand-archive-EAI2rTY3/Storable-2.45/t/compat/Test/Simple.pm

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abstract: unknown

author:

- unknown

build_requires:

ExtUtils::MakeMaker: 0

configure_requires:

ExtUtils::MakeMaker: 0

dynamic_config: 1

generated_by: 'ExtUtils::MakeMaker version 6.68, CPAN::Meta::Converter version 2.112621'

license: unknown

meta-spec:

url: <http://module-build.sourceforge.net/META-spec-v1.4.html>

version: 1.4

name: Storable

no_index:

directory:

- t

- inc

requires:

XSLoader: 0
resources:
bugtracker: <http://rt.perl.org/perlbug/>
version: 2.45

Found in path(s):

* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-p75jAUEh/Storable-2.45.tar.gz-cosi-expand-archive-EAI2rTY3/Storable-2.45/META.yml

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Storable 2.14

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+=====

| Storable is distributed as a module, but is also part of the official
| Perl core distribution, as of perl 5.8.
| Maintenance is now done by the perl5-porters. We thank Raphael
| Manfredi for providing us with this very
| useful module.

+=====

The Storable extension brings persistence to your data.

You may recursively store to disk any data structure, no matter how
complex and circular it is, provided it contains only SCALAR, ARRAY,
HASH (possibly tied) and references (possibly blessed) to those items.

At a later stage, or in another program, you may retrieve data from
the stored file and recreate the same hierarchy in memory. If you
had blessed references, the retrieved references are blessed into
the same package, so you must make sure you have access to the
same perl class than the one used to create the relevant objects.

There is also a dclone() routine which performs an optimized mirroring
of any data structure, preserving its topology.

Objects (blessed references) may also redefine the way storage and

retrieval is performed, and/or what deep cloning should do on those objects.

To compile this extension, run:

```
perl Makefile.PL
[PERL_SRC=...where you put perl sources...]
make
make install
```

There is an embedded POD manual page in Storable.pm.

Storable was written by Raphael Manfredi <Raphael_Manfredi@pobox.com>
Maintenance is now done by the perl5-porters <perl5-porters@perl.org>

Please e-mail us with problems, bug fixes, comments and complaints, although if you have complements you should send them to Raphael. Please don't e-mail Raphael with problems, as he no longer works on Storable, and your message will be delayed while he forwards it to us.

Thanks to (in chronological order):

Jarkko Hietaniemi <jhi@iki.fi>
Ulrich Pfeifer <pfeifer@charly.informatik.uni-dortmund.de>
Benjamin A. Holzman <bholzman@earthlink.net>
Andrew Ford <A.Ford@ford-mason.co.uk>
Gisle Aas <gisle@aas.no>
Jeff Gresham <gresham_jeffrey@jpmorgan.com>
Murray Nesbitt <murray@activestate.com>
Albert N. Micheev <Albert.N.Micheev@f80.n5049.z2.fidonet.org>
Marc Lehmann <pcg@opengroup.org>
Justin Banks <justinb@wamnet.com>
Jarkko Hietaniemi <jhi@iki.fi> (AGAIN, as perl 5.7.0 Pumpkin!)

for their contributions.

A Japanese translation of this man page is available at the Japanized Perl Resources Project <<https://sourceforge.jp/projects/perldocjp/>>.

The perl5-porters would like to thank

Raphael Manfredi <Raphael_Manfredi@pobox.com>

According to the perl5.8 Changes file, the following people have helped bring you this Storable release:

Abhijit Menon-Sen <ams@wiw.org>
Andreas J. Koenig <andreas.koenig@anima.de>
Archer Sully <archer@meer.net>
Craig A. Berry <craig.berry@psinetcs.com>
Dan Kogai <dankogai@dan.co.jp>
Doug MacEachern <dougmac@covalent.net>
Gurusamy Sarathy <gsar@ActiveState.com>
H.Merijn Brand <h.m.brand@xs4all.nl>
Jarkko Hietaniemi <jhi@iki.fi>
Mark Bixby
Michael Stevens
<michael@etla.org>
Mike Guy <mjtg@cam.ac.uk>
Nicholas Clark <nick@unfortu.net>
Peter J. Farley III <pjfarley@banet.net>
Peter Prymmer <pvhp@forte.com>
Philip Newton <pne@cpan.org>
Raphael Manfredi <Raphael_Manfredi@pobox.com>
Robin Barker <rmb1@cise.npl.co.uk>
Radu Greab <radu@netsoft.ro>
Tim Bunce <Tim.Bunce@pobox.com>
VMSperlrs
Yitzchak Scott-Thoennes <sthoenna@efn.org>

If I've missed you out, please accept my apologies, and e-mail your patch to perl5-porters@perl.org.

Found in path(s):

```
* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-75jAUEh/Storable-2.45.tar.gz-cosi-expand-archive-EAI2rTY3/Storable-2.45/README
```

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=head1 THREADS

In perl 5.8.0 and later, Test::Builder is thread-safe. The test number is shared amongst all threads. This means if one thread sets the test number using current_test() they will all be effected.

=head1 EXAMPLES

CPAN can provide the best examples. Test::Simple, Test::More, Test::Exception and Test::Differences all use Test::Builder.

=head1 SEE ALSO

Test::Simple, Test::More, Test::Harness

=head1 AUTHORS

Original code by chromatic, maintained by Michael G Schwern
E<lt>schwern@pobox.comE<gt>

=head1 COPYRIGHT

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Found in path(s):

* /opt/cola/permits/1592955594_1678786368.6658235/0/perl-Storable-2.45-3.el7-1.src.rpm-cosi-expand-archive-
p75jAUEh/Storable-2.45.tar.gz-cosi-expand-archive-EAI2rTY3/Storable-2.45/t/compat/Test/Builder.pm

1.292 pcre 8.32-14.el7

1.292.1 Available under license :

PCRE LICENCE

PCRE is a library of functions to support regular expressions whose syntax
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specified below. The documentation for PCRE, supplied in the "doc"
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The basic library functions are written in C and are freestanding. Also
included in the distribution is a set of C++ wrapper functions, and a
just-in-time compiler that can be used to optimize pattern matching. These
are both optional features that can be omitted when the library is built.

THE BASIC LIBRARY FUNCTIONS

Written by: Philip Hazel
Email local part: ph10
Email domain: cam.ac.uk

University of Cambridge Computing Service,

Cambridge, England.

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PCRE JUST-IN-TIME COMPILATION SUPPORT

Written

by: Zoltan Herczeg
Email local part: hzmester
Email domain: freemail.hu

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STACK-LESS JUST-IN-TIME COMPILER

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1.293 setup 2.8.71-5.el7

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1.294 sysv-init 2.86-1

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Version 2, June 1991

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The of the start-stop-daemon

- * A rewrite of the original Debian's start-stop-daemon Perl script
- * in C (faster - it is executed many times during system startup).
- *
- * Written by Marek Michalkiewicz <marekm@i17linuxb.ists.pwr.wroc.pl>,
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1.295 sysv-init 2.88

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- * A rewrite
- of the original Debian's start-stop-daemon Perl script
- * in C (faster - it is executed many times during system startup).
- *
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1.297 sblim-sfcb 1.3.8

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Ajay Joshi <jaj@google.com>

Balzs Dn <balazs.dan@gmail.com>

Benoit Sigoure <tsuna@google.com>

Bharat Mediratta <bharat@menalto.com>

Bogdan Piloca <boo@google.com>

Chandler Carruth <chandlerc@google.com>

Chris Prince <cprince@google.com>

Chris Taylor <taylorc@google.com>

Dan Egnor <egnor@google.com>

Dave MacLachlan <dmaclach@gmail.com>

David Anderson <danderson@google.com>

Dean Sturtevant

Eric Roman <eroman@chromium.org>

Gene Volovich <gv@cite.com>

Hady Zalek <hady.zalek@gmail.com>

Hal Burch <gmock@hburch.com>

Jeffrey Yasskin <jyasskin@google.com>

Jim Keller <jimkeller@google.com>

Joe Walnes <joe@truemesh.com>

Jon Wray <jwray@google.com>

Ji Sigursson <joi@google.com>

Keir Mierle <mierle@gmail.com>
Keith Ray <keith.ray@gmail.com>
Kenton Varda
<kenton@google.com>
Kostya Serebryany <kcc@google.com>
Krystian Kuzniarek <krystian.kuzniarek@gmail.com>
Lev Makhlis
Manuel Klimek <klimek@google.com>
Mario Tanev <radix@google.com>
Mark Paskin
Markus Heule <markus.heule@gmail.com>
Matthew Simmons <simmonmt@acm.org>
Mika Raento <mikie@iki.fi>
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Mikls Fazekas <mfazekas@szemafor.com>
Neal Norwitz <nnorwitz@gmail.com>
Nermin Ozkiranartli <nermin@google.com>
Owen Carlsen <ocarlsen@google.com>
Paneendra Ba <paneendra@google.com>
Pasi Valminen <pasi.valminen@gmail.com>
Patrick Hanna <phanna@google.com>
Patrick Riley <pfr@google.com>
Paul Menage <menage@google.com>
Peter Kaminski <piotr@google.com>
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Preston Jackson <preston.a.jackson@gmail.com>
Rainer Klaffenboeck <rainer.klaffenboeck@dynatrace.com>
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1.302 u-boot 1.3

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*
*/

```

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For the server\util_md5.c component:

```

/*****
* NCSA HTTPd Server
* Software Development Group
* National Center for Supercomputing Applications
* University of Illinois at Urbana-Champaign
* 605 E. Springfield, Champaign, IL 61820
* httpd@ncsa.uiuc.edu
*
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*****/
*
* md5.c: NCSA HTTPd code which uses the md5c.c RSA Code
*
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```

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For the test\zb.c component:

```
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=====
```

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Written by Adam Twiss (adam@zeus.co.uk). March 1996

Thanks to the following people for their input:

Mike Belshe (mbelshe@netscape.com)
Michael Campanella (campanella@stevms.enet.dec.com)

```
*/
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en"><head>
<meta content="text/html; charset=UTF-8" http-equiv="Content-Type" />
<!--
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X
    This file is generated from xml source: DO NOT EDIT
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X
-->
<title>The Apache License, Version 2.0 - Apache HTTP Server Version 2.4</title>
<link href="/style/css/manual.css" rel="stylesheet" media="all" type="text/css" title="Main stylesheet" />
```


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</div><div class="top"><a href="#page-header"></a></div><div
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class="warning"><strong>Notice:</strong><br
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<script type="text/javascript"><!--><![CDATA[</script><!--
var comments_shortname = 'httpd';
var comments_identifier = 'http://httpd.apache.org/docs/2.4/license.html';
(function(w, d) {
  if (w.location.hostname.toLowerCase() == "httpd.apache.org") {
    d.write('<div id="comments_thread"></div>');
    var s = d.createElement('script');
    s.type = 'text/javascript';
    s.async = true;
    s.src = 'https://comments.apache.org/show_comments.lua?site=' + comments_shortname + '&page=' +
comments_identifier;
    (d.getElementsByTagName('head')[0] || d.getElementsByTagName('body')[0]).appendChild(s);
  }
  else {
    d.write('<div id="comments_thread">Comments are disabled for this page at the moment.</div>');
  }
})(window, document);
--><![</script></div><div id="footer">
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href="http://wiki.apache.org/httpd/FAQ">FAQ</a> | <a href="/glossary.html">Glossary</a> | <a
href="/sitemap.html">Sitemap</a></p></div><script type="text/javascript"><!--><![CDATA[</script><!--
if (typeof(prettyPrint) !== 'undefined') {
  prettyPrint();
}
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</body></html>

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1.304 netkit-ftp 0.17

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*
/opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/domacro.c

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*
/opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/cmds.c
* /opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/cmdtab.c
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* /opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/netrc.5
* /opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/ftp.1
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- *
- * from: @(#)ftp_var.h 5.9 (Berkeley) 6/1/90
- * \$Id: ftp_var.h,v 1.12 1999/10/02 18:39:17 dholland Exp \$
- */

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* /opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/ftp_var.h

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* from: @(#)pathnames.h 5.2 (Berkeley) 6/1/90

* \$Id: pathnames.h,v 1.1 1996/07/13 23:46:07 dholland Exp \$

*/

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* /opt/cola/permits/1633532305_1681719645.6079297/0/netkit-ftp-0-17-orig-tar-gz/netkit-ftp-0.17/ftp/pathnames.h

1.305 kerberos 3.2.0-542

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cmd/krb5/kproplog/kproplog.c
cmd/krb5/slave/kpropd_rpc.c
lib/gss_mechs/mech_krb5/et/kdb5_err.c
lib/gss_mechs/mech_spnego/mech/gssapiP_spnego.h
lib/gss_mechs/mech_spnego/mech/spnego_mech.c
lib/krb5/kadm5/kadm_host_srv_names.c
lib/krb5/kdb/kdb_convert.c
lib/krb5/kdb/kdb_hdr.h
lib/krb5/kdb/kdb_log.c
lib/krb5/kdb/kdb_log.h
lib/libgss/g_accept_sec_context.c
lib/libgss/g_acquire_cred.c
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lib/libgss/g_dup_name.c
lib/libgss/g_exp_sec_context.c
lib/libgss/g_export_name.c
lib/libgss/g_glue.c
lib/libgss/g_imp_name.c
lib/libgss/g_imp_sec_context.c
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lib/libgss/g_initialize.c
lib/libgss/g_inquire_context.c
lib/libgss/g_inquire_cred.c
lib/libgss/g_inquire_names.c
lib/libgss/g_process_context.c
lib/libgss/g_rel_buffer.c
lib/libgss/g_rel_cred.c
lib/libgss/g_rel_name.c
lib/libgss/g_rel_oid_set.c
lib/libgss/g_seal.c
lib/libgss/g_sign.c
lib/libgss/g_store_cred.c
lib/libgss/g_unseal.c
lib/libgss/g_userok.c
lib/libgss/g_utils.c
lib/libgss/g_verify.c
lib/libgss/gssd_pname_to_uid.c
uts/common/gssapi/include/gssapi_err_generic.h
uts/common/gssapi/include/mechglueP.h

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in "src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c

lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including
the
following new or changed files:

include/iprop_hdr.h
kadmin/server/ipropd_svc.c
lib/kdb/iprop.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
slave/kpropd_rpc.c
slave/kproplog.c

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1.306 util-linux 2.37.4-11.el9_2

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1.307 libxcrypt 4.4.18

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form

under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also combine or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work

under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

- a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)
- b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.
- c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.
- d) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.
- e) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for

reproducing the executable from it. However, as a special exception, the materials to be distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

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That's all there is to it!

1.308 libnss-nis 2.17

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while

preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

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"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

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(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must

be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If

identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition,

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This option is useful when you wish to copy part of the code of the

Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to

distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

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b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

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For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

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1.309 libnss-nisplus 2.17

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@item

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@end enumerate

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@enumerate a

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1.311 apr 1.7.4

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file_io/unix/mktemp.c, strings/apr_strings.c:

```
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```

From network_io/unix/inet_ntop.c, network_io/unix/inet_pton.c:

```
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From dso/aix/dso.c:

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From strings/apr_strnatcmp.c,
include/apr_strings.h:

strnatcmp.c -- Perform 'natural order' comparisons of strings in C.
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From
strings/apr_snprintf.c:

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1.312 pyparsing 3.1.1

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1.313 xwt 2.0.1.0

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1.314 libsemanage-common 3.5-1.el9

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The implementations of GSSAPI mechglue in GSSAPI-SPNEGO in "src/lib/gssapi", including the following files:

lib/gssapi/generic/gssapi_err_generic.et
lib/gssapi/mechglue/g_accept_sec_context.c
lib/gssapi/mechglue/g_acquire_cred.c
lib/gssapi/mechglue/g_canon_name.c
lib/gssapi/mechglue/g_compare_name.c
lib/gssapi/mechglue/g_context_time.c
lib/gssapi/mechglue/g_delete_sec_context.c
lib/gssapi/mechglue/g_dsp_name.c
lib/gssapi/mechglue/g_dsp_status.c
lib/gssapi/mechglue/g_dup_name.c
lib/gssapi/mechglue/g_exp_sec_context.c
lib/gssapi/mechglue/g_export_name.c
lib/gssapi/mechglue/g_glue.c
lib/gssapi/mechglue/g_imp_name.c
lib/gssapi/mechglue/g_imp_sec_context.c
lib/gssapi/mechglue/g_init_sec_context.c
lib/gssapi/mechglue/g_initialize.c
lib/gssapi/mechglue/g_inquire_context.c
lib/gssapi/mechglue/g_inquire_cred.c
lib/gssapi/mechglue/g_inquire_names.c
lib/gssapi/mechglue/g_process_context.c
lib/gssapi/mechglue/g_rel_buffer.c
lib/gssapi/mechglue/g_rel_cred.c
lib/gssapi/mechglue/g_rel_name.c
lib/gssapi/mechglue/g_rel_oid_set.c
lib/gssapi/mechglue/g_seal.c
lib/gssapi/mechglue/g_sign.c
lib/gssapi/mechglue/g_store_cred.c
lib/gssapi/mechglue/g_unseal.c
lib/gssapi/mechglue/g_userok.c
lib/gssapi/mechglue/g_utils.c
lib/gssapi/mechglue/g_verify.c
lib/gssapi/mechglue/gssd_pname_to_uid.c
lib/gssapi/mechglue/mglueP.h
lib/gssapi/mechglue/oid_ops.c
lib/gssapi/spnego/gssapiP_spnego.h
lib/gssapi/spnego/spnego_mech.c

and the initial implementation of incremental propagation, including

the following new or changed files:

include/iprof_hdr.h
kadmin/server/iprofd_svc.c
lib/kdb/iprof.x
lib/kdb/kdb_convert.c
lib/kdb/kdb_log.c
lib/kdb/kdb_log.h
lib/krb5/error_tables/kdb5_err.et
kprop/kpropd_rpc.c
kprop/kproplog.c

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This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
```

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```
Yoyodyne, Inc., hereby disclaims all copyright interest in the
program `Gnomovision' (a program to direct compilers to make passes
at assemblers) written by James Hacker.
```

```
<signature of Ty Coon>, 1 April 1989
Ty Coon, President of Vice
```

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1.323 d-bus 1.12.20-7.el9_2.1

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1.327 libcap 2.48-9.el9_2

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <https://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations, which became Zope Corporation. In 2001, the Python Software Foundation (PSF, see <https://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation was a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
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2.0	1.6	2000	BeOpen.com	no
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2.1.1	2.1+2.0.1	2001	PSF	yes

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*/

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/common/tftpsubs.h

*

/opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp/extern.h

No license file was found, but licenses were detected in source scan.

/* *- c *- ----- *

*

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*

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* as the "OpenBSD" operating system, distributed at

* <http://www.openbsd.org/>.

*

* ----- */

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/config.h

No license file was found, but licenses were detected in source scan.

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*/

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp/tftp.c

*

/opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp/main.c

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/common/tftpsubs.c

No license file was found, but licenses were detected in source scan.

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* LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY
* OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF
* SUCH DAMAGE.
*/

Found

in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/tftpd.c

No license file was found, but licenses were detected in source scan.

```
/* ----- *  
*  
* Copyright 2001 H. Peter Anvin - All Rights Reserved  
*  
* This program is free software available under the same license  
* as the "OpenBSD" operating system, distributed at  
* http://www.openbsd.org/.  
*  
* ----- */
```

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/tftpd.h

No license file was found, but licenses were detected in source scan.

Summary: The client for the Trivial File Transfer Protocol (TFTP).

Name: tftp

Version: 5.2

Release: 1

License: BSD

Group: Applications/Internet

Source0: <http://www.kernel.org/pub/software/network/tftp/tftp-hpa-%{version}.tar.gz>

BuildRequires: tcp_wrappers-devel

BuildRoot: %{_tmppath}/%{name}-root

%description

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp package provides the user interface for TFTP, which allows users to transfer files to and from a remote machine. This program and TFTP provide very little security,

and should not be enabled unless it is expressly needed.

%package server

Group: System Environment/Daemons

Summary: The server for the Trivial File Transfer Protocol (TFTP).

Requires: xinetd

%description server

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp-server package provides the server for TFTP, which allows users to transfer files to and from a remote machine. TFTP provides very little security, and should not be enabled unless it is expressly needed. The TFTP server is run from /etc/xinetd.d/tftp, and is disabled by default on Red Hat Linux systems.

%prep

%setup -q -n tftp-hpa-% { version }

%build

%configure

make %{?_smp_mflags}

%install

rm -rf \${RPM_BUILD_ROOT}

mkdir -p \${RPM_BUILD_ROOT}%{_bindir}

mkdir -p \${RPM_BUILD_ROOT}%{_mandir}/man{1,8}

mkdir -p \${RPM_BUILD_ROOT}%{_sbindir}

make INSTALLROOT=\${RPM_BUILD_ROOT} \

SBINDIR=%{_sbindir} MANDIR=%{_mandir} \

install

install -m755 -d \${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/ \${RPM_BUILD_ROOT}/tftpboot

install -m644 tftp-xinetd \${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/tftp

%post server

/sbin/service xinetd reload > /dev/null 2>&1 || :

%postun server

if [\$1 = 0]; then

/sbin/service xinetd reload > /dev/null 2>&1 || :

fi

%clean

rm -rf \${RPM_BUILD_ROOT}

%files

```
%defattr(-,root,root)
% {_bindir}/tftp
% {_mandir}/man1/*

%files
server
%defattr(-,root,root)
%config(noreplace) % {_sysconfdir}/xinetd.d/tftp
%dir /tftpboot
% {_sbindir}/in.tftpd
% {_mandir}/man8/*

%changelog
* Tue Sep 14 2004 H. Peter Anvin <hpa@zytor.com>
- removed completely broken "Malta" patch.
- integrated into build machinery so rpm -ta works.

* Fri Feb 13 2004 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Wed Jun 04 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Fri Apr 11 2003 Elliot Lee <sopwith@redhat.com>
- 0.33
- Add /tftpboot directory (#88204)

* Mon Feb 24 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Sun Feb 23 2003 Tim Powers <timp@redhat.com>
- add BuildPreReq on tcp_wrappers

* Wed Jan 22 2003 Tim Powers <timp@redhat.com>
- rebuilt

* Mon Nov 11 2002 Elliot Lee <sopwith@redhat.com> 0.32-1
- Update to 0.32

* Wed Oct 23 2002 Elliot Lee <sopwith@redhat.com> 0.30-1
- Fix #55789
- Update to 0.30

* Thu Jun 27 2002 Elliot Lee <sopwith@redhat.com>
- Try applying HJ's patch from #65476

* Fri Jun
```

- 21 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Mon Jun 17 2002 Elliot Lee <sopwith@redhat.com>
 - Update to 0.29

- * Thu May 23 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Wed Jan 09 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Tue Dec 18 2001 Elliot Lee <sopwith@redhat.com> 0.17-15
 - Add patch4: netkit-tftp-0.17-defaultport.patch for bug #57562
 - Update to tftp-hpa-0.28 (bug #56131)
 - Remove include/arpa/tftp.h to fix #57259
 - Add resource limits in tftp-xinetd (#56722)

- * Sun Jun 24 2001 Elliot Lee <sopwith@redhat.com>
 - Bump release + rebuild.

- * Tue Jun 12 2001 Helge Deller <hdeller@redhat.de> (0.17-13)
 - updated tftp-hpa source to tftp-hpa-0.17
 - tweaked specfile with different defines for tftp-netkit and tftp-hpa version
 - use hpa's tftpd.8 man page instead of the netkits one

- * Mon May 07 2001 Helge Deller <hdeller@redhat.de>
 - rebuilt in 7.1.x

- * Wed Apr 18 2001 Helge Deller <hdeller@redhat.de>
 - fix tftp client's put problems (#29529)
 - update
 - to tftp-hpa-0.16

- * Wed Apr 4 2001 Jakub Jelinek <jakub@redhat.com>
 - don't let configure to guess compiler, it can pick up egcs

- * Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
 - changed "wait" in xinetd file to "yes" (hpa-tftpd forks and exits) (#26467)
 - fixed hpa-tftpd to handle files greater than 32MB (#23725)
 - added "-l" flag to hpa-tftpd for file-logging (#26467)
 - added description for "-l" to the man-page

- * Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
 - updated tftp client to 0.17 stable (#19640),
 - drop dependency on xinetd for tftp client (#25051),

- * Wed Jan 17 2001 Jeff Johnson <jbj@redhat.com>

- xinetd shouldn't wait on tftp (which forks) (#23923).

- * Sat Jan 6 2001 Jeff Johnson <jbj@redhat.com>
 - fix to permit tftp put's (#18128).
 - startup as root with chroot to /tftpboot with early reversion to nobody is preferable to starting as nobody w/o ability to chroot.
 - %%post is needed by server, not client. Add %%postun for erasure as well.

- * Wed Aug 23 2000
 - Nalin Dahyabhai <nalin@redhat.com>
 - default to being disabled

- * Thu Aug 17 2000 Jeff Johnson <jbj@redhat.com>
 - correct group.

- * Tue Jul 25 2000 Nalin Dahyabhai <nalin@redhat.com>
 - change user from root to nobody

- * Sat Jul 22 2000 Jeff Johnson <jbj@redhat.com>
 - update to tftp-hpa-0.14 (#14003).
 - add server_args (#14003).
 - remove -D_BSD_SOURCE (#14003).

- * Fri Jul 21 2000 Nalin Dahyabhai <nalin@redhat.com>
 - cook up an xinetd config file for tftpd

- * Wed Jul 12 2000 Prospector <bugzilla@redhat.com>
 - automatic rebuild

- * Sun Jun 18 2000 Jeff Johnson <jbj@redhat.com>
 - FHS packaging.
 - update to 0.17.

- * Fri May 5 2000 Matt Wilson <msw@redhat.com>
 - use _BSD_SOURCE for hpa's tftpd so we get BSD signal semantics.

- * Fri Feb 11 2000 Bill Nottingham <notting@redhat.com>
 - fix description

- * Wed Feb 9 2000 Jeff Johnson <jbj@redhat.com>
 - compress man pages (again).

- * Wed Feb 02 2000 Cristian Gafton <gafton@redhat.com>
 - man pages are compressed
 - fix description and summary

- * Tue

Jan 4 2000 Bill Nottingham <notting@redhat.com>

- split client and server

* Tue Dec 21 1999 Jeff Johnson <jbj@redhat.com>

- update to 0.16.

* Sat Aug 28 1999 Jeff Johnson <jbj@redhat.com>

- update to 0.15.

* Wed Apr 7 1999 Jeff Johnson <jbj@redhat.com>

- tftpd should truncate file when overwriting (#412)

* Sun Mar 21 1999 Cristian Gafton <gafton@redhat.com>

- auto rebuild in the new build environment (release 22)

* Mon Mar 15 1999 Jeff Johnson <jbj@redhat.com>

- compile for 6.0.

* Fri Aug 7 1998 Jeff Johnson <jbj@redhat.com>

- build root

* Mon Apr 27 1998 Prospector System <bugs@redhat.com>

- translations modified for de, fr, tr

* Mon Sep 22 1997 Erik Troan <ewt@redhat.com>

- added check for getpwnam() failure

* Tue Jul 15 1997 Erik Troan <ewt@redhat.com>

- initial build

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp.spec

No license file was found, but licenses were detected in source scan.

Summary: The client for the Trivial File Transfer Protocol (TFTP).

Name: tftp

Version: @@VERSION@@

Release: 1

License: BSD

Group: Applications/Internet

Source0: <http://www.kernel.org/pub/software/network/tftp/tftp-hpa-%{version}.tar.gz>

BuildRequires: tcp_wrappers-devel

BuildRoot: %{_tmppath}/%{name}-root

%description

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp package provides the user

interface for TFTP, which allows users to transfer files to and from a remote machine. This program and TFTP provide very little security, and should not be enabled unless it is expressly needed.

```
%package server
```

```
Group: System Environment/Daemons
```

```
Summary: The server for the Trivial File Transfer Protocol (TFTP).
```

```
Requires: xinetd
```

```
%description server
```

```
The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp-server package provides the server for TFTP, which allows users to transfer files to and from a remote machine. TFTP provides very little security, and should not be enabled unless it is expressly needed. The TFTP server is run from /etc/xinetd.d/tftp, and is disabled by default on Red Hat Linux systems.
```

```
%prep
```

```
%setup -q -n tftp-hpa-% { version }
```

```
%build
```

```
%configure
```

```
make % { ?_smp_mflags }
```

```
%install
```

```
rm -rf ${RPM_BUILD_ROOT}
```

```
mkdir -p ${RPM_BUILD_ROOT}% { _bindir }
```

```
mkdir -p ${RPM_BUILD_ROOT}% { _mandir }/man{ 1,8 }
```

```
mkdir -p ${RPM_BUILD_ROOT}% { _sbindir }
```

```
make INSTALLROOT=${RPM_BUILD_ROOT} \
```

```
SBINDIR=% { _sbindir } MANDIR=% { _mandir } \
```

```
install
```

```
install -m755 -d ${RPM_BUILD_ROOT}% { _sysconfdir }/xinetd.d/ ${RPM_BUILD_ROOT}/tftpboot
```

```
install -m644 tftp-xinetd ${RPM_BUILD_ROOT}% { _sysconfdir }/xinetd.d/tftp
```

```
%post server
```

```
/sbin/service xinetd reload > /dev/null 2>&1 || :
```

```
%postun server
```

```
if [ $1 = 0 ]; then
```

```
  /sbin/service xinetd reload > /dev/null 2>&1 || :
```

```
fi
```

```
%clean
```

```
rm -rf ${RPM_BUILD_ROOT}
```

```

%files
%defattr(-,root,root)
%{_bindir}/tftp
%{_mandir}/man1/*

%files
server
%defattr(-,root,root)
%config(noreplace) % {_sysconfdir}/xinetd.d/tftp
%dir /tftpboot
%{_sbindir}/in.tftpd
%{_mandir}/man8/*

%changelog
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* Wed Jun 04 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

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- 0.33
- Add /tftpboot directory (#88204)

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- rebuilt

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- Update to 0.32

* Wed Oct 23 2002 Elliot Lee <sopwith@redhat.com> 0.30-1
- Fix #55789
- Update to 0.30

* Thu Jun 27 2002 Elliot Lee <sopwith@redhat.com>
- Try applying HJ's patch from #65476

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- *
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 - tweaked specfile with different defines for tftp-netkit and tftp-hpa version
 - use hpa's tftpd.8 man page instead of the netkits one

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 - rebuilt in 7.1.x

- * Wed Apr 18 2001 Helge Deller <hdeller@redhat.de>
 - fix tftp client's put problems (#29529)
 -
 update to tftp-hpa-0.16

- * Wed Apr 4 2001 Jakub Jelinek <jakub@redhat.com>
 - don't let configure to guess compiler, it can pick up egcs

- * Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
 - changed "wait" in xinetd file to "yes" (hpa-tftpd forks and exits) (#26467)
 - fixed hpa-tftpd to handle files greater than 32MB (#23725)
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 - default to being disabled

- * Thu Aug 17 2000 Jeff Johnson <jbj@redhat.com>
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 - FHS packaging.
 - update to 0.17.

- * Fri May 5 2000 Matt Wilson <maw@redhat.com>
 - use _BSD_SOURCE for hpa's tftpd so we get BSD signal semantics.

- * Fri Feb 11 2000 Bill Nottingham <notting@redhat.com>
 - fix description

- * Wed Feb 9 2000 Jeff Johnson <jbj@redhat.com>
 - compress man pages (again).

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- update to 0.15.

* Wed Apr 7 1999 Jeff Johnson <jbj@redhat.com>

- tftpd should truncate file when overwriting (#412)

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* Mon Mar 15 1999 Jeff Johnson <jbj@redhat.com>

- compile for 6.0.

* Fri Aug 7 1998 Jeff Johnson <jbj@redhat.com>

- build root

* Mon Apr 27 1998 Prospector System <bugs@redhat.com>

- translations modified for de, fr, tr

* Mon Sep 22 1997 Erik Troan <ewt@redhat.com>

- added check for getpwnam() failure

* Tue Jul 15 1997 Erik Troan <ewt@redhat.com>

- initial build

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp.spec.in

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Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/tftpd.8.in

No license file was found, but licenses were detected in source scan.

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Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/MCONFIG.in

No license file was found, but licenses were detected in source scan.

/* ----- *

*

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*

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* <http://www.openbsd.org/>.

*

* ----- */

Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/remap.h

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/misc.c

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftpd/remap.c

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Found in path(s):

* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-hpa-5.2/tftp/tftp.1.in

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*  
* ----- */
```

Found in path(s):

```
* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-  
hpa-5.2/tftpd/recvfrom.c  
* /opt/cola/permits/1820789344_1697168617.6683886/0/tftp-hpa-5-2-r0-tar-bz2/tftp-hpa-5.2-r0/tftp-hpa-5.2/tftp-  
hpa-5.2/tftpd/recvfrom.h
```

1.333 fribidi 1.0.10

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Version 2.1, February 1999

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Any

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1.334 sqlite 3.43.1

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1.335 libpng 1.2.44

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1.336 curl 8.4.0

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Version 2.1, February 1999

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```
#!/usr/bin/env bash
# MIT licenses will each have a unique MD5 sum since they contain a unique copyright.
# This script will read the license file into memory, strip out the copyright, and then
# generate an MD5 that is not unique and can be matched against a known MIT MD5 sum.
set -e
```

```
calculate_md5_sum() {
  local FILE="$1"

  # Read the contents of the file into a variable
  local raw_license_text=$(<"$FILE")

  # Convert to lowercase
  local lowercase_license_text="{raw_license_text,,}"

  # Remove anything before the beginning of the license
  local stripped_license_text=$(awk '/permission is hereby granted,/{p=1} p' <<< "$lowercase_license_text")

  # Replace line breaks (Windows or Linux) with a single space
  local replaced_linebreaks=$(tr "\r\n" ' ' <<< "$stripped_license_text")

  # Replace multiple spaces with a single space
  local normalized_license_text=$(tr -s ' ' <<< "$replaced_linebreaks")

  # Strip away any non-printable, non-whitespace characters
  local clean_unprintable_license_text=$(tr
-cd '[:print:][:space:]' <<< "$normalized_license_text")

  # Remove punctuation and special characters
  local clean_license_text=$(echo "$clean_unprintable_license_text" | sed 's/[^a-zA-Z ]//g')

  # Calculate the MD5 sum of the cleaned license text
  local MD5SUM=$(echo -n "$clean_license_text" | md5sum | awk '{print $1}')

  # Output the MD5 sum
  echo "$MD5SUM"
```

```

}

# Check if the FILE argument is provided
if [ -z "$1" ]; then
    echo "Please provide a FILE as an argument."
    exit 1
fi

# Invoke the function with the provided FILE argument
calculate_md5_sum "$1"
WEV @@ WEV[B "1
x ?"U@,5 @mISmIN<GimCN7g1uE
43mI,5WEV @@ WEV @mImImIAmImImI0mImImI*mImI
A0mImImI...
lost+found...

;9GimCN7g

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

!"#$%&'()*+,-
./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~WEV @@
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```

1.339 hwloc 1.11.13

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Julian Seward, Cambridge, UK.

jseward@bzip.org

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<signature of Ty Coon>, 1 April 1989
Ty Coon, President of
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Julian Seward, Cambridge, UK.

jseward@bzip.org

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Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
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```

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<signature of Ty Coon>, 1 April 1989

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1.342 rsync 3.2.3

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1.343 net-snmp 5.8

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Upstream-Contact: Yann Collet <Cyan4973@github.com>

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1.345 pcre 8.44

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Written by: Philip Hazel
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1.348 pcre 8.45

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Written by: Philip Hazel
Email local part: Philip.Hazel
Email domain: gmail.com

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1.349 python-pip 22.3.1

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This package contains a modified version of ca-bundle.crt:

ca-bundle.crt -- Bundle of CA Root Certificates

Certificate data from Mozilla as of: Thu Nov 3 19:04:19 2011#

This is a bundle of X.509 certificates of public Certificate Authorities (CA). These were automatically extracted from Mozilla's root certificates file (certdata.txt). This file can be found in the mozilla source tree:

<https://hg.mozilla.org/mozilla-central/file/tip/security/nss/lib/ckfw/builtins/certdata.txt>

It contains the certificates in PEM format and therefore can be directly used with curl / libcurl / php_curl, or with an Apache+mod_ssl webserver for SSL client authentication.

Just configure this file as the SSLCertificateFile.#

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@(#) \$RCSfile: certdata.txt,v

\$ \$Revision: 1.80 \$ \$Date: 2011/11/03 15:11:58 \$

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In 1995, Guido continued his work on Python at the Corporation for National Research Initiatives (CNRI, see <http://www.cnri.reston.va.us>) in Reston, Virginia where he released several versions of the software.

In May 2000, Guido and the Python core development team moved to BeOpen.com to form the BeOpen PythonLabs team. In October of the same year, the PythonLabs team moved to Digital Creations (now Zope Corporation, see <http://www.zope.com>). In 2001, the Python Software Foundation (PSF, see <http://www.python.org/psf/>) was formed, a non-profit organization created specifically to own Python-related Intellectual Property. Zope Corporation is a sponsoring member of the PSF.

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1.3 thru 1.5.2	1.2	1995-1999	CNRI	yes
1.6	1.5.2	2000	CNRI	no
2.0	1.6	2000	BeOpen.com	no
1.6.1	1.6	2001	CNRI	yes (2)
2.1	2.0+1.6.1	2001	PSF	no
2.0.1	2.0+1.6.1	2001	PSF	yes
2.1.1	2.1+2.0.1	2001	PSF	yes
2.2	2.1.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3				
2.1.2	2002	PSF	yes	
2.2.1	2.2	2002	PSF	yes
2.2.2	2.2.1	2002	PSF	yes
2.2.3	2.2.2	2003	PSF	yes
2.3	2.2.2	2002-2003	PSF	yes
2.3.1	2.3	2002-2003	PSF	yes
2.3.2	2.3.1	2002-2003	PSF	yes
2.3.3	2.3.2	2002-2003	PSF	yes
2.3.4	2.3.3	2004	PSF	yes
2.3.5	2.3.4	2005	PSF	yes
2.4	2.3	2004	PSF	yes
2.4.1	2.4	2005	PSF	yes
2.4.2	2.4.1	2005	PSF	yes
2.4.3	2.4.2	2006	PSF	yes
2.4.4	2.4.3	2006	PSF	yes
2.5	2.4	2006	PSF	yes
2.5.1	2.5	2007	PSF	yes
2.5.2	2.5.1	2008	PSF	yes
2.5.3	2.5.2	2008	PSF	yes
2.6	2.5	2008	PSF	yes
2.6.1	2.6	2008	PSF	yes
2.6.2	2.6.1	2009	PSF	yes
2.6.3	2.6.2	2009	PSF	yes
2.6.4	2.6.3	2009	PSF	yes
2.6.5	2.6.4	2010	PSF	yes
3.0	2.6	2008	PSF	yes
3.0.1	3.0	2009	PSF	yes
3.1	3.0.1	2009	PSF	yes

3.1.1	3.1	2009	PSF	yes
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2.1.1	2.1+2.0.1	2001	PSF	yes
2.1.2	2.1.1	2002	PSF	yes
2.1.3	2.1.2	2002	PSF	yes
2.2 and above	2.1.1	2001-now		
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@subheading END OF TERMS AND CONDITIONS

@page

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@end
smallexample
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```

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@var{signature of Ty Coon}, 1 April 1990
Ty Coon, President of Vice
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```

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Ty Coon, President of Vice
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1.355 nghttp2 1.43.0-5.el9_2.1

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set yrange [0:]

set terminal pngcairo font 'Sans, 8' lw 1 size 1400,1024

set xtics rotate by -45

set style histogram errorbars gap 2 lw 1

set style fill solid border -1

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1.356 curl 7.76.1-23.el9_2.4

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1.357 sg3-utils 1.47-9.el9

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Peter Allworth <linsol at zeta dot org dot au>,
James Bottomley <jejb at parisc-linux dot org>,
Lars Marowsky-Bree <lmb at suse dot de>,
Kurt Garloff,
Grant Grundler <grundler at parisc-linux dot org>,
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-->

<!-- Generate ISC copyright comments from Docbook copyright metadata. -->

<xsl:stylesheet version="1.0"

xmlns:xsl="http://www.w3.org/1999/XSL/Transform"

xmlns:xi="http://www.w3.org/2001/XInclude"

xmlns:db="http://docbook.org/ns/docbook">

<xsl:template name="isc.copyright.format">

<xsl:param name="text"/>

<xsl:value-of select="\$isc.copyright.leader"/>

<xsl:value-of select="normalize-space(substring-before(\$text, '
'))"/>

<xsl:text>
</xsl:text>

<xsl:variable name="rest" select="substring-after(\$text, '
')"/>

<xsl:if test="translate(\$rest, '	 ', '')">

<xsl:call-template name="isc.copyright.format">

<xsl:with-param name="text" select="\$rest"/>

</xsl:call-template>

</xsl:if>

</xsl:template>

<xsl:variable name="isc.copyright.text">

<xsl:text>

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</xsl:text>

</xsl:variable>

```

<xsl:variable name="isc.copyright">
  <xsl:call-template name="isc.copyright.format">
    <xsl:with-param name="text">
      <xsl:for-each select="db:book/db:info/db:copyright | db:refentry/db:docinfo/db:copyright">
        <xsl:text>Copyright (C) </xsl:text>
        <xsl:call-template name="copyright.years">
          <xsl:with-param name="years" select="db:year"/>
        </xsl:call-template>
        <xsl:text> </xsl:text>
        <xsl:value-of select="db:holder"/>
        <xsl:value-of select="$isc.copyright.breakline"/>
        <xsl:text>&#10;</xsl:text>
      </xsl:for-each>
      <xsl:value-of
select="$isc.copyright.text"/>
    </xsl:with-param>
  </xsl:call-template>
</xsl:variable>
</xsl:stylesheet>

```

<!--

- Local variables:

- mode: sgml

- End:

-->

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Jean-loup Gailly Mark Adler
jloup@gzip.org madler@alumni.caltech.edu

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The following list of people, sorted by last name, have contributed code or patches to this implementation of sudo since I began maintaining it in 1993. This list is known to be incomplete--if you believe you should be listed, please send a note to sudo@sudo.ws.

Ackeret, Matt
Adler, Mark
Allbery, Russ
Anderson, Jamie
Andrew, Nick
Andric, Dimitry
Barron, Danny
Bates, Tom
Behan, Zdenk
Bellis, Ray
Benali, Elias
Beverly, Jamie
Boardman, Spider
Bos, Sander
Bostley, P.J.
Bowes, Keith
Boyce, Keith Garry
Brantley, Michael
Braun, Rob
Bezina, Pavel
Brooks, Piete
Brown, Jerry
Burr, Michael E
Burton, Ross
Bussjaeger, Andreas

Calvin, Gary
Campbell, Aaron
Chazelas, Stephane
Cheloha, Scott
ek, Vtzslav
Coleman, Chris
Corzine, Deven T.
Cusack, Frank
Dai, Wei
Dill, David
Earickson, Jeff
Eckhardt, Drew
Edgington, Ben
Esipovich, Marc
Espie, Marc
Faigon, Ariel
Farrell, Brian
Fobes, Steve
Frysinger, Mike
G., Daniel Richard
Gailly, Jean-loup
Gelman, Stephen
Gerraty, Simon J.
Graber, Stephane
Guillory, B.
Hayman, Randy M.
Henke, Joachim
Hideaki, Yoshifuji
Hieb, Dave
Holloway, Nick
Hoover, Adam
Hunter, Michael T.
Hutchings, Ben
Irrgang, Eric
Jackson, Brian
Jackson, John R.
Jackson, Richard L., Jr.
Janssen, Mark
Jepeway, Chris
Jorge, Joel Pele
Jover, Guillem
Juhani, Timo
Kikuchi, Ayamura
Kadow, Kevin
Kasal, Stepan
Kienenberger, Mike
King, Dale
King, Michael

Klyachkin, Andrey
Knoble, Jim
Knox, Tim
Komarnitsky, Alek O.
Kondrashov, Nikolai
Kopeek, Daniel
Kranenburg, Paul
Krause, David
Lakin, Eric
Larsen, Case
Levin, Dmitry V.
Libby, Kendall
Lobbes, Phillip E.
McIntyre, Jason
MacKenzie, David J.
McLaughlin, Tom
Makey, Jeff
Mallayya, Sangamesh
Manner, Rbert
Marchionna, Michael D.
Markham, Paul
Martinian, Emin
Meskes, Michael
Michael, David
Miller, Todd C.
Minier, Loc
Moffat, Darren
Moldung, Jan Thomas
Morris, Charles
Mueller, Andreas
Mller, Dworkin
Nieusma, Jeff
Nikitser, Peter A.
Nussel, Ludwig
Orbn, Lszl
Ouellet, Jean-Philippe
Paquet, Eric
Paradis, Chantal
Pasteleurs, Frederic
Percival, Ted
Perera, Andres
Peron, Christian S.J.
Peschel, Aaron
Peslyak, Alexander
Peterson, Toby
Petten, Diego Elio
Pickett, Joel
Plotnick, Alex

de Raadt, Theo
Rasch, Gudleik
Reid, Steve
Richards, Matt
Rossum, Guido van
Rouillard, John P.
Rowe, William A., Jr.
Roy, Alain
Ruusame, Elan
Ryabinkin, Eygene
Sato, Yuichi
Snchez, Wilfredo
Sanders, Miguel
Sasaki, Kan
Saucier, Jean-Francois
Schoenfeld, Patrick
Schuring, Arno
Schwarze, Ingo
Scott, Dougal

Sieger, Nick
Simon, Thor Lancelot
Slemko, Marc
Smith, Andy
Sobrado, Igor
Soulen, Steven
Spangler, Aaron
Spradling, Cloyce D.
Spradling, Michael
Stier, Matthew
Stoeckmann, Tobias
Street, Russell
Stritzky, Tilo
Stroucken, Michael
Tarrall, Robert
Thomas, Matthew
Todd, Giles
Toft, Martin
Torek, Chris
Tucker, Darren
Uhl, Robert
Uzel, Petr
Valery, Reznic
Van Dinter, Theo
Venckus, Martynas
de Vries, Maarten
Wagner, Klaus
Walsh, Dan

Warburton, John
Webb, Kirk
Wetzel, Timm
Wieringen, Marco van
Wilk, Jakub
Winiger, Gary
Wood, David
Zacarias, Gustavo
Zolnowsky, John

The following people have worked to translate sudo into other languages as part of the Translation Project, see <https://translationproject.org> for more details.

Albuquerque, Pedro
Blttermann, Mario
Bogusz, Jakub
Buo-ren, Lin
Casagrande, Milo
Castro, Felipe
Cho, Seong-ho
Chornoivan, Yuri
Diguez, Francisco
Fontenelle, Rafael
Garca-Fontes, Walter
Gezer, Volkan
Hamasaki, Takeshi
Hamming, Peter
Hansen, Joe
Hantrais, Frdric
Hein, Jochen
Hufthammer, Karl Ove
Jerovek, Damir
Karvonen, Jorma
Kazik, Duan
Kelemen, Gbor
Keeci, Mehmet
Koir, Klemen
Kozlov, Yuri
Kramer, Jakob
Krznar, Tomislav
Marchal, Frdric
Margeviius, Algimantas
Maryanov, Pavel
Florentina Muat
Nurmi, Lauri
Nikoli, Miroslav
Nylander, Daniel

Pan, Yi-Jyun
Psa, Petr
Puente, Enol
Putanec, Boidar
Qun, Trn Ngc
Rasmussen, Sebastian
Regueiro, Leandro
Sarar, zgr
Sendn, Abel
erbnescu, Daniel
Sikrom, ka
Spingos, Dimitris
Taniguchi, Yasuaki
Tomat, Fbio
r, Balzs
Uranga, Mikel Olasagasti
Vorotnikov, Artem
Wang, Wylmer
Yang, Boyuan

The following people designed the artwork used on the sudo website:

Shield logo: Badger, Trent
Sandwich logo: Stillman, Mark

1.361 gir1.2-gdkpixbuf-2.0 2.42.6

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3. Your "Contributed-under" message explicitly states that the contribution is made under the terms of the specified contribution agreement. Your "Contributed-under" message must include the name of contribution agreement and version. For example: Contributed-under: TianoCore Contribution Agreement 1.1
The "TianoCore Contribution Agreement" is included below in this document.
4. Submit your code to the TianoCore project using the process that the project documents on its web page. If the process is not documented, then submit the code on development email list for the project.
5. It is preferred that contributions are submitted using the same copyright license as the base project. When

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=====
= Change Description / Commit Message / Patch Email =

=====
Your change description should use the standard format for a
commit message, and must include
your "Signed-off-by" signature
and the "Contributed-under" message.

== Sample Change Description / Commit Message ==

=== Start of sample patch email message ===

From: Contributor Name <contributor@example.com>
Subject: [Repository/Branch PATCH] Module: Brief-single-line-summary

Full-commit-message

Contributed-under: TianoCore Contribution Agreement 1.1
Signed-off-by: Contributor Name <contributor@example.com>

An extra message for the patch email which will not be considered part
of the commit message can be added here.

Patch content inline or attached

=== End of sample patch email message ===

=== Notes for sample patch email ===

- * The first line of commit message is taken from the email's subject
line following [Repository/Branch PATCH]. The remaining portion of the
commit message is the email's content until the '---' line.
- * git format-patch is one way to create this format

=== Definitions
for sample patch email ===

- * "Repository" is the identifier of the repository the patch applies.
This identifier should only be provided for repositories other than
'edk2'. For example 'edk2-BuildSpecification' or 'staging'.
- * "Branch" is the identifier of the branch the patch applies. This
identifier should only be provided for branches other than 'edk2/master'.
For example 'edk2/UDK2015', 'edk2-BuildSpecification/release/1.27', or
'staging/edk2-test'.
- * "Module" is a short identifier for the affected code or documentation. For
example 'MdePkg', 'MdeModulePkg/UsbBusDxe', 'Introduction', or
'EDK II INF File Format'.
- * "Brief-single-line-summary" is a short summary of the change.

- * The entire first line should be less than ~70 characters.
- * "Full-commit-message" a verbose multiple line comment describing the change. Each line should be less than ~70 characters.
- * "Contributed-under" explicitly states that the contribution is made under the terms of the contribution agreement. This agreement is included below in this document.
- * "Signed-off-by" is the contributor's signature identifying them by their real/legal name and their email address.

=====
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Contributions.txt: TianoCore Contribution Agreement 1.0

=====
= Code Contributions =
=====

To make a contribution to a TianoCore project, follow these steps.

1. Create a change description in the format specified below to use in the source control commit log.
2. Your commit message must include your "Signed-off-by" signature, and "Contributed-under" message.
3. Your "Contributed-under" message explicitly states that the contribution is made under the terms of the specified contribution agreement. Your "Contributed-under" message must include the name of contribution agreement and version. For example: Contributed-under: TianoCore Contribution Agreement 1.0
The "TianoCore Contribution Agreement" is included below in this document.
4. Submit your code to the TianoCore project using the process that the project documents on its web page. If the process is not documented, then submit the code on development email list for the project.
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Contributions using other licenses might be accepted, but further review will be required.

=====
= Change Description / Commit Message / Patch Email =
=====

Your change description should use the standard format for a commit message, and must include your "Signed-off-by" signature and the "Contributed-under" message.

== Sample Change Description / Commit Message =

=== Start of sample patch email message ===

From: Contributor Name <contributor@example.com>
Subject: [PATCH] CodeModule: Brief-single-line-summary

Full-commit-message

Contributed-under:
TianoCore Contribution Agreement 1.0
Signed-off-by: Contributor Name <contributor@example.com>

An extra message for the patch email which will not be considered part of the commit message can be added here.

Patch content inline or attached

=== End of sample patch email message ===

=== Notes for sample patch email ===

- * The first line of commit message is taken from the email's subject line following [PATCH]. The remaining portion of the commit message is the email's content until the '---' line.
- * git format-patch is one way to create this format

=== Definitions for sample patch email ===

- * "CodeModule" is a short identifier for the affected code. For example MdePkg, or MdeModulePkg UsbBusDxe.
- * "Brief-single-line-summary" is a short summary of the change.
- * The entire first line should be less than ~70 characters.
- * "Full-commit-message" a verbose multiple line comment describing

the change.

Each line should be less than ~70 characters.

* "Contributed-under" explicitly states that the contribution is made under the terms of the contribution agreement. This agreement is included below in this document.

* "Signed-off-by" is the contributor's signature identifying them by their real/legal name and their email address.

=====
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1.373 acpica 20200110

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```
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```

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*
*****/

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 *
 *****/

```
#include "aslcompiler.h"
#include "acpi.h"
#include "accommon.h"
```

```
#define _COMPONENT      ACPI_COMPILER
        ACPI_MODULE_NAME  ("aslparse")
```

```
/*
 * Global Notes:
 *
 * October 2005: The following list terms have been optimized (from the
 * original ASL grammar in the ACPI specification) to force the immediate
 * reduction of each list item so that the parse stack use doesn't increase on
 * each list element and possibly overflow on very large lists (>4000 items).
 * This dramatically reduces use of the parse stack overall.
 *
 *   ArgList, TermList, ByteList,
 *   DWordList, PackageList,
 *   ResourceMacroList, and FieldUnitList
 */
```

```
void *
AslLocalAllocate (
    unsigned int      Size);
```

```
/* Bison/yacc configuration */
```

```
#define static
#undef malloc
#define malloc      AslLocalAllocate
#undef alloca
#define alloca      AslLocalAllocate
#define yyname      AslCompilername
```

```

#define YYINITDEPTH    600        /* State stack depth */
#define YYDEBUG        1          /* Enable debug output */
#define YYERROR_VERBOSE 1        /* Verbose error messages */
#define YYFLAG        -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors */

#define YYMALLOC        AslLocalAllocate
#define YYFREE          ACPI_FREE
% }

/*
 * Declare the type of values in the grammar
 */
%union {
    UINT64        i;
    char          *s;
    ACPI_PARSE_OBJECT *n;
}

/*
 * These shift/reduce conflicts are expected. There should be zero
 * reduce/reduce conflicts.
 */
%expect
124

/*! [Begin] no source code translation */

/*
 * The M4 macro processor is used to bring in the parser items,
 * in order to keep this master file smaller, and to break up
 * the various parser items.
 */
m4_define(NoEcho)

/* Token types */

m4_include(asltokens.y)

/* Production types/names */

m4_include(asltypes.y)
%%

/* Production rules */

```



```
m4_include(aslrules.y)
m4_include(aslprimaries.y)
m4_include(aslcstyle.y)
m4_include(aslkeywords.y)
m4_include(aslresources.y)
m4_include(aslhelpers.y)
%%
```

```
/*! [End] no source code translation !*/
```

```
/* Local support functions in C */
```

```
m4_include(aslsupport.y)
```

```
Found in path(s):
```

```
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslparser.y
```

```
No license file was found, but licenses were detected in source scan.
```

```
{
```

```
/******
```

```
*
```

```
* Module Name: dtparser.y - Bison input file for table compiler parser
```

```
*
```

```
*****/
```

```
/******
```

```
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```

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*****/

```
#include "aslcompiler.h"
```

```
#define _COMPONENT      DT_COMPILER
        ACPI_MODULE_NAME  ("dtparser")
```

```
void *      AslLocalAllocate (unsigned int Size);
```

```
/* Bison/yacc configuration */
```

```
#undef alloca
#define alloca      AslLocalAllocate
```

```
int      DtParserlex (void);
int      DtParserparse (void);
```

```

void          DtParsererror (char const *msg);
extern char   *DtParsestext;
extern DT_FIELD *AslGbl_CurrentField;

UINT64       DtParserResult; /*
Expression return value */

/* Bison/yacc configuration */

#define yyname      DtParsername
#define YYDEBUG     1        /* Enable debug output */
#define YYERROR_VERBOSE 1    /* Verbose error messages */
#define YYFLAG      -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors */

#define YYMALLOC     malloc
#define YYFREE       free
% }

% union
{
    UINT64          value;
    UINT32          op;
}

/*! [Begin] no source code translation */

%type <value> Expression

%token <op>  OP_EXP_EOF
%token <op>  OP_EXP_NEW_LINE
%token <op>  OP_EXP_NUMBER
%token <op>  OP_EXP_HEX_NUMBER
%token <op>  OP_EXP_DECIMAL_NUMBER
%token <op>  OP_EXP_LABEL
%token <op>  OP_EXP_PAREN_OPEN
%token <op>  OP_EXP_PAREN_CLOSE

%left <op>  OP_EXP_LOGICAL_OR
%left <op>  OP_EXP_LOGICAL_AND
%left <op>  OP_EXP_OR
%left <op>  OP_EXP_XOR
%left <op>  OP_EXP_AND
%left <op>  OP_EXP_EQUAL
OP_EXP_NOT_EQUAL
%left <op>  OP_EXP_GREATER OP_EXP_LESS OP_EXP_GREATER_EQUAL OP_EXP_LESS_EQUAL
%left <op>  OP_EXP_SHIFT_RIGHT OP_EXP_SHIFT_LEFT

```

```

%left <op> OP_EXP_ADD OP_EXP_SUBTRACT
%left <op> OP_EXP_MULTIPLY OP_EXP_DIVIDE OP_EXP_MODULO
%right <op> OP_EXP_ONES_COMPLIMENT OP_EXP_LOGICAL_NOT

%%

/*
* Operator precedence rules (from K&R)
*
* 1) ( )
* 2) ! ~ (unary operators that are supported here)
* 3) * / %
* 4) + -
* 5) >> <<
* 6) < > <= >=
* 7) == !=
* 8) &
* 9) ^
* 10) |
* 11) &&
* 12) ||
*/
Value
: Expression OP_EXP_NEW_LINE { DtParserResult=$1; return 0; } /* End of line (newline) */
| Expression OP_EXP_EOF { DtParserResult=$1; return 0; } /* End of string (0) */
;

Expression

/* Unary operators */

: OP_EXP_LOGICAL_NOT Expression { $$ = DtDoOperator ($2, OP_EXP_LOGICAL_NOT,
$2);}
| OP_EXP_ONES_COMPLIMENT Expression { $$ = DtDoOperator ($2,
OP_EXP_ONES_COMPLIMENT, $2);}

/* Binary operators */

| Expression OP_EXP_MULTIPLY Expression { $$ = DtDoOperator ($1, OP_EXP_MULTIPLY, $3);}
| Expression OP_EXP_DIVIDE Expression { $$ = DtDoOperator ($1, OP_EXP_DIVIDE, $3);}
| Expression OP_EXP_MODULO Expression { $$ = DtDoOperator ($1, OP_EXP_MODULO, $3);}
| Expression OP_EXP_ADD Expression { $$ = DtDoOperator ($1, OP_EXP_ADD, $3);}
| Expression OP_EXP_SUBTRACT Expression { $$ = DtDoOperator ($1, OP_EXP_SUBTRACT,
$3);}
| Expression OP_EXP_SHIFT_RIGHT Expression { $$ = DtDoOperator ($1, OP_EXP_SHIFT_RIGHT,
$3);}
| Expression OP_EXP_SHIFT_LEFT Expression { $$ = DtDoOperator ($1, OP_EXP_SHIFT_LEFT, $3);}
| Expression OP_EXP_GREATER Expression { $$ = DtDoOperator ($1, OP_EXP_GREATER,

```

```

    $3);}
| Expression OP_EXP_LESS      Expression { $$ = DtDoOperator ($1, OP_EXP_LESS,      $3);}
| Expression OP_EXP_GREATER_EQUAL Expression { $$ = DtDoOperator ($1,
OP_EXP_GREATER_EQUAL, $3);}
| Expression OP_EXP_LESS_EQUAL Expression { $$ = DtDoOperator ($1, OP_EXP_LESS_EQUAL,
$3);}
| Expression OP_EXP_EQUAL      Expression { $$ = DtDoOperator ($1, OP_EXP_EQUAL,      $3);}
| Expression OP_EXP_NOT_EQUAL Expression { $$ = DtDoOperator ($1, OP_EXP_NOT_EQUAL,
$3);}
| Expression OP_EXP_AND        Expression { $$ = DtDoOperator ($1, OP_EXP_AND,        $3);}
| Expression OP_EXP_XOR        Expression { $$ = DtDoOperator ($1, OP_EXP_XOR,        $3);}
| Expression OP_EXP_OR         Expression { $$ = DtDoOperator ($1, OP_EXP_OR,         $3);}
| Expression OP_EXP_LOGICAL_AND Expression { $$ = DtDoOperator ($1, OP_EXP_LOGICAL_AND,
$3);}
| Expression
OP_EXP_LOGICAL_OR Expression { $$ = DtDoOperator ($1, OP_EXP_LOGICAL_OR, $3);}

/* Parentheses: '(' Expression ')' */

| OP_EXP_PAREN_OPEN Expression
  OP_EXP_PAREN_CLOSE      { $$ = $2;}

/* Label references (prefixed with $) */

| OP_EXP_LABEL              { $$ = DtResolveLabel (DtParsertext);}

/*
 * All constants for the data table compiler are in hex, whether a (optional) 0x
 * prefix is present or not. For example, these two input strings are equivalent:
 * 1234
 * 0x1234
 */

/* Non-prefixed hex number */

| OP_EXP_NUMBER              { $$ = DtDoConstant (DtParsertext);}

/* Standard hex number (0x1234) */

| OP_EXP_HEX_NUMBER         { $$ = DtDoConstant (DtParsertext);}

/* Possible TBD: Decimal number with prefix (0d1234) - Not supported this time */

| OP_EXP_DECIMAL_NUMBER     { $$ = DtDoConstant (DtParsertext);}

;
%%

```

```

/*! [End] no source code translation !*/

/*
 * Local support functions, including parser entry point
 */
#define PR_FIRST_PARSE_OPCODE OP_EXP_EOF
#define PR_YYTNAME_START      3

/*****
 *
 * FUNCTION: DtParsererror
 *
 * PARAMETERS: Message          - Parser-generated error message
 *
 * RETURN:    None
 *
 * DESCRIPTION: Handler for parser errors
 *
 *****/

void
DtParsererror (
    char const      *Message)
{
    DtError (ASL_ERROR, ASL_MSG_SYNTAX,
             AslGbl_CurrentField, (char *) Message);
}

/*****
 *
 * FUNCTION: DtGetOpName
 *
 * PARAMETERS: ParseOpcode      - Parser token (OP_EXP_*)
 *
 * RETURN:    Pointer to the opcode name
 *
 * DESCRIPTION: Get the ascii
                name of the parse opcode for debug output
 *
 *****/

char *
DtGetOpName (
    UINT32          ParseOpcode)
{
#ifdef ASL_YYTNAME_START

```



```

/*
 * First entries (PR_YYTNAME_START) in yytname are special reserved names.
 * Ignore first 6 characters of name (OP_EXP_)
 */
return ((char *) yytname
        [(ParseOpcode - PR_FIRST_PARSE_OPCODE) + PR_YYTNAME_START] + 6);
#else
return ("[Unknown parser generator]");
#endif
}

/*****
 *
 * FUNCTION: DtEvaluateExpression
 *
 * PARAMETERS: ExprString      - Expression to be evaluated. Must be
 *                               terminated by either a newline or a NUL
 *                               string terminator
 *
 * RETURN:    64-bit value for the expression
 *
 * DESCRIPTION: Main entry point for the DT expression parser
 *
 *****/

UINT64
DtEvaluateExpression
(
char      *ExprString)
{

DbgPrint (ASL_DEBUG_OUTPUT,
          "**** Input expression: %s (Base 16)\n", ExprString);

/* Point lexer to the input string */

if (DtInitLexer (ExprString))
{
DtError (ASL_ERROR, ASL_MSG_COMPILER_INTERNAL,
        AslGbl_CurrentField, "Could not initialize lexer");
return (0);
}

/* Parse/Evaluate the input string (value returned in DtParserResult) */

DtParserparse ();
DtTerminateLexer ();

```

```
DbgPrint (ASL_DEBUG_OUTPUT,
  "**** Parser returned value: %u (%8.8X%8.8X)\n",
  (UINT32) DtParserResult, ACPI_FORMAT_UINT64 (DtParserResult));

return (DtParserResult);
}
```

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtparser.y

No license file was found, but licenses were detected in source scan.

```
%{
/*****
*
* Module Name: prparser.l - Flex input file for preprocessor lexer
*
*****/

/*****
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*****/

```
#include "aslcompiler.h"
#include "prparser.y.h"
```

```
/* Buffer to pass strings to the parser */
```

```
#define STRING_SETUP strcpy (AslGbl_StringBuffer, PrParsertext);
PrParserlval.str = AslGbl_StringBuffer
```

```
#define _COMPONENT ACPI_COMPILER
ACPI_MODULE_NAME ("prscanner")
```

```
/* Local prototypes */
```

```
static char
PrDoCommentType1 (
void);
```

```
static char
```

```

PrDoCommentType2 (
    void);
% }

%option noyywrap

Number      [0-9a-fA-F]+
HexNumber   0[xX][0-9a-fA-F]+
WhiteSpace  [ \t\v\r]+
NewLine     [\n]
Identifier  [a-zA-Z][0-9a-zA-Z]*

%%
"/*"
    { if (!PrDoCommentType1 ()) {yyterminate ();} }
"//"
    { if (!PrDoCommentType2 ()) {yyterminate ();} }

\<
    return (EXPOP_PAREN_OPEN);
\>
    return (EXPOP_PAREN_CLOSE);
\~
    return (EXPOP_ONES_COMPLIMENT);
\!
    return (EXPOP_LOGICAL_NOT);
\*
    return (EXPOP_MULTIPLY);
\/
    return (EXPOP_DIVIDE);
\%
    return (EXPOP_MODULO);
\+
    return (EXPOP_ADD);
\-
    return (EXPOP_SUBTRACT);
">>"
    return (EXPOP_SHIFT_RIGHT);
"<<"
    return (EXPOP_SHIFT_LEFT);
\<
    return (EXPOP_LESS);
\>
    return (EXPOP_GREATER);
"<="
    return (EXPOP_LESS_EQUAL);
">="
    return (EXPOP_GREATER_EQUAL);
"=="
    return (EXPOP_EQUAL);
"!="
    return (EXPOP_NOT_EQUAL);
\&
    return (EXPOP_AND);
\^
    return (EXPOP_XOR);
\|
    return (EXPOP_OR);
"&&"
    return (EXPOP_LOGICAL_AND);
"||"
    return (EXPOP_LOGICAL_OR);

"defined"
    return (EXPOP_DEFINE);
{Identifier}
    {STRING_SETUP; return (EXPOP_IDENTIFIER);}

<<EOF>>
    return (EXPOP_EOF); /* null end-of-string */

{Number}
    return (EXPOP_NUMBER);
{HexNumber}
    return (EXPOP_HEX_NUMBER);

```

```

{NewLine}    return (EXPOP_NEW_LINE);
{WhiteSpace} /* Ignore */

.           return (EXPOP_EOF);
%%

/*
 * Local support functions
 */
YY_BUFFER_STATE    LexBuffer;

/*****
 *
 * FUNCTION:  PrInitLexer
 *
 * PARAMETERS:  String          - Input string to be parsed
 *
 * RETURN:     TRUE if parser returns NULL. FALSE otherwise.
 *
 * DESCRIPTION: Initialization routine for lexer. The lexer needs
 *              a buffer to handle strings instead of a file.
 *****/

int
PrInitLexer (
    char          *String)
{

    LexBuffer = yy_scan_string
(String);
    return (LexBuffer == NULL);
}

/*****
 *
 * FUNCTION:  PrTerminateLexer
 *
 * PARAMETERS:  None
 *
 * RETURN:     None
 *
 * DESCRIPTION: Termination routine for thelexer.
 *****/

```

```

void
PrTerminateLexer (
    void)
{

    yy_delete_buffer (LexBuffer);
}

/*****
*
* FUNCTION: PrDoCommentType1
*
* PARAMETERS: none
*
* RETURN:    none
*
* DESCRIPTION: Process a new legacy comment. Just toss it.
*
*****/

static char
PrDoCommentType1 (
    void)
{
    int      c;

Loop:
    while (((c = input ()) != '*') && (c != EOF))
    {
    }
    if (c == EOF)
    {
        return (FALSE);
    }

    if (((c = input ()) != '/') && (c != EOF))
    {

        unput (c);
        goto Loop;
    }
    if (c == EOF)
    {
        return (FALSE);
    }
}

```



```
return (TRUE);
}
```

```
/*
 *
 * FUNCTION: PrDoCommentType2
 *
 * PARAMETERS: none
 *
 * RETURN: none
 *
 * DESCRIPTION: Process a new "/" comment. Just toss it.
 *
 */
```

```
static char
PrDoCommentType2 (
    void)
{
    int c;

    while (((c = input ()) != '\n') && (c != EOF))
    {
    }
    if (c == EOF)
    {
        return (FALSE);
    }

    return (TRUE);
}
```

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/prparser.l

No license file was found, but licenses were detected in source scan.

NoEcho('

```
/*
 *
 * Module Name: aslprimaries.y - Rules for primary ASL operators
 *
 * - Keep this file synched with the
 *
 * CvParseOpBlockType function in cvcompiler.c
 *
 */
```

/******

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 *
 *****/

)

/*
 *
 * ASL Primary Terms
 *
 *****/

AccessAsTerm

```

: PARSEOP_ACCESSAS
  PARSEOP_OPEN_PAREN
  AccessTypeKeyword
  OptionalAccessAttribTerm
  PARSEOP_CLOSE_PAREN  {$$ = TrCreateOp (PARSEOP_ACCESSAS,2,$3,$4);}
| PARSEOP_ACCESSAS

  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

AcquireTerm

```

: PARSEOP_ACQUIRE
  PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp(PARSEOP_ACQUIRE);}
  SuperName
  ',' WordConstExpr
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,2,$4,$6);}
| PARSEOP_ACQUIRE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

AddTerm

```

: PARSEOP_ADD
  PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_ADD

```

```
PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

AliasTerm

```
: PARSEOP_ALIAS
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_ALIAS);}
  NameString
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$
= TrLinkOpChildren ($<n>3,2,$4,
                    TrSetOpFlags ($5, OP_IS_NAME_DECLARATION));}
| PARSEOP_ALIAS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

AndTerm

```
: PARSEOP_AND
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_AND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

ArgTerm

```
: PARSEOP_ARG0      {$$ = TrCreateLeafOp (PARSEOP_ARG0);}
| PARSEOP_ARG1      {$$ = TrCreateLeafOp (PARSEOP_ARG1);}
| PARSEOP_ARG2      {$$ = TrCreateLeafOp (PARSEOP_ARG2);}
| PARSEOP_ARG3      {$$ = TrCreateLeafOp (PARSEOP_ARG3);}
| PARSEOP_ARG4      {$$ = TrCreateLeafOp (PARSEOP_ARG4);}
| PARSEOP_ARG5
  {$$ = TrCreateLeafOp (PARSEOP_ARG5);}
| PARSEOP_ARG6      {$$ = TrCreateLeafOp (PARSEOP_ARG6);}
;
```

BankFieldTerm

```
: PARSEOP_BANKFIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_BANKFIELD);}
  NameString
  NameStringItem
  TermArgItem
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
```

```

OptionalUpdateRuleKeyword
PARSEOP_CLOSE_PAREN '{'
    FieldUnitList '}'    { $$ = TrLinkOpChildren ($<n>3,7,
                        $4,$5,$6,$7,$8,$9,$12);}
| PARSEOP_BANKFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  {' error '}          { $$ = AslDoError(); yyclearin;}
;

BreakTerm
: PARSEOP_BREAK          { $$ = TrCreateOp (PARSEOP_BREAK, 0);}
;

BreakPointTerm
: PARSEOP_BREAKPOINT    { $$ = TrCreateOp (PARSEOP_BREAKPOINT, 0);}
;

BufferTerm
: PARSEOP_BUFFER        { $<n>$ = TrCreateLeafOp (PARSEOP_BUFFER);}
COMMENT_CAPTURE_OFF; }
  OptionalDataCount
  {' BufferTermData '}   { $$ = TrLinkOpChildren ($<n>2,2,$3,$5); COMMENT_CAPTURE_ON;}
;

BufferTermData
: ByteList              {}
| StringData            {}
;

CaseTerm
: PARSEOP_CASE
  PARSEOP_OPEN_PAREN    { $<n>$ = TrCreateLeafOp (PARSEOP_CASE);}
  DataObject
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'        { $$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_CASE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN { $$ = AslDoError(); yyclearin;}
;

ConcatTerm
: PARSEOP_CONCATENATE
  PARSEOP_OPEN_PAREN    { $<n>$ = TrCreateLeafOp (PARSEOP_CONCATENATE);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   { $$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}

```

```

| PARSEOP_CONCATENATE
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ConcatResTerm

```

: PARSEOP_CONCATENATERESTEMPLATE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (
                          PARSEOP_CONCATENATERESTEMPLATE);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_CONCATENATERESTEMPLATE
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CondRefOfTerm

```

: PARSEOP_CONDREFOF
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CONDREFOF);}
  CondRefOfSource
  Target
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_CONDREFOF
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ConnectionTerm

```

: PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN
  NameString
  PARSEOP_CLOSE_PAREN   {$$ = TrCreateOp (PARSEOP_CONNECTION,1,$3);}
| PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CONNECTION);}
  ResourceMacroTerm
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3, 1,
                          TrLinkOpChildren (
                              TrCreateLeafOp (PARSEOP_RESOURCETEMPLATE), 3,
                              TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                              TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                              $4));}
| PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```


ContinueTerm

```
: PARSEOP_CONTINUE      {$$ = TrCreateOp (PARSEOP_CONTINUE, 0);}
;
```

CopyObjectTerm

```
: PARSEOP_COPYOBJECT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_COPYOBJECT);}
  TermArg
  ',' SimpleName
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren
($<n>3,2,$4,
      TrSetOpFlags ($6, OP_IS_TARGET));}
| PARSEOP_COPYOBJECT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

CreateBitFieldTerm

```
: PARSEOP_CREATEBITFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEBITFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
      TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEBITFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

CreateByteFieldTerm

```
: PARSEOP_CREATEBYTEFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEBYTEFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
      TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEBYTEFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

CreateDWordFieldTerm

```
: PARSEOP_CREATEDWORDFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEDWORDFIELD);}
  TermArg
```

```

TermArgItem
NameStringItem
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                        TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEDWORDFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateFieldTerm

```

: PARSEOP_CREATEFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEFIELD);}
  TermArg
  TermArgItem
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,

  TrSetOpFlags ($7, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateQWordFieldTerm

```

: PARSEOP_CREATEQWORDFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEQWORDFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                        TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEQWORDFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateWordFieldTerm

```

: PARSEOP_CREATEWORDFIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEWORDFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                        TrSetOpFlags ($6,
OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEWORDFIELD
  PARSEOP_OPEN_PAREN

```

```

    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DataRegionTerm
: PARSEOP_DATATABLEREGION
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DATATABLEREGION);}
  NameString
  TermArgItem
  TermArgItem
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,4,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$5,$6,$7);}
| PARSEOP_DATATABLEREGION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DebugTerm
: PARSEOP_DEBUG           {$$ = TrCreateLeafOp (PARSEOP_DEBUG);}
;

DecTerm
: PARSEOP_DECREMENT
  PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp (PARSEOP_DECREMENT);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_DECREMENT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DefaultTerm
: PARSEOP_DEFAULT '{'      {$<n>$ = TrCreateLeafOp (PARSEOP_DEFAULT);}
  TermList '}'            {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_DEFAULT '{'
  error '}'                {$$ = AslDoError(); yyclearin;}
;

DerefOfTerm
: PARSEOP_DEREOF
  PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp (PARSEOP_DEREOF);}
  DerefOfSource
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_DEREOF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

DeviceTerm

```
: PARSEOP_DEVICE
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_DEVICE);}
  NameString
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'          {$$ = TrLinkOpChildren (<n>3,2,
                                     TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_DEVICE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

DivideTerm

```
: PARSEOP_DIVIDE
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
  TermArg
  TermArgItem
  Target
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren (<n>3,4,$4,$5,$6,$7);}
| PARSEOP_DIVIDE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

EISAIDTerm

```
: PARSEOP_EISAID
  PARSEOP_OPEN_PAREN
  StringData
  PARSEOP_CLOSE_PAREN     {$$ = TrSetOpIntegerValue (PARSEOP_EISAID, $3);}
| PARSEOP_EISAID
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

ElseIfTerm

```
: IfTerm ElseTerm        {$$ = TrLinkPeerOp ($1,$2);}
;
```

ElseTerm

```
:                          {$$ = NULL;}
| PARSEOP_ELSE '{'
  TermList      {<n>$
= TrCreateLeafOp (PARSEOP_ELSE);}
  '}'          {$$ = TrLinkOpChildren (<n>4,1,$3);}

| PARSEOP_ELSE '{'
  error '}'    {$$ = AslDoError(); yyclearin;}
;
```

```

| PARSEOP_ELSE
    error                {$$ = AslDoError(); yyclearin;}

| PARSEOP_ELSEIF
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_ELSE);}
    TermArg                {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
    PARSEOP_CLOSE_PAREN '{'
        TermList '}'      {TrLinkOpChildren ($<n>5,2,$4,$8);}
    ElseTerm               {TrLinkPeerOp ($<n>5,$11);}
                          {$$ = TrLinkOpChildren ($<n>3,1,$<n>5);}

| PARSEOP_ELSEIF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}

| PARSEOP_ELSEIF
    error                {$$ = AslDoError(); yyclearin;}
;

EventTerm
: PARSEOP_EVENT
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp
(PARSEOP_EVENT);}
    NameString
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,
        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION));}
| PARSEOP_EVENT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ExternalTerm
: PARSEOP_EXTERNAL
    PARSEOP_OPEN_PAREN
    NameString
    OptionalObjectTypeKeyword
    OptionalParameterTypePackage
    OptionalParameterTypesPackage
    PARSEOP_CLOSE_PAREN    {$$ = TrCreateOp (PARSEOP_EXTERNAL,4,$3,$4,$5,$6);}
| PARSEOP_EXTERNAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

FatalTerm
: PARSEOP_FATAL
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_FATAL);}

```

```

ByteConstExpr
',' DWordConstExpr
TermArgItem
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
| PARSEOP_FATAL

PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

FieldTerm

```

: PARSEOP_FIELD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_FIELD);}
  NameString
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
  OptionalUpdateRuleKeyword
  PARSEOP_CLOSE_PAREN '{'
    FieldUnitList '}'    {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$6,$7,$10);}
| PARSEOP_FIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  '{' error '}'          {$$ = AslDoError(); yyclearin;}
;

```

FindSetLeftBitTerm

```

: PARSEOP_FINDSETLEFTBIT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETLEFTBIT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_FINDSETLEFTBIT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

FindSetRightBitTerm

```

:
  PARSEOP_FINDSETRIGHTBIT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETRIGHTBIT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_FINDSETRIGHTBIT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

/* Convert a For() loop to a While() loop */
ForTerm
: PARSEOP_FOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
  OptionalTermArg ';'      {}
  OptionalPredicate ','
  OptionalTermArg          {$<n>$ = TrLinkPeerOp ($4,$<n>3);
                           TrSetOpParent ($9,$<n>3);}          /* New parent is WHILE */
  PARSEOP_CLOSE_PAREN
  {' TermList '}'         {$<n>$ = TrLinkOpChildren ($<n>3,2,$7,$13);}
                           {$<n>$ = TrLinkPeerOp ($13,$9);
                           $$ = $<n>10;}
;

OptionalPredicate
:                               {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER, 1);}
| TermArg                       {$$ = $1;}
;

FprintfTerm
: PARSEOP_FPRINTF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FPRINTF);}
  TermArg ';'
  StringData
  PrintfArgList
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
| PARSEOP_FPRINTF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

FromBCDTerm
: PARSEOP_FROMBCD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FROMBCD);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_FROMBCD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

FunctionTerm
: PARSEOP_FUNCTION
  PARSEOP_OPEN_PAREN      {COMMENT_CAPTURE_OFF; $<n>$ = TrCreateLeafOp
(PARSEOP_METHOD);
}
  NameString

```

```

OptionalParameterTypePackage
OptionalParameterTypesPackage
PARSEOP_CLOSE_PAREN '{'  {COMMENT_CAPTURE_ON; }
    TermList '}'          {$$ = TrLinkOpChildren ($<n>3,7,
                        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                        TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),
                        TrCreateLeafOp (PARSEOP_SERIALIZERULE_NOTSERIAL),
                        TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),$5,$6,$10);}
| PARSEOP_FUNCTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IfTerm
: PARSEOP_IF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
  TermArg
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}

| PARSEOP_IF
  PARSEOP_OPEN_PAREN
  error
  PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IncludeTerm
: PARSEOP_INCLUDE
  PARSEOP_OPEN_PAREN
  String
  PARSEOP_CLOSE_PAREN    {$$ = TrSetOpIntegerValue (PARSEOP_INCLUDE, $3);
                        FIOpenIncludeFile ($3);}
;

IncludeEndTerm
: PARSEOP_INCLUDE_END    {$<n>$ = TrCreateLeafOp (PARSEOP_INCLUDE_END);
                        TrSetOpCurrentFilename ($$);}
;

IncTerm
: PARSEOP_INCREMENT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_INCREMENT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```


IndexFieldTerm

```
: PARSEOP_INDEXFIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_INDEXFIELD);}
  NameString
  NameStringItem
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
  OptionalUpdateRuleKeyword
  PARSEOP_CLOSE_PAREN '{'
    FieldUnitList '}'    {$$ = TrLinkOpChildren ($<n>3,6,$4,$5,$6,$7,$8,$11);}
| PARSEOP_INDEXFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  '{' error '}'          {$$ = AslDoError(); yyclearin;}
;
```

IndexTerm

```
: PARSEOP_INDEX
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_INDEX);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_INDEX
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

LAndTerm

```
: PARSEOP_LAND
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LAND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  {$$ = AslDoError(); yyclearin;}
;
```

LEqualTerm

```
: PARSEOP_LEQUAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LEQUAL
```

```

PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LGreaterEqualTerm
: PARSEOP_LGREATEREQUAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren ($<n>3,2,$4,$5));}
| PARSEOP_LGREATEREQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LGreaterTerm
: PARSEOP_LGREATER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN
  {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LGREATER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LLessEqualTerm
: PARSEOP_LLESSEQUAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren ($<n>3,2,$4,$5));}
| PARSEOP_LLESSEQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LLessTerm
: PARSEOP_LLESS
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LLESS
  PARSEOP_OPEN_PAREN

```

```

    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LNotEqualTerm
: PARSEOP_LNOTEQUAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren ($<n>3,2,$4,$5));}
| PARSEOP_LNOTEQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LNotTerm
: PARSEOP_LNOT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
  TermArg
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_LNOT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LoadTableTerm
: PARSEOP_LOADTABLE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LOADTABLE);}
  TermArg
  TermArgItem
  TermArgItem
  OptionalListString
  OptionalListString
  OptionalReference
  PARSEOP_CLOSE_PAREN     {$$
= TrLinkOpChildren ($<n>3,6,$4,$5,$6,$7,$8,$9);}
| PARSEOP_LOADTABLE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LoadTerm
: PARSEOP_LOAD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_LOAD);}
  NameString
  RequiredTarget
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LOAD

```

```
PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

LocalTerm

```
: PARSEOP_LOCAL0      {$$ = TrCreateLeafOp (PARSEOP_LOCAL0);}
| PARSEOP_LOCAL1      {$$ = TrCreateLeafOp (PARSEOP_LOCAL1);}
| PARSEOP_LOCAL2      {$$ = TrCreateLeafOp (PARSEOP_LOCAL2);}
| PARSEOP_LOCAL3      {$$ = TrCreateLeafOp (PARSEOP_LOCAL3);}
| PARSEOP_LOCAL4      {$$ = TrCreateLeafOp (PARSEOP_LOCAL4);}
| PARSEOP_LOCAL5      {$$ = TrCreateLeafOp (PARSEOP_LOCAL5);}
| PARSEOP_LOCAL6
    {$$ = TrCreateLeafOp (PARSEOP_LOCAL6);}
| PARSEOP_LOCAL7      {$$ = TrCreateLeafOp (PARSEOP_LOCAL7);}
;
```

LORTerm

```
: PARSEOP_LOR
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LOR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

MatchTerm

```
: PARSEOP_MATCH
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_MATCH);}
    TermArg
    ',' MatchOpKeyword
    TermArgItem
    ',' MatchOpKeyword
    TermArgItem
    TermArgItem
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$7,$9,$10,$11);}
| PARSEOP_MATCH
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

MethodTerm

```
: PARSEOP_METHOD
    PARSEOP_OPEN_PAREN    {$<n>$
= TrCreateLeafOp (PARSEOP_METHOD); COMMENT_CAPTURE_OFF;}
    NameString
    OptionalByteConstExpr    {UtCheckIntegerRange ($5, 0, 7);}
;
```

```

OptionalSerializeRuleKeyword
OptionalByteConstExpr
OptionalParameterTypePackage
OptionalParameterTypesPackage
PARSEOP_CLOSE_PAREN '{' {COMMENT_CAPTURE_ON;}
  TermList '}'      {$$ = TrLinkOpChildren ($<n>3,7,
                    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                    $5,$7,$8,$9,$10,$14);}
| PARSEOP_METHOD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

MidTerm
: PARSEOP_MID
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MID);}
  TermArg
  TermArgItem
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,$7);}
| PARSEOP_MID
  PARSEOP_OPEN_PAREN
  error
  PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ModTerm
: PARSEOP_MOD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_MOD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

MultiplyTerm
: PARSEOP_MULTIPLY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_MULTIPLY
  PARSEOP_OPEN_PAREN

```

```

    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

MutexTerm
: PARSEOP_MUTEX
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MUTEX);}
  NameString
  OptionalSyncLevel
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren
($<n>3,2,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$5);}
| PARSEOP_MUTEX
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NameTerm
: PARSEOP_NAME
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_NAME);}
  NameString
  ',' DataObject
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$6);}
| PARSEOP_NAME
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NAndTerm
: PARSEOP_NAND
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_NAND);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_NAND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NoOpTerm
: PARSEOP_NOOP           {$$ = TrCreateOp (PARSEOP_NOOP, 0);}
;

NOrTerm
: PARSEOP_NOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_NOR);}
  TermArg

```

```

TermArgItem
Target
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_NOR
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

NotifyTerm

```

: PARSEOP_NOTIFY
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_NOTIFY);}
  SuperName
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_NOTIFY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

NotTerm

```

: PARSEOP_NOT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_NOT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ObjectTypeTerm

```

: PARSEOP_OBJECTTYPE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE);}
  ObjectTypeSource
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_OBJECTTYPE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

OffsetTerm

```

: PARSEOP_OFFSET
  PARSEOP_OPEN_PAREN
  AmlPackageLengthTerm
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateOp (PARSEOP_OFFSET,1,$3);}
| PARSEOP_OFFSET
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

;

OpRegionTerm
: PARSEOP_OPERATIONREGION
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_OPERATIONREGION);}
  NameString
  ',' OpRegionSpaceIdTerm
  TermArgItem
  TermArgItem
  PARSEOP_CLOSE_PAREN
  {$$ = TrLinkOpChildren ($<n>3,4,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                          $6,$7,$8);}
| PARSEOP_OPERATIONREGION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

OpRegionSpaceIdTerm
: RegionSpaceKeyword      {}
| ByteConst                {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
;

```

```

OrTerm
: PARSEOP_OR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_OR
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

PackageTerm
: PARSEOP_PACKAGE        {$<n>$ = TrCreateLeafOp (PARSEOP_VAR_PACKAGE);}
  OptionalDataCount
  '{' PackageList '}'     {$$ = TrLinkOpChildren ($<n>2,2,$3,$5);}
;

```

```

PowerResTerm
: PARSEOP_POWERRESOURCE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_POWERRESOURCE);}
  NameString
  ',' ByteConstExpr
  ',' WordConstExpr
  PARSEOP_CLOSE_PAREN '{'
  TermList '}'           {$$ = TrLinkOpChildren ($<n>3,4,

```



```

        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
        $6,$8,$11);}
| PARSEOP_POWERRESOURCE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

PrintfTerm
: PARSEOP_PRINTF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PRINTF);}
  StringData
  PrintfArgList
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_PRINTF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

PrintfArgList
:
  {$$ = NULL;}

| TermArg      {$$ = $1;}
| PrintfArgList ' '
  TermArg      {$$ = TrLinkPeerOp ($1, $3);}
;

ProcessorTerm
: PARSEOP_PROCESSOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PROCESSOR);}
  NameString
  ',' ByteConstExpr
  OptionalDWordConstExpr
  OptionalByteConstExpr
  PARSEOP_CLOSE_PAREN '{'
  TermList '}'          {$$ = TrLinkOpChildren ($<n>3,5,
        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
        $6,$7,$8,$11);}
| PARSEOP_PROCESSOR
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

RawDataBufferTerm
: PARSEOP_DATABUFFER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DATABUFFER);}
  OptionalWordConst
  PARSEOP_CLOSE_PAREN '{'
  ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}

```

```

|
PARSEOP_DATABUFFER
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

/*
* In RefOf, the node isn't really a target, but we can't keep track of it after
* we've taken a pointer to it. (hard to tell if a local becomes initialized this way.)
*/
RefOfTerm
: PARSEOP_REFOF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_REFOF);}
  RefOfSource
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,
                                TrSetOpFlags ($4, OP_IS_TARGET));}
| PARSEOP_REFOF
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ReleaseTerm
: PARSEOP_RELEASE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_RELEASE);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_RELEASE
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

ResetTerm
: PARSEOP_RESET
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_RESET);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_RESET
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ReturnTerm
: PARSEOP_RETURN
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_RETURN);}
  OptionalReturnArg
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_RETURN          {$$ = TrLinkOpChildren (

```

```

        TrCreateLeafOp (PARSEOP_RETURN),1,
        TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
        OP_IS_NULL_RETURN));}
| PARSEOP_RETURN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ScopeTerm
: PARSEOP_SCOPE

  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SCOPE);}
  NameString
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'          {$$ = TrLinkOpChildren ($<n>3,2,
    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_SCOPE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ShiftLeftTerm
: PARSEOP_SHIFTLEFT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLEFT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_SHIFTLEFT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ShiftRightTerm
: PARSEOP_SHIFTRIGHT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren
($<n>3,3,$4,$5,$6);}
| PARSEOP_SHIFTRIGHT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

SignalTerm
: PARSEOP_SIGNAL

```

```

    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_SIGNAL);}
    SuperName
    PARSEOP_CLOSE_PAREN  {$ = TrLinkOpChildren (<n>3,1,$);}
| PARSEOP_SIGNAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

SizeOfTerm
: PARSEOP_SIZEOF
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_SIZEOF);}
    SuperName
    PARSEOP_CLOSE_PAREN  {$ = TrLinkOpChildren (<n>3,1,$);}
| PARSEOP_SIZEOF
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

SleepTerm
: PARSEOP_SLEEP
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_SLEEP);}
    TermArg
    PARSEOP_CLOSE_PAREN  {$ = TrLinkOpChildren (<n>3,1,$);}
| PARSEOP_SLEEP
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

StallTerm
: PARSEOP_STALL
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_STALL);}
    TermArg
    PARSEOP_CLOSE_PAREN  {$ = TrLinkOpChildren (<n>3,1,$);}
| PARSEOP_STALL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

StoreTerm
: PARSEOP_STORE
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_STORE);}
    TermArg
    ',' SuperName
    PARSEOP_CLOSE_PAREN  {$ = TrLinkOpChildren (<n>3,2,$,
                                TrSetOpFlags ($6, OP_IS_TARGET));}
| PARSEOP_STORE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}

```

;

SubtractTerm

```
: PARSEOP_SUBTRACT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_SUBTRACT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

SwitchTerm

```
: PARSEOP_SWITCH
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_SWITCH);}
  TermArg
  PARSEOP_CLOSE_PAREN '{'
    CaseDefaultTermList '}' {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_SWITCH
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

ThermalZoneTerm

```
: PARSEOP_THERMALZONE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_THERMALZONE);}
  NameString
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'    {$$ = TrLinkOpChildren ($<n>3,2,
      TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_THERMALZONE
  PARSEOP_OPEN_PAREN
  error
  PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

TimerTerm

```
: PARSEOP_TIMER
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_TIMER);}
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,0);}
| PARSEOP_TIMER          {$$ = TrLinkOpChildren (
  TrCreateLeafOp (PARSEOP_TIMER),0);}
| PARSEOP_TIMER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

ToBCDTerm

```
: PARSEOP_TOBCD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOBCD);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOBCD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ToBufferTerm

```
: PARSEOP_TOBUFFER
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOBUFFER);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOBUFFER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ToDecimalStringTerm

```
: PARSEOP_TODECIMALSTRING
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TODECIMALSTRING);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TODECIMALSTRING
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ToHexStringTerm

```
: PARSEOP_TOHEXSTRING
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOHEXSTRING);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOHEXSTRING
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ToIntegerTerm

```
: PARSEOP_TOINTEGER
```

```

PARSEOP_OPEN_PAREN
  {<n>$ = TrCreateLeafOp (PARSEOP_TOINTEGER);}
TermArg
Target
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOINTEGER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ToPLDTerm

```

: PARSEOP_TOPLD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOPLD);}
  PldKeywordList
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_TOPLD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

PldKeywordList

```

:          {$$ = NULL;}
| PldKeyword
  PARSEOP_EXP_EQUALS Integer  {$$ = TrLinkOpChildren ($1,1,$3);}
| PldKeyword
  PARSEOP_EXP_EQUALS String   {$$ = TrLinkOpChildren ($1,1,$3);}
| PldKeywordList ','        /* Allows a trailing comma at list end */
| PldKeywordList ','
  PldKeyword
  PARSEOP_EXP_EQUALS
Integer  {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
| PldKeywordList ','
  PldKeyword
  PARSEOP_EXP_EQUALS String   {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
;

```

ToStringTerm

```

: PARSEOP_TOSTRING
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOSTRING);}
  TermArg
  OptionalCount
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_TOSTRING
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ToUUIDTerm

```
: PARSEOP_TOUUID
  PARSEOP_OPEN_PAREN
  StringData
  PARSEOP_CLOSE_PAREN    {$$ = TrSetOpIntegerValue (PARSEOP_TOUUID, $3);}
| PARSEOP_TOUUID
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

UnicodeTerm

```
: PARSEOP_UNICODE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_UNICODE);}
  StringData
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,0,$4);}
| PARSEOP_UNICODE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

UnloadTerm

```
: PARSEOP_UNLOAD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_UNLOAD);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_UNLOAD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

WaitTerm

```
: PARSEOP_WAIT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_WAIT);}
  SuperName
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_WAIT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

XOrTerm

```
: PARSEOP_XOR
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
  TermArg
  TermArgItem
```



```

    Target
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_XOR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN    {$$ = AslDoError(); yyclearin;}
;

```

WhileTerm

```

: PARSEOP_WHILE
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
    TermArg
    PARSEOP_CLOSE_PAREN
    {' TermList ' }    {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_WHILE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN    {$$ = AslDoError(); yyclearin;}
;

```

Found in path(s):

```

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslprimaries.y

```

No license file was found, but licenses were detected in source scan.

10 January 2020. Summary of changes for version 20200110:

1) ACPICA kernel-resident subsystem:

Updated all copyrights to 2020. This affects all ACPICA source code modules.

2) iASL Compiler/Disassembler and ACPICA tools:

ASL test suite (ASLTS): Updated all copyrights to 2020.

Tools and utilities: Updated all signon copyrights to 2020.

iASL: fix forward reference analysis for field declarations. Fixes forward reference analysis for field declarations by searching the parent scope for the named object when the object is not present in the current scope.

iASL: Improved the error output for ALREADY_EXISTS errors. Now, the full pathname of the name that already exists is printed.

iASL: Enhance duplicate Case() detection for buffers. Add check for

buffers with no initializer list (these buffers will be filled with zeros at runtime.)

13

December 2019. Summary of changes for version 20191213:

1) ACPICA kernel-resident subsystem:

Return a Buffer object for all fields created via the CreateField operator. Previously, an Integer would be returned if the size of the field was less than or equal to the current size of an Integer. Although this goes against the ACPI specification, it provides compatibility with other ACPI implementations. Also updated the ASLTS test suite to reflect this new behavior.

2) iASL Compiler/Disassembler and ACPICA tools:

iASL: Implemented detection of (and throw an error for) duplicate values for Case statements within a single Switch statement. Duplicate Integers, Strings, and Buffers are supported.

iASL: Fix error logging issue during multiple file compilation -- Switch to the correct input file during error node creation.

iASL: For duplicate named object creation, now emit an error instead of a warning - since this will cause a runtime error.

AcpiSrc: Add unix line-ending support for non-Windows builds.

iASL: Add an error condition for an attempt to create a NameString with > 255 NameSegs (the max allowable via the AML definition).

18 October 2019. Summary of changes for version 20191018:

1) ACPICA kernel-resident subsystem:

Debugger: added a new command: ?Fields [address space ID]?. This command dumps the contents of all field units that are defined within the namespace with a particular address space ID.

Modified the external interface AcpiLoadTable() to return a table index.

This table index can be used for unloading a table for debugging.

```
ACPI_STATUS
AcpiLoadTable (
    ACPI_TABLE_HEADER    *Table,
    UINT32                *TableIndex))
```

Implemented a new external interface: AcpiUnloadTable() This new function takes a table index as an argument and unloads the table. Useful for debugging only.

```
ACPI_STATUS
AcpiUnloadTable (
    UINT32                TableIndex))
```

Ported

the AcpiNames utility to use the new table initialization sequence. The utility was broken before this change. Also, it was required to include most of the AML interpreter into the utility in order to process table initialization (module-level code execution.)

Update for results from running Clang V8.0.1. This fixes all "dead assignment" warnings. There are still several "Dereference of NULL pointer" warnings, but these have been found to be false positive warnings.

2) iASL Compiler/Disassembler and ACPICA tools:

iASL: numerous table compiler changes to ensure that the usage of yacc/bison syntax is POSIX-compliant.

iASL/disassembler: several simple bug fixes in the data table disassembler.

Acpiexec: expanded the initialization file (the -fi option) to initialize strings, buffers, packages, and field units.

16 August 2019. Summary of changes for version 20190816:

This release is available at <https://acpica.org/downloads>

1)

ACPICA kernel-resident subsystem:

Modified the OwnerId mechanism to allow for more Owner Ids. The previous limit was 256 Ids, now it is 4096 Ids. This prevents OWNER_ID_LIMIT

exceptions on machines with a large number of initialization threads, many CPU cores and nested initialization control methods.

Introduced `acpi_dispatch_gpe()` as a wrapper around `AcpiEvDetectGpe()` for checking if the given GPE (as represented by a GPE device handle and a GPE number) is currently active and dispatching it (if that's the case) outside of interrupt context.

Table load: exit the interpreter before initializing objects within the new table This prevents re-acquiring the interpreter lock when loading tables

Added the "Windows 2019" string to the `_OSI` support (version 1903). Jung-uk Kim

Macros: removed pointer math on a null pointer. Causes warnings on some compilers and/or tools. Changed `ACPI_TO_POINTER` to use `ACPI_CAST_PTR` instead of using arithmetic.

Fully deployed the `ACPI_PRINTF_LIKE` macro. This macro was not being used across all "printf-like" internal functions. Also, cleanup all calls to such functions (both in 32-bit mode and 64-bit mode) now that they are analyzed by the gcc compiler via `ACPI_PRINTF_LIKE`.

2) iASL Compiler/Disassembler and ACPICA tools:

iASL: implemented a new data table compiler flex/bison front-end. This change is internal and is not intended to result in changes to the compiled code. This new compiler front-end can be invoked using the `-tp` option for now, until the old mechanism is removed.

ASLTS: Implemented a new data table compiler test suite. This test suite generates all table templates and compile/disassemble/re-compile/binary-compare each file.

iASL: return -1 if AML files were not generated due to compiler errors

iASL: added a warning on use of the now-legacy `ASL Processor ()` keyword.

iASL: added an error on `_UID` object declaration that returns a String within a `Processor ()` declaration. A `_UID` for a processor must be an Integer.

iASL: added a null terminator to name strings that consist only of multiple parent prefixes (^)

iASL: added support to compile both ASL and data table files in a single command.

Updated the tool generation project files that were recently migrated to MSVC 2017 to eliminate all new warnings. The new project files appear in the directory `\acpica\generate\msvc2017`. This change effectively deprecates the older project files in `\acpica\generate\msvc9`.

03 July 2019. Summary of changes for version 20190703:

1) ACPICA kernel-resident subsystem:

Remove legacy module-level support code. There were still some remnants of the legacy module-level code executions. Since we no longer support this option, this is essentially dead code and has been removed from the ACPICA source.

iASL: ensure that `_WAK`, `_PTS`, `_TTS`, and `_Sx` are declared only at the root scope. If these named objects are declared outside the root scope, they will not be invoked by any host Operating System.

Clear status of GPEs on first direct enable. ACPI GPEs (other than the EC one) can be enabled in two situations. First, the GPEs with existing `_Lxx` and `_Exx` methods are enabled implicitly by ACPICA during system initialization. Second, the GPEs without these methods (like GPEs listed by `_PRW` objects for wakeup devices) need to be enabled directly by the code that is going to use them (e.g. ACPI power management or device drivers).

In the former case, if the status of a given GPE is set to start with, its handler method (either `_Lxx` or `_Exx`) needs to be invoked to take care of the events (possibly) signaled before the GPE was enabled. In the latter case, however, the first caller of `AcpiEnableGpe()` for a given GPE should not be expected to care about any events that might be signaled through it earlier. In that case, it is better to clear the status of the GPE before enabling it, to prevent stale events from triggering unwanted actions (like spurious system resume, for example).

For this reason, modify `AcpiEvAddGpeReference()` to take an additional boolean argument indicating whether or not the GPE status needs to be cleared when its reference counter changes from zero to one and make `AcpiEnableGpe()` pass `TRUE` to it through that new argument.

2) iASL Compiler/Disassembler and ACPICA tools:

The tool generation process has been migrated to MSVC 2017, and all project files have been upgraded. The new project files appear in the directory `\acpica\generate\msvc2017`. This change effectively deprecates the older project files in `\acpica\generate\msvc9`.

iASL: ensure that `_WAK`, `_PTS`, `_TTS`, and `_Sx` are declared only at the root scope. If these named objects are declared outside the root scope, they will not be invoked by any host Operating System

09 May 2019. Summary of changes for version 20190509:

1) ACPICA kernel-resident subsystem:

Revert commit 6c43e1a

("ACPICA: Clear status of GPEs before enabling them") that causes problems with Thunderbolt controllers to occur if a dock device is connected at init time (the `xhci_hcd` and `thunderbolt` modules crash which prevents peripherals connected through them from working). Commit 6c43e1a effectively causes commit ecc1165b8b74 ("ACPICA: Dispatch active GPEs at init time") to get undone, so the problem addressed by commit ecc1165b8b74 appears again as a result of it.

2) iASL Compiler/Disassembler and ACPICA tools:

Reverted iASL: Additional forward reference detection. This change reverts forward reference detection for field declarations. The feature unintentionally emitted AML bytecode with incorrect package lengths for some ASL code related to Fields and OperationRegions. This malformed AML can cause systems to crash during boot. The malformed AML bytecode is emitted in iASL version 20190329 and 20190405.

iASL: improve forward reference detection. This change improves forward

reference detection for named objects inside of scopes. If a parse object has the `OP_NOT_FOUND_DURING_LOAD` set, it means that `Op` is a reference to a named object that is declared later in the AML bytecode. This is allowed if the reference is inside of a method and the declaration is outside of a method like so:

```
DefinitionBlock(...)
```

```

{
  Method (TEST)
  {
    Return (NUM0)
  }
  Name (NUM0,0)
}

```

However, if the declaration and reference are both in the same method or outside any methods, this is a forward reference and should be marked as an error because it would result in runtime errors.

```

DefinitionBlock(...)
{
  Name (BUFF, Buffer (NUM0) {}) // Forward reference
  Name (NUM0, 0x0)

  Method (TEST)
  {
    Local0 = NUM1
    Name (NUM1, 0x1) // Forward reference
    return (Local0)
  }
}

```

iASL: Implemented additional buffer overflow analysis for BufferField declarations. Check if a buffer index argument to a create buffer field operation is beyond the end of the target buffer.

This affects these AML operators:

```

AML_CREATE_FIELD_OP
AML_CREATE_BIT_FIELD_OP
AML_CREATE_BYTE_FIELD_OP
AML_CREATE_WORD_FIELD_OP
AML_CREATE_DWORD_FIELD_OP
AML_CREATE_QWORD_FIELD_OP

```

There are three conditions that must be satisfied in order to allow this validation at compile time:

- 1) The length of the target buffer must be an integer constant
- 2) The index specified in the create* must be an integer constant
- 3) For CreateField, the bit length argument must be non-zero.

Example:

```

Name (BUF1, Buffer() {1,2})

```

CreateField (BUF1, 7, 9, CF03) // 3: ERR

dsdt.asl 14: CreateField (BUF1, 7, 9, CF03) // 3: ERR
Error 6165 - ^ Buffer index beyond end of
target buffer

05 April 2019. Summary of changes for version 20190405:

1) ACPICA kernel-resident subsystem:

Event Manager: History: Commit 18996f2db918 ("ACPICA: Events: Stop unconditionally

clearing ACPI IRQs during suspend/resume") was added earlier to stop clearing of event status bits unconditionally on suspend and resume paths. Though this change fixed an issue on suspend path, it introduced regressions on several resume paths. In the case of S0ix, events are enabled as part of device suspend path. If status bits for the events are set when they are enabled, it could result in premature wake from S0ix. If status is cleared for any event that is being enabled so that any stale events are cleared out. In case of S0ix, events are enabled as part of device suspend path. If status bits for the events are set when they are enabled, it could result in premature wake from S0ix.

This change ensures that status is cleared for any event that is being enabled so that any stale events are cleared out.

2) iASL Compiler/Disassembler and ACPICA tools:

iASL: Implemented an enhanced multiple file compilation that combines named objects from all input files to a single namespace. With this feature, any unresolved external declarations as well as duplicate named object declarations can be detected during compilation rather than generating errors much later at runtime. The following commands are examples that utilize this feature:

```
iasl dsdt.asl ssdt.asl  
iasl dsdt.asl ssdt1.asl ssdt2.asl  
iasl dsdt.asl ssdt*.asl
```

29 March 2019. Summary of changes for version 20190329:

1) ACPICA kernel-resident subsystem:

Namespace support: Remove the address nodes from global list after method termination. The global address list contains pointers to namespace nodes that represent Operation Regions. This change properly removes Operation Region namespace nodes that are declared dynamically during method execution.

Linux: Use a different debug default than ACPICA. There was a divergence between Linux and the ACPICA codebases. In order to resolve this divergence, Linux now declares its own debug default in `aclinux.h`

Renamed some internal macros to improve code understanding and maintenance. The macros below all operate on single 4-character ACPI NameSegs, not generic strings (old -> new):

```
ACPI_NAME_SIZE -> ACPI_NAMESEG_SIZE
ACPI_COMPARE_NAME -> ACPI_COMPARE_NAMESEG
ACPI_MOVE_NAME -> ACPI_COPY_NAMESEG
```

Fix for missing comma in array declaration for the `AcpiGbl_GenericNotify` table.

Test suite: Update makefiles, add PCC operation region support

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented additional illegal forward reference detection. Now detect and emit an error upon detection of a forward reference from a Field to an Operation Region. This will fail at runtime if allowed to pass the compiler.

AcpiExec: Add an address list check for dynamic Operation Regions. This feature performs a sanity test for each node the global address list. This is done in order to ensure that all dynamic operation regions are properly removed from the global address list and no dangling pointers are left behind.

Disassembler: Improved generation of resource pathnames. This change improves the code that generates resource descriptor and resource tag pathnames. The original code used a bunch of `str*` C library functions that caused warnings on some compilers.

iASL: Removed some uses of `strncpy` and replaced with `memmove`. The `strncpy` function can overwrite buffers if the calling code is not very careful. In the case of generating a module/table header, use of `memmove` is a better implementation.

3) Status of new features that have not been completed at this time:

iASL: Implementing an enhanced multiple file compilation into a single namespace feature (Status): This feature will be released soon, and allows multiple ASL files to be compiled into the same single namespace. By doing so, any unresolved external declarations as well as duplicate named object declarations can be detected during compilation (rather than later during runtime).

The following commands are examples that utilize this feature:

```
iasl dsdt.asl ssdt.asl
iasl dsdt.asl ssdt1.asl ssdt2.asl
iasl dsdt.asl ssdt*.asl
```

ASL tutorial status: Feedback is being gathered internally and the current plan is to publish this tutorial on the ACPICA website after a final review by a tech writer.

15 February 2019. Summary of changes for version 20190215:

0) Support for ACPI specification version 6.3:

Add PCC operation region support for the AML interpreter. This adds PCC operation region support in the AML interpreter and a default handler for acpiexec. The change also renames the PCC region address space keyword to PlatformCommChannel.

Support for new predefined methods `_NBS`, `_NCH`, `_NIC`, `_NIH`, and `_NIG`. These methods provide OSPM with health information and device boot status.

PDTT: Add TriggerOrder to the PCC Identifier structure. The field value defines if the trigger needs to be invoked by OSPM before or at the end of kernel crash dump processing/handling operation.

SRAT: Add Generic Affinity Structure subtable. This subtable in the SRAT is used for describing devices such as heterogeneous processors, accelerators, GPUs, and IO devices with integrated compute or DMA engines.

MADT: Add support for statistical profiling in GICC. Statistical profiling extension (SPE) is an architecture-specific feature for ARM.

MADT: Add online capable flag. If this bit is set, system hardware supports enabling this processor during OS runtime.

New Error Disconnect Recover Notification value. There are a number of scenarios where system Firmware in collaboration with hardware may disconnect one or more devices from the rest of the system for purposes of error containment. Firmware can use this new notification value to alert OSPM of such a removal.

PPTT: New additional fields in Processor Structure Flags. These flags provide more information about processor topology.

NFIT/Disassembler:

Change a field name from "Address Range" to "Region Type".

HMAT updates: make several existing fields to be reserved as well as rename subtable 0 to "memory proximity domain attributes".

GTDT: Add support for new GTDT Revision 3. This revision adds information for the EL2 timer.

iASL: Update the HMAT example template for new fields.

iASL: Add support for the new revision of the GTDT (Rev 3).

1) ACPICA kernel-resident subsystem:

AML Parser: fix the main AML parse loop to correctly skip erroneous extended opcodes. AML opcodes come in two lengths: 1-byte opcodes and 2-byte extended opcodes. If an error occurs during an AML table load, the AML parser will continue loading the table by skipping the offending opcode. This implements a "load table at any cost" philosophy.

2) iASL Compiler/Disassembler and Tools:

iASL: Add checks for illegal object references, such as a reference outside of method to an object within a method. Such an object is only temporary.

iASL:

Emit error for creation of a zero-length operation region. Such a region is rather pointless. If encountered, a runtime error is also implemented in the interpreter.

Debugger: Fix a possible fault with the "test objects" command.

iASL: Makefile: support parent directory filenames containing embedded spaces.

iASL: Update the TPM2 template to revision 4.

iASL: Add the ability to report specific warnings or remarks as errors.

Disassembler: Disassemble OEMx tables as actual AML byte code. Previously, these tables were treated as "unknown table".

iASL: Add definition and disassembly for TPM2 revision 3.

iASL: Add support for TPM2 rev 3 compilation.

08 January 2019. Summary of changes for version 20190108:

1) ACPICA kernel-resident subsystem:

Updated all copyrights to 2019. This affects all source code modules.

2) iASL Compiler/Disassembler and Tools:

ASL test suite (ASLTS): Updated all copyrights to 2019.

Tools: Updated all signon copyrights to 2019.

AcpiExec: Added a new option to dump extra information concerning any memory leaks detected by the internal object/cache tracking mechanism. -va

iASL: Updated the table template for the TPM2 table to the newest version of the table (Revision 4)

13 December 2018. Summary of changes for version 20181213:

1) ACPICA Kernel-resident Subsystem:

Fixed some buffer length issues with the GenericSerialBus, related to two of the bidirectional protocols: AttribRawProcessBytes and AttribRawBytes,

which are rarely seen in the field. For these, the LEN field of the ASL buffer is now ignored. Hans de Goede

Implemented a new object evaluation trace mechanism for control methods and data objects. This includes nested control methods. It is particularly useful for examining the ACPI execution during system initialization since the output is relatively terse. The flag below enables the output of the trace via the ACPI_DEBUG_PRINT_RAW interface:

```
#define ACPI_LV_EVALUATION    0x00080000
```

Examples:

```
Enter evaluation    : _SB.PCI0._INI (Method)
Exit evaluation     : _SB.PCI0._INI
Enter evaluation    : _OSI (Method)
Exit evaluation     : _OSI
Enter evaluation    : _SB.PCI0.TEST (Method)
Nested method call : _SB.PCI0.NST1
Exit nested method : _SB.PCI0.NST1
Exit evaluation     : _SB.PCI0.TEST
```

Added two recently-defined _OSI strings. See <https://docs.microsoft.com/en-us/windows-hardware/drivers/acpi/winacpi-osi>.

```
"Windows 2018"
"Windows 2018.2"
```

Update for buffer-to-string conversions via the ToHexString ASL operator. A "0x" is now prepended to each of the hex values in the output string. This provides compatibility with other ACPI implementations. The ACPI specification is somewhat vague on this issue.

Example output string after conversion:

```
"0x01,0x02,0x03,0x04,0x05,0x06"
```

Return a run-time error for TermArg expressions within individual package elements. Although this is technically supported by the ASL grammar, other ACPI implementations do not support this either. Also, this fixes a fault if this type of construct is ever encountered (it never has been).

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented a new compile option (-ww) that will promote individual warnings and remarks to errors. This is intended to enhance the firmware build process.

AcpiExec: Implemented a new command-line option (-eo) to support the new

object evaluation trace mechanism described above.

Disassembler: Added support to disassemble OEMx tables as AML/ASL tables instead of a "unknown table" message.

AcpiHelp: Improved support for the "special" predefined names such as `_Lxx`, `_Exx`, `_EJx`, `_T_x`, etc. For these, any legal hex value can now be used for "xx" and "x".

31 October 2018. Summary of changes for version 20181031:

An Operation Region regression was fixed by properly adding address ranges to a global list during initialization. This allows OS to accurately check for overlapping regions between native devices (such as PCI) and Operation regions as well as checking for region conflicts between two Operation Regions.

Added support for the 2-byte extended opcodes in the code/feature that attempts to continue parsing during the table load phase. Skip parsing Device declarations (and other extended opcodes) when an error occurs during parsing. Previously, only single-byte opcodes were supported.

Cleanup: Simplified the module-level code support by eliminating a useless global variable (`AcpiGbl_GroupModuleLeveCode`).

2) iASL Compiler/Disassembler and Tools:

iASL/Preprocessor: Fixed a regression where an incorrect use of `ACPI_FREE` could cause a fault in the preprocessor. This was an inadvertent side-effect from moving more allocations/frees to the local cache/memory mechanism.

iASL: Enhanced error detection by validating that all NameSeg elements within a NamePatch actually exist. The previous behavior was spotty at best, and such errors could be improperly ignored at compiler time (never at runtime, however). There are two new error messages, as shown in the examples below:

```
dsdt.asl 33: CreateByteField (TTTT.BXXX, 1, CBF1)
Error 6161 - ^ One or more objects within
the Pathname do not exist (TTTT.BXXX)
```

```
dsdt.asl 34: CreateByteField (BUF1, UUUU.INT1, BBBB.CBF1)
```

Error 6160 - One or more prefix Scopes do not exist ^
(BBBB.CBF1)

iASL: Disassembler/table-compiler: Added support for the static data table TPM2 revision 3 (an older version of TPM2). The support has been added for the compiler and the disassembler.

Fixed compilation of DOS format data table file on Unix/Linux systems. iASL now properly detects line continuations (\) for DOS format data table definition language files on when executing on Unix/Linux.

03

October 2018. Summary of changes for version 20181003:

2) iASL Compiler/Disassembler and Tools:

Fixed a regression introduced in version 20180927 that could cause the compiler to fault, especially with NamePaths containing one or more carats (^). Such as: ^^_SB_PCI0

Added a new remark for the Sleep() operator when the sleep time operand is larger than one second. This is a very long time for the ASL/BIOS code and may not be what was intended by the ASL writer.

27 September 2018. Summary of changes for version 20180927:

1) ACPICA kernel-resident subsystem:

Updated the GPE support to clear the status of all ACPI events when entering any/all sleep states in order to avoid premature wakeups. In theory, this may cause some wakeup events to be missed, but the likelihood of this is small. This change restores the original behavior of the ACPICA code in order to fix a regression seen from the previous "Stop unconditionally clearing ACPI IRQs during suspend/resume" change. This regression could cause some systems to incorrectly wake immediately.

Updated the execution of the _REG methods during initialization and namespace loading to bring the behavior into closer conformance to the ACPI specification and other ACPI implementations:

From the ACPI specification 6.2A, section 6.5.4 "_REG (Region):

"Control methods must assume all operation regions are inaccessible until the _REG(RegionSpace, 1) method is executed"

"The exceptions to this rule are:

1. OSPM must guarantee that the following operation regions are always accessible:

SystemIO operation regions.

SystemMemory operation regions when accessing memory returned by the System Address Map reporting interfaces."

Since the state of both the SystemIO and SystemMemory address spaces are defined by the specification to never change, this ACPICA change ensures that now `_REG` is never called on them. This solves some problems seen in the

field and provides compatibility with other ACPI implementations. An update to the upcoming new version of the ACPI specification will help clarify this behavior.

Updated the implementation of support for the Generic Serial Bus. For the "bidirectional" protocols, the internal implementation now automatically creates a return data buffer of the maximum size (255). This handles the worst-case for data that is returned from the serial bus handler, and fixes some problems seen in the field. This new buffer is directly returned to the ASL. As such, there is no true "bidirectional" buffer, which matches the ACPI specification. This is the reason for the "double store" seen in the example ASL code in the specification, shown below:

Word Process Call (AttribProcessCall):

```
OperationRegion(TOP1, GenericSerialBus, 0x00, 0x100)
```

```
Field(TOP1, BufferAcc, NoLock, Preserve)
```

```
{
```

```
    FLD1, 8, // Virtual register at command value 1.
```

```
}
```

```
Name(BUFF, Buffer(20){}) // Create GenericSerialBus
```

```
data buffer
```

```
    // as BUFF
```

```
CreateWordField(BUFF, 0x02, DATA) // DATA = Data (Word)
```

```
Store(0x5416, DATA) // Save 0x5416 into the data buffer
```

```
Store(Store(BUFF, FLD1), BUFF) // Invoke a write/read Process Call  
transaction
```

```
    // This is the "double store". The write to
```

```
    // FLD1 returns a new buffer, which is stored
```

```
    // back into BUFF with the second Store.
```

- 2) iASL Compiler/Disassembler and Tools:

iASL: Implemented detection of extraneous/redundant uses of the `Offset()`

operator within a Field Unit list. A remark is now issued for these. For example, the first two of the Offset() operators below are extraneous. Because both the compiler and the interpreter track the offsets automatically, these Offsets simply refer to the current offset and are unnecessary. Note, when optimization is enabled, the iASL compiler will in fact remove the redundant Offset operators and will not emit any AML code for them.

```

OperationRegion (OPR1, SystemMemory, 0x100, 0x100)
Field (OPR1)
{
    Offset (0),    // Never needed
    FLD1, 32,
    Offset (4),    // Redundant, offset is already 4 (bytes)
    FLD2, 8,
    Offset (64),   // OK use of Offset.
    FLD3, 16,
}
dsdt.asl 14:    Offset (0),
Remark 2158 -      ^ Unnecessary/redundant use of Offset
operator

dsdt.asl 16:    Offset (4),
Remark 2158 -      ^ Unnecessary/redundant use of Offset
operator

```

10 August 2018. Summary of changes for version 20180810:

1) ACPICA kernel-resident subsystem:

Initial ACPI table loading: Attempt to continue loading ACPI tables regardless of malformed AML. Since migrating table initialization to the new module-level code support, the AML interpreter rejected tables upon any ACPI error encountered during table load. This is a problem because non-serious ACPI errors during table load do not necessarily mean that the entire definition block (DSDT or SSDT) is invalid. This change improves the table loading by ignoring some types of errors that can be generated by incorrect AML. This can range from object type errors, scope errors, and index errors.

Suspend/Resume support: Update to stop unconditionally clearing ACPI IRQs during suspend/resume. The status of ACPI events is no longer cleared when entering the ACPI S5 system state (power off) which caused some systems to power up immediately after turning off power in certain

situations. This was a functional regression. It was fixed by clearing the status of all ACPI events again when entering S5 (for system-wide suspend or hibernation the clearing of the status of all events is not desirable, as it might cause the kernel to miss wakeup events sometimes).
Rafael Wysocki.

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Enhanced the -fi option (Namespace initialization file). Field elements listed in the initialization file were previously initialized after the table load and before executing module-level code blocks. Recent changes in the module-level code support means that the table load becomes a large control method execution. If fields are used within module-level code and we are executing with the -fi option, the initialization values were used to initialize the namespace object(s) only after the table was finished loading. This change Provides an early initialization of objects specified in the initialization file so that field unit values are populated during the table load (not after the load).

AcpiExec: Fixed a small memory leak regression that could result in warnings during exit of the utility. These warnings were similar to these:

```
0002D690 Length 0x0006 nsnames-0502 [Not a Descriptor - too small]
0002CD70 Length 0x002C utcache-0453 [Operand] Integer RefCount 0x0001
```

29

June 2018. Summary of changes for version 20180629:

1) iASL Compiler/Disassembler and Tools:

iASL: Fixed a regression related to the use of the ASL External statement. Error checking for the use of the External() statement has been relaxed. Previously, a restriction on the use of External meant that the referenced named object was required to be defined in a different table (an SSDT). Thus it would be an error to declare an object as an external and then define the same named object in the same table. For example:

```
DefinitionBlock (...)
{
    External (DEV1)
    Device (DEV1){...} // This was an error
}
```

However, this behavior has caused regressions in some existing ASL code,

because there is code that depends on named objects and externals (with the same name) being declared in the same table. This change will allow the ASL code above to compile without errors or warnings.

iASL: Implemented ASL language extensions for four operators to make some

of their arguments optional instead of required:

- 1) Field (RegionName, AccessType, LockRule, UpdateRule)
- 2) BankField (RegionName, BankName, BankValue, AccessType, LockRule, UpdateRule)
- 3) IndexField (IndexName, DataName, AccessType, LockRule, UpdateRule)

For the Field operators above, the AccessType, LockRule, and UpdateRule are now optional arguments. The default values are:

AccessType: AnyAcc

LockRule: NoLock

UpdateRule: Preserve

- 4) Mutex (MutexName, SyncLevel)

For this operator, the SyncLevel argument is now optional. This argument is rarely used in any meaningful way by ASL code, and thus it makes sense to make it optional. The default value is:

SyncLevel: 0

iASL: Attempted use of the ASL Unload() operator now results in the following warning:

"Unload is not supported by all operating systems"

This is in fact very true, and the Unload operator may be completely deprecated in the near future.

AcpiExec: Fixed a regression for the -fi option (Namespace initialization file. Recent changes in the ACPICA module-level code support altered the table load/initialization sequence . This means that the table load has become a large method execution of the table itself. If Operation Region Fields are used within any module-level code and the -fi option was specified, the initialization values were populated only after the table had completely finished loading (and thus the module-level code had already been executed). This change moves the initialization of objects listed in the initialization file to before the table is executed as a method. Field unit values are now initialized before the table execution is performed.

31 May 2018. Summary of changes for version 20180531:

- 1) ACPICA kernel-resident Subsystem:

Implemented additional support to help ensure that a DSDT or SSDT is fully loaded even if errors are incurred during the load. The majority of the problems that are seen is the failure of individual AML operators that occur during execution of any module-level code (MLC) existing in the table. This support adds a mechanism to abort the current ASL statement (AML opcode), emit an error message, and to simply move on to the next opcode -- instead of aborting the entire table load. This is different than the execution of a control method where the entire method is aborted upon any error. The goal is to perform a very "best effort" to load the ACPI tables. The most common MLC errors that have been seen in the field are direct references to unresolved ASL/AML symbols (referenced directly without the use of the CondRefOf operator to validate the symbol). This new ACPICA behavior is now compatible with other ACPI implementations.

Interpreter: The Unload AML operator is no longer supported for the reasons below. An AE_NOT_IMPLEMENTED exception is returned.

- 1) A correct implementation on at least some hosts may not be possible.
- 2) Other ACPI implementations do not correctly/fully support it.
- 3) It requires host device driver support which is not known to exist. (To properly support namespace unload out from underneath.)
- 4) This AML operator has never been seen in the field.

Parser: Added a debug option to dump AML parse sub-trees as they are being executed. Used with ACPI_DEBUG_PRINT, the enabling debug level is ACPI_DB_PARSE_TREES.

Debugger: Reduced the verbosity for errors incurred during table load and module-level code execution.

Completed an investigation into adding a namespace node "owner list" instead of the current "owner ID" associated with namespace nodes. This list would link together all nodes that are owned by an individual control method. The purpose would be to enhance control method execution by speeding up cleanup during method exit (all namespace nodes created by a method are deleted upon method termination.) Currently, the entire namespace must be searched for matching owner IDs if (and only if) the method creates named objects outside of the local scope. However, by far the most common case is that methods create objects locally, not outside the method scope. There is already an ACPICA optimization in place that only searches the entire namespace in the rare case of a method creating objects elsewhere in the namespace. Therefore, it is felt that the overhead of adding an additional pointer to each namespace node to implement the owner list makes this feature unnecessary.

2) iASL Compiler/Disassembler and Tools:

iASL, Disassembler, and Template generator: Implemented support for Revision D of the IORT table. Adds a new subtable that is used to specify SMMUv3 PMCGs. rmurphy-arm.

Disassembler: Restored correct table header validation for the "special" ACPI tables -- RSDP and FACS. These tables do not contain a standard ACPI table header and must be special-cased. This was a regression that has been present for apparently a long time.

AcpiExec: Reduced verbosity of the local exception handler implemented within acpiexec. This handler is invoked by ACPICA upon any exceptions generated during control method execution. A new option was added: -vh restores the original verbosity level if desired.

AcpiExec: Changed the default base from decimal to hex for the -x option (set debug level). This simplifies the use of this option and matches the behavior of the corresponding iASL -x option.

AcpiExec: Restored a force-exit on multiple control-c (sigint) interrupts. This allows program termination even if other issues cause the control-c to fail.

ASL test suite (ASLTS): Added tests for the recently implemented package element resolution mechanism that allows forward references to named objects from individual package elements (this mechanism provides compatibility with other ACPI implementations.)

8 May 2018. Summary of changes for version
20180508:

1) ACPICA kernel-resident subsystem:

Completed the new (recently deployed) package resolution mechanism for the Load and LoadTable ASL/AML operators. This fixes a regression that was introduced in version 20180209 that could result in an AE_AML_INTERNAL exception during the loading of a dynamic ACPI/AML table (SSDT) that contains package objects.

2) iASL Compiler/Disassembler and Tools:

AcpiDump and AcpiXtract: Implemented support for ACPI tables larger than 1 MB. This change allows for table offsets within the acpidump file to be up to 8 characters. These changes are backwards compatible with existing acpidump files.

27 April 2018. Summary of changes for version 20180427:

1) ACPICA kernel-resident subsystem:

Debugger: Added support for Package objects in the "Test Objects" command. This command walks the entire namespace and evaluates all named data objects (Integers, Strings, Buffers, and now Packages).

Improved

error messages for the namespace root node. Originally, the root was referred to by the confusing string "_\". This has been replaced by "Namespace Root" for clarification.

Fixed a potential infinite loop in the AcpiRsDumpByteList function. Colin Ian King <colin.king@canonical.com>.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented support to detect and flag illegal forward references. For compatibility with other ACPI implementations, these references are now illegal at the root level of the DSDT or SSDTs. Forward references have always been illegal within control methods. This change should not affect existing ASL/AML code because of the fact that these references have always been illegal in the other ACPI implementation.

iASL: Added error messages for the case where a table OEM ID and OEM TABLE ID strings are longer than the ACPI-defined length. Previously, these strings were simply silently truncated.

iASL: Enhanced the -tc option (which creates an AML hex file in C, suitable for import into a firmware project):

- 1) Create a unique name for the table, to simplify use of multiple SSDTs.
- 2) Add a protection #ifdef in the file, similar to a .h header file.

With assistance from Sami Mujawar, sami.mujawar@arm.com and Evan Lloyd, evan.lloyd@arm.com

AcpiExec: Added a new option, -df, to disable the local fault handler.

This is useful during debugging, where it may be desired to drop into a debugger on a fault.

13 March 2018. Summary of changes for version 20180313:

1) ACPICA kernel-resident subsystem:

Implemented various improvements to the GPE support:

- 1) Dispatch all active GPEs at initialization time so that no GPEs are lost.
- 2) Enable runtime GPEs earlier. Some systems expect GPEs to be enabled before devices are enumerated.
- 3) Don't unconditionally clear ACPI IRQs during suspend/resume, so that IRQs are not lost.
- 4) Add parallel GPE handling to eliminate the possibility of dispatching the same GPE twice.
- 5) Dispatch any pending GPEs after enabling for the first time.

AcpiGetObjectInfo - removed support for the _STA method. This was causing problems on some platforms.

Added a new _OSI string, "Windows 2017.2".

Cleaned up and simplified the module-level code support. These changes are in preparation for the eventual removal of the legacy MLC support (deferred execution), replaced by the new MLC architecture which executes the MLC as a table is loaded (DSDT/SSDTs).

Changed a compile-time option to a runtime option. Changes the option to ignore ACPI table load-time package resolution errors into a runtime option. Used only for platforms that generate many AE_NOT_FOUND errors during boot. AcpiGbl_IgnorePackageResolutionErrors.

Fixed the ACPI_ERROR_NAMESPACE macro. This change involves putting some ACPI_ERROR_NAMESPACE parameters inside macros. By doing so, we avoid compilation errors from unused variables (seen with some compilers).

2) iASL

Compiler/Disassembler and Tools:

ASLTS: parallelized execution in order to achieve an (approximately) 2X performance increase.

ASLTS: Updated to use the iASL `__LINE__` and `__METHOD__` macros. Improves error reporting.

09 February 2018. Summary of changes for version 20180209:

1) ACPICA kernel-resident subsystem:

Completed the final integration of the recent changes to Package Object handling and the module-level AML code support. This allows forward references from individual package elements when the package object is declared from within module-level code blocks. Provides compatibility with other ACPI implementations.

The new architecture for the AML module-level code has been completed and is now the default for the ACPICA code. This new architecture executes the module-level code in-line as the ACPI table is loaded/parsed instead of the previous architecture which deferred this code until after the table was fully loaded. This solves some ASL code ordering issues and provides compatibility with other ACPI implementations. At this time, there is an option to fallback to the earlier architecture, but this support is deprecated and is planned to be completely removed later this year.

Added a compile-time option to ignore `AE_NOT_FOUND` exceptions during resolution of named reference elements within Package objects. Although this is potentially a serious problem, it can generate a lot of noise/errors on platforms whose firmware carries around a bunch of unused Package objects. To disable these errors, define `ACPI_IGNORE_PACKAGE_RESOLUTION_ERRORS` in the OS-specific header. All errors are always reported for ACPICA applications such as `AcpiExec`.

Fixed a regression related to the explicit type-conversion AML operators (`ToXXXX`). The regression was introduced early in 2017 but was not seen until recently because these operators are not fully supported by other ACPI implementations and are thus rarely used by firmware developers. The operators are defined by the ACPI specification to not implement the "implicit result object conversion". The regression incorrectly introduced this object conversion for the following explicit conversion operators:

- ToInteger
- ToString
- ToBuffer
- ToDecimalString
- ToHexString

ToBCD
FromBCD

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with the compiler constant folding feature as related to the ToXXXX explicit conversion operators. These operators do not support the "implicit result object conversion" by definition. Thus, ASL expressions that use these operators cannot be folded to a simple Store operator because Store implements the implicit conversion. This change uses the CopyObject operator for the ToXXXX operator folding instead. CopyObject is defined to not implement implicit result conversions and is thus appropriate for folding the ToXXXX operators.

iASL: Changed the severity of an error condition to a simple warning for the case where a symbol is declared both locally and as an external symbol. This accommodates existing ASL code.

AcpiExec: The -ep option to enable the new architecture for module-level code has been removed. It is replaced by the -dp option which instead has the opposite effect: it disables the new architecture (the default) and enables the legacy architecture. When the legacy code is removed in the future, the -dp option will be removed also.

05 January 2018. Summary of changes for version 20180105:

1) ACPICA kernel-resident subsystem:

Updated all copyrights to 2018. This affects all source code modules.

Fixed a possible build error caused by an unresolved reference to the AcpiUtSafeStrncpy function.

Removed NULL pointer arithmetic in the various pointer manipulation macros. All "(void *) NULL" constructs are converted to "(void *) 0". This eliminates warnings/errors in newer C compilers. Jung-uk Kim.

Added support for A32 ABI compilation, which uses the ILP32 model. Anuj Mittal.

2) iASL Compiler/Disassembler and Tools:

ASLTS: Updated all copyrights to 2018.

Tools: Updated all signon copyrights to 2018.

AcpiXtract: Fixed a regression related to ACPI table signatures where the signature was truncated to 3 characters (instead of 4).

AcpiExec: Restore the original terminal mode after the use of the -v and -vd options.

ASLTS: Deployed the iASL __METHOD__ macro across the test suite.

14 December 2017. Summary of changes for version 20171214:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the external (public) AcpiEvaluateObjectTyped interface where the optional "pathname" argument had inadvertently become a required argument returning an error if omitted (NULL pointer argument).

Fixed two possible memory leaks related to the recently developed "late resolution" of reference objects within ASL Package Object definitions.

Added
two recently defined _OSI strings: "Windows 2016" and "Windows 2017". Mario Limonciello.

Implemented and deployed a safer version of the C library function strncpy: AcpiUtSafeStrncpy. The intent is to at least prevent the creation of unterminated strings as a possible result of a standard strncpy.

Cleaned up and restructured the global variable file (acglobal.h). There are many changes, but no functional changes.

2) iASL Compiler/Disassembler and Tools:

iASL Table Compiler: Fixed a problem with the DBG2 ACPI table where the optional OemData field at the end of the table was incorrectly required for proper compilation. It is now correctly an optional field.

ASLTS: The entire suite was converted from standard ASL to the ASL+ language, using the ASL-to-ASL+ converter which is integrated into the iASL compiler. A binary compare of all output files has verified the

correctness of the conversion.

iASL: Fixed the source code build for platforms where "char" is unsigned.

This affected the iASL lexer only. Jung-uk Kim.

10 November 2017. Summary of changes for version 20171110:

1) ACPICA kernel-resident subsystem:

This release implements full support for ACPI 6.2A:

NFIT - Added a new subtable, "Platform Capabilities Structure"

No other changes to ACPICA were required, since ACPI 6.2A is primarily an errata release of the specification.

Other ACPI table changes:

IORT: Added the SMMUv3 Device ID mapping index. Hanjun Guo

PPTT: Added cache attribute flag definitions to actbl1.h. Jeremy Linton

Utilities: Modified the string/integer conversion functions to use internal 64-bit divide support instead of a native divide. On 32-bit platforms, a 64-bit divide typically requires a library function which may not be present in the build (kernel or otherwise).

Implemented a targeted error message for timeouts returned from the Embedded Controller device driver. This is seen frequently enough to special-case an AE_TIME returned from an EC operation region access:
"Timeout from EC hardware or EC device driver"

Changed the "ACPI Exception" message prefix to "ACPI Error" so that all runtime error messages have the identical prefix.

2) iASL Compiler/Disassembler and Tools:

AcpiXtract: Fixed a problem with table header detection within the acpidump file. Processing a table could be ended early if a 0x40 (@) appears in the original binary table, resulting in the @ symbol appearing in the decoded ASCII field at the end of the acpidump text line. The symbol caused acpixtract to incorrectly think it had reached the end of the current table and the beginning of a new table.

AcpiXtract: Added an option (-f) to ignore some errors during table extraction. This initial implementation ignores non-ASCII and non-

printable characters found in the acpidump text file.

TestSuite(ASLTS)/AcpiExec: Fixed and restored the memory usage statistics for ASLTS. This feature is used to track memory allocations from different memory caches within the ACPICA code. At the end of an ASLTS run, these memory statistics are recorded and stored in a log file.

Debugger (user-space version): Implemented a simple "Background" command. Creates a new thread to execute a control method in the background, while control returns to the debugger prompt to allow additional commands.

Syntax: Background <Namepath> [Arguments]

29 September 2017. Summary of changes for version 20170929:

1) ACPICA kernel-resident subsystem:

Redesigned and implemented an improved ASL While() loop timeout mechanism. This mechanism is used to prevent infinite loops in the kernel AML interpreter caused by either non-responsive hardware or incorrect AML code. The new implementation uses AcpiOsGetTimer instead of a simple maximum loop count, and is thus more accurate and constant across different machines. The default timeout is currently 30 seconds, but this may be adjusted later.

Renamed the ACPI_AML_INFINITE_LOOP exception to AE_AML_LOOP_TIMEOUT to better reflect the new implementation of the loop timeout mechanism.

Updated the AcpiGetTimerDuration interface to cleanup the 64-bit support and to fix an off-by-one error. Jung-uk Kim.

Fixed an EFI build problem by updating the makefiles to for a new file that was added, utstrsuppt.c

2) iASL Compiler/Disassembler and Tools:

Implemented full support for the PDTT, SDEV, and TPM2 ACPI tables. This includes support in the table disassembler, compiler, and template generator.

iASL: Added an exception for an illegal type of recursive method invocation. If a method creates named objects, the first recursive call will fail at runtime. This change adds an error detection at compile time to catch the problem up front. Note: Marking such a method as

"serialized" will not help with this problem, because the same thread can acquire the method mutex more than once. Example compiler and runtime output:

```
Method (MTH1)
{
    Name (INT1, 1)
    MTH1 ()
}
```

```
dsdt.asl 22: MTH1 ()
Error 6152 - ^ Illegal recursive call to method
            that creates named objects (MTH1)
```

Previous runtime exception:

```
ACPI Error: [INT1] Namespace lookup failure,
AE_ALREADY_EXISTS (20170831/dswload2-465)
```

iASL: Updated support for External() opcodes to improve namespace management and error detection. These changes are related to issues seen with multiple-segment namespace pathnames within External declarations, such as below:

```
External(\_SB.PCI0.GFX0, DeviceObj)
External(\_SB.PCI0.GFX0.ALSI)
```

iASL: Implemented support for multi-line error/warning messages. This enables more detailed and helpful error messages as below, from the initial deployment for the duplicate names error:

```
DSDT.iiii 1692: Device(PEG2) {
Error 6074 -      ^ Name already exists in scope
(PEG2)
```

Original name
creation/declaration below:

```
DSDT.iiii 93: External(\_SB.PCI0.PEG2, DeviceObj)
```

AcpiXtract: Added additional flexibility to support differing input hex dump formats. Specifically, hex dumps that contain partial disassembly and/or comments within the ACPI table data definition. There exist some dump utilities seen in the field that create this type of hex dump (such as Simics). For example:

```
DSDT @ 0xdfffd0c0 (10999 bytes)
Signature DSDT
Length 10999
```

Revision 1
Checksum 0xf3 (Ok)
OEM_ID BXPC
OEM_table_id BXDSDT
OEM_revision 1
Creator_id 1280593481
Creator_revision 537399345
0000: 44 53 44 54 f7 2a 00 00 01 f3 42 58 50 43 00 00
...
2af0: 5f 4c 30 46 00 a4 01

Test suite: Miscellaneous changes/fixes:

- More cleanup and simplification of makefiles
- Continue compilation of test cases after a compile failure
- Do not perform binary compare unless both files actually exist

iASL:

Performed some code/module restructuring. Moved all memory allocation functions to new modules. Two new files, aslallocate.c and aslcache.c

31 August 2017. Summary of changes for version 20170831:

1) ACPICA kernel-resident subsystem:

Implemented internal support for full 64-bit addresses that appear in all Generic Address Structure (GAS) structures. Previously, only the lower 32 bits were used. Affects the use of GAS structures in the FADT and other tables, as well as the GAS structures passed to the AcpiRead and AcpiWrite public external interfaces that are used by drivers. Lv Zheng.

Added header support for the PDTT ACPI table (Processor Debug Trigger Table). Full support in the iASL Data Table Compiler and disassembler is forthcoming.

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Fixed a problem with the PPTT ACPI table (Processor Properties Topology Table) where a flag bit was specified in the wrong bit position ("Line Size Valid", bit 6).

iASL: Implemented support for Octal integer constants as defined by the ASL language grammar, per the ACPI specification. Any integer constant that starts with a zero is an octal constant. For example,

```
Store (037777, Local0) /* Octal constant */
Store (0x3FFF, Local0) /* Hex equivalent */
Store (16383, Local0) /* Decimal equivalent */
```

iASL: Improved overflow detection for 64-bit string conversions during compilation of integer constants. "Overflow" in this case means a string that represents an integer that is too large to fit into a 64-bit value.

Any 64-bit constants within a 32-bit DSDT or SSDT are still truncated to the low-order 32 bits with a warning, as previously implemented. Several new exceptions are defined that indicate a 64-bit overflow, as well as the base (radix) that was used during the attempted conversion. Examples:

```
Local0 = 0xAAAABBBBCCCCDDDDDEEEEEFFFF // AE_HEX_OVERFLOW
Local0 = 01111222233334444555566667777
// AE_OCTAL_OVERFLOW
Local0 = 11112222333344445555666677778888 // AE_DECIMAL_OVERFLOW
```

iASL: Added a warning for the case where a ResourceTemplate is declared with no ResourceDescriptor entries (coded as "ResourceTemplate(){}"). In this case, the resulting template is created with a single END_TAG descriptor, which is essentially useless.

iASL: Expanded the -vw option (ignore specific warnings/remarks) to include compilation error codes as well.

28 July 2017. Summary of changes for version 20170728:

1) ACPI kernel-resident subsystem:

Fixed a regression seen with small resource descriptors that could cause an inadvertent AE_AML_NO_RESOURCE_END_TAG exception.

AML interpreter: Implemented a new feature that allows forward references from individual named references within package objects that are contained within blocks of "module-level code". This provides compatibility with other ACPI implementations and supports existing firmware that depends on this feature. Example:

```
Name (ABCD, 1)
If (ABCD) /* An If() at module-level */
{
    Name (PKG1, Package()
    {
        INT1 /* Forward reference to object INT1
*/
    })
```

```
Name (INT1, 0x1234)
}
```

AML Interpreter: Fixed a problem with the Alias() operator where aliases to some ASL objects were not handled properly. Objects affected are: Mutex, Event, and OperationRegion.

AML Debugger: Enhanced to properly handle AML Alias objects. These objects have one level of indirection which was not fully supported by the debugger.

Table Manager: Added support to detect and ignore duplicate SSDTs within the XSDT/RSDT. This error in the XSDT has been seen in the field.

EFI and EDK2 support:

- Enabled /WX flag for MSVC builds

- Added support for AcpiOsStall, AcpiOsSleep, and AcpiOsGetTimer

- Added local support for 64-bit multiply and shift operations

- Added support

to compile acpidump.efi on Windows

- Added OSL function stubs for interfaces not used under EFI

Added additional support for the _DMA predefined name. _DMA returns a buffer containing a resource template. This change add support within the resource manager (AcpiWalkResourceBuffer) to walk and parse this list of resource descriptors. Lorenzo Pieralisi <lorenzo.pieralisi@arm.com>

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem where the internal input line buffer(s) could overflow if there are very long lines in the input ASL source code file. Implemented buffer management that automatically increases the size of the buffers as necessary.

iASL: Added an option (-vx) to "expect" particular remarks, warnings and errors. If the specified exception is not raised during compilation, the compiler emits an error. This is intended to support the ASL test suite, but may be useful in other contexts.

iASL: Implemented a new predefined macro, __METHOD__, which returns a string containing the name of the current control method that is being compiled.

iASL: Implemented debugger and table compiler support for the SDEI ACPI table (Software Delegated Exception Interface). James Morse <james.morse@arm.com>

Unix/Linux makefiles: Added an option to disable compile optimizations.
The disable occurs when the NOOPT flag is set to TRUE.
theracermaster@gmail.com

Acpidump: Added support for multiple DSDT and FACS tables. This can occur when there are different tables for 32-bit versus 64-bit.

Enhanced error reporting for the ASL test suite (ASLTS) by removing unnecessary/verbose text, and emit the actual line number where an error has occurred. These changes are intended to improve the usefulness of the test suite.

29 June 2017. Summary of changes for version 20170629:

1) ACPICA kernel-resident subsystem:

Tables: Implemented a deferred ACPI table verification. This is useful for operating systems where the tables cannot be verified in the early initialization stage due to early memory mapping limitations on some architectures. Lv Zheng.

Tables: Removed the signature validation for dynamically loaded tables. Provides compatibility with other ACPI implementations. Previously, only SSDT tables were allowed, as per the ACPI specification. Now, any table signature can be used via the Load() operator. Lv Zheng.

Tables: Fixed several mutex issues that could cause errors during table acquisition. Lv Zheng.

Tables: Fixed a problem where an ACPI warning could be generated if a null pointer was passed to the AcpiPutTable interface. Lv Zheng.

Tables: Added a mechanism to handle imbalances for the AcpiGetTable and AcpiPutTable interfaces. This applies to the "late stage" table loading when the use of AcpiPutTable is no longer required (since the system memory manager is fully running and available). Lv Zheng.

Fixed/Reverted a regression during processing of resource descriptors that contain only a single EndTag. Fixes an AE_AML_NO_RESOURCE_END_TAG exception in this case.

Headers: IORT/SMMU support: Updated the SMMU models for Revision C of the I/O Remapping specification. Robin Murphy <robin.murphy@arm.com>

Interpreter: Fixed a possible fault if an Alias operator with an invalid or duplicate target is encountered during Alias creation in AcpiExCreateAlias. Alex James <theracermaster@gmail.com>

Added an option to use designated initializers for function pointers. Kees Cook <keescook@google.com>

2) iASL Compiler/Disassembler and Tools:

iASL: Allow compilation of External declarations with target pathnames that refer to existing named objects within the table. Erik Schmauss.

iASL: Fixed a regression when compiling FieldUnits. Fixes an error if a FieldUnit name also is declared via External in the same table. Erik Schmauss.

iASL: Allow existing scope names within pathnames used in External statements. For example:

```
External (ABCD.EFGH) // ABCD
exists, but EFGH is truly external
Device (ABCD)
```

iASL: IORT ACPI table: Implemented changes required to decode the new Proximity Domain for the SMMUv3 IORT. Disassembler and Data Table compiler. Ganapatrao Kulkarni <ganapatrao.kulkarni@cavium.com>

Disassembler: Don't abort disassembly on errors from External() statements. Erik Schmauss.

Disassembler: fixed a possible fault when one of the Create*Field operators references a Resource Template. ACPICA Bugzilla 1396.

iASL: In the source code, resolved some naming inconsistencies across the parsing support. Fixes confusion between "Parse Op" and "Parse Node". Adds a new file, aslparseop.c

31 May 2017. Summary of changes for version 20170531:

0) ACPI 6.2 support:

The ACPI specification version 6.2 has been released and is available at <http://uefi.org/specifications>

This version of ACPICA fully supports the ACPI 6.2 specification. Changes

are summarized below.

New ACPI tables (Table

Compiler/Disassembler/Templates):

- HMAT (Heterogeneous Memory Attributes Table)
- WSMT (Windows SMM Security Mitigation Table)
- PPTT (Processor Properties Topology Table)

New subtables for existing ACPI tables:

- HEST (New subtable, Arch-deferred machine check)
- SRAT (New subtable, Arch-specific affinity structure)
- PCCT (New subtables, Extended PCC subspaces (types 3 and 4))

Simple updates for existing ACPI tables:

- BGRT (two new flag bits)
- HEST (New bit defined for several subtables, GHES_ASSIST)

New Resource Descriptors and Resource macros (Compiler/Disassembler):

- PinConfig()
- PinFunction()
- PinGroup()
- PinGroupConfig()
- PinGroupFunction()
- New type for hardware error notification (section 18.3.2.9)

New predefined names/methods (Compiler/Interpreter):

- _HMA (Heterogeneous Memory Attributes)
- _LSI (Label Storage Information)
- _LSR (Label Storage Read)
- _LSW (Label Storage Write)

ASL grammar/macro changes (Compiler):

- For()
- ASL macro, implemented with the AML while operator
- Extensions to Concatenate operator
- Support for multiple definition blocks in same ASL file
- Clarification for Buffer operator
- Allow executable AML code underneath all scopes (Devices, etc.)
- Clarification/change for the _OSI return value
- ASL grammar update for reference operators
- Allow a zero-length string for AML filename in DefinitionBlock

Miscellaneous:

- New device object notification value
- Remove a notify value (0x0C) for graceful shutdown
- New UUIDs for processor/cache properties and physical package property
- New _HID, ACPI0014 (Wireless Power Calibration Device)

1) ACPICA kernel-resident subsystem:

Added support to disable ACPI events on hardware-reduced platforms.
Eliminates error messages of the form "Could not enable fixed event". Lv
Zheng

Fixed a problem using Device/Thermal objects with the ObjectType and
DerefOf ASL operators. This support had not been fully/properly
implemented.

Fixed a problem where if a Buffer object containing a resource template
was longer than the actual resource template, an error was generated --
even though the AML is legal. This case has been seen in the field.

Fixed a problem with the header definition of the MADT PCAT_COMPAT flag.
The values for DUAL_PIC and MULTIPLE_APIC were reversed.

Added header file changes for the TPM2 ACPI table. Update to new version
of the TCG specification. Adds a new TPM2 subtable for ARM SMC.

Exported the external interfaces AcpiAcquireMutex and AcpiReleaseMutex.
These interfaces are intended to be used only in conjunction with the
predefined _DLM method (Device Lock Method). "This object appears in a
device scope when AML access to the device must be synchronized with the
OS environment".

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug
output trace mechanism and
has a much larger code and data size.

Current Release:

Non-Debug Version: 143.1K Code, 60.0K Data, 203.1K Total

Debug Version: 204.0K Code, 84.3K Data, 288.3K Total

Previous Release:

Non-Debug Version: 141.7K Code, 58.5K Data, 200.2K Total

Debug Version: 207.5K Code, 82.7K Data, 290.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem where an External() declaration could not refer to
a Field Unit. Erik Schmauss.

Disassembler: Improved support for the Switch/Case operators. This feature will disassemble AML code back to the original Switch operators when possible, instead of an If..Else sequence. David Box

iASL and disassembler: Improved the handling of multiple extraneous parentheses for both ASL input and disassembled ASL output.

Improved the behavior of the iASL compiler and disassembler to detect improper use of external declarations

Disassembler: Now aborts immediately upon detection of an unknown AML opcode. The AML parser has no real way to recover from this, and can result in the creation of an ill-formed parse tree that causes errors later during the disassembly.

All tools: Fixed a problem where the Unix application OSL did not handle control-c correctly. For example, a control-c could incorrectly wake the debugger.

AcpiExec: Improved the Control-C handling and added a handler for segmentation faults (SIGSEGV). Supports both Windows and Unix-like environments.

Reduced the verbosity of the generic unix makefiles. Previously, each compilation displayed the full set of compiler options. This has been eliminated as the options are easily inspected within the makefiles. Each compilation now results in a single line of output.

03 March 2017. Summary of changes for version 20170303:

0) ACPICA licensing:

The licensing information at the start of each source code module has been updated. In addition to the Intel license, the dual GPLv2/BSD license has been added for completeness. Now, a single version of the source code should be suitable for all ACPICA customers. This is the major change for this release since it affects all source code modules.

1) ACPICA kernel-resident subsystem:

Fixed two issues with the common asltypes.h header that could cause problems in some environments: (Kim Jung-uk)

Removed typedef for YY_BUFFER_STATE ?

Fixes an error with earlier versions of Flex.

Removed use of FILE typedef (which is only defined in stdio.h)

2) iASL Compiler/Disassembler and Tools:

Disassembler: fixed a regression introduced in 20170224. A fix for a memory leak related to resource descriptor tags (names) could fault when the disassembler was generated with 64-bit compilers.

The ASLTS test suite has been updated to implement a new testing architecture. During generation of the suite from ASL source, both the ASL and ASL+ compilers are now validated, as well as the disassembler

itself (Erik Schmauss). The architecture executes as follows:

For every ASL source module:

- Compile (legacy ASL compilation)

- Disassemble the resulting AML to ASL+ source code

- Compile the new ASL+ module

- Perform a binary compare on the legacy AML and the new ASL+ AML

The ASLTS suite then executes normally using the AML binaries.

24 February 2017. Summary of changes for version 20170224:

1) ACPICA kernel-resident subsystem:

Interpreter: Fixed two issues with the control method return value auto-repair feature, where an attempt to double-delete an internal object could result in an ACPICA warning (for _CID repair and others). No fault occurs, however, because the attempted deletion (actually a release to an internal cache) is detected and ignored via object poisoning.

Debugger: Fixed an AML interpreter mutex issue during the single stepping of control methods. If certain debugger commands are executed during stepping, a mutex acquire/release error could occur. Lv Zheng.

Fixed some issues generating ACPICA with the Intel C compiler by restoring the original behavior and compiler-specific include file in acenv.h. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 141.7K Code, 58.5K Data, 200.2K Total

Debug Version: 207.5K Code, 82.7K Data, 290.2K Total

Previous Release:

Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total

Debug Version: 201.5K Code, 82.2K Data, 283.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: A preliminary version of a new ASL-to-ASL+ conversion tool has been designed, implemented, and included in this release. The key feature of this utility is that the original comments within the input ASL file are preserved during the conversion process, and included within the converted ASL+ file -- thus creating a transparent conversion of existing ASL files to ASL+ (ASL 2.0). Erik Schmauss.

Usage: `iasl -ca <ASL-filename> // Output is a .dsl file with converted code`

iASL/Disassembler: Improved the detection and correct disassembly of Switch/Case operators. This feature detects sequences of if/elseif/else operators that originated from ASL Switch/Case/Default operators and emits the original operators. David Box.

iASL: Improved the IORT ACPI table support in the following areas. Lv Zheng:

- Clear MappingOffset if the MappingCount is zero.

- Fix the disassembly of the SMMU GSU interrupt offset.

- Update the template file for the IORT table.

Disassembler: Enhanced the detection and disassembly of resource template/descriptor within a Buffer object. An EndTag descriptor is now required to have a zero second byte, since all known ASL compilers emit this. This helps eliminate incorrect decisions when a buffer is disassembled (false positives on resource templates).

19 January 2017. Summary of changes for version 20170119:

1) General ACPICA software:

Entire source code base: Added the 2017 copyright to all source code legal/licensing module headers and utility/tool signons. This includes

the standard Linux dual-license header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the ACPICA test suite.

2) iASL Compiler/Disassembler and Tools:

iASL: Removed/fixed an inadvertent remark when a method argument containing a reference is used as a target operand within the method (and never used as a simple argument), as in the example below. Jeffrey Hugo.

```
dsdt.asl 1507: Store(0x1, Arg0)
Remark 2146 -      ^ Method Argument is never used (Arg0)
```

All tools: Removed the bit width of the compiler that generated the tool from the common signon for all user space tools. This proved to be confusing and unnecessary. This includes similar removal of `HARDWARE_NAME` from the generic makefiles (Thomas Petazzoni). Example below.

Old:
ASL+ Optimizing Compiler version 20170119-32
ASL+ Optimizing Compiler version 20170119-64

New:
ASL+ Optimizing Compiler version 20170119

22 December 2016. Summary of changes for version 20161222:

1) ACPICA kernel-resident subsystem:

AML Debugger: Implemented a new mechanism to simplify and enhance debugger integration into all environments, including kernel debuggers and user-space utilities, as well as remote debug services. This mechanism essentially consists of new OSL interfaces to support debugger initialization/termination, as well as wait/notify interfaces to perform the debugger handshake with the host. Lv Zheng.

New OSL interfaces:
AcpiOsInitializeDebugger
(void)
AcpiOsTerminateDebugger (void)
AcpiOsWaitCommandReady (void)
AcpiOsNotifyCommandComplete (void)

New OS services layer:

osgendbg.c -- Example implementation, and used for AcpiExec

Update for Generic Address Space (GAS) support: Although the AccessWidth and/or BitOffset fields of the GAS are not often used, this change now fully supports these fields. This affects the internal support for FADT registers, registers in other ACPI data tables, and the AcpiRead and AcpiWrite public interfaces. Lv Zheng.

Sleep support: In order to simplify integration of ACPI sleep for the various host operating systems, a new OSL interface has been introduced. AcpiOsEnterSleep allows the host to perform any required operations before the final write to the sleep control register(s) is performed by ACPICA. Lv Zheng.

New OSL interface:

AcpiOsEnterSleep(SleepState, RegisterAValue, RegisterBValue)

Called from these internal interfaces:

AcpiHwLegacySleep

AcpiHwExtendedSleep

EFI support: Added a very small EFI/ACPICA example application. Provides a simple demo for EFI integration, as well as assisting with resolution of issues related to customer ACPICA/EFI integration. Lv Zheng. See:

source/tools/efihello/efihello.c

Local C library: Implemented several new functions to enhance ACPICA portability, for environments where these clib functions are not available (such as EFI). Lv Zheng:

putchar

getchar

strpbrk

strtok

memmove

Fixed a regression where occasionally a valid resource descriptor was incorrectly detected as invalid at runtime, and a AE_AML_NO_RESOURCE_END_TAG was returned.

Fixed a problem with the recently implemented support that enables control method invocations as Target operands to many ASL operators. Warnings of this form: "Needed type [Reference], found [Processor]" were seen at runtime for some method invocations.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 141.5K Code, 58.5K Data, 200.0K Total

Debug Version: 201.7K Code, 82.7K Data, 284.4K Total

Previous Release:

Non-Debug Version: 140.5K Code, 58.5K Data, 198.9K Total

Debug Version: 201.3K Code, 82.7K Data, 284.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Enhanced output by adding the capability to detect and disassemble ASL Switch/Case statements back to the original ASL source code instead of if/else blocks. David Box.

AcpiHelp: Split a large file into separate files based upon functionality/purpose. New files are:

ahaml.c

ahasl.c

17 November 2016. Summary of changes for version 20161117:

1) ACPICA kernel-resident subsystem:

Table

Manager: Fixed a regression introduced in 20160729, "FADT support cleanup". This was an attempt to remove all references in the source to the FADT version 2, which never was a legal version number. It was skipped because it was an early version of 64-bit support that was eventually abandoned for the current 64-bit support.

Interpreter: Fixed a problem where runtime implicit conversion was incorrectly disabled for the ASL operators below. This brings the behavior into compliance with the ACPI specification:

FromBCD

ToBCD

ToDecimalString

ToHexString

ToInteger

ToBuffer

Table Manager: Added a new public interface, AcpiPutTable, used to release and free an ACPI table returned by AcpiGetTable and related interfaces. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent `apica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 140.5K Code, 58.5K Data, 198.9K Total

Debug Version: 201.3K Code, 82.7K Data, 284.0K Total

Previous Release:

Non-Debug Version: 140.4K Code, 58.1K Data, 198.5K Total

Debug Version: 200.7K Code, 82.1K Data, 282.8K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a regression for disassembly of Resource Template. Detection of templates in the AML stream missed some types of templates.

iASL: Fixed a problem where an Access Size error was returned for the PCC address space when the AccessSize of the GAS register is greater than a DWORD. Hoan Tran.

iASL: Implemented several grammar changes for the operators below. These changes are slated for the next version of the ACPI specification:

RefOf - Disallow method invocation as an operand

CondRefOf - Disallow method invocation as an operand

DerefOf - Disallow operands that use the result from operators

that

do not return a reference (Changed TermArg to SuperName).

iASL: Control method invocations are now allowed for Target operands, as per the ACPI specification. Removed error for using a control method invocation as a Target operand.

Disassembler: Improved detection of Resource Templates, Unicode, and Strings within Buffer objects. These subtypes do not contain a specific opcode to indicate the originating ASL code, and they must be detected by other means within the disassembler.

iASL: Implemented an optimization improvement for 32-bit ACPI tables (DSDT/SSDT). For the 32-bit case only, compute the optimum integer opcode only after 64-bit to 32-bit truncation. A truncation warning message is still emitted, however.

AcpiXtract: Implemented handling for both types of line terminators (LF or CR/LF) so that it can accept AcpiDump output files from any system.

Peter Wu.

AcpiBin: Added two new options for comparing AML files:

- a: compare and display ALL mismatches
- o: start compare at this offset into the second file

30 September 2016. Summary of changes for version 20160930:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the internal AcpiTbFindTable function where a non AE_OK exception could inadvertently be returned even if the function did not fail. This problem affects the following operators:

- DataTableRegion
- LoadTable

Fixed a regression in the LoadTable operator where a load to any namespace location other than the root no longer worked properly.

Increased the maximum loop count value that will result in the AE_AML_INFINITE_LOOP exception. This is a mechanism that is intended to prevent infinite loops within the AML interpreter and thus the host OS kernel. The value is increased from 0xFFFF to 0xFFFFF loops (65,535 to 1,048,575).

Moved the AcpiGbl_MaxLoopIterations configuration variable to the public acpixf.h file. This allows hosts to easily configure the maximum loop count at runtime.

Removed an illegal character in the strtoul64.c file. This character caused errors with some C compilers.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 140.4K Code, 58.1K Data, 198.5K Total

Debug Version: 200.7K Code, 82.1K Data, 282.8K Total

Previous Release:

Non-Debug Version: 140.0K Code, 58.1K Data, 198.1K Total

Debug Version: 200.3K Code, 82.1K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the conversion of Else{If{ blocks into the simpler ASL ElseIf keyword. During the conversion, a trailing If block could be lost and missing from the disassembled output.

iASL: Fixed a missing parser rule for the ObjectType operator. For ASL+, the missing rule caused a parse error when using the Index operator as an operand to ObjectType. This construct now compiles properly. Example:
ObjectType(PKG1[4]).

iASL: Correctly handle unresolved symbols in the hardware map file (-lm option). Previously, unresolved symbols could cause a protection fault. Such symbols are now marked as unresolved in the map file.

iASL: Implemented support to allow control method invocations as an operand to the ASL DeRefOf operator. Example:
DeRefOf(MTH1(Local0))

Disassembler: Improved support for the ToPLD ASL macro. Detection of a possible _PLD buffer now includes examination of both the normal buffer length (16 or 20) as well as the surrounding AML package length.

Disassembler: Fixed a problem with the decoding of complex expressions within the Divide operator for ASL+. For the case where both the quotient and remainder targets are specified, the entire statement cannot be disassembled. Previously, the output incorrectly contained a mix of ASL- and ASL+ operators. This mixed statement causes a syntax error when compiled. Example:

Divide (Add (INT1, 6), 128, RSLT, QUOT) // was incorrectly disassembled to:

```
Divide (INT1 + 6, 128, RSLT, QUOT)
```

iASL/Tools: Added support to process AML and non-AML ACPI tables consistently. For the disassembler and AcpiExec, allow all types of ACPI tables (AML and data tables). For the iASL -e option, allow only AML tables (DSDT/SSDT).

31 August 2016. Summary of changes for version 20160831:

1) ACPICA kernel-resident subsystem:

Improve support for the so-called "module-level code", which is defined to be math, logical and control AML opcodes that appear outside of any control method. This change improves the support by adding more opcodes that can be executed in the manner. Some other issues have been solved, and the ASL grammar changes to support such code under all scope operators (Device, etc.) are complete. Lv Zheng.

UEFI support: these OSL functions have been implemented. This is an additional step toward supporting the AcpiExec utility natively (with full hardware access) under UEFI. Marcelo Ferreira.

AcpiOsReadPciConfiguration
AcpiOsWritePciConfiguration

Fixed a possible mutex error during control method auto-serialization. Lv Zheng.

Updated support for the Generic Address Structure by fully implementing all GAS fields when a 32-bit address is expanded to a 64-bit GAS. Lv Zheng.

Updated the return value for the internal _OSI method. Instead of 0xFFFFFFFF, the "Ones" value is now returned, which is 0xFFFFFFFFFFFFFFFF for 64-bit ACPI tables. This fixes an incompatibility with other ACPI implementations, and will be reflected and clarified in the next version of the ACPI specification.

Implemented two new table events that can be passed to an ACPICA table handler. These events are used to indicate a table installation or uninstallation. These events are used in addition to existed table load and unload events. Lv Zheng.

Implemented a cleanup for all internal string-to-integer conversions. Consolidate multiple versions of this functionality and limit possible bases to either 10 or 16 to simplify the code. Adds a new file, utstrtol64.

Cleanup the inclusion order of the various compiler-specific headers. This simplifies build configuration management. The compiler-specific headers are now split out from the host-specific headers. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 140.1K Code, 58.1K Data, 198.1K Total

Debug Version: 200.3K Code, 82.1K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/AcpiExec: Added a command line option to display the build date/time of the tool (-vd). This can be useful to verify that the correct version of the tools are being used.

AML Debugger: Implemented a new subcommand ("execute predef") to execute all predefined control methods and names within the current namespace. This can be useful for debugging problems with ACPI tables and the ACPI namespace.

29 July 2016. Summary of changes for version 20160729:

1) ACPICA kernel-resident subsystem:

Implemented basic UEFI support for the various ACPICA tools. This includes:

- 1) An OSL to implement the various AcpiOs* interfaces on UEFI.
- 2) Support to obtain the ACPI tables on UEFI.
- 3) Local implementation of required C library functions not available on UEFI.
- 4) A front-end (main) function for the tools for UEFI-related initialization.

The initial deployment of this support is the AcpiDump utility executing as an UEFI application via EDK2 (EDKII, "UEFI Firmware Development Kit").

Current

environments supported are Linux/Unix. MSVC generation is not supported at this time. See the generate/efi/README file for build instructions. Lv Zheng.

Future plans include porting the AcpiExec utility to execute natively on the platform with I/O and memory access. This will allow viewing/dump of the platform namespace and native execution of ACPI control methods that access the actual hardware. To fully implement this support, the OSL functions below must be implemented with UEFI interfaces. Any community help in the implementation of these functions would be appreciated:

AcpiOsReadPort

AcpiOsWritePort

AcpiOsReadMemory

AcpiOsWriteMemory
AcpiOsReadPciConfiguration
AcpiOsWritePciConfiguration

Restructured and standardized the C library configuration for ACPICA, resulting in the various configuration options below. This includes a global restructuring of the compiler-dependent and platform-dependent include files. These changes may affect the existing platform-dependent configuration files on some hosts. Lv Zheng.

The current C library configuration options appear below. For any issues, it may be helpful to examine the existing compiler-dependent and platform-dependent files as examples. Lv Zheng.

1) Linux kernel:

ACPI_USE_STANDARD_HEADERS=n in order not to use system-provided C library.

ACPI_USE_SYSTEM_CLIBRARY=y in order not to use ACPICA mini C library.

2) Unix/Windows/BSD applications:

ACPI_USE_STANDARD_HEADERS=y in order to use system-provided C library.

ACPI_USE_SYSTEM_CLIBRARY=y in order not to use ACPICA mini C library.

3) UEFI applications:

ACPI_USE_STANDARD_HEADERS=n in order not to use system-provided C library.

ACPI_USE_SYSTEM_CLIBRARY=n in order to use ACPICA mini C library.

4) UEFI applications (EDK2/StdLib):

ACPI_USE_STANDARD_HEADERS=y in order to use EDK2 StdLib C library.

ACPI_USE_SYSTEM_CLIBRARY=y in order to use EDK2 StdLib C library.

AML interpreter: "module-level code" support. Allows for execution of so-called "executable" AML code (math/logical operations, etc.) outside of control methods not just at the module level (top level) but also within any scope declared outside of a control method - Scope{ }, Device{ }, Processor{ }, PowerResource{ }, and ThermalZone{ }. Lv Zheng.

Simplified the configuration of the "maximum AML loops" global option by adding a global public variable, "AcpiGbl_MaxLoopIterations" which can be modified at runtime.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 139.1K Code, 22.9K Data, 162.0K Total

Debug Version: 199.0K Code, 81.8K Data, 280.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Add full support for the RASF ACPI table (RAS Features Table).

Includes disassembler, data table compiler, and header support.

iASL Expand "module-level code" support. Allows for compilation/disassembly of so-called "executable" AML code (math/logical operations, etc.) outside of control methods not just at the module level (top level) but also within any scope declared outside of a control method - Scope{ }, Device{ }, Processor{ }, PowerResource{ }, and ThermalZone{ }.

AcpiDump: Added support for dumping all SSDTs on newer versions of Windows. These tables are now easily available -- SSDTs are not available through the registry on older versions.

27 May 2016. Summary of changes for version 20160527:

1) ACPICA kernel-resident subsystem:

Temporarily reverted the new arbitrary bit length/alignment support in AcpiHwRead/AcpiHwWrite for the Generic Address Structure. There have been a number of regressions with the new code that need to be fully resolved and tested before this support can be finally integrated into ACPICA.

Apologies for any inconveniences these issues may have caused.

The ACPI message macros are not configurable (ACPI_MSG_ERROR, ACPI_MSG_EXCEPTION, ACPI_MSG_WARNING, ACPI_MSG_INFO, ACPI_MSG_BIOS_ERROR, and ACPI_MSG_BIOS_WARNING). Lv Zheng.

Fixed a couple of GCC warnings associated with the use of the -Wcast-qual option. Adds a new return macro, return_STR. Junk-uk Kim.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 136.8K Code, 51.6K Data, 188.4K Total

Debug Version: 201.5K Code, 82.2K Data, 283.7K Total

Previous Release:

Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total

Debug Version: 200.9K Code, 82.2K Data, 283.1K Total

22 April

2016. Summary of changes for version 20160422:

1) ACPICA kernel-resident subsystem:

Fixed a regression in the GAS (generic address structure) arbitrary bit support in AcpiHwRead/AcpiHwWrite. Problem could cause incorrect behavior and incorrect return values. Lv Zheng. ACPICA BZ 1270.

ACPI 6.0: Added support for new/renamed resource macros. One new argument was added to each of these macros, and the original name has been deprecated. The AML disassembler will always disassemble to the new names. Support for the new macros was added to iASL, disassembler, resource manager, and the acpihelp utility. ACPICA BZ 1274.

I2cSerialBus -> I2cSerialBusV2

SpiSerialBus -> SpiSerialBusV2

UartSerialBus -> UartSerialBusV2

ACPI 6.0: Added support for a new integer field that was appended to the package object returned by the _BIX method. This adds iASL compile-time and AML runtime error checking. ACPICA BZ 1273.

ACPI 6.1: Added support for a new PCCT subtable, "HW-Reduced Comm

Subspace Type2" (Headers, Disassembler, and data table compiler).

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 137.4K Code, 52.6K Data, 190.0K Total

Debug Version: 201.5K Code, 82.2K Data, 283.7K Total

Previous Release:

Non-Debug Version: 137.1K Code, 51.5K Data, 188.6K Total

Debug Version: 201.0K Code, 82.0K Data, 283.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented an ASL grammar extension to allow/enable executable "module-level code" to be created and executed under the various operators that create new scopes. This type of AML code is already supported in all known AML interpreters, and the grammar change will appear in the next version of the ACPI specification. Simplifies the

conditional runtime creation of named objects under these object types:

- Device
- PowerResource
- Processor
- Scope
- ThermalZone

iASL: Implemented a new ASL extension, a "For" loop macro to add greater ease-of-use to the ASL language. The syntax is similar to the corresponding C operator, and is implemented with the existing AML While opcode -- thus requiring no changes to existing AML interpreters.

```
For (Initialize, Predicate, Update) {TermList}
```

Grammar:

```
ForTerm :=  
  For (  
    Initializer // Nothing | TermArg => ComputationalData  
    Predicate   // Nothing | TermArg => ComputationalData  
    Update      // Nothing | TermArg => ComputationalData  
  ) {TermList}
```

iASL: The _HID/_ADR detection and validation has been enhanced to search under conditionals in order to allow these objects to be conditionally created at runtime.

iASL: Fixed several issues with the constant folding feature. The improvement allows better detection and resolution of statements that can be folded at compile time. ACPICA BZ 1266.

iASL/Disassembler: Fixed a couple issues with the Else{If{ }...} conversion to the ASL ElseIf operator where incorrect ASL code could be generated.

iASL/Disassembler: Fixed a problem with the ASL+ code disassembly where sometimes an extra (and extraneous) set of parentheses were emitted for some combinations of operators. Although this did not cause any problems

with recompilation of the disassembled code, it made the code more difficult to read. David Box. ACPICA BZ 1231.

iASL: Changed to ignore the unreferenced detection for predefined names of resource descriptor elements, when the resource descriptor is created/defined within a control method.

iASL: Disassembler: Fix a possible fault with externally declared Buffer objects.

18 March 2016. Summary of changes for version 20160318:

1) ACPICA kernel-resident subsystem:

Added support for arbitrary bit lengths and bit offsets for registers defined by the Generic Address Structure. Previously, only aligned bit lengths of 8/16/32/64 were supported. This was sufficient for many years, but recently some machines have been seen that require arbitrary bit-level support. ACPICA BZ 1240. Lv Zheng.

Fixed an issue where the `_SB._INI` method sometimes must be evaluated before any `_REG` methods are evaluated. Lv Zheng.

Implemented several changes related to ACPI table support (Headers/Disassembler/TableCompiler):

NFIT: For ACPI 6.1, updated to add some additional new fields and constants.

FADT: Updated a warning message and set compliance to ACPI 6.1 (Version 6).

DMAR: Added new constants per the 10/2014 DMAR spec.

IORT: Added new subtable per the 10/2015 IORT spec.

HEST: For ACPI 6.1, added new constants and new subtable.

DBG2: Added new constants per the 12/2015 DBG2 spec.

FPDT: Fixed several incorrect fields, add the FPDT boot record structure.

ACPICA BZ 1249.

ERST/EINJ:

Updated disassembler with new "Execute Timings" actions.

Updated header support for the DMAR table to match the current version of the related spec.

Added extensions to the ASL Concatenate operator to allow any ACPI object to be passed as an operand. Any object other than Integer/String/Buffer simply returns a string containing the object type. This extends the usefulness of the Printf macros. Previously, Concatenate would abort the control method if a non-data object was encountered.

ACPICA source code: Deployed the C "const" keyword across the source code where appropriate. ACPICA BZ 732. Joerg Sonnenberger (NetBSD).

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 137.1K Code, 51.5K Data, 188.6K Total

Debug Version:

201.0K Code, 82.0K Data, 283.0K Total

Previous Release:

Non-Debug Version: 136.2K Code, 51.5K Data, 187.7K Total

Debug Version: 200.4K Code, 82.0K Data, 282.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Improved the heuristic used to determine the number of arguments for an externally defined control method (a method in another table). Although this is an improvement, there is no deterministic way to "guess" the number of method arguments. Only the ACPI 6.0 External opcode will completely solve this problem as it is deployed (automatically) in newer BIOS code.

iASL/Disassembler: Fixed an ordering issue for emitted External() ASL statements that could cause errors when the disassembled file is compiled. ACPICA BZ 1243. David Box.

iASL: Fixed a regression caused by the merger of the two versions of the local strtoul64. Because of a dependency on a global variable, strtoul64 could return an error for integers greater than a 32-bit value.

ACPICA BZ

1260.

iASL: Fixed a regression where a fault could occur for an ASL Return statement if it invokes a control method that is not resolved. ACPICA BZ 1264.

AcpiXtract: Improved input file validation: detection of binary files and non-acpidump text files.

12 February 2016. Summary of changes for version 20160212:

1) ACPICA kernel-resident subsystem:

Implemented full support for the ACPI 6.1 specification (released in January). This version of the specification is available at:
<http://www.uefi.org/specifications>

Only a relatively small number of changes were required in ACPICA to support ACPI 6.1, in these areas:

- New predefined names
- New _HID values
- A new subtable for HEST
- A few other header changes for new values

Ensure _SB_INI is executed before any _REG methods are executed. There appears to be existing BIOS code that relies on this behavior. Lv Zheng.

Reverted a change made in version 20151218 which enabled method invocations to be targets of various ASL operators (SuperName and Target grammar elements). While the new behavior is supported by the ACPI specification, other AML interpreters do not support this behavior and never will. The ACPI specification will be updated for ACPI 6.2 to remove this support. Therefore, the change was reverted to the original ACPICA behavior.

ACPICA now supports the GCC 6 compiler.

Current Release: (Note: build changes increased sizes)

Non-Debug Version: 136.2K Code, 51.5K Data, 187.7K Total

Debug Version: 200.4K Code, 82.0K Data, 282.4K Total

Previous Release:

Non-Debug Version: 102.7K Code, 28.4K Data, 131.1K Total

Debug Version: 200.4K Code, 81.9K Data, 282.3K Total

2) iASL Compiler/Disassembler and Tools:

Completed full support for the ACPI 6.0 External() AML opcode. The compiler emits an external AML opcode for each ASL External statement. This opcode is used by the disassembler to assist with the disassembly of

external control methods by specifying the required number of arguments for the method. AML interpreters do not use this opcode. To ensure that interpreters do not even see the opcode, a block of one or more external opcodes is surrounded by an "If(0)" construct. As this feature becomes commonly deployed in BIOS code, the ability of disassemblers to correctly disassemble AML code will be greatly improved. David Box.

iASL: Implemented support for an optional cross-reference output file.

The -lx option will create a the cross-reference file with the suffix "xrf". Three different types of cross-reference are created in this file:

- List of object references made from within each control method
- Invocation (caller) list for each user-defined control method
- List of references to each non-method object in the namespace

iASL: Method invocations as ASL Target operands are now disallowed and flagged as errors in preparation for ACPI 6.2 (see the description of the problem above).

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January 2016. Summary of changes for version 20160108:

1) ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2016: Added the 2016 copyright to all source code module headers and utility/tool signons.

This includes the standard Linux dual-license header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the ACPICA test suite.

Fixed a regression introduced in version 20151218 concerning the execution of so-called module-level ASL/AML code. Namespace objects created under a module-level If() construct were not properly/fully entered into the namespace and could cause an interpreter fault when accessed.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current

Release:

Non-Debug Version: 102.7K Code, 28.4K Data, 131.1K Total

Debug Version: 200.4K Code, 81.9K Data, 282.4K Total

Previous Release:

Non-Debug Version: 102.6K Code, 28.4K Data, 131.0K Total

Debug Version: 200.3K Code, 81.9K Data, 282.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the compilation of the GpioIo and GpioInt resource descriptors. The _PIN field name was incorrectly defined to be an array of 32-bit values, but the _PIN values are in fact 16 bits each. This would cause incorrect bit width warnings when using Word (16-bit) fields

to access the descriptors.

18 December 2015. Summary of changes for version 20151218:

1) ACPICA kernel-resident subsystem:

Implemented per-AML-table execution of "module-level code" as individual ACPI tables are loaded into the namespace during ACPICA initialization.

In other words, any module-level code within an AML table is executed

immediately after the table is loaded, instead of batched and executed after all of the tables have been loaded. This provides compatibility with other ACPI implementations. ACPICA BZ 1219. Bob Moore, Lv Zheng, David Box.

To fully support the feature above, the default operation region handlers for the SystemMemory, SystemIO, and PCI_Config address spaces are now installed before any ACPI tables are loaded. This enables module-level code to access these address spaces during the table load and module-level code execution phase. ACPICA BZ 1220. Bob Moore, Lv Zheng, David Box.

Implemented several changes to the internal _REG support in conjunction with the changes above. Also, changes to the AcpiExec/AcpiNames/Examples utilities for the changes above. Although these tools were changed, host operating systems that simply use the default handlers for SystemMemory, SystemIO, and PCI_Config spaces should not require any update. Lv Zheng.

For example, in the code below, DEV1 is conditionally added to the namespace by the DSDT via module-level code that accesses an operation region. The SSDT references DEV1 via the Scope operator. DEV1 must be created immediately after the DSDT is loaded in order for the SSDT to successfully reference DEV1. Previously, this code would cause an AE_NOT_EXIST exception during the load of the SSDT. Now, this code is fully supported by ACPICA.

```
DefinitionBlock ("", "DSDT", 2, "Intel", "DSDT1", 1)
{
    OperationRegion (OPR1, SystemMemory, 0x400, 32)
    Field (OPR1, AnyAcc, NoLock, Preserve)
    {
        FLD1, 1
    }
    If (FLD1)
    {
```



```

    Device (\DEV1)
    {
    }
}
DefinitionBlock ("", "SSDT", 2, "Intel", "SSDT1", 1)
{
    External (\DEV1, DeviceObj)
    Scope (\DEV1)
    {
    }
}

```

Fixed an AML interpreter problem where control method invocations were not handled correctly when the invocation was itself a SuperName argument to another ASL operator. In these cases, the method was not invoked. ACPIA BZ 1002. Affects the following ASL operators that have a SuperName argument:

- Store
- Acquire, Wait
- CondRefOf, RefOf
- Decrement, Increment
- Load, Unload
- Notify
- Signal, Release, Reset
- SizeOf

Implemented automatic String-to-ObjectReference conversion support for packages returned by predefined names (such as _DEP). A common BIOS error is to add double quotes around an ObjectReference namepath, which turns the reference into an unexpected string object. This support detects the problem and corrects it before the package is returned to the caller that invoked the method. Lv Zheng.

Implemented extensions to the Concatenate operator. Concatenate now accepts any type of object, it is not restricted to simply Integer/String/Buffer. For objects other than these 3 basic data types, the argument is treated as a string containing the name of the object type. This expands the utility of Concatenate and the Printf/Fprintf macros. ACPIA BZ 1222.

Cleaned up the output of the ASL Debug object. The timer() value is now optional and no longer emitted by default. Also, the basic data types of Integer/String/Buffer are simply emitted as their values, without a data type string -- since the data type is obvious from the output. ACPIA BZ 1221.

Example Code and Data Size: These are the sizes for the OS-independent `apica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 102.6K Code, 28.4K Data, 131.0K Total

Debug Version: 200.3K Code, 81.9K Data, 282.3K Total

Previous Release:

Non-Debug Version: 102.0K Code, 28.3K Data, 130.3K Total

Debug Version: 199.6K Code, 81.8K Data, 281.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed some issues with the ASL

`Include()` operator. This operator

was incorrectly defined in the iASL parser rules, causing a new scope to be opened for the code within the include file. This could lead to several issues, including allowing ASL code that is technically illegal and not supported by AML interpreters. Note, this does not affect the related `#include` preprocessor operator. ACPICA BZ 1212.

iASL/Disassembler: Implemented support for the ASL `ElseIf` operator. This operator is essentially an ASL macro since there is no AML opcode associated with it. The code emitted by the iASL compiler for `ElseIf` is an `Else` opcode followed immediately by an `If` opcode. The disassembler will now emit an `ElseIf` if it finds an `Else` immediately followed by an `If`. This simplifies the decoded ASL, especially for deeply nested `If..Else` and large `Switch` constructs. Thus, the disassembled code more closely follows the original source ASL. ACPICA BZ 1211. Example:

Old disassembly:

```
Else
{
```

```
If (Arg0 == 0x02)
```

```
{
    Local0 = 0x05
}
```

New disassembly:

```
ElseIf (Arg0 == 0x02)
{
    Local0 = 0x05
}
```

AcpiExec: Added support for the new module level code behavior and the early region installation. This required a small change to the initialization, since AcpiExec must install its own operation region handlers.

AcpiExec: Added support to make the debug object timer optional. Default is timer disabled. This cleans up the debug object output -- the timer data is rarely used.

AcpiExec: Multiple ACPI tables are now loaded in the order that they appear on the command line. This can be important when there are interdependencies/references between the tables.

iASL/Templates. Add support to generate template files with multiple SSDTs within a single output file. Also added command line support to specify the number of SSDTs (in addition to a single DSDT). ACPICA BZ 1223, 1225.

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November 2015. Summary of changes for version 20151124:

1) ACPICA kernel-resident subsystem:

Fixed a possible regression for a previous update to FADT handling. The FADT no longer has a fixed table ID, causing some issues with code that was hardwired to a specific ID. Lv Zheng.

Fixed a problem where the method auto-serialization could interfere with the current SyncLevel. This change makes the auto-serialization support transparent to the SyncLevel support and management.

Removed support for the _SUB predefined name in AcpiGetObjectInfo. This interface is intended for early access to the namespace during the initial namespace device discovery walk. The _SUB method has been seen to access operation regions in some cases, causing errors because the operation regions are not fully initialized.

AML Debugger: Fixed some issues with the terminate/quit/exit commands that can cause faults. Lv Zheng.

AML Debugger: Add thread ID support so that single-step mode only applies to the AML Debugger thread. This prevents runtime errors within some kernels. Lv Zheng.

Eliminated extraneous warnings from AcpiGetSleepTypeData. Since the _Sx methods that are invoked by this interface are optional, removed warnings emitted for the case where one or more of these methods do not exist.
ACPICA BZ 1208, original change by Prarit Bhargava.

Made a major pass through the entire ACPICA source code base to standardize formatting that has diverged a bit over time. There are no functional changes, but this will of course cause quite a few code differences from the previous ACPICA release.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 102.0K Code, 28.3K Data, 130.3K Total

Debug Version: 199.6K

Code, 81.8K Data, 281.4K Total

Previous Release:

Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total

Debug Version: 199.3K Code, 81.4K Data, 280.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL/acpiexec/acpixtract/disassembler: Added support to allow multiple definition blocks within a single ASL file and the resulting AML file. Support for this type of file was also added to the various tools that use binary AML files: acpiexec, acpixtract, and the AML disassembler. The example code below shows two definition blocks within the same file:

```
DefinitionBlock ("dsdt.aml", "DSDT", 2, "Intel", "Template",  
0x12345678)  
{  
}  
DefinitionBlock ("", "SSDT", 2, "Intel", "Template", 0xABCDEF01)  
{  
}
```

iASL: Enhanced typechecking for the Name() operator. All expressions for the value of the named object must be reduced/folded to a single constant at compile time, as per the ACPI specification (the AML definition of Name()).

iASL: Fixed some

code indentation issues for the -ic and -ia options (C and assembly headers). Now all emitted code correctly begins in column 1.

iASL: Added an error message for an attempt to open a Scope() on an object defined in an SSDT. The DSDT is always loaded into the namespace first, so any attempt to open a Scope on an SSDT object will fail at runtime.

30 September 2015. Summary of changes for version 20150930:

1) ACPICA kernel-resident subsystem:

Debugger: Implemented several changes and bug fixes to assist support for the in-kernel version of the AML debugger. Lv Zheng.

- Fix the "predefined" command for in-kernel debugger.
- Do not enter debug command loop for the help and version commands.
- Disallow "execute" command during execution/single-step of a method.

Interpreter: Updated runtime typechecking for all operators that have target operands. The operand is resolved and validated that it is legal.

For example, the target cannot be a non-data object such as a Device, Mutex, ThermalZone, etc., as per the ACPI specification.

Debugger: Fixed the double-mutex user I/O handshake to work when local deadlock detection is enabled.

Debugger: limited display of method locals and arguments (LocalX and ArgX) to only those that have actually been initialized. This prevents lines of extraneous output.

Updated the definition of the NFIT table to correct the bit polarity of one flag: ACPI_NFIT_MEM_ARMED --> ACPI_NFIT_MEM_NOT_ARMED

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total

Debug Version: 199.3K Code, 81.4K Data, 280.7K Total

Previous Release:

Non-Debug Version: 101.3K Code, 27.7K Data, 129.0K Total

Debug Version:

198.6K Code, 80.9K Data, 279.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Improved the compile-time typechecking for operands of many of the ASL operators:

-- Added an option to disable compiler operand/operator typechecking (-ot).

-- For the following operators, the TermArg operands are now validated when possible to be Integer data objects: BankField, OperationRegion, DataTableRegion, Buffer, and Package.

-- Store (Source, Target): Both the source and target operands are resolved and checked that the operands are both legal. For example, neither operand can be a non-data object such as a Device, Mutex, ThermalZone, etc. Note, as per the ACPI specification, the CopyObject operator can be used to store an object to any type of target object.

-- Store (Source, Target): If the source is a Package object, the target must be a Package object, LocalX, ArgX, or Debug. Likewise, if the target is a Package, the source must also be a Package.

-- Store (Source, Target):
A warning is issued if the source and target resolve to the identical named object.

-- Store (Source, <method invocation>): An error is generated for the target method invocation, as this construct is not supported by the AML interpreter.

-- For all ASL math and logic operators, the target operand must be a data object (Integer, String, Buffer, LocalX, ArgX, or Debug). This includes the function return value also.

-- External declarations are also included in the typechecking where possible. External objects defined using the UnknownObj keyword cannot be typechecked, however.

iASL and Disassembler: Added symbolic (ASL+) support for the ASL Index operator:

- Legacy code: Index(PKG1, 3)

- New ASL+ code: PKG1[3]

This completes the ACPI 6.0 ASL+ support as it was the only operator not supported.

iASL: Fixed the file suffix for the preprocessor output file (.i). Two spaces were inadvertently appended to the filename, causing file access and deletion problems on some systems.

ASL

Test Suite (ASLTS): Updated the master makefile to generate all possible compiler output files when building the test suite -- thus exercising these features of the compiler. These files are automatically deleted when the test suite exits.

18 August 2015. Summary of changes for version 20150818:

1) ACPICA kernel-resident subsystem:

Fix a regression for AcpiGetTableByIndex interface causing it to fail. Lv Zheng. ACPICA BZ 1186.

Completed development to ensure that the ACPICA Disassembler and Debugger are fully standalone components of ACPICA. Removed cross-component dependences. Lv Zheng.

The max-number-of-AML-loops is now runtime configurable (previously was compile-time only). This is essentially a loop timeout to force-abort infinite AML loops. ACPCIA BZ 1192.

Debugger: Cleanup output to dump ACPI names and namepaths without any trailing underscores. Lv Zheng. ACPICA BZ 1135.

Removed unnecessary conditional compilations across the Debugger and Disassembler components where entire modules could be left uncompiled.

The aapits test is deprecated and has been removed from the ACPICA git tree. The test has never been completed and has not been maintained, thus becoming rather useless. ACPICA BZ 1015, 794.

A batch of small changes to close bugzilla and other reports:

- Remove duplicate code for _PLD processing. ACPICA BZ 1176.
- Correctly cleanup after a ACPI table load failure. ACPICA BZ 1185.
- iASL: Support POSIX yacc again in makefile. Jung-uk Kim.
- ACPI table support: general cleanup and simplification. Lv Zheng, Bob Moore.
- ACPI table support: fix for a buffer read overrun in AcpiTbFindTable. ACPICA BZ 1184.
- Enhance parameter validation for DataTableRegion and LoadTable ASL/AML operators.
- Debugger: Split debugger initialization/termination interfaces. Lv Zheng.
- AcpiExec: Emit OemTableId for SSDTs during the load phase for table

identification.

- AcpiExec: Add debug message during _REG method phase during table load/init.
- AcpiNames: Fix a regression where some output was missing and no longer emitted.
- Debugger: General cleanup and simplification. Lv Zheng.
- Disassembler: Cleanup use of several global option variables. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 101.3K Code, 27.7K Data, 129.0K Total

Debug Version: 198.6K Code, 80.9K Data, 279.5K Total

Previous Release:

Non-Debug Version: 100.9K Code, 24.5K Data, 125.4K Total

Debug Version: 197.8K Code, 81.5K Data, 279.3K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Fixed a problem where any more than 32 ACPI tables in the XSDT were not handled properly and caused load errors. Now, properly invoke and use the ACPICA auto-reallocate mechanism for ACPI table data structures. ACPICA BZ 1188

AcpiNames: Add command-line wildcard support for ACPI table files. ACPICA BZ 1190.

AcpiExec and AcpiNames: Add `-l` option to load ACPI tables only. For AcpiExec, this means that no control methods (like `_REG/_INI/_STA`) are executed during initialization. ACPICA BZ 1187, 1189.

iASL/Disassembler: Implemented a prototype "listing" mode that emits AML that corresponds to each disassembled ASL statement, to simplify debugging. ACPICA BZ 1191.

Debugger: Add option to the "objects" command to display a summary of the current namespace objects (Object type and count). This is displayed if the command is entered with no arguments.

AcpiNames: Add `-x` option to specify debug level, similar to AcpiExec.

17 July 2015. Summary of changes for version 20150717:

1) ACPICA kernel-resident subsystem:

Improved the partitioning between the Debugger and Disassembler components.

This allows the Debugger to be used standalone within kernel code without the Disassembler (which is used for single stepping also). This renames and moves one file, dmobject.c to dbobject.c. Lv Zheng.

Debugger: Implemented a new command to trace the execution of control methods (Trace). This is especially useful for the in-kernel version of the debugger when file I/O may not be available for method trace output. See the ACPICA reference for more information. Lv Zheng.

Moved all C library prototypes (used for the local versions of these functions when requested) to a new header, acclib.h

Cleaned up the use of non-ANSI C library functions. These functions are implemented locally in ACPICA. Moved all such functions to a common source file, utnonansi.c

Debugger: Fixed a problem with the "!!" command (get last command executed) where the debugger could enter an infinite loop and eventually crash.

Removed the use of local macros that were used for some of the standard C

library functions to automatically cast input parameters. This mostly affected the is* functions where the input parameter is defined to be an int. This required a few modifications to the main ACPICA source code to provide casting for these functions and eliminate possible compiler warnings for these parameters.

Across the source code, added additional status/error checking to resolve issues discovered by static source code analysis tools such as Coverity.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 100.9K Code, 24.5K Data, 125.4K Total

Debug Version: 197.8K Code, 81.5K Data, 279.3K Total

Previous Release:

Non-Debug Version: 100.6K Code, 27.6K Data, 128.2K Total

Debug Version: 196.2K Code, 81.0K Data,

277.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a regression where the device map file feature no longer worked properly when used in conjunction with the disassembler. It only worked properly with the compiler itself.

iASL: Implemented a new warning for method LocalX variables that are set but never used (similar to a C compiler such as gcc). This also applies to ArgX variables that are not defined by the parent method, and are instead (legally) used as local variables.

iASL/Preprocessor: Finished the pass-through of line numbers from the preprocessor to the compiler. This ensures that compiler errors/warnings have the correct original line numbers and filenames, regardless of any #include files.

iASL/Preprocessor: Fixed a couple of issues with comment handling and the pass-through of comments to the preprocessor output file (which becomes the compiler input file). Also fixed a problem with // comments that appear after a math expression.

iASL:

Added support for the TCPA server table to the table compiler and template generator. (The client table was already previously supported)

iASL/Preprocessor: Added a permanent #define of the symbol "__IASL__" to identify the iASL compiler.

Cleaned up the use of the macros NEGATIVE and POSITIVE which were defined multiple times. The new names are ACPI_SIGN_NEGATIVE and ACPI_SIGN_POSITIVE.

AcpiHelp: Update to expand help messages for the iASL preprocessor directives.

19 June 2015. Summary of changes for version 20150619:

Two regressions in version 20150616 have been addressed:

Fixes some problems/issues with the C library macro removal (ACPI_STRLEN, etc.) This update changes ACPICA to only use the standard headers for functions, or the prototypes for the local versions of the C library functions. Across the source code, this required some additional casts

for some Clib invocations for portability. Moved all local prototypes to a new file, acclib.h

Fixes several problems with recent changes to the handling of the FACS table that could cause some systems not to boot.

16 June 2015. Summary of changes for version 20150616:

1) ACPICA kernel-resident subsystem:

Across the entire ACPICA source code base, the various macros for the C library functions (such as ACPI_STRLEN, etc.) have been removed and replaced by the standard C library names (strlen, etc.) The original purpose for these macros is no longer applicable. This simplification reduces the number of macros used in the ACPICA source code significantly, improving readability and maintainability.

Implemented support for a new ACPI table, the OSDT. This table, the "override" SDT, can be loaded directly by the host OS at boot time. It enables the replacement of existing namespace objects that were installed via the DSDT and/or SSDTs. The primary purpose for this is to replace buggy or incorrect ASL/AML code obtained via the BIOS. The OSDT is slated for inclusion in a future version of the ACPI Specification. Lv Zheng/Bob Moore.

Added support for systems with (improperly) two FACS tables -- a "32-bit" table (via FADT 32-bit legacy field) and a "64-bit" table (via the 64-bit X field). This change will support both automatically. There continues to be systems found with this issue. This support requires a change to the AcpiSetFirmwareWakingVector interface. Also, a public global variable has been added to allow the host to select which FACS is desired (AcpiGbl_Use32BitFacsAddresses). See the ACPICA reference for more details Lv Zheng.

Added a new feature to allow for systems that do not contain an FACS. Although this is already supported on hardware-reduced platforms, the feature has been extended for all platforms. The reasoning is that we do not want to abort the entire ACPICA initialization just because the system is seriously buggy and has no FACS.

Fixed a problem where the GUID strings for NFIT tables (in acuuid.h) were not correctly transcribed from the ACPI specification in ACPICA version

20150515.

Implemented support for the `_CLS` object in the `AcpiGetObjectInfo` external interface.

Updated the definitions of the TCPA and TPM2 ACPI tables to the more recent TCG ACPI Specification, December 14, 2014. Table disassembler and compiler also updated. Note: The TCPA "server" table is not supported by the disassembler/table-compiler at this time.

ACPI 6.0: Added definitions for the new GIC version field in the MADT.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 100.6K Code, 27.6K Data, 128.2K Total

Debug Version: 196.2K Code, 81.0K Data, 277.2K Total

Previous Release:

Non-Debug Version:

99.9K Code, 27.5K Data, 127.4K Total

Debug Version: 195.2K Code, 80.8K Data, 276.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the new symbolic operator disassembler where incorrect ASL code could be emitted in some cases for the "non-commutative" operators -- Subtract, Divide, Modulo, ShiftLeft, and ShiftRight. The actual problem cases seem to be rather unusual in common ASL code, however. David Box.

Modified the linux version of `acpidump` to obtain ACPI tables from not just `/dev/mem` (which may not exist) and `/sys/firmware/acpi/tables`. Lv Zheng.

iASL: Fixed a problem where the user preprocessor output file (`.i`) contained extra data that was not expected. The compiler was using this file as a temporary file and passed through `#line` directives in order to keep compiler error messages in sync with the input file and line number across multiple include files. The `.i` is no longer a temporary file as the compiler uses a new, different file for the original purpose.

iASL: Fixed a problem where comments within the original ASL source code file were not passed through to the preprocessor output file, nor any

listing files.

iASL: Fixed some issues for the handling of the "#include" preprocessor directive and the similar (but not the same) "Include" ASL operator.

iASL: Add support for the new OSDT in both the disassembler and compiler.

iASL: Fixed a problem with the constant folding support where a Buffer object could be incorrectly generated (incorrectly formed) during a conversion to a Store() operator.

AcpiHelp: Updated for new NFIT GUIDs, "External" AML opcode, and new description text for the _REV predefined name. _REV now permanently returns 2, as per the ACPI 6.0 specification.

Debugger: Enhanced the output of the Debug ASL object for references produced by the Index operator. For Buffers and strings, only output the actual byte pointed to by the index. For packages, only print the single

package element decoded by the index. Previously, the entire buffer/string/package was emitted.

iASL/Table-compiler: Fixed a regression where the "generic" data types were no longer recognized, causing errors.

15 May 2015. Summary of changes for version 20150515:

This release implements most of ACPI 6.0 as described below.

1) ACPICA kernel-resident subsystem:

Implemented runtime argument checking and return value checking for all new ACPI 6.0 predefined names. This includes: _BTH, _CR3, _DSD, _LPI, _MTL, _PRR, _RDI, _RST, _TFP, _TSN.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 99.9K Code, 27.5K Data, 127.4K Total

Debug Version: 195.2K Code, 80.8K Data, 276.0K Total

Previous

Release:

Non-Debug Version: 99.1K Code, 27.3K Data, 126.4K Total

Debug Version: 192.8K Code, 79.9K Data, 272.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL compiler: Added compile-time support for all new ACPI 6.0 predefined names (argument count validation and return value typechecking.)

iASL disassembler and table compiler: implemented support for all new ACPI 6.0 tables. This includes: DRTM, IORT, LPIT, NFIT, STAO, WPBT, XENV.

iASL disassembler and table compiler: Added ACPI 6.0 changes to existing tables: FADT, MADT.

iASL preprocessor: Added a new directive to enable inclusion of binary blobs into ASL code. The new directive is #includebuffer. It takes a binary file as input and emits a named ascii buffer object into the ASL code.

AcpiHelp: Added support for all new ACPI 6.0 predefined names.

AcpiHelp: Added a new option, -d, to display all iASL preprocessor directives.

AcpiHelp: Added a new option, -t, to display all known/supported ACPI tables.

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April 2015. Summary of changes for version 20150410:

Reverted a change introduced in version 20150408 that caused a regression in the disassembler where incorrect operator symbols could be emitted.

08 April 2015. Summary of changes for version 20150408:

1) ACPICA kernel-resident subsystem:

Permanently set the return value for the _REV predefined name. It now returns 2 (was 5). This matches other ACPI implementations. _REV will be deprecated in the future, and is now defined to be 1 for ACPI 1.0, and 2 for ACPI 2.0 and later. It should never be used to differentiate or identify operating systems.

Added the "Windows 2015" string to the _OSI support. ACPICA will now return TRUE to a query with this string.

Fixed several issues with the local version of the printf function.

Added the C99 compiler option (-std=c99) to the Unix makefiles.

Current Release:

Non-Debug Version: 99.9K

Code, 27.4K Data, 127.3K Total

Debug Version: 195.2K Code, 80.7K Data, 275.9K Total

Previous Release:

Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total

Debug Version: 192.1K Code, 79.8K Data, 271.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented an enhancement to the constant folding feature to transform the parse tree to a simple Store operation whenever possible:

Add (2, 3, X) ==> is converted to: Store (5, X)

X = 2 + 3 ==> is converted to: Store (5, X)

Updated support for the SLIC table (Software Licensing Description Table) in both the Data Table compiler and the disassembler. The SLIC table support now conforms to "Microsoft Software Licensing Tables (SLIC and MSDM). November 29, 2011. Copyright 2011 Microsoft". Note: Any SLIC data following the ACPI header is now defined to be "Proprietary Data", and as such, can only be entered or displayed as a hex data block.

Implemented full support for the MSDM table as described in the document

above. Note: The format of MSDM is similar to SLIC. Any MSDM data following the ACPI header is defined to be "Proprietary Data", and can only be entered or displayed as a hex data block.

Implemented the -Pn option for the iASL Table Compiler (was only implemented for the ASL compiler). This option disables the iASL preprocessor.

Disassembler: For disassembly of Data Tables, added a comment field around the Ascii equivalent data that is emitted as part of the "Raw Table Data" block. This prevents the iASL Preprocessor from possible confusion if/when the table is compiled.

Disassembler: Added an option (-df) to force the disassembler to assume that the table being disassembled contains valid AML. This feature is

useful for disassembling AML files that contain ACPI signatures other than DSDT or SSDT (such as OEMx or other signatures).

Changes for the EFI version of the tools:

- 1) Fixed a build error/issue
- 2) Fixed a cast warning

iASL: Fixed a path

issue with the `__FILE__` operator by making the directory prefix optional within the internal `SplitInputFilename` function.

Debugger: Removed some unused global variables.

Tests: Updated the makefile for proper generation of the AAPITS suite.

04 February 2015. Summary of changes for version 20150204:

ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2014. Added the 2014 copyright to all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the test suites.

Events: Introduce `ACPI_GPE_DISPATCH_RAW_HANDLER` to fix GPE storm issues.

A raw gpe handling mechanism was created to allow better handling of GPE storms that aren't easily managed by the normal handler. The raw handler allows disabling/enabling of the the GPE so that interrupt storms can be avoided in cases where events cannot be timely serviced.

In this

scenario, handlers should use the `AcpiSetGpe()` API to disable/enable the GPE. This API will leave the reference counts undisturbed, thereby preventing unintentional clearing of the GPE when the intent is only to temporarily disable it. Raw handlers allow enabling and disabling of a GPE by removing GPE register locking. As such, raw handlers must provide their own locks while using GPE API's to protect access to GPE data structures.

Lv Zheng

Events: Always modify GPE registers under the GPE lock.

Applies GPE lock around `AcpiFinishGpe()` to protect access to GPE register values. Reported as bug by `joe.liu@apple.com`.

Unix makefiles: Separate option to disable optimizations and

`_FORTIFY_SOURCE`. This change removes the `_FORTIFY_SOURCE` flag from the

NOOPT disable option and creates a separate flag (NOFORTIFY) for this purpose. Some toolchains may define _FORTIFY_SOURCE which leads redefined errors when building ACPIA. This allows disabling the option without also having to disable optimizations.
David Box

Current Release:

Non-Debug Version: 101.7K Code, 27.9K Data, 129.6K Total
Debug Version: 199.2K Code, 82.4K Data, 281.6K Total

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07 November 2014. Summary of changes for version 20141107:

This release is available at <https://acpica.org/downloads>

This release introduces and implements language extensions to ASL that provide support for symbolic ("C-style") operators and expressions. These language extensions are known collectively as ASL+.

1) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with disassembly of the UartSerialBus macro. Changed "StopBitsNone" to the correct "StopBitsZero". David E. Box.

Disassembler: Fixed the Unicode macro support to add escape sequences. All non-printable ASCII values are emitted as escape sequences, as well as the standard escapes for quote and backslash. Ensures that the disassembled macro can be correctly recompiled.

iASL:

Added Printf/Fprintf macros for formatted output. These macros are translated to existing AML Concatenate and Store operations. Printf writes to the ASL Debug object. Fprintf allows the specification of an ASL name as the target. Only a single format specifier is required, %o, since the AML interpreter dynamically converts objects to the required type. David E. Box.

(old) Store (Concatenate (Concatenate (Concatenate (Concatenate (Concatenate (Concatenate (Concatenate ("", Arg0),
": Unexpected value for ", Arg1), ", "), Arg2),
" at line "), Arg3), Debug)

(new) Printf ("%o: Unexpected value for %o, %o at line %o",
Arg0, Arg1, Arg2, Arg3)

(old) Store (Concatenate (Concatenate (Concatenate (Concatenate
(" ", Arg1), ": "), Arg0), " Successful"), STR1)

(new) Fprintf (STR1, "%o: %o Successful", Arg1, Arg0)

iASL: Added debug options (-bp, -bt) to dynamically prune levels of the ASL parse tree before the AML code is generated. This allows blocks of ASL code to be removed in order to help locate and identify problem devices and/or code. David E. Box.

AcpiExec: Added support (-fi) for an optional namespace object initialization file. This file specifies initial values for namespace objects as necessary for debugging and testing different ASL code paths that may be taken as a result of BIOS options.

2) Overview of symbolic operator support for ASL (ASL+)

As an extension to the ASL language, iASL implements support for symbolic (C-style) operators for math and logical expressions. This can greatly simplify ASL code as well as improve both readability and maintainability. These language extensions can exist concurrently with all legacy ASL code and expressions.

The symbolic extensions are 100% compatible with existing AML interpreters, since no new AML opcodes are created. To implement the extensions, the iASL compiler transforms the symbolic expressions into the legacy ASL/AML equivalents at compile time.

Full symbolic expressions are supported, along with the standard C precedence and associativity rules.

Full disassembler support for the symbolic expressions is provided, and creates an automatic migration path for existing ASL code to ASL+ code via the disassembly process. By default, the disassembler now emits ASL+ code with symbolic expressions. An option (-dl) is provided to force the disassembler to emit legacy ASL code if desired.

Below is the complete list of the currently supported symbolic operators with examples. See the iASL User Guide for additional information.

ASL+ Syntax	Legacy ASL Equivalent
-------------	-----------------------

// Math operators

Z = X + Y Add (X, Y, Z)
Z = X - Y Subtract (X, Y, Z)
Z = X * Y Multiply (X, Y, Z)
Z = X / Y Divide (X, Y, , Z)
Z = X % Y Mod (X, Y, Z)
Z = X <<
Y ShiftLeft (X, Y, Z)
Z = X >> Y ShiftRight (X, Y, Z)
Z = X & Y And (X, Y, Z)
Z = X | Y Or (X, Y, Z)
Z = X ^ Y Xor (X, Y, Z)
Z = ~X Not (X, Z)
X++ Increment (X)
X-- Decrement (X)

// Logical operators

(X == Y) LEqual (X, Y)
(X != Y) LNotEqual (X, Y)
(X < Y) LLess (X, Y)
(X > Y) LGreater (X, Y)
(X <= Y) LLessEqual (X, Y)
(X >= Y) LGreaterEqual (X, Y)
(X && Y) LAnd (X, Y)
(X || Y) LOr (X, Y)
(!X) LNot (X)

// Assignment and compound assignment operations

X = Y Store (Y, X)
X += Y Add (X, Y, X)
X -= Y Subtract (X, Y, X)
X *= Y Multiply (X, Y, X)
X /= Y Divide (X, Y, , X)
X %= Y Mod (X, Y, X)
X <<= Y ShiftLeft (X, Y, X)
X >>= Y ShiftRight (X, Y, X)
X &= Y And (X, Y, X)
X |= Y Or (X, Y, X)
X ^= Y Xor (X, Y, X)

3) ASL+ Examples:

Legacy

ASL:

```
If (LOr (LOr (LEqual (And (R510, 0x03FB), 0x02E0), LEqual (
    And (R520, 0x03FB), 0x02E0)), LOr (LEqual (And (R530,
0x03FB),
    0x02E0), LEqual (And (R540, 0x03FB), 0x02E0))))
{
    And (MEMB, 0xFFFFFFFF0, SRMB)
    Store (MEMB, Local2)
    Store (PDBM, Local1)
    And (PDBM, 0xFFFFFFFFFFFFFFFF9, PDBM)
    Store (SRMB, MEMB)
    Or (PDBM, 0x02, PDBM)
}
```

ASL+ version:

```
If (((R510 & 0x03FB) == 0x02E0) ||
    ((R520 & 0x03FB) == 0x02E0) ||
    ((R530 & 0x03FB) == 0x02E0) ||
    ((R540 & 0x03FB) == 0x02E0))
{
    SRMB = (MEMB & 0xFFFFFFFF0)
    Local2 = MEMB
    Local1 = PDBM
    PDBM &= 0xFFFFFFFFFFFFFFFF9
    MEMB = SRMB
    PDBM |= 0x02
}
```

Legacy ASL:

```
Store (0x1234, Local1)
Multiply (Add (Add (Local1, TEST), 0x20), Local2, Local3)
Multiply (Local2, Add (Add (Local1,
TEST), 0x20), Local3)
Add (Local1, Add (TEST, Multiply (0x20, Local2)), Local3)
Store (Index (PKG1, 0x03), Local6)
Store (Add (Local3, Local2), Debug)
Add (Local1, 0x0F, Local2)
Add (Local1, Multiply (Local2, Local3), Local2)
Multiply (Add (Add (Local1, TEST), 0x20), ToBCD (Local1), Local3)
```

ASL+ version:

```
Local1 = 0x1234
Local3 = (((Local1 + TEST) + 0x20) * Local2)
Local3 = (Local2 * ((Local1 + TEST) + 0x20))
Local3 = (Local1 + (TEST + (0x20 * Local2)))
Local6 = Index (PKG1, 0x03)
Debug = (Local3 + Local2)
```

Local2 = (Local1 + 0x0F)
Local2 = (Local1 + (Local2 * Local3))
Local3 = (((Local1 + TEST) + 0x20) * ToBCD (Local1))

26 September 2014. Summary of changes for version 20140926:

1) ACPICA kernel-resident subsystem:

Updated the GPIO operation region handler interface (GeneralPurposeIo). In order to support GPIO Connection objects with multiple pins, along with the related Field objects, the following changes to the interface have been made: The Address is now defined to be the offset in bits of the field unit from the previous invocation of a Connection. It can be viewed as a "Pin Number Index" into the connection resource descriptor. The BitWidth is the exact bit width of the field. It is usually one bit, but not always. See the ACPICA reference guide (section 8.8.6.2.1) for additional information and examples.

GPE support: During ACPICA/GPE initialization, ensure that all GPEs with corresponding `_Lxx/_Exx` methods are disabled (they may have been enabled by the firmware), so that they cannot fire until they are enabled via `AcpiUpdateAllGpes`. Rafael J. Wysocki.

Added a new return flag for the Event/GPE status interfaces -- `AcpiGetEventStatus` and `AcpiGetGpeStatus`. The new `ACPI_EVENT_FLAGS_HAS_HANDLER` flag is used to indicate that the event or GPE currently has a handler associated with it, and can thus actually affect the system. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 99.1K Code, 27.3K Data, 126.4K Total

Debug Version: 192.8K Code, 79.9K Data, 272.7K Total

Previous Release:

Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total

Debug Version: 192.1K Code, 79.8K Data, 271.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a memory allocation/free regression introduced in 20140828

that could cause the compiler to crash. This was introduced inadvertently during the effort to eliminate compiler memory leaks. ACPICA BZ 1111, 1113.

iASL: Removed two error messages that have been found to create false positives, until they can be fixed and fully validated (ACPICA BZ 1112):

- 1) Illegal forward reference within a method
- 2) Illegal reference across two methods

iASL: Implemented a new option (-lm) to create a hardware mapping file that summarizes all GPIO, I2C, SPI, and UART connections. This option works for both the compiler and disassembler. See the iASL compiler user guide for additional information and examples (section 6.4.6).

AcpiDump: Added support for the version 1 (ACPI 1.0) RSDP in addition to version 2. This corrects the AE_BAD_HEADER exception seen on systems with a version 1 RSDP. Lv Zheng ACPICA BZ 1097.

AcpiExec: For Unix versions, don't attempt to put STDIN into raw mode unless STDIN is actually a terminal. Assists with batch-mode processing. ACPICA BZ 1114.

Disassembler/AcpiHelp: Added another large group of recognized _HID values.

28 August 2014. Summary of changes for version 20140828:

1) ACPICA kernel-resident subsystem:

Fixed a problem related to the internal use of the Timer() operator where a 64-bit divide could cause an attempted link to a double-precision math library. This divide is not actually necessary, so the code was restructured to eliminate it. Lv Zheng.

ACPI 5.1: Added support for the runtime validation of the _DSD package (similar to the iASL support).

ACPI 5.1/Headers: Added support for the GICC affinity subtable to the SRAT table. Hanjun Guo <hanjun.guo@linaro.org>.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 98.8K Code, 27.3K Data, 126.1K Total

Debug Version: 192.1K Code, 79.8K Data, 271.9K Total

Previous Release:

Non-Debug Version: 98.7K Code, 27.3K Data, 126.0K Total

Debug Version: 192.0K Code, 79.7K Data, 271.7K Total

2) iASL Compiler/Disassembler
and Tools:

AcpiExec: Fixed a problem on unix systems where the original terminal state was not always properly restored upon exit. Seen when using the -v option. ACPICA BZ 1104.

iASL: Fixed a problem with the validation of the ranges/length within the Memory24 resource descriptor. There was a boundary condition when the range was equal to the (length -1) caused by the fact that these values are defined in 256-byte blocks, not bytes. ACPICA BZ 1098

Disassembler: Fixed a problem with the GpioInt descriptor interrupt polarity flags. The flags are actually 2 bits, not 1, and the "ActiveBoth" keyword is now supported properly.

ACPI 5.1: Added the GICC affinity subtable to the SRAT table. Supported in the disassembler, data table compiler, and table template generator.

iASL: Added a requirement for Device() objects that one of either a _HID or _ADR must exist within the scope of a Device, as per the ACPI specification. Remove a similar requirement that was incorrectly in place for the _DSD object.

iASL: Added error detection for illegal named references within control methods that would cause runtime failures. Now trapped as errors are: 1) References to objects within a non-parent control method. 2) Forward references (within a method) -- for control methods, AML interpreters use a one-pass parse of control methods. ACPICA BZ 1008.

iASL: Added error checking for dependencies related to the _PSx power methods. ACPICA BZ 1029.

1) For _PS0, one of these must exist within the same scope: _PS1, _PS2, _PS3.

2) For _PS1, _PS2, and PS3: A _PS0 object must exist within the same scope.

iASL and table compiler: Cleanup miscellaneous memory leaks by fully deploying the existing object and string caches and adding new caches for the table compiler.

iASL: Split the huge parser source file into multiple subfiles to improve manageability. Generation now requires the M4 macro preprocessor, which is part of the Bison distribution on both unix and windows platforms.

AcpiSrc: Fixed and removed all extraneous warnings generated during entire ACPICA source code scan and/or conversion.

24 July 2014. Summary of changes for version 20140724:

The ACPI 5.1 specification has been released and is available at:
<http://uefi.org/specs/access>

0) ACPI 5.1 support in ACPICA:

ACPI 5.1 is fully supported in ACPICA as of this release.

New predefined names. Support includes iASL and runtime ACPICA validation.

_CCA (Cache Coherency Attribute).

_DSD (Device-Specific Data). David Box.

Modifications to existing ACPI tables. Support includes headers, iASL Data Table compiler, disassembler, and the template generator.

FADT - New fields and flags. Graeme Gregory.

GTDT - One new subtable and new fields. Tomasz Nowicki.

MADT - Two new subtables. Tomasz Nowicki.

PCCT - One new subtable.

Miscellaneous.

New notification type for System Resource Affinity change events.

1) ACPICA kernel-resident subsystem:

Fixed a regression introduced in 20140627 where a fault can happen during the deletion of Alias AML namespace objects. The problem affected both the core ACPICA and the ACPICA tools including iASL and AcpiExec.

Implemented a new GPE public interface, AcpiMarkGpeForWake. Provides a simple mechanism to enable wake GPEs that have no associated handler or control method. Rafael Wysocki.

Updated the AcpiEnableGpe interface to disallow the enable if there is no handler or control method associated with the particular GPE. This will help avoid meaningless GPEs and even GPE floods. Rafael Wysocki.

Updated GPE handling and dispatch by disabling the GPE before clearing the status bit for edge-triggered GPEs. Lv Zheng.

Added Timer() support to the AML Debug object. The current timer value is now displayed with each invocation of (Store to) the debug object to enable simple generation of execution times for AML code (method execution for example.) ACPICA BZ 1093.

Example

Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 98.7K Code, 27.3K Data, 126.0K Total

Debug Version: 192.0K Code, 79.7K Data, 271.7K Total

Previous Release:

Non-Debug Version: 98.7K Code, 27.2K Data, 125.9K Total

Debug Version: 191.7K Code, 79.6K Data, 271.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed an issue with the recently added local printf implementation, concerning width/precision specifiers that could cause incorrect output. Lv Zheng. ACPICA BZ 1094.

Disassembler: Added support to detect buffers that contain UUIDs and disassemble them to an invocation of the ToUUID operator. Also emit commented descriptions of known ACPI-related UUIDs.

AcpiHelp: Added support to display known ACPI-related UUIDs. New option, -u. Adds three new files.

iASL: Update table compiler and disassembler for DMAR table changes that were introduced in September 2013. With assistance by David Woodhouse.

27 June 2014. Summary of changes for version 20140627:

1) ACPICA kernel-resident subsystem:

Formatted Output: Implemented local versions of standard formatted output utilities such as printf, etc. Over time, it has been discovered that there are in fact many portability issues with printf, and the addition of this feature will fix/prevent these issues once and for all. Some known issues are summarized below:

- 1) Output of 64-bit values is not portable. For example, UINT64 is %ull for the Linux kernel and is %uI64 for some MSVC versions.
- 2) Invoking printf consistently in a manner that is portable across both 32-bit and 64-bit platforms is difficult at best in many situations.
- 3) The output format for pointers varies from system to system (leading

zeros especially), and leads to inconsistent output from ACPICA across platforms.

- 4) Certain platform-specific printf formats may conflict with ACPICA use.
- 5) If there is no local C library available, ACPICA now has local support for printf.

-- To address these printf issues in a complete manner, ACPICA now directly implements a small subset of printf format specifiers, only those that it requires. Adds a new file, utilities/utprint.c. Lv Zheng.

Implemented support for ACPICA generation within the EFI environment. Initially, the AcpiDump utility is supported in the UEFI shell environment. Lv Zheng.

Added a new external interface, AcpiLogError, to improve ACPICA portability. This allows the host to redirect error messages from the ACPICA utilities. Lv Zheng.

Added and deployed new OSL file I/O interfaces to improve ACPICA portability:

AcpiOsOpenFile
AcpiOsCloseFile
AcpiOsReadFile
AcpiOsWriteFile
AcpiOsGetFileOffset
AcpiOsSetFileOffset

There are C library implementations of these functions in the new file service_layers/oslibcfs.c -- however, the functions can be implemented by the local host in any way necessary. Lv Zheng.

Implemented a mechanism to disable/enable ACPI table checksum validation

at runtime. This can be useful when loading tables very early during OS initialization when it may not be possible to map the entire table in order to compute the checksum. Lv Zheng.

Fixed a buffer allocation issue for the Generic Serial Bus support. Originally, a fixed buffer length was used. This change allows for variable-length buffers based upon the protocol indicated by the field access attributes. Reported by Lan Tianyu. Lv Zheng.

Fixed a problem where an object detached from a namespace node was not properly terminated/cleared and could cause a circular list problem if reattached. ACPICA BZ 1063. David Box.

Fixed a possible recursive lock acquisition in hwregs.c. Rakib Mullick.

Fixed a possible memory leak in an error return path within the function AcpiUtCopyIobjectToIobject. ACPICA BZ 1087. Colin Ian King.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 98.7K Code, 27.2K Data, 125.9K Total

Debug Version: 191.7K Code, 79.6K Data, 271.3K Total

Previous Release:

Non-Debug Version: 96.8K Code, 27.2K Data, 124.0K Total

Debug Version: 189.5K Code, 79.7K Data, 269.2K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Add dump of ASCII equivalent text within a comment at the end of each line of the output for the Buffer() ASL operator.

AcpiDump: Miscellaneous changes:

Fixed repetitive table dump in -n mode.

For older EFI platforms, use the ACPI 1.0 GUID during RSDP search if the ACPI 2.0 GUID fails.

iASL: Fixed a problem

where the compiler could fault if incorrectly given an acpidump output file as input. ACPICA BZ 1088. David Box.

AcpiExec/AcpiNames: Fixed a problem where these utilities could fault if they are invoked without any arguments.

Debugger: Fixed a possible memory leak in an error return path. ACPICA BZ 1086. Colin Ian King.

Disassembler: Cleaned up a block of code that extracts a parent Op object. Added a comment that explains that the parent is guaranteed to be valid in this case. ACPICA BZ 1069.

24 April 2014. Summary of changes for version 20140424:

1) ACPICA kernel-resident subsystem:

Implemented support to skip/ignore NULL address entries in the RSDT/XSDT. Some of these tables are known to contain a trailing NULL entry. Lv Zheng.

Removed an extraneous error message for the case where there are a large number of system GPEs (> 124). This was the "32-bit FADT register is too long to convert to GAS struct" message, which is irrelevant for GPEs since the GPEX_BLK_LEN fields of the FADT are always used instead of the (limited capacity) GAS bit length. Also, several changes to ensure proper support for GPE numbers > 255, where some "GPE number" fields were 8-bits internally.

Implemented and deployed additional configuration support for the public ACPICA external interfaces. Entire classes of interfaces can now be easily modified or configured out, replaced by stubbed inline functions by default. Lv Zheng.

Moved all public ACPICA runtime configuration globals to the public ACPICA external interface file for convenience. Also, removed some obsolete/unused globals. See the file acpixf.h. Lv Zheng.

Documentation: Added a new section to the ACPICA reference describing the maximum number of GPEs that can be supported by the FADT-defined GPEs in block zero and one. About 1200 total. See section 4.4.1 of the ACPICA reference.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.8K Code, 27.2K Data, 124.0K Total
Debug Version: 189.5K Code, 79.7K Data, 269.2K Total
Previous Release:
Non-Debug Version: 97.0K Code, 27.2K Data, 124.2K Total
Debug Version: 189.7K Code, 79.5K Data, 269.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL and disassembler: Add full support for the LPIT table (Low Power Idle Table). Includes support in the disassembler, data table compiler, and template generator.

AcpiDump utility:

- 1) Add option to force the use of the RSDT (over the XSDT).
- 2) Improve validation of the RSDP signature (use 8 chars instead of 4).

iASL: Add check for predefined packages that are too large. For predefined names that contain subpackages, check if each subpackage is too large. (Check for too small already exists.)

Debugger: Updated the GPE command (which simulates a GPE by executing the GPE code paths in ACPICA). The GPE device is now optional, and defaults to the GPE 0/1 FADT-defined blocks.

Unix application OSL: Update line-editing support. Add additional error checking and take care not to reset terminal attributes on exit if they were never set. This should help guarantee that the terminal is always left in the previous state on program exit.

25 March 2014. Summary of changes for version 20140325:

1) ACPICA kernel-resident subsystem:

Updated the auto-serialize feature for control methods. This feature automatically serializes all methods that create named objects in order to prevent runtime errors. The update adds support to ignore the currently executing AML SyncLevel when invoking such a method, in order to prevent disruption of any existing SyncLevel priorities that may exist in the AML code. Although the use of SyncLevels is relatively rare, this change fixes a regression where an AE_AML_MUTEX_ORDER exception can appear on some machines starting with the 20140214 release.

Added a new external interface to allow the host to install ACPI tables

very early, before the namespace is even created. AcpiInstallTable gives the host additional flexibility for ACPI table management. Tables can be installed directly by the host as if they had originally appeared in the XSDT/RSDT. Installed tables can be SSDTs or other ACPI data tables (anything except the DSDT and FACS). Adds a new file, tldata.c, along with additional internal restructuring and cleanup. See the ACPICA Reference for interface details. Lv Zheng.

Added validation of the checksum for all incoming dynamically loaded tables (via external interfaces or via AML Load/LoadTable operators). Lv Zheng.

Updated the use of the AcpiOsWaitEventsComplete interface during Notify and GPE handler removal. Restructured calls to eliminate possible race conditions. Lv Zheng.

Added a warning for the use/execution of the ASL/AML Unload (table) operator. This will help detect and identify machines that use this operator if and when it is ever used. This operator has never been seen in the field and the usage model and possible side-effects of the drastic runtime action of a full table removal are unknown.

Reverted the use of #pragma push/pop which was introduced in the 20140214 release. It appears that push and pop are not implemented by enough compilers to make the use of this feature feasible for ACPICA at this time. However, these operators may be deployed in a future ACPICA release.

Added the missing EXPORT_SYMBOL macros for the install and remove SCI handler interfaces.

Source code generation:

- 1) Disabled the use of the "strchr" macro for the gcc-specific generation. For some versions of gcc, this macro can periodically expose a compiler bug which in turn causes compile-time error(s).
- 2) Added support for PPC64 compilation. Colin Ian King.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 97.0K Code, 27.2K Data, 124.2K Total

Debug Version: 189.7K Code, 79.5K Data, 269.2K Total

Previous Release:

Non-Debug Version: 96.5K Code, 27.2K Data, 123.7K Total

Debug Version: 188.6K Code, 79.0K Data, 267.6K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Added several new features to improve the readability of the resulting ASL code. Extra information is emitted within comment fields in the ASL code:

- 1) Known `_HID/_CID` values are decoded to descriptive text.
- 2) Standard values for the `Notify()` operator are decoded to descriptive text.
- 3) Target operands are expanded to full pathnames (in a comment) when possible.

Disassembler:

Miscellaneous updates for `extern()` handling:

- 1) Abort compiler if file specified by `-fe` option does not exist.
- 2) Silence unnecessary warnings about argument count mismatches.
- 3) Update warning messages concerning unresolved method externals.
- 4) Emit "UnknownObj" keyword for externals whose type cannot be determined.

AcpiHelp utility:

- 1) Added the `-a` option to display both the ASL syntax and the AML encoding for an input ASL operator. This effectively displays all known information about an ASL operator with one `AcpiHelp` invocation.
- 2) Added substring match support (similar to a wildcard) for the `-i` (`_HID/PNP IDs`) option.

iASL/Disassembler: Since this tool does not yet support execution on big-endian machines, added detection of endianness and an error message if execution is attempted on big-endian. Support for big-endian within iASL is a feature that is on the ACPICA to-be-done list.

AcpiBin utility:

- 1) Remove option to extract binary files from an `acpidump`; this function is made obsolete by the `AcpiXtract` utility.
- 2) General cleanup of open files and allocated buffers.

14 February 2014. Summary of changes for version 20140214:

- 1) ACPICA kernel-resident subsystem:

Implemented a new mechanism to proactively prevent problems with ill-

behaved reentrant control methods that create named ACPI objects. This behavior is illegal as per the ACPI specification, but is nonetheless frequently seen in the field. Previously, this could lead to an AE_ALREADY_EXISTS exception if the method was actually entered by more than one thread. This new mechanism detects such methods at table load time and marks them "serialized" to prevent reentrancy. A new global option, AcpiGbl_AutoSerializeMethods, has been added to disable this feature if desired. This mechanism and global option obsoletes and supersedes the previous AcpiGbl_SerializeAllMethods option.

Added the "Windows 2013" string to the _OSI support.

ACPICA will now respond TRUE to _OSI queries with this string. It is the stated policy of ACPICA to add new strings to the _OSI support as soon as possible after they are defined. See the full ACPICA _OSI policy which has been added to the utilities/utosi.c file.

Hardened/updated the _PRT return value auto-repair code:

- 1) Do not abort the repair on a single subpackage failure, continue to check all subpackages.
- 2) Add check for the minimum subpackage length (4).
- 3) Properly handle extraneous NULL package elements.

Added support to avoid the possibility of infinite loops when traversing object linked lists. Never allow an infinite loop, even in the face of corrupted object lists.

ACPICA headers: Deployed the use of #pragma pack(push) and #pragma pack(pop) directives to ensure that the ACPICA headers are independent of compiler settings or other host headers.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.5K Code, 27.2K Data, 123.7K Total

Debug Version: 188.6K Code, 79.0K Data, 267.6K Total

Previous Release:

Non-Debug Version: 96.2K Code, 27.0K Data, 123.2K Total

Debug Version: 187.5K Code, 78.3K Data, 265.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Table-compiler: Fixed a problem with support for the SPMI table. The

first reserved field was incorrectly forced to have a value of zero. This change correctly forces the field to have a value of one. ACPICA BZ 1081.

Debugger: Added missing support for the "Extra" and "Data" subobjects when displaying object data.

Debugger: Added support to display entire object linked lists when displaying object data.

iASL: Removed the obsolete -g option to obtain ACPI tables from the Windows registry. This feature has been superseded by the acpidump utility.

14 January 2014. Summary of changes for version 20140114:

1) ACPICA kernel-resident subsystem:

Updated all ACPICA copyrights and signons to 2014. Added the 2014 copyright to all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the test suites.

Improved parameter validation for AcpiInstallGpeBlock. Added the following checks:

- 1) The incoming device handle refers to type ACPI_TYPE_DEVICE.
- 2) There is not already a GPE block attached to the device.

Likewise, with AcpiRemoveGpeBlock, ensure that the incoming object is a device.

Correctly support "references" in the ACPI_OBJECT. This change fixes the support to allow references (namespace nodes) to be passed as arguments to control methods via the evaluate object interface. This is probably most useful for testing purposes, however.

Improved

support for 32/64 bit physical addresses in printf()-like output. This change improves the support for physical addresses in printf debug statements and other output on both 32-bit and 64-bit hosts. It consistently outputs the appropriate number of bytes for each host. The %p specifier is unsatisfactory since it does not emit uniform output on all hosts/clib implementations (on some, leading zeros are not supported, leading to difficult-to-read output).

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.2K Code, 27.0K Data, 123.2K Total

Debug Version: 187.5K Code, 78.3K Data, 265.8K Total

Previous Release:

Non-Debug Version: 96.1K Code, 27.0K Data, 123.1K Total

Debug Version: 185.6K Code, 77.3K Data,
262.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fix a possible fault when using the Connection() operator. Fixes a problem if the parent Field definition for the Connection operator refers to an operation region that does not exist. ACPICA BZ 1064.

AcpiExec: Load of local test tables is now optional. The utility has the capability to load some various tables to test features of ACPICA. However, there are enough of them that the output of the utility became confusing. With this change, only the required local tables are displayed (RSDP, XSDT, etc.) along with the actual tables loaded via the command line specification. This makes the default output simpler and easier to understand. The -el command line option restores the original behavior for testing purposes.

AcpiExec: Added support for overlapping operation regions. This change expands the simulation of operation regions by supporting regions that overlap within the given address space. Supports SystemMemory and SystemIO. ASLTS test suite updated also. David Box. ACPICA BZ 1031.

AcpiExec: Added region handler support for PCI_Config and EC spaces. This allows AcpiExec to simulate these address spaces, similar to the current support for SystemMemory and SystemIO.

Debugger: Added new command to read/write/compare all namespace objects. The command "test objects" will exercise the entire namespace by writing new values to each data object, and ensuring that the write was successful. The original value is then restored and verified.

Debugger: Added the "test predefined" command. This change makes this test public and puts it under the new "test" command. The test executes each and every predefined name within the current namespace.

18 December 2013. Summary of changes for version 20131218:

Global note: The ACPI 5.0A specification was released this month. There are no changes needed for ACPIA since this release of ACPI is an errata/clarification release. The specification is available at acpi.info.

1) ACPIA kernel-resident subsystem:

Added validation of the XSDT root table if it is present. Some older platforms contain an XSDT that is ill-formed or otherwise invalid (such as containing some or all entries that are NULL pointers). This change adds a new function to validate the XSDT before actually using it. If the XSDT is found to be invalid, ACPIA will now automatically fall back to using the RSDT instead. Original implementation by Zhao Yakui. Ported to ACPIA and enhanced by Lv Zheng and Bob Moore.

Added a runtime option to ignore the XSDT and force the use of the RSDT. This change adds a runtime option that will force ACPIA to use the RSDT instead of the XSDT (`AcpiGbl_DoNotUseXsdt`). Although the ACPI spec requires that an XSDT be used instead of the RSDT, the XSDT has been found to be corrupt or ill-formed on some machines. Lv Zheng.

Added a runtime option to favor 32-bit FADT register addresses over the 64-bit addresses. This change adds an option to favor 32-bit FADT addresses when there is a conflict between the 32-bit and 64-bit versions of the same register. The default behavior is to use the 64-bit version in accordance with the ACPI specification. This can now be overridden via the `AcpiGbl_Use32BitFadtAddresses` flag. ACPIA BZ 885. Lv Zheng.

During the change above, the internal "Convert FADT" and "Verify FADT" functions have been merged to simplify the code, making it easier to understand and maintain. ACPIA BZ 933.

Improve exception reporting and handling for GPE block installation. Return an actual status from `AcpiEvGetGpeXruptBlock` and don't clobber the status when exiting `AcpiEvInstallGpeBlock`. ACPIA BZ 1019.

Added helper macros to extract bus/segment numbers from the HEST table. This change adds two macros to extract the encoded bus and segment numbers from the HEST Bus field - `ACPI_HEST_BUS` and `ACPI_HEST_SEGMENT`. Betty Dall <betty.dall@hp.com>

Removed

the unused ACPI_FREE_BUFFER macro. This macro is no longer used by ACPICA. It is not a public macro, so it should have no effect on existing OSV code. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.1K Code, 27.0K Data, 123.1K Total

Debug Version: 185.6K Code, 77.3K Data, 262.9K Total

Previous Release:

Non-Debug Version: 95.9K Code, 27.0K Data, 122.9K Total

Debug Version: 185.1K Code, 77.2K Data, 262.3K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Improved pathname support for emitted External() statements. This change adds full pathname support for external names that have been resolved internally by the inclusion of additional ACPI tables (via the iASL -e option).

Without this change, the disassembler can emit multiple externals for the same object, or it become confused when the Scope() operator is used on an external object. Overall, greatly improves the ability to actually recompile the emitted ASL code when objects a referenced across multiple ACPI tables. Reported by Michael Tsirkin (mst@redhat.com).

Tests/ASLTS: Updated functional control suite to execute with no errors. David Box. Fixed several errors related to the testing of the interpreter slack mode. Lv Zheng.

iASL: Added support to detect names that are declared within a control method, but are unused (these are temporary names that are only valid during the time the method is executing). A remark is issued for these cases. ACPICA BZ 1022.

iASL: Added full support for the DBG2 table. Adds full disassembler, table compiler, and template generator support for the DBG2 table (Debug Port 2 table).

iASL: Added full support for the PCCT table, update the table definition.

Updates the PCCT table definition in the actbl3.h header and adds table compiler and template generator support.

iASL: Added an option to emit only error messages (no warnings/remarks). The -ve option will enable only error messages, warnings and remarks are suppressed. This can simplify debugging when only the errors are important, such as when an ACPI table is disassembled and there are many warnings and remarks -- but only the actual errors are of real interest.

Example ACPICA code (source/tools/examples): Updated the example code so that it builds to an actual working program, not just example code. Added ACPI tables and execution of an example control method in the DSDT. Added makefile support for Unix generation.

15 November 2013. Summary of changes for version 20131115:

This release is available at <https://acpica.org/downloads>

1) ACPICA kernel-resident subsystem:

Resource Manager: Fixed loop termination for the "get AML length" function. The loop previously had an error termination on a NULL resource pointer, which can never happen since the loop simply increments a valid resource pointer. This fix changes the loop to terminate with an error on an invalid end-of-buffer condition. The problem can be seen as an infinite loop by callers to AcpiSetCurrentResources with an invalid or corrupted resource descriptor, or a resource descriptor that is missing an END_TAG descriptor. Reported by Dan Carpenter <dan.carpenter@oracle.com>. Lv Zheng, Bob Moore.

Table unload and ACPICA termination: Delete all attached data objects during namespace node deletion. This fix updates namespace node deletion to delete the entire list of attached objects (attached via AcpiAttachObject) instead of just one of the attached items. ACPICA BZ 1024. Tomasz Nowicki (tomasz.nowicki@linaro.org).

ACPICA termination: Added support to delete all objects attached to the root namespace node. This fix deletes any and all objects that have been attached to the root node via AcpiAttachData. Previously, none of these objects were deleted. Reported by Tomasz Nowicki. ACPICA BZ 1026.

Debug output: Do not emit the function nesting level for the in-kernel build. The nesting level is really only useful during a single-thread execution. Therefore, only enable this output for the AcpiExec utility. Also, only emit the thread ID when executing under AcpiExec (Context switches are still always detected and a message is emitted). ACPICA BZ

972.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 95.9K Code, 27.0K Data, 122.9K Total

Debug Version: 185.1K Code, 77.2K Data, 262.3K Total

Previous Release:

Non-Debug Version: 95.8K Code, 27.0K Data, 122.8K

Total

Debug Version: 185.2K Code, 77.2K Data, 262.4K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec/Unix-OSL: Use `<termios.h>` instead of `<termio.h>`. This is the correct portable POSIX header for terminal control functions.

Disassembler: Fixed control method invocation issues related to the use of the `CondRefOf()` operator. The problem is seen in the disassembly where control method invocations may not be disassembled properly if the control method name has been used previously as an argument to `CondRefOf`. The solution is to not attempt to emit an external declaration for the `CondRefOf` target (it is not necessary in the first place). This prevents disassembler object type confusion. ACPICA BZ 988.

Unix Makefiles: Added an option to disable compiler optimizations and the `_FORTIFY_SOURCE` flag. Some older compilers have problems compiling ACPICA with optimizations (reportedly, gcc 4.4 for example). This change adds a command line option for make (NOOPT) that disables all compiler optimizations and the `_FORTIFY_SOURCE` compiler flag. The default optimization is `-O2` with the `_FORTIFY_SOURCE` flag specified. ACPICA BZ 1034. Lv Zheng, Bob Moore.

Tests/ASLTS: Added options to specify individual test cases and modes. This allows testers running `aslts.sh` to optionally specify individual test modes and test cases. Also added an option to disable the forced generation of the ACPICA tools from source if desired. Lv Zheng.

27 September 2013. Summary of changes for version 20130927:

This release is available at <https://acpica.org/downloads>

1) ACPICA kernel-resident subsystem:

Fixed a problem with store operations to reference objects. This change fixes a problem where a Store operation to an ArgX object that contained a reference to a field object did not complete the automatic dereference and then write to the actual field object. Instead, the object type of the field object was inadvertently changed to match the type of the source operand. The new behavior will actually write to the field object (buffer field or field unit), thus matching the correct ACPI-defined behavior.

Implemented support to allow the host to redefine individual OSL prototypes. This change enables the host to redefine OSL prototypes found in the acpiosxf.h file. This allows the host to implement OSL interfaces with a macro or inlined function. Further, it allows the host to add any additional required modifiers such as __iomem, __init, __exit, etc., as necessary on a per-interface basis. Enables maximum flexibility for the OSL interfaces. Lv Zheng.

Hardcoded the access width for the FADT-defined reset register. The ACPI specification requires the reset register width to be 8 bits. ACPICA now hardcodes the width to 8 and ignores the FADT width value. This provides compatibility with other ACPI implementations that have allowed BIOS code with bad register width values to go unnoticed. Matthew Garrett, Bob Moore, Lv Zheng.

Changed the position/use of the ACPI_PRINTF_LIKE macro. This macro is used in the OSL header (acpiosxf). The change modifies the position of this macro in each instance where it is used (AcpiDebugPrint, etc.) to avoid build issues if the OSL defines the implementation of the interface to be an inline stub function. Lv Zheng.

Deployed a new macro ACPI_EXPORT_SYMBOL_INIT for the main ACPICA initialization interfaces. This change adds a new macro for the main init and terminate external interfaces in order to support hosts that require additional or different processing for these functions. Changed from ACPI_EXPORT_SYMBOL to ACPI_EXPORT_SYMBOL_INIT for these functions. Lv Zheng, Bob Moore.

Cleaned up the memory allocation macros for configurability. In the common case, the ACPI_ALLOCATE and related macros now resolve directly to their

respective AcpiOs* OSL interfaces. Two options:

- 1) The ACPI_ALLOCATE_ZEROED macro uses a simple local implementation by default, unless overridden by the USE_NATIVE_ALLOCATE_ZEROED define.
- 2) For AcpiExec (and for debugging), the macros can optionally be resolved to the local ACPICA interfaces that track each allocation (local tracking is used to immediately detect memory leaks).

Lv Zheng.

Simplified the configuration for ACPI_REDUCED_HARDWARE. Allows the kernel to predefine this macro to either TRUE or FALSE during the system build.

Replaced __FUNCTION__ with __func__ in the gcc-specific header.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 95.8K Code, 27.0K Data, 122.8K Total

Debug Version: 185.2K Code, 77.2K Data, 262.4K Total

Previous Release:

Non-Debug Version: 96.7K Code, 27.1K Data, 123.9K Total

Debug Version:

184.4K Code, 76.8K Data, 261.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented wildcard support for the -e option. This simplifies use when there are many SSDTs that must be included to resolve external method

declarations. ACPICA BZ 1041. Example:

```
iasl -e ssdt*.dat -d dsdt.dat
```

AcpiExec: Add history/line-editing for Unix/Linux systems. This change adds a portable module that implements full history and limited line editing for Unix and Linux systems. It does not use readline() due to portability issues. Instead it uses the POSIX termio interface to put the terminal in raw input mode so that the various special keys can be trapped (such as up/down-arrow for history support and left/right-arrow for line editing). Uses the existing debugger history mechanism. ACPICA BZ 1036.

AcpiXtract: Add support to handle (ignore) "empty" lines containing only one or more spaces. This provides compatible with early or different

versions of the AcpiDump utility.

ACPICA BZ 1044.

AcpiDump: Do not ignore tables that contain only an ACPI table header. Apparently, some BIOSs create SSDTs that contain an ACPI table header but no other data. This change adds support to dump these tables. Any tables shorter than the length of an ACPI table header remain in error (an error message is emitted). Reported by Yi Li.

Debugger: Echo actual command along with the "unknown command" message.

23 August 2013. Summary of changes for version 20130823:

1) ACPICA kernel-resident subsystem:

Implemented support for host-installed System Control Interrupt (SCI) handlers. Certain ACPI functionality requires the host to handle raw SCIs. For example, the "SCI Doorbell" that is defined for memory power state support requires the host device driver to handle SCIs to examine if the doorbell has been activated. Multiple SCI handlers can be installed to allow for future expansion. New external interfaces are AcpiInstallSciHandler, AcpiRemoveSciHandler; see the ACPICA reference for details. Lv Zheng, Bob Moore. ACPICA BZ 1032.

Operation region support: Never locally free the handler "context" pointer. This change removes some dangerous code that attempts to free the handler context pointer in some (rare) circumstances. The owner of the handler owns this pointer and the ACPICA code should never touch it. Although not seen to be an issue in any kernel, it did show up as a problem (fault) under AcpiExec. Also, set the internal storage field for the context pointer to zero when the region is deactivated, simply for sanity. David Box. ACPICA BZ 1039.

AcpiRead: On error, do not modify the return value target location. If an error happens in the middle of a split 32/32 64-bit I/O operation, do not modify the target of the return value pointer. Makes the code consistent with the rest of ACPICA. Bjorn Helgaas.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.7K Code, 27.1K Data, 123.9K Total

Debug Version: 184.4K Code, 76.8K Data, 261.2K Total
Previous Release:
Non-Debug Version: 96.2K Code, 27.1K Data, 123.3K Total
Debug Version: 185.4K Code, 77.1K Data, 262.5K Total

2) iASL Compiler/Disassembler and Tools:

AcpiDump: Implemented several new features and fixed some problems:

- 1) Added support to dump the RSDP, RSDT, and XSDT tables.
- 2) Added support for multiple table instances (SSDT, UEFI).
- 3) Added option to dump "customized" (overridden) tables (-c).
- 4) Fixed a problem where some table filenames were improperly constructed.
- 5) Improved some error messages, removed some unnecessary messages.

iASL: Implemented additional support for disassembly of ACPI tables that contain invocations of external control methods. The `-fe<file>` option allows the import of a file that specifies the external methods along with the required number of arguments for each -- allowing for the correct disassembly of the table. This is a workaround for a limitation of AML code where the disassembler often cannot determine the number of arguments required for an external control method and generates incorrect ASL code. See the iASL reference for details. ACPICA BZ 1030.

Debugger: Implemented a new command (`paths`) that displays the full pathnames (`namepaths`) and object types of all objects in the namespace. This is an alternative to the `namespace` command.

Debugger: Implemented a new command (`sci`) that invokes the SCI dispatch mechanism and any installed handlers.

iASL: Fixed a possible segfault for "too many parent prefixes" condition. This can occur if there are too many parent prefixes in a namepath (for example, `^^^^PCI0.ECRD`). ACPICA BZ 1035.

Application OSLs: Set the return value for the PCI read functions. These functions simply return `AE_OK`, but should set the return value to zero also. This change implements this. ACPICA BZ 1038.

Debugger: Prevent possible command line buffer overflow. Increase the size of a couple of the debugger line buffers, and ensure that overflow cannot happen. ACPICA BZ 1037.

iASL: Changed to abort immediately on serious errors during the parsing phase. Due to the nature of ASL, there is no point in attempting to

compile these types of errors, and they typically end up causing a cascade of hundreds of errors which obscure the original problem.

25 July 2013. Summary of changes for version 20130725:

1) ACPICA kernel-resident subsystem:

Fixed a problem with the DereferOf operator where references to FieldUnits and BufferFields incorrectly returned the parent object, not the actual value of the object. After this change, a dereference of a FieldUnit reference results in a read operation on the field to get the value, and likewise, the appropriate BufferField value is extracted from the target buffer.

Fixed a problem where the _WAK method could cause a fault under these circumstances: 1) Interpreter slack mode was not enabled, and 2) the _WAK method returned no value. The problem is rarely seen because most kernels run ACPICA in slack mode.

For the DereferOf operator, a fatal error now results if an attempt is made to dereference a reference (created by the Index operator) to a NULL package element. Provides compatibility with other ACPI implementations, and this behavior will be added to a future version of the ACPI specification.

The ACPI Power Management Timer (defined in the FADT) is now optional. This provides compatibility with other ACPI implementations and will appear in the next version of the ACPI specification. If there is no PM Timer on the platform, AcpiGetTimer returns AE_SUPPORT. An address of zero in the FADT indicates no PM timer.

Implemented

a new interface for _OSI support, AcpiUpdateInterfaces. This allows the host to globally enable/disable all vendor strings, all feature strings, or both. Intended to be primarily used for debugging purposes only. Lv Zheng.

Expose the collected _OSI data to the host via a global variable. This data tracks the highest level vendor ID that has been invoked by the BIOS so that the host (and potentially ACPICA itself) can change behaviors based upon the age of the BIOS.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.2K Code, 27.1K Data, 123.3K Total

Debug Version: 184.4K Code, 76.8K Data, 261.2K Total

Previous Release:

Non-Debug Version: 95.9K Code, 26.9K Data, 122.8K Total

Debug Version: 184.1K Code, 76.7K

Data, 260.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Created the following enhancements for the -so option (create offset table):

- 1) Add offsets for the last nameseg in each namepath for every supported object type
- 2) Add support for Processor, Device, Thermal Zone, and Scope objects
- 3) Add the actual AML opcode for the parent object of every supported object type
- 4) Add support for the ZERO/ONE/ONES AML opcodes for integer objects

Disassembler: Emit all unresolved external symbols in a single block.

These are external references to control methods that could not be resolved, and thus, the disassembler had to make a guess at the number of arguments to parse.

iASL: The argument to the -T option (create table template) is now optional. If not specified, the default table is a DSDT, typically the most common case.

26 June 2013. Summary of changes for version 20130626:

1) ACPICA kernel-resident subsystem:

Fixed an issue

with runtime repair of the _CST object. Null or invalid elements were not always removed properly. Lv Zheng.

Removed an arbitrary restriction of 256 GPEs per GPE block (such as the FADT-defined GPE0 and GPE1). For GPE0, GPE1, and each GPE Block Device, the maximum number of GPEs is 1016. Use of multiple GPE block devices makes the system-wide number of GPEs essentially unlimited.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 95.9K Code, 26.9K Data, 122.8K Total

Debug Version: 184.1K Code, 76.7K Data, 260.8K Total

Previous Release:

Non-Debug Version: 96.0K Code, 27.0K Data, 123.0K Total

Debug Version: 184.1K Code, 76.8K Data, 260.9K Total

2) iASL Compiler/Disassembler and Tools:

Portable AcpiDump: Implemented

full support for the Linux and FreeBSD

hosts. Now supports Linux, FreeBSD, and Windows.

Disassembler: Added some missing types for the HEST and EINJ tables: "Set Error Type With Address", "CMCI", "MCE", and "Flush Cacheline".

iASL/Preprocessor: Implemented full support for nested

#if/#else/#elif/#endif blocks. Allows arbitrary depth of nested blocks.

Disassembler: Expanded maximum output string length to 64K. Was 256 bytes max. The original purpose of this constraint was to limit the amount of debug output. However, the string function in question (UtPrintString) is now used for the disassembler also, where 256 bytes is insufficient.

Reported by RehabMan@GitHub.

iASL/DataTables: Fixed some problems and issues with compilation of DMAR tables. ACPICA BZ 999. Lv Zheng.

iASL: Fixed a couple of error exit issues that could result in a "Could not delete <file>" message during ASL compilation.

AcpiDump: Allow "FADT" and "MADT" as valid table signatures, even though the actual

signatures for these tables are "FACP" and "APIC", respectively.

AcpiDump: Added support for multiple UEFI tables. Only SSDT and UEFI tables are allowed to have multiple instances.

17 May 2013. Summary of changes for version 20130517:

1) ACPICA kernel-resident subsystem:

Fixed a regression introduced in version 20130328 for _INI methods. This change fixes a problem introduced in 20130328 where _INI methods are no

longer executed properly because of a memory block that was not initialized correctly. ACPICA BZ 1016. Tomasz Nowicki <tomasz.nowicki@linaro.org>.

Fixed a possible problem with the new extended sleep registers in the ACPI 5.0 FADT. Do not use these registers (even if populated) unless the HW-reduced bit is set in the FADT (as per the ACPI specification). ACPICA BZ 1020. Lv Zheng.

Implemented return value repair code for _CST predefined objects: Sort the list and detect/remove invalid entries. ACPICA BZ 890. Lv Zheng.

Implemented a debug-only option to disable loading of SSDTs from the RSDT/XSDT during ACPICA initialization. This can be useful for debugging ACPI problems on some machines. Set AcpiGbl_DisableSsdTableLoad in acglobal.h - ACPICA BZ 1005. Lv Zheng.

Fixed some issues in the ACPICA initialization and termination code: Tomasz Nowicki <tomasz.nowicki@linaro.org>

- 1) Clear events initialized flag upon event component termination. ACPICA BZ 1013.
- 2) Fixed a possible memory leak in GPE init error path. ACPICA BZ 1018.
- 3) Delete global lock pending lock during termination. ACPICA BZ 1012.
- 4) Clear debug buffer global on termination to prevent possible multiple delete. ACPICA BZ 1010.

Standardized all switch() blocks across the entire source base. After many years, different formatting for switch() had crept in. This change makes the formatting of every switch block identical. ACPICA BZ 997. Chao Guan.

Split some files to enhance ACPICA modularity and configurability:

- 1) Split buffer dump routines into utilities/utbuffer.c
- 2) Split internal error message routines into utilities/uterror.c
- 3) Split table print utilities into tables/tbprint.c
- 4) Split iASL command-line option processing into asloptions.c

Makefile enhancements:

- 1) Support for all new files above.
- 2) Abort make on errors from any subcomponent. Chao Guan.
- 3) Add build support for Apple Mac OS X. Liang Qi.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 96.0K Code, 27.0K Data, 123.0K Total

Debug Version: 184.1K Code, 76.8K Data, 260.9K Total

Previous Release:

Non-Debug Version: 95.6K Code, 26.8K Data, 122.4K Total

Debug Version: 183.5K Code, 76.6K Data, 260.1K Total

2) iASL Compiler/Disassembler and Tools:

New utility: Implemented

an easily portable version of the acpidump utility to extract ACPI tables from the system (or a file) in an ASCII hex

dump format. The top-level code implements the various command line options, file I/O, and table dump routines. To port to a new host, only three functions need to be implemented to get tables -- since this functionality is OS-dependent. See the tools/acpidump/apmain.c module and the ACPICA reference for porting instructions. ACPICA BZ 859. Notes:

- 1) The Windows version obtains the ACPI tables from the Registry.
- 2) The Linux version is under development.
- 3) Other hosts - If an OS-dependent module is submitted, it will be distributed with ACPICA.

iASL: Fixed a regression for -D preprocessor option (define symbol). A restructuring/change to the initialization sequence caused this option to no longer work properly.

iASL: Implemented a mechanism to disable specific warnings and remarks. Adds a new command line option, "-vw <messageid>" as well as "#pragma

disable <messageid>". ACPICA BZ 989. Chao Guan, Bob Moore.

iASL: Fix for too-strict package object validation. The package object validation for return values from the predefined names is a bit too strict, it does not allow names references within the package (which will be resolved at runtime.) These types of references cannot be validated at compile time. This change ignores named references within package objects for names that return or define static packages.

Debugger: Fixed the 80-character command line limitation for the History command. Now allows lines of arbitrary length. ACPICA BZ 1000. Chao Guan.

iASL: Added control method and package support for the -so option (generates AML offset table for BIOS support.)

iASL: issue a remark if a non-serialized method creates named objects. If a thread blocks within the method for any reason, and another thread enters the method, the method will fail because an attempt will be made to create the same (named) object twice.

In this case, issue a remark that the method should be marked serialized. NOTE: may become a warning later. ACPICA BZ 909.

18 April 2013. Summary of changes for version 20130418:

1) ACPICA kernel-resident subsystem:

Fixed a possible buffer overrun during some rare but specific field unit read operations. This overrun can only happen if the DSDT version is 1 -- meaning that all AML integers are 32 bits -- and the field length is between 33 and 55 bits long. During the read, an internal buffer object is created for the field unit because the field is larger than an integer (32 bits). However, in this case, the buffer will be incorrectly written beyond the end because the buffer length is less than the internal minimum of 64 bits (8 bytes) long. The buffer will be either 5, 6, or 7 bytes long, but a full 8 bytes will be written.

Updated the Embedded Controller "orphan" _REG method support. This refers to _REG methods under the EC device that have no corresponding operation region. This is allowed by the ACPI specification. This update removes a dependency on the existence an EC DT table. It will execute an orphan _REG method as long as the operation region handler for the EC is installed at the EC device node and not the namespace root. Rui Zhang (original update), Bob Moore (update/integrate).

Implemented run-time argument typechecking for all predefined ACPI names (_STA, _BIF, etc.) This change performs object typechecking on all incoming arguments for all predefined names executed via AcpiEvaluateObject. This ensures that ACPI-related device drivers are passing correct object types as well as the correct number of arguments (therefore identifying any issues immediately). Also, the ASL/namespace definition of the predefined name is checked against the ACPI specification for the proper argument count. Adds one new file, nsarguments.c

Changed an exception code for the ASL UnLoad() operator. Changed

the

exception code for the case where the input DdbHandle is invalid, from AE_BAD_PARAMETER to the more appropriate AE_AML_OPERAND_TYPE.

Unix/Linux makefiles: Removed the use of the -O2 optimization flag in the global makefile. The use of this flag causes compiler errors on earlier versions of GCC, so it has been removed for compatibility.

Miscellaneous cleanup:

- 1) Removed some unused/obsolete macros
- 2) Fixed a possible memory leak in the _OSI support
- 3) Removed an unused variable in the predefined name support
- 4) Windows OSL: remove obsolete reference to a memory list field

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Current Release:

Non-Debug Version: 95.2K Code, 26.4K Data, 121.6K Total

Debug Version: 183.0K Code, 76.0K Data, 259.0K Total

Previous

Release:

Non-Debug Version: 95.6K Code, 26.8K Data, 122.4K Total

Debug Version: 183.5K Code, 76.6K Data, 260.1K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Added installation of a handler for the SystemCMOS address space. This prevents control method abort if a method accesses this space.

AcpiExec: Added support for multiple EC devices, and now install EC operation region handler(s) at the actual EC device instead of the namespace root. This reflects the typical behavior of host operating systems.

AcpiExec: Updated to ensure that all operation region handlers are installed before the _REG methods are executed. This prevents a _REG method from aborting if it accesses an address space has no handler.

AcpiExec installs a handler for every possible address space.

Debugger: Enhanced the "handlers" command to display non-root handlers. This change enhances the handlers command to display handlers associated with individual devices throughout the

namespace, in addition to the currently supported display of handlers associated with the root namespace node.

ASL Test Suite: Several test suite errors have been identified and resolved, reducing the total error count during execution. Chao Guan.

28 March 2013. Summary of changes for version 20130328:

1) ACPICA kernel-resident subsystem:

Fixed several possible race conditions with the internal object reference counting mechanism. Some of the external ACPICA interfaces update object reference counts without holding the interpreter or namespace lock. This change adds a spinlock to protect reference count updates on the internal ACPICA objects. Reported by and with assistance from Andriy Gapon (avg@FreeBSD.org).

FADT support: Removed an extraneous warning for very large GPE register sets. This change removes a size mismatch warning if the legacy length field for a GPE register set is larger than the 64-bit GAS structure can accommodate.

GPE register sets can be larger than the 255-bit width limitation of the GAS structure. Linn Crosetto (linn@hp.com).

_OSI Support: handle any errors from AcpiOsAcquireMutex. Check for error return from this interface. Handles a possible timeout case if ACPI_WAIT_FOREVER is modified by the host to be a value less than "forever". Jung-uk Kim.

Predefined name support: Add allowed/required argument type information to the master predefined info table. This change adds the infrastructure to enable typechecking on incoming arguments for all predefined methods/objects. It does not actually contain the code that will fully utilize this information, this is still under development. Also condenses some duplicate code for the predefined names into a new module, utilities/utpredef.c

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 95.0K Code, 25.9K Data, 120.9K Total
Debug Version: 182.9K Code, 75.6K Data, 258.5K Total
Current Release:
Non-Debug Version: 95.2K Code, 26.4K Data, 121.6K Total
Debug Version: 183.0K Code, 76.0K Data, 259.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented a new option to simplify the development of ACPI-related

BIOS code. Adds support for a new "offset table" output file. The -so option will create a C table containing the AML table offsets of various named objects in the namespace so that BIOS code can modify them easily at

boot time. This can simplify BIOS runtime code by eliminating expensive searches for "magic values", enhancing boot times and adding greater reliability. With assistance from Lee Hamel.

iASL: Allow additional predefined names to return zero-length packages.

Now, all predefined names that are defined by the ACPI specification to

return a "variable-length package of packages" are allowed to return a zero length top-level package. This allows the BIOS to tell the host that the requested feature is not supported, and supports existing BIOS/ASL code and practices.

iASL: Changed the "result not used" warning to an error. This is the case where an ASL operator is effectively a NOOP because the result of the operation is not stored anywhere. For example:

```
Add (4, Local0)
```

There is no target (missing 3rd argument), nor is the function return value used. This is potentially a very serious problem -- since the code was probably intended to do something, but for whatever reason, the value was not stored. Therefore, this issue has been upgraded from a warning to an error.

AcpiHelp: Added allowable/required argument types to the predefined names info display. This feature utilizes the recent update to the predefined names table (above).

14 February

2013. Summary of changes for version 20130214:

1) ACPICA Kernel-resident Subsystem:

Fixed a possible regression on some hosts: Reinstated the safe return

macros (return_ACPI_STATUS, etc.) that ensure that the argument is evaluated only once. Although these macros are not needed for the ACPICA code itself, they are often used by ACPI-related host device drivers where the safe feature may be necessary.

Fixed several issues related to the ACPI 5.0 reduced hardware support (SOC): Now ensure that if the platform declares itself as hardware-reduced via the FADT, the following functions become NOOPs (and always return AE_OK) because ACPI is always enabled by definition on these machines:

- AcpiEnable
- AcpiDisable
- AcpiHwGetMode
- AcpiHwSetMode

Dynamic Object Repair: Implemented additional runtime repairs for predefined name return values. Both of these repairs can simplify code in the related device drivers that invoke these methods:

- 1) For the _STR and _MLS names, automatically repair/convert an ASCII string to a Unicode buffer.
 - 2) For the _CRS, _PRS, and _DMA names, return a resource descriptor with a lone end tag descriptor in the following cases: A Return(0) was executed, a null buffer was returned, or no object at all was returned (non-slack mode only). Adds a new file, nsconvert.c
- ACPICA BZ 998. Bob Moore, Lv Zheng.

Resource Manager: Added additional code to prevent possible infinite loops while traversing corrupted or ill-formed resource template buffers. Check for zero-length resource descriptors in all code that loops through resource templates (the length field is used to index through the template). This change also hardens the external AcpiWalkResources and AcpiWalkResourceBuffer interfaces.

Local Cache Manager: Enhanced the main data structure to eliminate an unnecessary mechanism to access the next object in the list. Actually provides a small performance enhancement for hosts that use the local ACPICA cache manager. Jung-uk Kim.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 94.5K Code, 25.4K Data, 119.9K Total

Debug Version: 182.3K Code, 75.0K Data, 257.3K Total

Current Release:

Non-Debug Version: 95.0K Code, 25.9K Data, 120.9K Total

Debug Version: 182.9K Code, 75.6K Data, 258.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Fixed several issues with the definition of the ACPI 5.0 RASF table (RAS Feature Table). This change incorporates late changes that were made to the ACPI 5.0 specification.

iASL/Disassembler: Added full support for the following new ACPI tables:

- 1) The MTMR table (MID Timer Table)
- 2) The VRTC table (Virtual Real Time Clock Table).

Includes header file, disassembler, table compiler, and template support for both tables.

iASL: Implemented compile-time validation of package objects returned by predefined names. This new feature validates static package objects returned by the various predefined names defined to return packages. Both object types and package lengths are validated, for both parent packages and sub-packages, if any. The code is similar in structure and behavior to the runtime repair mechanism within the AML interpreter and uses the existing predefined name information table. Adds a new file, aslprepkg.c. ACPICA BZ 938.

iASL: Implemented auto-detection of binary ACPI tables for disassembly. This feature detects a binary file with a valid ACPI table header and invokes the disassembler automatically. Eliminates the need to specifically invoke the disassembler with the -d option. ACPICA BZ 862.

iASL/Disassembler: Added several warnings for the case where there are unresolved control methods during the disassembly. This can potentially cause errors when the output file is compiled, because the disassembler assumes zero method arguments in these cases (it cannot determine the actual number of arguments without resolution/definition of the method).

Debugger: Added support to display all resources with a single command. Invocation of the resources command with no arguments will now display all resources within the current namespace.

AcpiHelp: Added descriptive text for each ACPICA exception code displayed via the -e option.

17 January 2013. Summary of changes for version 20130117:

1) ACPICA Kernel-resident Subsystem:

Updated the AcpiGetSleepTypeData interface: Allow the _Sx methods to return either 1 or 2 integers. Although the ACPI spec defines the _Sx objects to return a package containing one integer, most BIOS code returns two integers and the previous code reflects that. However, we also need to support BIOS code that actually implements to the ACPI spec, and this change reflects this.

Fixed two issues with the ACPI_DEBUG_PRINT macros:

- 1) Added the ACPI_DO_WHILE macro to the main DEBUG_PRINT helper macro for C compilers that require this support.
- 2) Renamed the internal ACPI_DEBUG macro to ACPI_DO_DEBUG_PRINT since ACPI_DEBUG is already used by many of the various hosts.

Updated all ACPICA copyrights and signons to 2013. Added the 2013 copyright to all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, all ACPICA utilities, and the test suites.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 94.5K Code, 25.5K Data, 120.0K Total

Debug Version: 182.2K Code, 74.9K Data, 257.1K Total

Current Release:

Non-Debug Version: 94.5K Code, 25.4K Data, 119.9K Total

Debug Version: 182.3K Code, 75.0K Data, 257.3K Total

2) iASL Compiler/Disassembler and Tools:

Generic Unix OSL: Use a buffer to eliminate multiple vfprintf(s) and prevent a possible fault on some hosts. Some C libraries modify the arg pointer parameter to vfprintf making it difficult to call it twice in the AcpiOsVprintf function. Use a local buffer to workaround this issue. This

does not affect the Windows OSL since the Win C library does not modify the arg pointer. Chao Guan, Bob Moore.

iASL: Fixed a possible infinite loop when the maximum error count is reached. If an output file other than the .AML file is specified (such as a listing file), and the maximum number of errors is reached, do not attempt to flush data to the output file(s) as the compiler is aborting. This can cause an infinite loop as the max error count code essentially keeps calling itself.

iASL/Disassembler:

Added an option (-in) to ignore NOOP opcodes/operators.

Implemented for both the compiler and the disassembler. Often, the NOOP opcode is used as padding for packages that are changed dynamically by the

BIOS. When disassembled and recompiled, these NOOPs will cause syntax errors. This option causes the disassembler to ignore all NOOP opcodes (0xA3), and it also causes the compiler to ignore all ASL source code NOOP statements as well.

Debugger: Enhanced the Sleep command to execute all sleep states. This change allows Sleep to be invoked with no arguments and causes the debugger to execute all of the sleep states, 0-5, automatically.

20 December 2012. Summary of changes for version 20121220:

1) ACPICA Kernel-resident Subsystem:

Implemented a new interface, AcpiWalkResourceBuffer. This interface is an alternate entry point for AcpiWalkResources and improves the usability of the resource manager by accepting as input a buffer containing the output of either a _CRS, _PRS, or _AEI method. The key functionality is that the input buffer is not deleted by this interface so that it can be used by the host later. See the ACPICA reference for details.

Interpreter: Add a warning if a 64-bit constant appears in a 32-bit table (DSDT version < 2). The constant will be truncated and this warning reflects that behavior.

Resource Manager: Add support for the new ACPI 5.0 wake bit in the IRQ, ExtendedInterrupt, and GpioInt descriptors. This change adds support to both get and set the new wake bit in these descriptors, separately from the existing share bit. Reported by Aaron Lu.

Interpreter: Fix Store() when an implicit conversion is not possible. For example, in the cases such as a store of a string to an existing package object, implement the store as a CopyObject(). This is a small departure from the ACPI specification which states that the control method should be aborted in this case. However, the ASLTS suite depends on this behavior.

Performance improvement for the various FUNCTION_TRACE and DEBUG_PRINT macros: check if debug output is currently enabled as soon as possible to minimize performance impact if debug is in fact not enabled.

Source code restructuring: Cleanup to improve modularity. The following new files have been added: dbconvert.c, evhandler.c, nsprepkg.c, psopinfo.c, psubject.c, rsdumpinfo.c, utstring.c, and utownerid.c. Associated makefiles and project files have been updated.

Changed an exception code for LoadTable operator. For the case where one of the input strings is too long, change the returned exception code from AE_BAD_PARAMETER to AE_AML_STRING_LIMIT.

Fixed a possible memory leak in dispatcher error path. On error, delete the mutex object created during method mutex creation. Reported by tim.gardner@canonical.com.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler.

The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 94.3K Code, 25.3K Data, 119.6K Total

Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

Current Release:

Non-Debug Version: 94.5K Code, 25.5K Data, 120.0K Total

Debug Version: 182.2K Code, 74.9K Data, 257.1K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Disallow a method call as argument to the ObjectType ASL operator. This change tracks an errata to the ACPI 5.0 document. The AML grammar will not allow the interpreter to differentiate between a method and a method invocation when these are used as an argument to the ObjectType operator. The ACPI specification change is to disallow a method invocation (UserTerm) for the ObjectType operator.

Finish support for the TPM2 and CSRT tables in the headers, table compiler, and disassembler.

Unix user-space OSL: Fix a problem with WaitSemaphore where the timeout always expires immediately if the semaphore is not available. The original code was using a relative-time timeout, but sem_timedwait requires the use of an absolute time.

iASL: Added a remark if the Timer() operator is used within a 32-bit table. This operator returns a 64-bit time value that will be truncated within a 32-bit table.

iASL Source code restructuring: Cleanup to improve modularity. The following new files have been added: aslhex.c, aslxref.c, aslnamesp.c, aslmethod.c, and aslfileio.c. Associated makefiles and project files have been updated.

14 November 2012. Summary of changes for version 20121114:

1) ACPICA Kernel-resident Subsystem:

Implemented a performance enhancement for ACPI/AML Package objects. This change greatly increases the performance of Package objects within the interpreter. It changes the processing of reference counts for packages by optimizing for the most common case where the package sub-objects are either Integers, Strings, or Buffers. Increases the overall performance of the ASLTS test suite by 1.5X (Increases the Slack Mode performance by 2X.)

Chao Guan. ACPICA BZ 943.

Implemented and deployed common macros to extract flag bits from resource descriptors. Improves readability and maintainability of the code. Fixes a problem with the UART serial bus descriptor for the number of data bits flags (was incorrectly 2 bits, should be 3).

Enhanced the ACPI_GETx and ACPI_SETx macros. Improved the implementation of the macros and changed the SETx macros to the style of (destination, source). Also added ACPI_CASTx companion macros. Lv Zheng.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.9K
Code, 25.2K Data, 119.1K Total

Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

Current Release:

Non-Debug Version: 94.3K Code, 25.3K Data, 119.6K Total

Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Added the new ACPI 5.0 interrupt sharing flags. This change adds the ShareAndWake and ExclusiveAndWake flags which were added to the Irq, Interrupt, and Gpio resource descriptors in ACPI 5.0. ACPICA BZ 986.

Disassembler: Fixed a problem with external declaration generation. Fixes a problem where an incorrect pathname could be generated for an external declaration if the original reference to the object includes leading carats (^). ACPICA BZ 984.

Debugger: Completed a major update for the Disassemble<method> command. This command was out-of-date and did not properly disassemble control methods that had any reasonable complexity. This fix brings the command up to the same level as the rest of the disassembler. Adds one new file, dmdeferred.c, which is existing code that is now common with the main disassembler and the debugger disassemble command. ACPICA MZ 978.

iASL: Moved the parser entry prototype to avoid a duplicate declaration. Newer versions of Bison emit this prototype, so moved the prototype out of the iASL header to where it is actually used in order to avoid a duplicate declaration.

iASL/Tools: Standardized use of the stream I/O functions:

- 1) Ensure check for I/O error after every fopen/fread/fwrite
- 2) Ensure proper order of size/count arguments for fread/fwrite
- 3) Use test of (Actual != Requested) after all fwrite, and most fread
- 4) Standardize I/O error messages

Improves reliability and maintainability of the code. Bob Moore, Lv

Zheng.
ACPICA BZ 981.

Disassembler: Prevent duplicate External() statements. During generation of external statements, detect similar pathnames that are actually duplicates such as these:

External (\ABCD)

External

(ABCD)

Remove all leading '\' characters from pathnames during the external statement generation so that duplicates will be detected and tossed.

ACPICA BZ 985.

Tools: Replace low-level I/O with stream I/O functions. Replace open/read/write/close with the stream I/O equivalents fopen/fread/fwrite/fclose for portability and performance. Lv Zheng, Bob Moore.

AcpiBin: Fix for the dump-to-hex function. Now correctly output the table name header so that AcpiXtract recognizes the output file/table.

iASL: Remove obsolete -2 option flag. Originally intended to force the compiler/disassembler into an ACPI 2.0 mode, this was never implemented and the entire concept is now obsolete.

18 October 2012. Summary of changes for version 20121018:

1) ACPICA Kernel-resident Subsystem:

Updated support for the ACPI 5.0 MPST table. Fixes some problems introduced by late changes to the table as it was added to the ACPI 5.0 specification. Includes header, disassembler, and data table compiler support as well as a new version of the MPST template.

AcpiGetObjectInfo: Enhanced the device object support to include the ACPI 5.0 _SUB method. Now calls _SUB in addition to the other PNP-related ID methods: _HID, _CID, and _UID.

Changed ACPI_DEVICE_ID to ACPI_PNP_DEVICE_ID. Also changed ACPI_DEVICE_ID_LIST to ACPI_PNP_DEVICE_ID_LIST. These changes prevent name collisions on hosts that reserve the *_DEVICE_ID (or *DeviceId) names for their various drivers. Affects the AcpiGetObjectInfo external interface, and other internal interfaces as well.

Added and deployed a new macro for ACPI_NAME management: ACPI_MOVE_NAME.

This macro resolves to a simple 32-bit move of the 4-character ACPI_NAME on machines that support non-aligned transfers. Optimizes for this case rather than using a strncpy. With assistance from Zheng Lv.

Resource Manager: Small fix for buffer size calculation. Fixed a one byte error in the output buffer calculation.

Feng Tang. ACPICA BZ 849.

Added a new debug print message for AML mutex objects that are force-released. At control method termination, any currently acquired mutex objects are force-released. Adds a new debug-only message for each one that is released.

Audited/updated all ACPICA return macros and the function debug depth counter: 1) Ensure that all functions that use the various TRACE macros also use the appropriate ACPICA return macros. 2) Ensure that all normal return statements surround the return expression (value) with parens to ensure consistency across the ACPICA code base. Guan Chao, Tang Feng, Zheng Lv, Bob Moore. ACPICA Bugzilla 972.

Global source code changes/maintenance: All extra lines at the start and end of each source file have been removed for consistency. Also, within comments, all new sentences start with a single space instead of a double space, again for consistency across the code base.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.7K Code, 25.3K Data, 119.0K Total

Debug Version: 175.0K Code, 74.4K Data, 249.4K Total

Current Release:

Non-Debug Version: 93.9K Code, 25.2K Data, 119.1K Total

Debug Version: 175.5K Code, 74.5K Data, 250.0K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Improved the algorithm used for memory leak/corruption detection. Added some intelligence to the code that maintains the global list of allocated memory. The list is now ordered by allocated memory address, significantly improving performance. When running AcpiExec on the ASLTS test suite, speed improvements of 3X to 5X are seen, depending on the platform and/or the environment. Note, this performance enhancement affects the AcpiExec utility only, not

the kernel-resident
ACPICA code.

Enhanced error reporting for invalid AML opcodes and bad ACPI_NAMES. For the disassembler, dump the 48 bytes surrounding the invalid opcode. Fix incorrect table offset reported for invalid opcodes. Report the original 32-bit value for bad ACPI_NAMES (as well as the repaired name.)

Disassembler: Enhanced the -vt option to emit the binary table data in hex format to assist with debugging.

Fixed a potential filename buffer overflow in osunixdir.c. Increased the size of file structure. Colin Ian King.

13 September 2012. Summary of changes for version 20120913:

1) ACPICA Kernel-resident Subsystem:

ACPI 5.0: Added two new notify types for the Hardware Error Notification Structure within the Hardware Error Source Table (HEST) table -- CMCI(5) and MCE(6).

Table Manager: Merged/removed duplicate code in the root table resize functions. One function is external, the other is internal. Lv Zheng, ACPICA

BZ 846.

Makefiles: Completely removed the obsolete "Linux" makefiles under acpica/generate/linux. These makefiles are obsolete and have been replaced by the generic unix makefiles under acpica/generate/unix.

Makefiles: Ensure that binary files always copied properly. Minor rule change to ensure that the final binary output files are always copied up to the appropriate binary directory (bin32 or bin64.)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.8K Code, 25.3K Data, 119.1K Total

Debug Version: 175.7K Code, 74.8K Data, 250.5K Total

Current Release:

Non-Debug Version: 93.7K Code, 25.3K Data, 119.0K Total

Debug Version: 175.0K Code, 74.4K Data, 249.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler:

Fixed a possible fault during the disassembly of resource descriptors when a second parse is required because of the invocation of external control methods within the table. With assistance from adq@lidskialf.net. ACPICA BZ 976.

iASL: Fixed a namepath optimization problem. An error can occur if the parse node that contains the namepath to be optimized does not have a parent node that is a named object. This change fixes the problem.

iASL: Fixed a regression where the AML file is not deleted on errors. The AML output file should be deleted if there are any errors during the compiler. The only exception is if the -f (force output) option is used. ACPICA BZ 974.

iASL: Added a feature to automatically increase internal line buffer sizes. Via realloc(), automatically increase the internal line buffer sizes as necessary to support very long source code lines. The current version of the preprocessor requires a buffer long enough to contain full source code lines. This change increases the line buffer(s) if the input lines go beyond the current buffer size. This eliminates errors that occurred when a source code line was longer than the buffer.

iASL: Fixed a problem with constant folding in method declarations. The SyncLevel term is a ByteConstExpr, and incorrect code would be generated if a Type3 opcode was used.

Debugger: Improved command help support. For incorrect argument count, display full help for the command. For help command itself, allow an argument to specify a command.

Test Suites: Several bug fixes for the ASLTS suite reduces the number of errors during execution of the suite. Guan Chao.

16 August 2012. Summary of changes for version 20120816:

1) ACPICA Kernel-resident Subsystem:

Removed all use of the deprecated `_GTS` and `_BFS` predefined methods. The `_GTS` (Going To Sleep) and `_BFS` (Back From Sleep) methods are essentially deprecated and will probably be removed from the ACPI specification.

Windows

does not invoke them, and reportedly never will. The final nail in the coffin

is that the ACPI specification states that these methods must be run with interrupts off, which is not going to happen in a kernel interpreter.

Note:

Linux has removed all use of the methods also. It was discovered that invoking these functions caused failures on some machines, probably because

they were never tested since Windows does not call them. Affects two external

interfaces, `AcpiEnterSleepState` and `AcpiLeaveSleepStatePrep`. Tang Feng. ACPICA BZ 969.

Implemented support for complex bit-packed buffers returned from the `_PLD` (Physical Location of Device) predefined method. Adds a new external interface, `AcpiDecodePldBuffer` that parses the buffer into a more usable C

structure. Note: C Bitfields cannot be used for this type of predefined structure since the memory layout of individual bitfields is not defined by

the C language. In addition, there are endian concerns where a compiler

will

change the bitfield ordering based on the machine type. The new ACPICA interface eliminates these issues, and should be called after `_PLD` is executed. ACPICA BZ 954.

Implemented a change to allow a scope change to root (via "Scope (\)")

during
execution of module-level ASL code (code that is executed at table load
time.) Lin Ming.

Added the Windows8/Server2012 string for the _OSI method. This change
adds

a
new _OSI string, "Windows 2012" for both Windows 8 and Windows Server
2012.

Added header support for the new ACPI tables DBG2 (Debug Port Table Type
2)
and CSRT (Core System Resource Table).

Added struct header support for the _FDE, _GRT, _GTM, and _SRT predefined
names. This simplifies access to the buffers returned by these predefined
names. Adds a new file, include/acbuffer.h. ACPICA BZ 956.

GPE support: Removed an extraneous parameter from the various low-level
internal GPE functions. Tang Feng.

Removed the linux makefiles
from the unix packages. The generate/linux
makefiles are obsolete and have been removed from the unix tarball
release
packages. The replacement makefiles are under generate/unix, and there is
a
top-level makefile under the main acpica directory. ACPICA BZ 967, 912.

Updates for Unix makefiles:

- 1) Add -D_FORTIFY_SOURCE=2 for gcc generation. Arjan van de Ven.
- 2) Update linker flags (move to end of command line) for AcpiExec
utility.

Guan Chao.

Split ACPICA initialization functions to new file, utxfinit.c. Split from
utxface.c to improve modularity and reduce file size.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:

Non-Debug Version: 93.5K Code, 25.3K Data, 118.8K Total

Debug Version: 173.7K Code, 74.0K Data, 247.7K Total

Current

Release:

Non-Debug Version: 93.8K Code, 25.3K Data, 119.1K Total

Debug Version: 175.7K Code, 74.8K Data, 250.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with constant folding for fixed-length constant expressions. The constant-folding code was not being invoked for constant expressions that allow the use of type 3/4/5 opcodes to generate constants

for expressions such as ByteConstExpr, WordConstExpr, etc. This could result

in the generation of invalid AML bytecode. ACPICA BZ 970.

iASL: Fixed a generation issue on newer versions of Bison. Newer versions apparently automatically emit some of the necessary externals. This change

handles these versions in order to eliminate generation warnings.

Disassembler: Added support to decode the DBG2 and CSRT ACPI tables.

Disassembler: Add support to decode _PLD buffers. The decoded buffer appears

within comments in the output file.

Debugger: Fixed a regression with the "Threads" command where

AE_BAD_PARAMETER was always returned.

11 July 2012. Summary of changes for version 20120711:

1) ACPICA Kernel-resident Subsystem:

Fixed a possible fault in the return package object repair code. Fixes a problem that can occur when a lone package object is wrapped with an outer

package object in order to force conformance to the ACPI specification.

Can

affect these predefined names: _ALR, _MLS, _PSS, _TRT, _TSS, _PRT, _HPX, _DLM, _CSD, _PSD, _TSD.

Removed code to disable/enable bus master arbitration (ARB_DIS bit in the PM2_CNT register) in the ACPICA sleep/wake interfaces. Management of the ARB_DIS bit must be implemented in the host-dependent C3 processor power state

support. Note, ARB_DIS is obsolete and only applies to older chipsets, both Intel and other vendors. (for Intel: ICH4-M and earlier)

This change removes the code to disable/enable bus master arbitration during suspend/resume. Use of the ARB_DIS bit in the optional PM2_CNT register causes resume problems on some machines. The change has been in use for over seven years within Linux.

Implemented two new external interfaces to support host-directed dynamic ACPI table load and unload. They are intended to simplify the host implementation of hot-plug support:
AcpiLoadTable: Load an SSDT from a buffer into the namespace.
AcpiUnloadParentTable: Unload an SSDT via a named object owned by the table.
See the ACPICA reference for additional details. Adds one new file, components/tables/tbxload.c

Implemented and deployed two new interfaces for errors and warnings that are known to be caused by BIOS/firmware issues:
AcpiBiosError: Prints "ACPI Firmware Error" message.
AcpiBiosWarning: Prints "ACPI Firmware Warning" message.
Deployed these new interfaces in the ACPICA Table Manager code for ACPI table and FADT errors. Additional deployment to be completed as appropriate in the future. The associated conditional macros are ACPI_BIOS_ERROR and ACPI_BIOS_WARNING. See the ACPICA reference for additional details.
ACPICA
BZ
843.

Implicit notify support: ensure that no memory allocation occurs within a critical region. This fix moves a memory allocation outside of the time that a spinlock is held. Fixes issues on systems that do not allow this behavior.
Jung-uk Kim.

Split exception code utilities and tables into a new file,

utilities/utexcept.c

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.1K Code, 25.1K Data, 118.2K Total

Debug Version: 172.9K Code, 73.6K Data, 246.5K Total

Current Release:

Non-Debug Version: 93.5K Code, 25.3K Data, 118.8K Total

Debug Version: 173.7K Code, 74.0K Data, 247.7K Total

2) iASL Compiler/Disassembler
and Tools:

iASL: Fixed a parser problem for hosts where EOF is defined as -1 instead of 0. Jung-uk Kim.

Debugger: Enhanced the "tables" command to emit additional information about the current set of ACPI tables, including the owner ID and flags decode.

Debugger: Reimplemented the "unload" command to use the new AcpiUnloadParentTable external interface. This command was disabled previously due to need for an unload interface.

AcpiHelp: Added a new option to decode ACPICA exception codes. The -e option will decode 16-bit hex status codes (ACPI_STATUS) to name strings.

20 June 2012. Summary of changes for version 20120620:

1) ACPICA Kernel-resident Subsystem:

Implemented support to expand the "implicit notify" feature to allow multiple devices to be notified by a single GPE. This feature automatically generates a runtime device notification in the absence of a BIOS-provided GPE control

method (`_Lxx/_Exx`) or a host-installed handler for the GPE. Implicit notify is provided by ACPICA for Windows compatibility, and is a workaround for BIOS AML code errors. See the description of the `AcpiSetupGpeForWake` interface in the APCICA reference. Bob Moore, Rafael Wysocki. ACPICA BZ 918.

Changed some comments and internal function names to simplify and ensure correctness of the Linux code translation. No functional changes.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.0K Code, 25.1K Data, 118.1K Total

Debug Version: 172.7K Code, 73.6K Data, 246.3K Total

Current Release:

Non-Debug Version: 93.1K Code, 25.1K Data, 118.2K Total

Debug Version: 172.9K Code, 73.6K Data, 246.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler:

Added support to emit short, commented descriptions for the ACPI predefined names in order to improve the readability of the disassembled output. ACPICA BZ 959. Changes include:

- 1) Emit descriptions for all standard predefined names (`_INI`, `_STA`, `_PRW`, etc.)
- 2) Emit generic descriptions for the special names (`_Exx`, `_Qxx`, etc.)
- 3) Emit descriptions for the resource descriptor names (`_MIN`, `_LEN`, etc.)

`AcpiSrc`: Fixed several long-standing Linux code translation issues. Argument descriptions in function headers are now translated properly to lower case and underscores. ACPICA BZ 961. Also fixes translation problems such as

these:

(old -> new)

i_aSL -> iASL

00-7_f -> 00-7F

16_k -> 16K

local_fADT -> local_FADT

execute_oSI -> execute_OSI

iASL: Fixed a problem where null bytes were inadvertently emitted into some listing files.

iASL: Added the existing debug options to the standard help screen. There are no longer two different help screens. ACPICA BZ 957.

AcpiHelp: Fixed some typos in the various predefined name descriptions. Also expand some of the descriptions where appropriate.

iASL: Fixed the -ot option (display compile times/statistics). Was not working properly for standard output; only worked for the debug file case.

18 May 2012. Summary of changes for version 20120518:

1) ACPICA Core Subsystem:

Added a new OSL interface, AcpiOsWaitEventsComplete. This interface is defined to block until asynchronous events such as notifies and GPEs have completed.

Within ACPICA, it is only called before a notify or GPE handler is removed/uninstalled. It also may be useful for the host OS within related drivers such as the Embedded Controller driver. See the ACPICA reference for additional information. ACPICA BZ 868.

ACPI Tables: Added a new error message for a possible overflow failure during the conversion of FADT 32-bit legacy register addresses to internal common 64-bit

GAS structure representation. The GAS has a one-byte "bit length" field, thus limiting the register length to 255 bits. ACPICA BZ 953.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total

Debug Version: 172.6K Code, 73.4K Data, 246.0K Total

Current Release:

Non-Debug Version: 93.0K Code, 25.1K Data, 118.1K Total

Debug Version: 172.7K Code, 73.6K Data, 246.3K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added the ACPI 5.0 "PCC" keyword for use in the `Register()` ASL macro.

This keyword was added late in the ACPI 5.0 release cycle and was not implemented until now.

Disassembler: Added support for Operation Region externals. Adds missing support for operation regions that are defined in another table, and referenced locally via a `Field` or `BankField` ASL operator. Now generates the correct `External` statement.

Disassembler: Several additional fixes for the `External()` statement generation related to some ASL operators. Also, order the `External()` statements alphabetically in the disassembler output. Fixes the `External()` generation for the `Create*` field, `Alias`, and `Scope` operators:

- 1) `Create*` buffer field operators - fix type mismatch warning on disassembly
- 2) `Alias` - implement missing `External` support
- 3) `Scope` - fix to make sure all necessary externals are emitted.

iASL: Improved pathname support. For include files, merge the prefix pathname with the file pathname and eliminate unnecessary components. Convert

backslashes in all pathnames to forward slashes, for readability. Include file pathname changes affect both #include and Include() type operators.

iASL/DTC/Preprocessor: Gracefully handle early EOF. Handle an EOF at the end

of a valid line by inserting a newline and then returning the EOF during the next call to GetNextLine. Prevents the line from being ignored due to EOF condition.

iASL: Implemented some changes to enhance the IDE support (-vi option.) Error and Warning messages are now correctly recognized for both the source code browser and the global error and warning counts.

20 April 2012. Summary of changes for version 20120420:

1) ACPI Core Subsystem:

Implemented support for multiple notify handlers. This change adds support to allow multiple system and device notify handlers on Device, Thermal Zone, and Processor objects. This can simplify the host OS notification implementation. Also re-worked and restructured the entire notify support code to simplify handler installation, handler removal, notify event queuing, and notify dispatch to handler(s). Note: there can still only be two global notify handlers - one for system notifies and one for device notifies. There are no changes to the existing handler install/remove interfaces. Lin Ming, Bob Moore, Rafael Wysocki.

Fixed a regression in the package repair code where the object reference count was calculated incorrectly. Regression was introduced in the commit "Support to add Package wrappers".

Fixed a couple possible memory leaks in the AML parser, in the error recovery path. Jesper Juhl, Lin Ming.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total

Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

Current Release:

Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total

Debug Version: 172.6K Code, 73.4K Data, 246.0K Total

2) iASL Compiler/Disassembler
and Tools:

iASL: Fixed a problem with the resource descriptor support where the length of the `StartDependentFn` and `StartDependentFnNoPrio` descriptors were not included in cumulative descriptor offset, resulting in incorrect values for resource tags within resource descriptors appearing after a `StartDependent*` descriptor. Reported by Petr Vandrovec. ACPICA BZ 949.

iASL and Preprocessor: Implemented full support for the `#line` directive to correctly track original source file line numbers through the `.i` preprocessor output file - for error and warning messages.

iASL: Expand the allowable byte constants for address space IDs. Previously, the allowable range was `0x80-0xFF` (user-defined spaces), now the range is `0x0A-0xFF` to allow for custom and new IDs without changing the compiler.

iASL: Add option to treat all warnings as errors (`-we`). ACPICA BZ 948.

iASL: Add option to completely disable the preprocessor (`-Pn`).

iASL: Now emit all error/warning messages to standard error (`stderr`) by default (instead of the previous `stdout`).

ASL Test Suite (ASLTS): Reduce iASL warnings due to use of `Switch()`.
Update

for resource descriptor offset fix above. Update/cleanup error output routines. Enable and send iASL errors/warnings to an error logfile (error.txt). Send all other iASL output to a logfile (compiler.txt).

Fixed

several extraneous "unrecognized operator" messages.

20 March 2012. Summary of changes for version 20120320:

1) ACPICA Core Subsystem:

Enhanced the sleep/wake interfaces to optionally execute the _GTS method (Going To Sleep) and the _BFS method (Back From Sleep). Windows apparently

does not execute these methods, and therefore these methods are often untested. It has been seen on some systems where the execution of these methods causes errors and also prevents the machine from entering S5. It is

therefore suggested that host operating systems do not execute these methods

by

default. In the future, perhaps these methods can be optionally executed

based on the age of the system and/or what is the newest version of Windows

that the BIOS asks for via _OSI. Changed interfaces: AcpiEnterSleepState and

AcpiLeaveSleepStatePrep. See the ACPICA reference and Linux BZ 13041. Lin Ming.

Fixed a problem where the length of the local/common FADT was set too early.

The local FADT table length cannot be set to the common length until the original length has been examined. There is code that checks the table length

and sets various fields appropriately. This can affect older machines with

early FADT versions. For example, this can cause inadvertent writes to the

CST_CNT register. Julian Anastasov.

Fixed a mapping issue related to a physical table override. Use the deferred

mapping mechanism for tables loaded via the physical override OSL interface.

This allows for early mapping before the virtual memory manager is available.

Thomas Renninger, Bob
Moore.

Enhanced the automatic return-object repair code: Repair a common problem with predefined methods that are defined to return a variable-length Package of sub-objects. If there is only one sub-object, some BIOS ASL code mistakenly simply returns the single object instead of a Package with one sub-object. This new support will repair this error by wrapping a Package object around the original object, creating the correct and expected Package with one sub-object. Names that can be repaired in this manner include: `_ALR`, `_CSD`, `_HPX`, `_MLS`, `_PLD`, `_PRT`, `_PSS`, `_TRT`, `_TSS`, `_BCL`, `_DOD`, `_FIX`, and `_Sx`. ACPICA BZ 939.

Changed the exception code returned for invalid ACPI paths passed as parameters to external interfaces such as `AcpiEvaluateObject`. Was `AE_BAD_PARAMETER`, now is the more sensible `AE_BAD_PATHNAME`.

Example Code and Data Size: These are the sizes for the OS-independent `apica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 93.0K Code, 25.0K Data, 118.0K Total

Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

Current Release:

Non-Debug Version: 92.9K Code, 25.0K Data, 117.9K Total

Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added the infrastructure and initial implementation of a integrated C-like preprocessor. This will simplify BIOS development process by eliminating the need for a separate preprocessing step during builds. On Windows, it also

eliminates the need to install a separate C compiler. ACPICA BZ 761. Some features including full #define() macro support are still under development.

These preprocessor directives are supported:

- #define
- #elif
- #else
- #endif
- #error
- #if
- #ifdef
- #ifndef
- #include
- #pragma message
- #undef
- #warning

In

addition, these new command line options are supported:

- D <symbol> Define symbol for preprocessor use
- li Create preprocessed output file (*.i)
- P Preprocess only and create preprocessor output file (*.i)

Table Compiler: Fixed a problem where the equals operator within an expression did not work properly.

Updated iASL to use the current versions of Bison/Flex. Updated the Windows project file to invoke these tools from the standard location. ACPICA BZ 904.

Versions supported:

- Flex for Windows: V2.5.4
- Bison for Windows: V2.4.1

15 February 2012. Summary of changes for version 20120215:

1) ACPICA Core Subsystem:

There have been some major changes to the sleep/wake support code, as described below (a - e).

a) The AcpiLeaveSleepState has been split into two interfaces, similar to AcpiEnterSleepStatePrep and AcpiEnterSleepState. The new interface is AcpiLeaveSleepStatePrep. This allows the host to perform actions between the

time the `_BFS` method is called and the `_WAK` method is called. NOTE: all hosts must update their wake/resume code or else sleep/wake will not work properly.
Rafael Wysocki.

b) In `AcpiLeaveSleepState`, now enable all runtime GPEs before calling the `_WAK` method. Some machines require that the GPEs are enabled before the `_WAK` method is executed. Thomas Renninger.

c) In `AcpiLeaveSleepState`, now always clear the `WAK_STS` (wake status) bit. Some BIOS code assumes that `WAK_STS` will be cleared on resume and use it to determine whether the system is rebooting or resuming. Matthew Garrett.

d) Move the invocations of `_GTS` (Going To Sleep) and `_BFS` (Back From Sleep) to match the ACPI specification requirement. Rafael Wysocki.

e) Implemented full support for the ACPI 5.0 `SleepStatus` and `SleepControl` registers within the V5 FADT. This support adds two new files: `hardware/hwesleep.c` implements the support for the new registers. Moved all sleep/wake external interfaces to `hardware/hwxfsleep.c`.

Added a new OSL interface for ACPI table overrides, `AcpiOsPhysicalTableOverride`. This interface allows the host to override a table via a physical address, instead of the logical address required by `AcpiOsTableOverride`. This simplifies the host implementation. Initial implementation by Thomas Renninger. The ACPICA implementation creates a single shared function for table overrides that attempts both a logical and a physical override.

Expanded the OSL memory read/write interfaces to 64-bit data (`AcpiOsReadMemory`, `AcpiOsWriteMemory`.) This enables full 64-bit memory transfer support for GAS register structures passed to `AcpiRead` and `AcpiWrite`.

Implemented the `ACPI_REDUCED_HARDWARE` option to allow the creation of a custom build of ACPICA that supports only the ACPI 5.0 reduced hardware (SoC) model.

See the ACPICA reference for details. ACPICA BZ 942. This option removes about 10% of the code and 5% of the static data, and the following hardware

ACPI

features become unavailable:

- PM Event and Control registers
- SCI interrupt (and handler)
- Fixed Events
- General Purpose Events (GPEs)
- Global Lock
- ACPI PM timer
- FACS table (Waking vectors and Global Lock)

Updated the unix tarball directory structure to match the ACPICA git source tree. This ensures that the generic unix makefiles work properly (in generate/unix). Also updated the Linux makefiles to match. ACPICA BZ 867.

Updated the return value of the _REV predefined method to integer value 5 to reflect ACPI 5.0 support.

Moved the external ACPI PM timer interface prototypes to the public acpixf.h file where they belong.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 92.8K
Code, 24.9K Data, 117.7K Total
Debug Version: 171.7K Code, 72.9K Data, 244.5K Total

Current Release:

Non-Debug Version: 93.0K Code, 25.0K Data, 118.0K Total
Debug Version: 172.5K Code, 73.2K Data, 245.7K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem with the new ACPI 5.0 serial resource descriptors (I2C, SPI, UART) where the resource produce/consumer bit was

incorrectly displayed.

AcpiHelp: Add display of ACPI/PNP device IDs that are defined in the ACPI specification.

11 January 2012. Summary of changes for version 20120111:

1) ACPICA Core Subsystem:

Implemented a new mechanism to allow host device drivers to check for address range conflicts with ACPI Operation Regions. Both SystemMemory and SystemIO address spaces are supported. A new external interface, AcpiCheckAddressRange, allows drivers to check an address range against the ACPI namespace. See the ACPICA reference for additional details. Adds one new file, utilities/utaddress.c. Lin Ming, Bob Moore.

Fixed several issues with the ACPI 5.0 FADT support: Add the sleep Control and Status registers, update the ACPI 5.0 flags, and update internal data structures to handle an FADT larger than 256 bytes. The size of the ACPI 5.0 FADT is 268 bytes.

Updated all ACPICA copyrights and signons to 2012. Added the 2012 copyright to all module headers and signons, including the standard Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, and all ACPICA utilities.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 92.3K Code, 24.9K Data, 117.2K Total

Debug Version: 170.8K Code, 72.6K Data, 243.4K Total

Current Release:

Non-Debug Version: 92.8K Code, 24.9K Data, 117.7K Total

Debug Version: 171.7K Code, 72.9K Data, 244.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: fixed a problem with the automatic resource tag generation support. Fixes a problem where the resource tags are inadvertently not constructed if the table being disassembled contains external references to control methods. Moved the actual construction of the tags to after the final namespace is constructed (after 2nd parse is invoked due to external method references.) ACPICA BZ 941.

Table Compiler: Make all "generic" operators caseless. These are the operators like UINT8, String, etc. Making these caseless improves ease-of-use. ACPICA BZ 934.

23 November 2011. Summary of changes for version 20111123:

0) ACPI 5.0 Support:

This release contains full support for the ACPI 5.0 specification, as summarized below.

Reduced Hardware Support:

This support allows for ACPI systems without the usual ACPI hardware. This support is enabled by a flag in the revision 5 FADT. If it is set, ACPICA will not attempt to initialize or use any of the usual ACPI hardware. Note, when this flag is set, all of the following ACPI hardware is assumed to be not present and is not initialized or accessed:

General Purpose Events (GPEs)

Fixed Events (PM1a/PM1b and PM Control)

Power Management Timer and Console Buttons (power/sleep)

Real-time Clock Alarm

Global Lock
System Control Interrupt (SCI)
The FACS is assumed to be non-existent

ACPI Tables:

All new tables and updates to existing tables are fully supported in the ACPICA headers (for use by device drivers), the disassembler, and the iASL

Data Table Compiler. ACPI 5.0 defines these new tables:

BGRT /* Boot Graphics Resource Table */
DRTM /* Dynamic Root of Trust for Measurement
table */
FPDT /* Firmware Performance Data Table */
GTDT /* Generic Timer Description Table */
MPST /* Memory Power State Table */
PCCT /* Platform Communications Channel Table */
PMTT /* Platform Memory Topology Table */
RASf /* RAS Feature table */

Operation Regions/SpaceIDs:

All new operation regions are fully supported by the iASL compiler, the disassembler, and the ACPICA runtime code (for dispatch to region handlers.)

The new operation region Space IDs are:

GeneralPurposeIo
GenericSerialBus

Resource Descriptors:

All new ASL resource descriptors are fully supported by the iASL compiler, the ASL/AML disassembler, and the ACPICA runtime Resource Manager code (including all new predefined resource tags). New descriptors are:

FixedDma
GpioIo
GpioInt
I2cSerialBus
SpiSerialBus

UartSerialBus

ASL/AML Operators, New and Modified:

One

new operator is added, the Connection operator, which is used to associate a GeneralPurposeIo or GenericSerialBus resource descriptor with individual field objects within an operation region. Several new protocols are associated with the AccessAs operator. All are fully supported by the iASL compiler, disassembler, and runtime ACPICA AML interpreter:

```
Connection          // Declare Field Connection
attributes
  AccessAs: AttribBytes (n)      // Read/Write N-Bytes Protocol
  AccessAs: AttribRawBytes (n)   // Raw Read/Write N-Bytes
Protocol
  AccessAs: AttribRawProcessBytes (n) // Raw Process Call Protocol
  RawDataBuffer                // Data type for Vendor Data
fields
```

Predefined ASL/AML Objects:

All new predefined objects/control-methods are supported by the iASL compiler and the ACPICA runtime validation/repair (arguments and return values.) New predefined names include the following:

Standard Predefined Names (Objects or Control Methods):

```
_AEI, _CLS, _CPC, _CWS, _DEP,
_DLM, _EVT, _GCP, _CRT, _GWS,
_HRV, _PRE, _PSE, _SRT, _SUB.
```

Resource Tags (Names used to access individual fields within resource descriptors):

```
_DBT, _DPL, _DRS, _END, _FLC,
_IOR, _LIN, _MOD, _PAR, _PHA,
_PIN, _PPI, _POL, _RXL, _SLV,
_SPE, _STB, _TXL, _VEN.
```

ACPICA External Interfaces:

Several new interfaces have been defined for use by ACPI-related device drivers and other host OS services:

AcpiAcquireMutex and AcpiReleaseMutex: These interfaces allow the host OS to acquire and release AML mutexes that are defined in the DSDT/SSDT tables provided by the BIOS. They are intended to be used in conjunction with the ACPI 5.0 `_DLM` (Device Lock Method) in order to provide transaction-level mutual exclusion with the AML code/interpreter.

AcpiGetEventResources: Returns the (formatted) resource descriptors as defined

by the ACPI 5.0 `_AEI` object (ACPI Event Information). This object provides resource descriptors associated with hardware-reduced platform events, similar to the `AcpiGetCurrentResources` interface.

Operation Region Handlers: For General Purpose IO and Generic Serial Bus operation regions, information about the `Connection()` object and any optional length information is passed to the region handler within the `Context` parameter.

AcpiBufferToResource: This interface converts a raw AML buffer containing a resource template or resource descriptor to the `ACPI_RESOURCE` internal format suitable for use by device drivers. Can be used by an operation region handler to convert the `Connection()` buffer object into a `ACPI_RESOURCE`.

Miscellaneous/Tools/TestSuites:

Support for extended `_HID` names (Four alpha characters instead of three).
Support for ACPI 5.0 features in the `AcpiExec` and `AcpiHelp` utilities.
Support for ACPI 5.0 features in the ASLTS test suite.
Fully updated documentation (ACPICA and iASL reference documents.)

ACPI Table Definition Language:

Support for this language was implemented and released as a subsystem of

the
iASL compiler in 2010. (See the iASL compiler User Guide.)

Non-ACPI 5.0 changes for this release:

1) ACPICA Core Subsystem:

Fix a problem with operation region declarations where a failure can occur if the region name and an argument that evaluates to an object (such as the region address) are in different namespace scopes. Lin Ming, ACPICA BZ 937.

Do not abort an ACPI table load if an invalid space ID is found within. This will be caught later if the offending method is executed. ACPICA BZ 925.

Fixed an issue with the FFixedHW space ID where the ID was not always recognized properly (Both ACPICA and iASL). ACPICA BZ 926.

Fixed a problem with the 32-bit generation of the unix-specific OSL (osunixxf.c). Lin Ming, ACPICA BZ 936.

Several changes made to enable generation with the GCC 4.6 compiler. ACPICA BZ 935.

New error messages: Unsupported I/O requests (not 8/16/32 bit), and Index/Bank field registers out-of-range.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented the __PATH__ operator, which returns the full pathname of the current source file.

AcpiHelp: Automatically display expanded keyword information for all ASL operators.

Debugger: Add "Template" command to disassemble/dump resource template buffers.

Added a new master script to generate and execute the ASLTS test suite.

Automatically handles 32- and 64-bit generation. See tests/aslts.sh

iASL: Fix problem with listing generation during processing of the Switch() operator where AML listing was disabled until the entire Switch block was completed.

iASL: Improve support for semicolon statement terminators. Fix "invalid character" message for some cases when the semicolon is used. Semicolons are now allowed after every <Term> grammar element. ACPICA BZ 927.

iASL: Fixed some possible aliasing warnings during generation. ACPICA BZ 923.

Disassembler: Fix problem with disassembly of the DataTableRegion operator where an inadvertent "Unhandled deferred opcode" message could be generated.

3) Example Code and Data Size

These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total

Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

Current Release:

Non-Debug Version: 92.3K Code, 24.9K Data, 117.2K Total

Debug Version: 170.8K Code, 72.6K Data, 243.4K Total

22 September 2011. Summary of changes for version 20110922:

0) ACPI 5.0 News:

Support for ACPI 5.0 in ACPICA has been underway for several months and will be released at the same time that ACPI 5.0 is officially released.

The ACPI 5.0 specification is on track for release in the next few months.

1) ACPICA Core Subsystem:

Fixed a problem where the maximum sleep time for the Sleep() operator was intended to be limited to two seconds, but was inadvertently limited to 20 seconds instead.

Linux and Unix makefiles: Added header file dependencies to ensure correct generation of ACPICA core code and utilities. Also simplified the makefiles considerably through the use of the vpath variable to specify search paths.
ACPICA BZ 924.

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented support to check the access length for all fields created to access named Resource Descriptor fields. For example, if a resource field is defined to be two bits, a warning is issued if a CreateXxxxField() is used with an incorrect bit length. This is implemented for all current resource descriptor names.
ACPICA BZ 930.

Disassembler: Fixed a byte ordering problem with the output of 24-bit and 56-bit integers.

iASL: Fixed a couple of issues associated with variable-length package objects. 1) properly handle constants like One, Ones, Zero -- do not make a VAR_PACKAGE when these are used as a package length. 2) Allow the VAR_PACKAGE opcode (in addition to PACKAGE) when validating object types for predefined names.

iASL: Emit statistics for all output files (instead of just the ASL input and AML output). Includes listings, hex files, etc.

iASL: Added -G option to the table compiler to allow the compilation of custom

ACPI tables. The only part of a table that is required is the standard 36-byte ACPI header.

AcpiXtract: Ported to the standard ACPICA environment (with ACPICA headers), which also adds correct 64-bit support. Also, now all output filenames are completely lower case.

AcpiExec: Ignore any non-AML tables (tables other than DSDT or SSDT) when loading table files. A warning is issued for any such tables. The only exception is an FADT. This also fixes a possible fault when attempting to load non-AML tables. ACPICA BZ 932.

AcpiHelp: Added the AccessAs and Offset operators. Fixed a problem where a missing table terminator could cause a fault when using the -p option.

AcpiSrc: Fixed a possible divide-by-zero fault when generating file statistics.

3) Example Code and Data Size

These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release (VC 9.0):

Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total

Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

Current Release (VC 9.0):

Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total

Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

23

June 2011. Summary of changes for version 20110623:

1) ACPI CA Core Subsystem:

Updated the predefined name repair mechanism to not attempt repair of a

_TSS

return object if a _PSS object is present. We can only sort the _TSS
return
package if there is no _PSS within the same scope. This is because if
_PSS
is
present, the ACPI specification dictates that the _TSS Power Dissipation
field
is to be ignored, and therefore some BIOSs leave garbage values in the
_TSS
Power field(s). In this case, it is best to just return the _TSS package
as-
is. Reported by, and fixed with assistance from Fenghua Yu.

Added an option to globally disable the control method return value
validation
and repair. This runtime option can be used to disable return value
repair
if
this is causing a problem on a particular machine. Also added an option
to
AcpiExec (-dr) to set this disable flag.

All makefiles and project files: Major changes to improve generation of
ACPICA
tools.

ACPICA BZ 912:

- Reduce default optimization levels to improve compatibility
- For Linux, add strict-aliasing=0 for gcc 4
- Cleanup and simplify use of command line defines
- Cleanup multithread library support
- Improve usage messages

Linux-specific header: update handling of THREAD_ID and pthread. For the
32-
bit case, improve casting to eliminate possible warnings, especially with
the
acpica tools.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 9.0 32-bit compiler. The
debug
version of the code includes the debug output trace mechanism and has a
much
larger code and data size.

Previous Release (VC 9.0):

Non-Debug Version: 90.1K Code, 23.9K Data, 114.0K Total

Debug Version: 165.6K Code, 68.4K Data, 234.0K Total
Current Release (VC 9.0):
Non-Debug Version: 90.2K Code, 23.9K Data, 114.1K Total
Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

2) iASL Compiler/Disassembler and Tools:

With this release, a new utility named "acpihelp" has been added to the ACPICA package. This utility summarizes the ACPI specification chapters for the ASL and AML languages. It generates under Linux/Unix as well as Windows, and provides the following functionality:

- Find/display ASL operator(s) -- with description and syntax.
- Find/display ASL keyword(s) -- with exact spelling and descriptions.
- Find/display ACPI predefined name(s) -- with description, number of arguments, and the return value data type.
- Find/display AML opcode name(s) -- with opcode, arguments, and grammar.
- Decode/display AML opcode -- with opcode name, arguments, and grammar.

Service Layers: Make multi-thread support configurable. Conditionally compile the multi-thread support so that threading libraries will not be linked if not necessary. The only tool that requires multi-thread support is AcpiExec.

iASL: Update yyerror/AslCompilerError for "const" errors. Newer versions of Bison appear to want the interface to yyerror to be a const char * (or at least this is a problem when generating iASL on some systems.) ACPICA BZ 923
Pierre Lejeune.

Tools: Fix for systems where O_BINARY is not defined. Only used for Windows versions of the tools.

27 May 2011. Summary of changes for version 20110527:

1) ACPI CA Core Subsystem:

ASL Load() operator: Reinstate most restrictions on the incoming ACPI

table

signature. Now, only allow SSDT, OEMx, and a null signature. History:

- 1) Originally, we checked the table signature for "SSDT" or "PSDT". (PSDT is now obsolete.)
- 2) We added support for OEMx tables, signature "OEM" plus a fourth "don't care" character.
- 3) Valid tables were encountered with a null signature, so we just gave up on validating the signature, (05/2008).
- 4) We encountered non-AML tables such as the MADT, which caused interpreter errors and kernel faults. So now, we once again allow only SSDT, OEMx, and now, also a null signature. (05/2011).

Added the missing `_TDL` predefined name to the global name list in order to enable validation. Affects both the core ACPICA code and the iASL compiler.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release (VC 9.0):

Non-Debug Version: 90.0K Code, 23.8K Data, 113.8K Total

Debug Version: 164.5K Code, 68.0K Data, 232.5K Total

Current Release (VC 9.0):

Non-Debug Version: 90.1K Code, 23.9K Data, 114.0K Total

Debug Version: 165.6K Code, 68.4K Data, 234.0K Total

2) iASL Compiler/Disassembler and Tools:

Debugger/AcpiExec: Implemented support for "complex" method arguments on the debugger command line. This adds support beyond simple integers -- including Strings, Buffers, and Packages. Includes support for nested packages. Increased the default command line buffer size to accommodate these arguments. See the ACPICA reference for details and syntax. ACPICA BZ 917.

Debugger/AcpiExec: Implemented support for "default" method arguments for the `Execute/Debug` command. Now, the debugger will always invoke a control method

with the required number of arguments -- even if the command line specifies none or insufficient arguments. It uses default integer values for any missing arguments. Also fixes a bug where only six method arguments maximum were supported instead of the required seven.

Debugger/AcpiExec: Add a maximum buffer length parameter to AcpiOsGetLine and also return status in order to prevent buffer overruns. See the ACPICA reference for details and syntax. ACPICA BZ 921

iASL: Cleaned up support for Berkeley yacc. A general cleanup of code and makefiles to simplify support for the two different but similar parser generators, bison and yacc.

Updated the generic unix makefile for gcc 4. The default gcc version is now expected to be 4 or greater, since options specific to gcc 4 are used.

13 April 2011. Summary of changes for version 20110413:

1) ACPI CA Core Subsystem:

Implemented support to execute a so-called "orphan" _REG method under the EC device. This change will force the execution of a _REG method underneath the EC device even if there is no corresponding operation region of type EmbeddedControl. Fixes a problem seen on some machines and apparently is compatible with Windows behavior. ACPICA BZ 875.

Added more predefined methods that are eligible for automatic NULL package element removal. This change adds another group of predefined names to the list of names that can be repaired by having NULL package elements dynamically removed. This group are those methods that return a single variable-length

package containing simple data types such as integers, buffers, strings.

This

includes: _ALx, _BCL, _CID, _DOD, _EDL, _FIX, _PCL, _PLD, _PMD, _PRx, _PSL,

_Sx,
and _TZD. ACPICA BZ 914.

Split and segregated all internal global lock functions to a new file,
evglock.c.

Updated internal address SpaceID for DataTable regions. Moved this
internal
space
id in preparation for ACPI 5.0 changes that will include some new space
IDs.
This
change should not affect user/host code.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib
produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug
version of
the code includes the debug output trace mechanism and has a much larger
code
and
data size.

Previous Release (VC 9.0):

Non-Debug Version: 89.8K Code, 23.8K Data, 113.6K Total

Debug Version: 164.2K Code, 67.9K Data, 232.1K Total

Current Release (VC 9.0):

Non-Debug Version: 90.0K Code, 23.8K Data, 113.8K Total

Debug Version:

164.5K Code, 68.0K Data, 232.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL/DTC: Major update for new grammar features. Allow generic data types
in
custom ACPI tables. Field names are now optional. Any line can be split
to
multiple lines using the continuation char (\). Large buffers now use
line-
continuation character(s) and no colon on the continuation lines. See the
grammar
update in the iASL compiler reference. ACPI BZ 910,911. Lin Ming, Bob
Moore.

iASL: Mark ASL "Return()" and the simple "Return" as "Null" return
statements.

Since the parser stuffs a "zero" as the return value for these statements
(due

to
the underlying AML grammar), they were seen as "return with value" by the
iASL
semantic checking. They are now seen correctly as "null" return
statements.

iASL: Check if a _REG declaration has a corresponding Operation Region.
Adds a
check for each _REG to ensure that there is in fact a corresponding
operation
region declaration in the
same scope. If not, the _REG method is not very
useful
since it probably won't be executed. ACPICA BZ 915.

iASL/DTC: Finish support for expression evaluation. Added a new
expression
parser
that implements c-style operator precedence and parenthesization. ACPICA
bugzilla
908.

Disassembler/DTC: Remove support for () and <> style comments in data
tables.
Now
that DTC has full expression support, we don't want to have comment
strings
that
start with a parentheses or a less-than symbol. Now, only the standard /*
and
//
comments are supported, as well as the bracket [] comments.

AcpiXtract: Fix for RSDP and dynamic SSDT extraction. These tables have
"unusual"
headers in the acpidump file. Update the header validation to support
these
tables. Problem introduced in previous AcpiXtract version in the change
to
support "wrong checksum" error messages emitted by acpidump utility.

iASL: Add a * option to generate all template files (as a synonym for
ALL)
as
in
"iasl -T
*" or "iasl -T ALL".

iASL/DTC: Do not abort compiler on fatal errors. We do not want to completely abort the compiler on "fatal" errors, simply should abort the current compile.

This allows multiple compiles with a single (possibly wildcard) compiler invocation.

16 March 2011. Summary of changes for version 20110316:

1) ACPI CA Core Subsystem:

Fixed a problem caused by a `_PRW` method appearing at the namespace root scope during the setup of wake GPEs. A fault could occur if a `_PRW` directly under the root object was passed to the `AcpiSetupGpeForWake` interface. Lin Ming.

Implemented support for "spurious" Global Lock interrupts. On some systems, a global lock interrupt can occur without the pending flag being set. Upon a GL interrupt, we now ensure that a thread is actually waiting for the lock before signaling GL availability. Rafael Wysocki, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent

`apica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release (VC 9.0):

Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total

Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

Current Release (VC 9.0):

Non-Debug Version: 89.8K Code, 23.8K Data, 113.6K Total

Debug Version: 164.2K Code, 67.9K Data, 232.1K Total

2) iASL Compiler/Disassembler and Tools:

Implemented full support for the "SLIC" ACPI table. Includes support in

the
header files, disassembler, table compiler, and template generator. Bob
Moore,
Lin Ming.

AcpiXtract: Correctly handle embedded comments and messages from
AcpiDump.
Apparently some or all versions of acpidump will occasionally emit a
comment
like
"Wrong checksum", etc., into the dump file. This was causing problems for
AcpiXtract. ACPICA BZ 905.

iASL: Fix the Linux makefile
by removing an inadvertent double file
inclusion.
ACPICA BZ 913.

AcpiExec: Update installation of operation region handlers. Install one
handler
for a user-defined address space. This is used by the ASL test suite
(ASLTS).

11 February 2011. Summary of changes for version 20110211:

1) ACPI CA Core Subsystem:

Added a mechanism to defer _REG methods for some early-installed
handlers.
Most user handlers should be installed before call to
AcpiEnableSubsystem.
However, Event handlers and region handlers should be installed after
AcpiInitializeObjects. Override handlers for the "default" regions should
be
installed early, however. This change executes all _REG methods for the
default regions (Memory/IO/PCI/DataTable) simultaneously to prevent any
chicken/egg issues between them. ACPICA BZ 848.

Implemented an optimization for GPE detection. This optimization will
simply
ignore GPE registers that contain no enabled GPEs -- there is no
need to
read the register since this information is available internally. This
becomes more important on machines with a large GPE space. ACPICA
bugzilla
884. Lin Ming. Suggestion from Joe Liu.

Removed all use of the highly unreliable FADT revision field. The revision number in the FADT has been found to be completely unreliable and cannot be trusted. Only the actual table length can be used to infer the version. This change updates the ACPI core and the disassembler so that both no longer even look at the FADT version and instead depend solely upon the FADT length.

Fix an unresolved name issue for the no-debug and no-error-message source generation cases. The `_AcpiModuleName` was left undefined in these cases, but it is actually needed as a parameter to some interfaces. Define `_AcpiModuleName` as a null string in these cases. ACPI Bugzilla 888.

Split several large files (makefiles and project files updated)

`utglobal.c` -> `utdecode.c`
`dbcomds.c` -> `dbmethod.c`
`dbnames.c`
`dsopcode.c` -> `dsargs.c dscontrol.c`
`dsload.c` -> `dsload2.c`
`aslanalyze.c` -> `aslbtypes.c aslwalks.c`

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release (VC 9.0):

Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total

Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

Current Release (VC 9.0):

Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total

Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented the predefined macros `__LINE__`, `__FILE__`, and `__DATE__`. These are useful C-style macros with the standard definitions. ACPI bugzilla 898.

iASL/DTC: Added support for integer expressions and labels. Support for full expressions for all integer fields

in all ACPI tables. Support for labels
in
"generic" portions of tables such as UEFI. See the iASL reference manual.

Debugger: Added a command to display the status of global handlers. The
"handlers" command will display op region, fixed event, and miscellaneous
global handlers. installation status -- and for op regions, whether
default
or user-installed handler will be used.

iASL: Warn if reserved method incorrectly returns a value. Many
predefined
names are defined such that they do not return a value. If implemented as
a
method, issue a warning if such a name explicitly returns a value. ACPICA
Bugzilla 855.

iASL: Added detection of GPE method name conflicts. Detects a conflict
where
there are two GPE methods of the form _Lxy and _Exy in the same scope.
(For
example, _L1D and _E1D in the same scope.) ACPICA bugzilla 848.

iASL/DTC: Fixed a couple input scanner issues with comments and line
numbers. Comment remover could get confused and miss a comment ending.
Fixed

a problem with line counter maintenance.

iASL/DTC: Reduced the severity of some errors from fatal to error. There
is
no need to abort on simple errors within a field definition.

Debugger: Simplified the output of the help command. All help output now
in
a single screen, instead of help subcommands. ACPICA Bugzilla 897.

12 January 2011. Summary of changes for version 20110112:

1) ACPI CA Core Subsystem:

Fixed a race condition between method execution and namespace walks that
can
possibly cause a fault. The problem was apparently introduced in version
20100528 as a result of a performance optimization that reduces the
number
of

namespace walks upon method exit by using the delete_namespace_subtree function instead of the delete_namespace_by_owner function used previously.

Bug is a missing namespace lock in the delete_namespace_subtree function.
dana.myers@oracle.com

Fixed several issues and a possible fault with the automatic "serialized"

method support. History: This support changes a method to "serialized" on the fly if the method generates an AE_ALREADY_EXISTS error, indicating the possibility that it cannot handle reentrancy. This fix repairs a couple of issues seen in the field, especially on machines with many cores:

- 1) Delete method children only upon the exit of the last thread, so as to not delete objects out from under other running threads (and possibly causing a fault.)
- 2) Set the "serialized" bit for the method only upon the exit of the Last thread, so as to not cause deadlock when running threads attempt to exit.
- 3) Cleanup the use of the AML "MethodFlags" and internal method flags so that there is no longer any confusion between the two.

Lin Ming, Bob Moore. Reported by dana.myers@oracle.com.

Debugger: Now lock the namespace for duration of a namespace dump. Prevents

issues if the namespace is changing dynamically underneath the debugger.

Especially affects temporary namespace nodes, since the debugger displays these also.

Updated the ordering of include files. The ACPICA headers should appear before any compiler-specific headers (stdio.h, etc.) so that acenv.h can set any necessary compiler-specific defines, etc. Affects the ACPI-related tools and utilities.

Updated all ACPICA copyrights and signons to 2011. Added the 2011 copyright to all module headers and signons, including the Linux header. This affects virtually every file in the ACPICA core subsystem, iASL compiler, and all utilities.

Added project files for MS Visual Studio 2008 (VC++ 9.0). The original

project files for VC++ 6.0 are now obsolete. New project files can be found under `acpica/generate/msvc9`. See `acpica/generate/msvc9/readme.txt` for details.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 9.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release (VC 6.0):

Non-Debug Version: 89.8K Code, 18.9K Data, 108.7K Total

Debug Version: 166.6K Code, 52.1K Data, 218.7K Total

Current Release (VC 9.0):

Non-Debug Version: 89.7K Code, 23.7K Data, 113.4K Total

Debug Version: 163.9K Code, 67.5K Data, 231.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added generic data types to the Data Table compiler. Add "generic" data types such as `UINT32`, `String`, `Unicode`, etc., to simplify the generation of platform-defined tables such as `UEFI`. Lin Ming.

iASL: Added listing support for the Data Table Compiler. Adds listing support (-l) to display actual binary output for each line of input code.

09 December 2010. Summary of changes for version 20101209:

1) ACPI CA Core Subsystem:

Completed the major overhaul of the GPE support code that was begun in July 2010. Major features include: removal of `_PRW` execution in `ACPICA` (host executes `_PRWs` anyway), cleanup of "wake" GPE interfaces and processing, changes to existing interfaces, simplification of GPE handler operation, and a handful of new interfaces:

`AcpiUpdateAllGpes`

`AcpiFinishGpe`

`AcpiSetupGpeForWake`

AcpiSetGpeWakeMask

One new file, evxfge.c to consolidate all external GPE interfaces.

See the ACPICA Programmer Reference for full details and programming information. See the new section 4.4 "General Purpose Event (GPE) Support"

for a full overview, and section 8.7 "ACPI General Purpose Event Management"

for programming details. ACPICA BZ 858,870,877. Matthew Garrett, Lin Ming,

Bob Moore, Rafael Wysocki.

Implemented a new GPE feature for Windows compatibility, the "Implicit Wake

GPE Notify". This feature will automatically issue a Notify(2) on a device

when a Wake GPE is received if there is no corresponding GPE method or handler. ACPICA BZ 870.

Fixed a problem with

the Scope() operator during table parse and load phase.

During load phase (table load or method execution), the scope operator should

not enter the target into the namespace. Instead, it should open a new scope

at the target location. Linux BZ 19462, ACPICA BZ 882.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a

much larger code and data size.

Previous Release:

Non-Debug Version: 89.8K Code, 18.9K Data, 108.7K Total

Debug Version: 166.6K Code, 52.1K Data, 218.7K Total

Current Release:

Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total

Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Relax the alphanumeric restriction on _CID strings. These strings are

"bus-specific" per the ACPI specification, and therefore any characters

are

acceptable. The only checks that can be performed are for a null string and perhaps for a leading asterisk. ACPICA BZ 886.

iASL: Fixed a problem where a syntax error that caused a premature EOF condition on the source file emitted a very confusing error message. The premature EOF is now detected correctly. ACPICA BZ 891.

Disassembler: Decode the AccessSize within a Generic Address Structure (byte access, word access, etc.) Note, this field does not allow arbitrary bit access, the size is encoded as 1=byte, 2=word, 3=dword, and 4=qword.

New: AcpiNames utility - Example namespace dump utility. Shows an example of ACPICA configuration for a minimal namespace dump utility. Uses table and namespace managers, but no AML interpreter. Does not add any functionality over AcpiExec, it is a subset of AcpiExec. The purpose is to show how to partition and configure ACPICA. ACPICA BZ 883.

AML Debugger: Increased the debugger buffer size for method return objects. Was 4K, increased to 16K. Also enhanced error messages for debugger method execution, including the buffer overflow case.

13 October 2010. Summary of changes for version 20101013:

1) ACPI CA Core Subsystem:

Added support to clear the PCIEXP_WAKE event. When clearing ACPI events, now clear the PCIEXP_WAKE_STS bit in the ACPI PM1 Status Register, via HwClearAcpiStatus. Original change from Colin King. ACPICA BZ 880.

Changed the type of the predefined namespace object _TZ from ThermalZone to Device. This was found to be confusing to the host software that processes the various thermal zones, since _TZ is not really a ThermalZone. However, a Notify() can still be performed on it. ACPICA BZ 876. Suggestion from Rui Zhang.

Added Windows Vista SP2 to the list of supported _OSI strings. The actual string is "Windows 2006 SP2".

Eliminated duplicate code in AcpiUtExecute* functions. Now that the nsrepair code automatically repairs _HID-related strings, this type of code is no longer needed in Execute_HID, Execute_CID, and Execute_UID. ACPICA BZ 878.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total

Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

Current Release:

Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total

Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented additional compile-time validation for _HID strings. The non-hex prefix (such as "PNP" or "ACPI") must be uppercase, and the length of the string must be exactly seven or eight characters. For both _HID and _CID strings, all characters must be alphanumeric. ACPICA BZ 874.

iASL:

Allow certain "null" resource descriptors. Some BIOS code creates descriptors that are mostly or all zeros, with the expectation that they will be filled in at runtime. iASL now allows this as long as there is a "resource tag" (name) associated with the descriptor, which gives the ASL a handle needed to modify the descriptor. ACPICA BZ 873.

Added single-thread support to the generic Unix application OSL. Primarily for iASL support, this change removes the use of semaphores in the single-threaded ACPICA tools/applications - increasing performance. The

_MULTI_THREADED option was replaced by the (reverse) ACPI_SINGLE_THREADED option. ACPICA BZ 879.

AcpiExec: several fixes for the 64-bit version. Adds XSDT support and support for 64-bit DSDT/FACS addresses in the FADT. Lin Ming.

iASL: Moved all compiler messages to a new file, aslmessages.h.

15 September 2010. Summary of changes for version 20100915:

1) ACPI CA Core Subsystem:

Removed

the AcpiOsDerivePciId OSL interface. The various host implementations of this function were not OS-dependent and are now obsolete and can be removed from all host OSLs. This function has been replaced by AcpiHwDerivePciId, which is now part of the ACPICA core code. AcpiHwDerivePciId has been implemented without recursion. Adds one new module, hwpci.c. ACPICA BZ 857.

Implemented a dynamic repair for _HID and _CID strings. The following problems are now repaired at runtime: 1) Remove a leading asterisk in the string, and 2) the entire string is uppercased. Both repairs are in accordance with the ACPI specification and will simplify host driver code.

ACPICA BZ 871.

The ACPI_THREAD_ID type is no longer configurable, internally it is now always UINT64. This simplifies the ACPICA code, especially any printf output.

UINT64 is the only common data type for all thread_id types across all operating systems. It is now up to the host OSL to cast the native thread_id

type to UINT64 before returning the value to ACPICA (via AcpiOsGetThreadId).

Lin Ming, Bob Moore.

Added the ACPI_INLINE type to enhance the ACPICA configuration. The "inline"

keyword is not standard across compilers, and this type allows inline to be

configured on a per-compiler basis. Lin Ming.

Made the system global AcpiGbl_SystemAwakeAndRunning publicly

available.

Added an extern for this boolean in acpixf.h. Some hosts utilize this value during suspend/restore operations. ACPICA BZ 869.

All code that implements error/warning messages with the "ACPI:" prefix has been moved to a new module, utxferror.c.

The UINT64_OVERLAY was moved to utmath.c, which is the only module where it is used. ACPICA BZ 829. Lin Ming, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 89.1K Code, 19.0K Data, 108.1K Total

Debug Version: 165.1K Code, 51.9K Data, 217.0K Total

Current Release:

Non-Debug Version: 89.9K Code, 19.0K Data, 108.9K Total

Debug Version: 166.3K Code, 52.1K Data, 218.4K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Write ACPI errors to stderr instead of the output file.

This keeps the output files free of random error messages that may originate from within the namespace/interpreter code. Used this opportunity to merge all ACPI:-style messages into a single new module, utxferror.c. ACPICA BZ 866. Lin Ming, Bob Moore.

Tools: update some printf's for ansi warnings on size_t. Handle width change of size_t on 32-bit versus 64-bit generations. Lin Ming.

06 August 2010. Summary of changes for version 20100806:

1) ACPI CA Core Subsystem:

Designed and implemented a new host interface to the _OSI support

code.

This

will allow the host to dynamically add or remove multiple `_OSI` strings, as

well as install an optional handler that is called for each `_OSI` invocation.

Also added a new AML debugger command, 'osi' to display and modify the global

`_OSI` string table, and test support in the `AcpiExec` utility. See the `ACPICA`

reference manual for full details. Lin Ming, Bob Moore. `ACPICA BZ 836`.

New Functions:

`AcpiInstallInterface` - Add an `_OSI` string.

`AcpiRemoveInterface` - Delete an `_OSI` string.

`AcpiInstallInterfaceHandler` - Install optional `_OSI` handler.

Obsolete Functions:

`AcpiOsValidateInterface` - no longer used.

New Files:

`source/components/utilities/utosi.c`

Re-introduced the support to enable multi-byte transfers for Embedded Controller (EC) operation regions. A reported problem was found to be a bug

in the host OS, not in the multi-byte support. Previously, the maximum data

size passed to the EC operation region handler was a single byte. There are

often EC Fields larger than one byte that need to be transferred, and it is

useful for the EC driver to lock these as a single transaction. This change

enables single transfers larger than 8 bits. This effectively changes the access to the EC space from `ByteAcc` to `AnyAcc`, and will probably require changes to the host OS Embedded Controller driver to enable 16/32/64/256-bit

transfers in addition to 8-bit transfers. Alexey Starikovskiy, Lin Ming.

Fixed a problem with the prototype for `AcpiOsReadPciConfiguration`. The prototype in `acpiosxf.h` had the output value pointer as a `(void *)`.

It should be a `(UINT64 *)`. This may affect some host OSL code.

Fixed a couple problems with the recently modified Linux makefiles for `iASL`

and `AcpiExec`. These new makefiles place the generated object files in the local directory so that there can be no collisions between the files that are

shared between them that are compiled with different options.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total

Debug Version: 164.0K Code, 51.5K Data, 215.5K Total

Current Release:

Non-Debug Version: 89.1K Code, 19.0K Data, 108.1K Total

Debug Version: 165.1K Code, 51.9K Data, 217.0K Total

2) iASL Compiler/Disassembler and Tools:

iASL/Disassembler: Added a new option (-da, "disassemble all") to load the namespace from and disassemble an entire group of AML files. Useful for loading all of the AML tables for a given machine (DSDT, SSDT1...SSDTn) and disassembling with one simple command. ACPICA BZ 865. Lin Ming.

iASL: Allow multiple invocations of -e option. This change allows multiple uses of -e on the command line: "-e ssdt1.dat -e ssdt2.dat". ACPICA BZ 834. Lin Ming.

02

July 2010. Summary of changes for version 20100702:

1) ACPI CA Core Subsystem:

Implemented several updates to the recently added GPE reference count support. The model for "wake" GPEs is changing to give the host OS complete control of these GPEs. Eventually, the ACPICA core will not execute any _PRW methods, since the host already must execute them. Also, additional changes were made to help ensure that the reference counts are kept in proper synchronization with reality. Rafael J. Wysocki.

- 1) Ensure that GPEs are not enabled twice during initialization.
- 2) Ensure that GPE enable masks stay in sync with the reference count.

- 3) Do not inadvertently enable GPEs when writing GPE registers.
- 4) Remove the internal wake reference counter and add new AcpiGpeWakeup interface. This interface will set or clear individual GPEs for wakeup.
- 5) Remove GpeType argument from AcpiEnable and AcpiDisable. These interfaces are now used for "runtime" GPEs only.

Changed the behavior of the GPE install/remove handler interfaces. The GPE is no longer disabled during this process, as it was found to cause problems on some machines. Rafael J. Wysocki.

Reverted a change introduced in version 20100528 to enable Embedded Controller multi-byte transfers. This change was found to cause problems with Index Fields and possibly Bank Fields. It will be reintroduced when these problems have been resolved.

Fixed a problem with references to Alias objects within Package Objects. A reference to an Alias within the definition of a Package was not always resolved properly. Aliases to objects like Processors, Thermal zones, etc. were resolved to the actual object instead of a reference to the object as it should be. Package objects are only allowed to contain integer, string, buffer, package, and reference objects. Redhat bugzilla 608648.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total

Debug Version: 164.1K Code, 51.5K Data, 215.6K Total

Current Release:

Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total

Debug Version: 164.0K Code, 51.5K Data, 215.5K Total

- 2) iASL Compiler/Disassembler and Tools:

iASL: Implemented a new compiler subsystem to allow definition and compilation of the non-AML ACPI tables such as FADT, MADT, SRAT, etc. These are called "ACPI Data Tables", and the new compiler is the "Data Table Compiler". This compiler is intended to simplify the existing error-prone process of creating these tables for the BIOS, as well as allowing the disassembly, modification, recompilation, and override of existing ACPI data tables. See the iASL User Guide for detailed information.

iASL:

Implemented a new Template Generator option in support of the new Data Table Compiler. This option will create examples of all known ACPI tables that can be used as the basis for table development. See the iASL documentation and the -T option.

Disassembler and headers: Added support for the WDDT ACPI table (Watchdog Descriptor Table).

Updated the Linux makefiles for iASL and AcpiExec to place the generated object files in the local directory so that there can be no collisions between the shared files between them that are generated with different options.

Added support for Mac OS X in the Unix OSL used for iASL and AcpiExec. Use the #define __APPLE__ to enable this support.

28 May 2010. Summary of changes for version 20100528:

Note: The ACPI 4.0a specification was released on April 5, 2010 and is available at www.acpi.info. This is primarily an errata release.

1) ACPI CA Core Subsystem:

Undefined ACPI tables: We are looking for the definitions for the following ACPI tables that have been seen in the field: ATKG, IEIT, GSCI.

Implemented support to enable multi-byte transfers for Embedded Controller (EC) operation regions. Previously, the maximum data size passed to the EC operation region handler was a single byte. There are often EC Fields larger

than one byte that need to be transferred, and it is useful for the EC driver to lock these as a single transaction. This change enables single transfers larger than 8 bits. This effectively changes the access to the EC space from ByteAcc to AnyAcc, and will probably require changes to the host OS Embedded Controller driver to enable 16/32/64/256-bit transfers in addition to 8-bit transfers. Alexey Starikovskiy, Lin Ming

Implemented a performance enhancement for namespace search and access. This change enhances the performance of namespace searches and walks by adding a backpointer to the parent in each namespace node. On large namespaces, this change can improve overall ACPI performance by up to 9X. Adding a pointer to each namespace node increases the overall size of the internal namespace by about 5%, since each namespace entry usually consists of both a namespace node and an ACPI operand object. However, this is the first growth of the namespace in ten years. ACPICA bugzilla 817. Alexey Starikovskiy.

Implemented a performance optimization that reduces the number of namespace walks. On control method exit, only walk the namespace if the method is known to have created namespace objects outside of its local scope. Previously, the entire namespace was traversed on each control method exit. This change can improve overall ACPI performance by up to 3X. Alexey Starikovskiy, Bob Moore.

Added support to truncate I/O addresses to 16 bits for Windows compatibility. Some ASL code has been seen in the field that inadvertently has bits set above bit 15. This feature is optional and is enabled if the BIOS requests any Windows OSI strings. It can also be enabled by the host OS. Matthew Garrett, Bob Moore.

Added support to limit the maximum time for the ASL Sleep() operator. To

prevent accidental deep sleeps, limit the maximum time that Sleep() will actually sleep. Configurable, the default maximum is two seconds. ACPICA bugzilla 854.

Added run-time validation support for the _WDG and _WED Microsoft predefined methods. These objects are defined by "Windows Instrumentation", and are not part of the ACPI spec. ACPICA BZ 860.

Expanded all statistic counters used during namespace and device initialization from 16 to 32 bits in order to support very large namespaces.

Replaced all instances of %d in printf format specifiers with %u since nearly all integers in ACPICA are unsigned.

Fixed the exception namestring for AE_WAKE_ONLY_GPE. Was incorrectly returned as AE_NO_HANDLER.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 88.4K Code, 18.8K Data, 107.2K Total

Debug Version: 164.2K Code, 51.5K Data, 215.7K Total

Current Release:

Non-Debug Version: 88.3K Code, 18.8K Data, 107.1K Total

Debug Version: 164.1K Code, 51.5K Data, 215.6K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added compiler support for the _WDG and _WED Microsoft predefined methods. These objects are defined by "Windows Instrumentation", and are not part of the ACPI spec. ACPICA BZ 860.

AcpiExec: added option to disable the memory tracking mechanism. The -dt option will disable the tracking mechanism, which improves performance considerably.

AcpiExec: Restructured the command line options into -d (disable) and -e

(enable) options.

28 April 2010. Summary of
changes for version 20100428:

1) ACPI CA Core Subsystem:

Implemented GPE support for dynamically loaded ACPI tables. For all GPEs, including FADT-based and GPE Block Devices, execute any `_PRW` methods in the new table, and process any `_Lxx/_Exx` GPE methods in the new table. Any runtime GPE that is referenced by an `_Lxx/_Exx` method in the new table is immediately enabled. Handles the FADT-defined GPEs as well as GPE Block Devices. Provides compatibility with other ACPI implementations. Two new files added, `evgpeinit.c` and `evgpeutil.c`. ACPICA BZ 833. Lin Ming, Bob Moore.

Fixed a regression introduced in version 20100331 within the table manager where initial table loading could fail. This was introduced in the fix for `AcpiReallocateRootTable`. Also, renamed some of fields in the table manager data structures to clarify their meaning and use.

Fixed a possible allocation overrun during internal object copy in `AcpiUtCopySimpleObject`. The original code did not correctly handle the case where the object to be copied was a namespace node. Lin Ming. ACPICA BZ 847.

Updated the allocation dump routine, `AcpiUtDumpAllocation` and fixed a possible access beyond end-of-allocation. Also, now fully validate descriptor (size and type) before output. Lin Ming, Bob Moore. ACPICA BZ 847

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 87.9K Code, 18.6K Data, 106.5K Total

Debug Version: 163.5K Code, 51.3K Data, 214.8K Total

Current Release:

Non-Debug Version: 88.4K Code, 18.8K Data, 107.2K Total

Debug Version: 164.2K Code, 51.5K Data, 215.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented Min/Max/Len/Gran validation for address resource descriptors. This change implements validation for the address fields that are common to all address-type resource descriptors. These checks are implemented: Checks for valid Min/Max, length within the Min/Max window, valid granularity, Min/Max a multiple of granularity, and _MIF/_MAF as per table 6-40 in the ACPI 4.0a specification. Also split the large aslrestype1.c and aslrestype2.c files into five new files. ACPICA BZ 840.

iASL: Added support for the _Wxx predefined names. This support was missing and these names were not recognized by the compiler as valid predefined names. ACPICA BZ 851.

iASL: Added an error for all predefined names that are defined to return no value and thus must be implemented as Control Methods. These include all of the _Lxx, _Exx, _Wxx, and _Qxx names, as well as some other miscellaneous names such as _DIS, _INI, _IRC, _OFF, _ON, and _PSx. ACPICA BZ 850, 856.

iASL: Implemented the -ts option to emit hex AML data in ASL format, as an ASL Buffer. Allows ACPI tables to be easily included within ASL files, to be dynamically loaded via the Load() operator. Also cleaned up output for the -ta and -tc options. ACPICA BZ 853.

Tests: Added a new file with examples of extended iASL error checking. Demonstrates the advanced error checking ability of the iASL compiler. Available at tests/misc/badcode.asl.

31 March 2010. Summary of changes for version 20100331:

1) ACPI CA Core Subsystem:

Completed a major update for the GPE support in order to improve support for shared GPEs and to simplify both host OS and ACPICA code. Added a reference count mechanism to support shared GPEs that require multiple device drivers.

Several external interfaces have changed. One external interface has been removed. One new external interface was added. Most of the GPE external interfaces now use the GPE spinlock instead of the events mutex (and the Flags parameter for many GPE interfaces has been removed.) See the updated

ACPICA

Programmer Reference for details. Matthew Garrett, Bob Moore, Rafael Wysocki. ACPICA BZ 831.

Changed:

AcpiEnableGpe, AcpiDisableGpe, AcpiClearGpe, AcpiGetGpeStatus

Removed:

AcpiSetGpeType

New:

AcpiSetGpe

Implemented write support for DataTable operation regions. These regions are defined via the DataTableRegion() operator. Previously, only read support was implemented. The ACPI specification allows DataTableRegions to be read/write, however.

Implemented a new subsystem option to force a copy of the DSDT to local memory. Optionally copy the entire DSDT to local memory (instead of simply mapping it.) There are some (albeit very rare) BIOSs that corrupt or replace the original DSDT, creating the need for this option. Default is FALSE, do not copy the DSDT.

Implemented detection of a corrupted or replaced DSDT. This change adds support to detect a DSDT that has been corrupted and/or replaced from outside the OS (by firmware). This is typically catastrophic for the system, but has been seen on some machines. Once this problem has been detected, the DSDT copy option can be enabled via system configuration. Lin Ming, Bob Moore.

Fixed two problems with AcpiReallocateRootTable during the root table copy.

When copying the root table to the new allocation, the length used was incorrect. The new size was used instead of the current table size, meaning too much data was copied. Also, the count of available slots for ACPI tables was not set correctly. Alexey Starikovskiy, Bob Moore.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 87.5K Code, 18.4K Data, 105.9K Total

Debug Version: 163.4K Code, 51.1K Data, 214.5K Total

Current Release:

Non-Debug Version: 87.9K Code,
18.6K Data, 106.5K Total

Debug Version: 163.5K Code, 51.3K Data, 214.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implement limited typechecking for values returned from predefined control methods. The type of any returned static (unnamed) object is now validated. For example, Return(1). ACPICA BZ 786.

iASL: Fixed a predefined name object verification regression. Fixes a problem introduced in version 20100304. An error is incorrectly generated if a predefined name is declared as a static named object with a value defined using the keywords "Zero", "One", or "Ones". Lin Ming.

iASL: Added Windows 7 support for the -g option (get local ACPI tables) by reducing the requested registry access rights. ACPICA BZ 842.

Disassembler: fixed a possible fault when generating External() statements.

Introduced in commit ae7d6fd: Properly handle externals with parent-prefix (carat). Fixes a string length allocation calculation. Lin Ming.

04

March 2010. Summary of changes for version 20100304:

1) ACPI CA Core Subsystem:

Fixed a possible problem with the AML Mutex handling function `AcpiExReleaseMutex` where the function could fault under the very rare condition when the interpreter has blocked, the interpreter lock is released, the interpreter is then reentered via the same thread, and attempts to acquire an AML mutex that was previously acquired. FreeBSD report 140979.
Lin
Ming.

Implemented additional configuration support for the AML "Debug Object". Output from the debug object can now be enabled via a global variable, `AcpiGbl_EnableAmlDebugObject`. This will assist with remote machine debugging. This debug output is now available in the release version of ACPICA instead of just the debug version. Also, the entire debug output module can now be configured out of the ACPICA build if desired. One new file added, `executer/exdebug.c`. Lin Ming, Bob Moore.

Added header support for the ACPI MCHI table (Management Controller Host Interface Table). This table was added in ACPI 4.0, but the defining document has only recently become available.

Standardized output of integer values for ACPICA warnings/errors. Always use `0x` prefix for hex output, always use `%u` for unsigned integer decimal output. Affects `ACPI_INFO`, `ACPI_ERROR`, `ACPI_EXCEPTION`, and `ACPI_WARNING` (about 400 invocations.) These invocations were converted from the original `ACPI_DEBUG_PRINT` invocations and were not consistent. ACPICA BZ 835.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 87.1K Code, 18.0K Data, 105.1K Total

Debug Version: 163.5K Code, 50.9K Data, 214.4K Total

Current Release:

Non-Debug Version: 87.5K Code, 18.4K Data, 105.9K Total

Debug Version: 163.4K Code, 51.1K Data, 214.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented typechecking support for static (non-control method) predefined named objects that are declared with the Name() operator. For example, the type of this object is now validated to be of type Integer: Name(_BBN, 1). This change migrates the compiler to using the core predefined name table instead of maintaining a local version. Added a new file, aslpredef.c. ACPICA BZ 832.

Disassembler: Added support for the ACPI 4.0 MCHI table.

21 January 2010. Summary of changes for version 20100121:

1) ACPI CA Core Subsystem:

Added the 2010 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, the tools/utilities, and the test suites.

Implemented a change to the AcpiGetDevices interface to eliminate unnecessary invocations of the _STA method. In the case where a specific _HID is requested, do not run _STA until a _HID match is found. This eliminates potentially dozens of _STA calls during a search for a particular device/HID, which in turn can improve boot times. ACPICA BZ 828. Lin Ming.

Implemented an additional repair for predefined method return values. Attempt to repair unexpected NULL elements within returned Package objects. Create an Integer of value zero, a NULL String, or a zero-length Buffer as appropriate. ACPICA BZ 818. Lin Ming, Bob Moore.

Removed the obsolete ACPI_INTEGER data type. This type was introduced as the code was migrated from ACPI 1.0 (with 32-bit AML integers) to ACPI 2.0 (with 64-bit AML integers). It is now obsolete and this change removes it from

the
ACPI CA code base, replaced by UINTE64. The original typedef has been
retained
for now for compatibility with existing device driver code. ACPI CA BZ
824.

Removed the unused UINTE32_STRUCT type, and the obsolete Integer64 field
in
the
parse tree object.

Added additional warning options for the gcc-4 generation. Updated the
source
accordingly. This includes some code restructuring to eliminate
unreachable
code, elimination of some gotos, elimination of unused return values,
some
additional casting, and removal of redundant declarations.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:

Non-Debug Version: 87.0K Code, 18.0K Data, 105.0K Total

Debug Version: 163.4K Code, 50.8K Data, 214.2K Total

Current Release:

Non-Debug Version: 87.1K Code, 18.0K Data, 105.1K Total

Debug Version: 163.5K Code, 50.9K Data, 214.4K Total

2) iASL Compiler/Disassembler and Tools:

No functional changes for this release.

14 December 2009.

Summary of changes for version 20091214:

1) ACPI CA Core Subsystem:

Enhanced automatic data type conversions for predefined name repairs.

This

change expands the automatic repairs/conversions for predefined name

return

values to make Integers, Strings, and Buffers fully interchangeable.

Also,

a

Buffer can be converted to a Package of Integers if necessary. The nsrepair.c module was completely restructured. Lin Ming, Bob Moore.

Implemented automatic removal of null package elements during predefined name repairs. This change will automatically remove embedded and trailing NULL package elements from returned package objects that are defined to contain

a

variable number of sub-packages. The driver is then presented with a package with no null elements to deal with. ACPICA BZ 819.

Implemented a repair for the predefined _FDE and _GTM names. The expected return value for both names is a Buffer of 5 DWORDs. This repair fixes two possible problems (both seen in the field), where a package of integers is returned, or a buffer of BYTES is returned. With assistance from Jung-uk Kim.

Implemented additional module-level code support. This change will properly execute module-level code that is not at the root of the namespace (under a Device object, etc.). Now executes the code within the current scope instead of the root. ACPICA BZ 762. Lin Ming.

Fixed possible mutex acquisition errors when running _REG methods. Fixes a problem where mutex errors can occur when running a _REG method that is in the same scope as a method-defined operation region or an operation region under a module-level IF block. This type of code is rare, so the problem has not been seen before. ACPICA BZ 826. Lin Ming, Bob Moore.

Fixed a possible memory leak during module-level code execution. An object could be leaked for each block of executed module-level code if the interpreter slack mode is enabled This change deletes any implicitly returned object from

the module-level code block. Lin Ming.

Removed messages for successful predefined repair(s). The repair mechanism was considered too wordy. Now, messages are only unconditionally emitted if the return object cannot be repaired. Existing messages for successful repairs were converted to ACPI_DEBUG_PRINT messages for now. ACPICA BZ 827.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 86.6K Code, 18.2K Data, 104.8K Total

Debug Version: 162.7K Code, 50.8K Data, 213.5K Total

Current Release:

Non-Debug Version: 87.0K Code, 18.0K Data, 105.0K Total

Debug Version: 163.4K Code, 50.8K Data, 214.2K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a regression introduced in 20091112 where intermediate .SRC files were no longer automatically removed at the termination of the compile.

acpiexec: Implemented the -f option to specify default region fill value. This option specifies the value used to initialize buffers that simulate operation regions. Default value is zero. Useful for debugging problems that depend on a specific initial value for a region or field.

12 November 2009. Summary of changes for version 20091112:

1) ACPI CA Core Subsystem:

Implemented a post-order callback to AcpiWalkNamespace. The existing interface only has a pre-order callback. This change adds an additional parameter for a post-order callback which will be more useful for bus scans.

ACPICA BZ 779. Lin Ming. Updated the ACPICA Programmer Reference.

Modified the behavior of the operation region memory mapping cache for

SystemMemory. Ensure that the memory mappings created for operation regions do not cross 4K page boundaries. Crossing a page boundary while mapping regions can cause kernel warnings on some hosts if the pages have different attributes. Such regions are probably BIOS bugs, and this is the workaround.
Linux BZ 14445. Lin Ming.

Implemented an automatic repair for predefined methods that must return sorted lists. This change will repair (by sorting) packages returned by `_ALR`, `_PSS`, and `_TSS`. Drivers can now assume that the packages are correctly sorted and do not contain NULL package elements. Adds one new file, `namespace/nsrepair2.c`. ACPICA BZ 784. Lin Ming, Bob Moore.

Fixed a possible fault during predefined name validation if a return Package object contains NULL elements. Also adds a warning if a NULL element is followed by any non-null elements. ACPICA BZ 813, 814. Future enhancement may include repair or removal of all such NULL elements where possible.

Implemented additional module-level executable AML code support. This change will execute module-level code that is not at the root of the namespace (under a Device object, etc.) at table load time. Module-level executable AML code has been illegal since ACPI 2.0. ACPICA BZ 762. Lin Ming.

Implemented a new internal function to create Integer objects. This function simplifies miscellaneous object creation code. ACPICA BZ 823.

Reduced the severity of predefined repair messages, Warning to Info. Since the object was successfully repaired, a warning is too severe. Reduced to an info message for now. These messages may eventually be changed to debug-only.
ACPICA BZ 812.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and

has a
much larger code and data size.

Previous Release:

Non-Debug Version: 85.8K Code, 18.0K Data, 103.8K Total

Debug Version: 161.8K Code, 50.6K Data, 212.4K Total

Current Release:

Non-Debug Version: 86.6K Code, 18.2K

Data, 104.8K Total

Debug Version: 162.7K Code, 50.8K Data, 213.5K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Implemented Switch() with While(1) so that Break works correctly.

This

change correctly implements the Switch operator with a surrounding

While(1)

so that the Break operator works as expected. ACPICA BZ 461. Lin Ming.

iASL: Added a message if a package initializer list is shorter than

package

length. Adds a new remark for a Package() declaration if an initializer

list

exists, but is shorter than the declared length of the package. Although

technically legal, this is probably a coding error and it is seen in the

field. ACPICA BZ 815. Lin Ming, Bob Moore.

iASL: Fixed a problem where the compiler could fault after the maximum

number

of errors was reached (200).

acpixtract: Fixed a possible warning for pointer cast if the compiler

warning

level set very high.

13 October 2009. Summary of changes for version

20091013:

1) ACPI CA Core Subsystem:

Fixed a problem where an Operation Region _REG method could be executed

more

than once. If a custom address space handler is installed by the host

before

the "initialize operation regions" phase of the ACPICA initialization,

any

_REG methods for that address space could be executed twice. This change

fixes the problem. ACPICA BZ 427. Lin Ming.

Fixed a possible memory leak for the Scope() ASL operator. When the exact invocation of "Scope()" is executed (change scope to root), one internal operand object was leaked. Lin Ming.

Implemented a run-time repair for the _MAT predefined method. If the _MAT return value is defined as a Field object in the AML, and the field size is less than or equal to the default width of an integer (32 or 64), _MAT can incorrectly return an Integer instead of a Buffer. ACPICA now automatically repairs this problem. ACPICA BZ 810.

Implemented a run-time repair for the _BIF and _BIX predefined methods.

The "OEM Information" field is often incorrectly returned as an Integer with value zero if the field is not supported by the platform. This is due to an ambiguity in the ACPI specification. The field should always be a string. ACPICA now automatically repairs this problem by returning a NULL string within the returned Package. ACPICA BZ 807.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 85.6K Code, 18.0K Data, 103.6K Total

Debug Version: 161.7K Code, 50.9K Data, 212.6K Total

Current Release:

Non-Debug Version: 85.8K Code, 18.0K Data, 103.8K Total

Debug Version: 161.8K Code, 50.6K Data, 212.4K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed a problem where references to external symbols that contained one or more parent-prefixes (carats) were not handled correctly, possibly causing a fault. ACPICA BZ 806. Lin Ming.

Disassembler: Restructured the code so that all functions that handle external symbols are in a single module. One new file is added, common/dmextern.c.

AML Debugger: Added a max count argument for the Batch command (which executes multiple predefined methods within the namespace.)

iASL: Updated the compiler documentation (User Reference.) Available at <http://www.acpica.org/documentation/>. ACPICA BZ 750.

AcpiXtract: Updated for Lint and other formatting changes. Close all open files.

03 September 2009. Summary of changes for version 20090903:

1) ACPI CA Core Subsystem:

For Windows Vista compatibility, added the automatic execution of an `_INI` method located at the namespace root (`_INI`). This method is executed at table load time. This support is in addition to the automatic execution of

`_SB._INI`.

Lin Ming.

Fixed a possible memory leak in the interpreter for AML package objects if

the package initializer list is longer than the defined size of the package.

This apparently can only happen if the BIOS changes the package size on the

fly (seen in a `_PSS` object), as ASL compilers do not allow this. The interpreter will truncate the package to the defined size (and issue an error

message), but previously could leave the extra objects undeleted if they were

pre-created during the argument processing (such is the case if the package

consists of a number of sub-packages as in the `_PSS`.) ACPICA BZ 805.

Fixed a problem seen when a Buffer or String is stored to itself via ASL.

This has been reported in the field. Previously, ACPICA would zero out the

buffer/string. Now, the operation is treated as a noop. Provides Windows compatibility. ACPICA BZ 803. Lin Ming.

Removed an extraneous error message for ASL constructs of the form `Store(LocalX,LocalX)` when `LocalX` is uninitialized.

These curious

statements

are seen in many BIOSs and are once again treated as NOOPs and no error is

emitted when they are encountered. ACPICA BZ 785.

Fixed an extraneous warning message if a `_DSM` reserved method returns a Package object. `_DSM` can return any type of object, so validation on the return type cannot be performed. ACPICA BZ 802.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 85.5K Code, 18.0K Data, 103.5K Total

Debug Version: 161.6K Code, 50.9K Data, 212.5K Total

Current Release:

Non-Debug Version: 85.6K Code, 18.0K Data, 103.6K Total

Debug Version: 161.7K Code, 50.9K Data, 212.6K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a problem with the use of the Alias operator and Resource

Templates. The correct alias is now constructed and no error is emitted. ACPICA BZ 738.

iASL: Implemented the `-I` option to specify additional search directories for include files. Allows multiple additional search paths for include files. Directories are searched in the order specified on the command line (after the local directory is searched.) ACPICA BZ 800.

iASL: Fixed a problem where the full pathname for include files was not emitted for warnings/errors. This caused the IDE support to not work properly. ACPICA BZ 765.

iASL: Implemented the `-@` option to specify a Windows-style response file containing additional command line options. ACPICA BZ 801.

AcpiExec: Added support to load multiple AML files simultaneously (such as a DSDT and multiple SSDTs). Also added support for wildcards within the AML pathname. These features allow all machine tables to be easily loaded and debugged together. ACPICA BZ 804.

Disassembler: Added missing support for disassembly

of HEST table Error
Bank
subtables.

30 July 2009. Summary of changes for version 20090730:

The ACPI 4.0 implementation for ACPICA is complete with this release.

1) ACPI CA Core Subsystem:

ACPI 4.0: Added header file support for all new and changed ACPI tables. Completely new tables are: IBFT, IVRS, MSCT, and WAET. Tables that are new for ACPI 4.0, but have previously been supported in ACPICA are: CPEP, BERT, EINJ, ERST, and HEST. Other newly supported tables are: UEFI and WDAT. There have been some ACPI 4.0 changes to other existing tables. Split the large actbl1.h header into the existing actbl2.h header. ACPICA BZ 774.

ACPI 4.0: Implemented predefined name validation for all new names. There are 31 new names in ACPI 4.0. The predefined validation module was split into two files. The new file is namespace/nsrepair.c. ACPICA BZ 770.

Implemented support for so-called "module-level executable code". This is executable AML code that exists outside of any control method and is intended to be executed at table load time. Although illegal since ACPI 2.0, this type of code still exists and is apparently still being created. Blocks of this code are now detected and executed as intended. Currently, the code blocks must exist under either an If, Else, or While construct; these are the typical cases seen in the field. ACPICA BZ 762. Lin Ming.

Implemented an automatic dynamic repair for predefined names that return nested Package objects. This applies to predefined names that are defined to return a variable-length Package of sub-packages. If the number of sub-packages is one, BIOS code is occasionally seen that creates a simple single package with no sub-packages. This code attempts to fix the problem by wrapping a new package object around the existing package. These methods

can

be repaired: `_ALR`, `_CSD`, `_HPX`, `_MLS`, `_PRT`, `_PSS`, `_TRT`, and `_TSS`. ACPICA

BZ

790.

Fixed a regression introduced
in 20090625 for the `AcpiGetDevices`
interface.

The `_HID/_CID` matching was broken and no longer matched IDs correctly.

ACPICA

BZ 793.

Fixed a problem with `AcpiReset` where the reset would silently fail if the
register was one of the protected I/O ports. `AcpiReset` now bypasses the
port

validation mechanism. This may eventually be driven into the

`AcpiRead/Write`

interfaces.

Fixed a regression related to the recent update of the `AcpiRead/Write`
interfaces. A sleep/suspend could fail if the optional PM2 Control
register

does not exist during an attempt to write the Bus Master Arbitration bit.

(However, some hosts already delete the code that writes this bit, and

the

code may in fact be obsolete at this date.) ACPICA BZ 799.

Fixed a problem where `AcpiTerminate` could fault if inadvertently called
twice

in succession. ACPICA BZ 795.

Example Code and Data Size: These are the sizes for the OS-independent
`acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler.

The

debug version of the code includes the debug output trace mechanism and

has a

much larger code and data size.

Previous Release:

Non-Debug Version: 84.7K Code, 17.8K Data, 102.5K Total

Debug Version: 160.5K Code, 50.6K Data, 211.1K Total

Current Release:

Non-Debug Version: 85.5K Code, 18.0K Data, 103.5K Total

Debug Version: 161.6K Code, 50.9K Data, 212.5K Total

2) iASL Compiler/Disassembler and Tools:

ACPI 4.0: Implemented disassembler support for all new ACPI tables and

changes to existing tables. ACPICA BZ 775.

25 June 2009. Summary of changes for version 20090625:

The ACPI 4.0 Specification was released on June 16 and is available at www.acpi.info. ACPICA implementation of ACPI 4.0 is underway and will continue for the next few releases.

1) ACPI CA Core Subsystem:

ACPI 4.0: Implemented interpreter support for the IPMI operation region address space. Includes support for bi-directional data buffers and an IPMI address space handler (to be installed by an IPMI device driver.) ACPICA BZ 773. Lin Ming.

ACPI 4.0: Added changes for existing ACPI tables - FACS and SRAT. Includes support in both the header files and the disassembler.

Completed a major update for the AcpiGetObjectInfo external interface.

Changes include:

- Support for variable, unlimited length HID, UID, and CID strings.
- Support Processor objects the same as Devices (HID,UID,CID,ADR,STA, etc.)
- Call the _SxW power methods on behalf of a device object.
- Determine if a device is a PCI root bridge.
- Change the ACPI_BUFFER parameter to ACPI_DEVICE_INFO.

These changes will require an update to all callers of this interface.

See

the updated ACPICA Programmer Reference for details. One new source file has been added - utilities/utids.c. ACPICA BZ 368, 780.

Updated the AcpiRead and AcpiWrite external interfaces to support 64-bit transfers. The Value parameter has been extended from 32 bits to 64 bits

in

order to support new ACPI 4.0 tables. These changes will require an update

to

all callers of these interfaces. See the ACPICA Programmer Reference for details. ACPICA BZ 768.

Fixed several problems with AcpiAttachData. The handler was not invoked

when
the host node was deleted. The data sub-object was not automatically
deleted
when the host node was deleted. The interface to the handler had an
unused
parameter, this was removed. ACPICA BZ 778.

Enhanced the function that dumps ACPI table headers. All non-printable
characters in the string fields are now replaced with '?' (Signature,
OemId,
OemTableId, and CompilerId.) ACPI tables with non-printable characters in
these fields are occasionally seen in the field. ACPICA BZ 788.

Fixed a problem with predefined method repair code where the code that
attempts to repair/convert an object of incorrect type is only executed
on
the first time the predefined method is called. The mechanism that
disables
warnings on subsequent
calls was interfering with the repair mechanism.
ACPICA BZ 781.

Fixed a possible memory leak in the predefined validation/repair code
when
a
buffer is automatically converted to an expected string object.

Removed obsolete 16-bit files from the distribution and from the current
git
tree head. ACPICA BZ 776.

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has a
much larger code and data size.

Previous Release:

Non-Debug Version: 83.4K Code, 17.5K Data, 100.9K Total

Debug Version: 158.9K Code, 50.0K Data, 208.9K Total

Current Release:

Non-Debug Version: 84.7K Code, 17.8K Data, 102.5K Total

Debug Version: 160.5K Code, 50.6K Data, 211.1K Total

2) iASL Compiler/Disassembler and Tools:

ACPI 4.0: iASL and Disassembler - implemented support for the new IPMI
operation region keyword.

ACPICA BZ 771, 772. Lin Ming.

ACPI 4.0: iASL - implemented compile-time validation support for all new predefined names and control methods (31 total). ACPICA BZ 769.

21 May 2009. Summary of changes for version 20090521:

1) ACPI CA Core Subsystem:

Disabled the preservation of the SCI enable bit in the PM1 control register.

The SCI enable bit (bit 0, SCI_EN) is defined by the ACPI specification to be

a "preserved" bit - "OSPM always preserves this bit position", section 4.7.3.2.1. However, some machines fail if this bit is in fact preserved because the bit needs to be explicitly set by the OS as a workaround. No machines fail if the bit is not preserved. Therefore, ACPICA no longer attempts to preserve this bit.

Fixed a problem in AcpiRsGetPciRoutingTableLength where an invalid or incorrectly formed _PRT package could cause a fault. Added validation to ensure that each package element is actually a sub-package.

Implemented

a new interface to install or override a single control method,

AcpiInstallMethod. This interface is useful when debugging in order to repair

an existing method or to install a missing method without having to override

the entire ACPI table. See the ACPICA Programmer Reference for use and examples. Lin Ming, Bob Moore.

Fixed several reference count issues with the DdbHandle object that is created from a Load or LoadTable operator. Prevent premature deletion of the object. Also, mark the object as invalid once the table has been unloaded.

This is needed because the handle itself may not be deleted after the table

unload, depending on whether it has been stored in a named object by the caller. Lin Ming.

Fixed a problem with Mutex Sync Levels. Fixed a problem where if multiple mutexes of the same sync level are acquired but then not released in strict

opposite order, the internally maintained Current Sync Level becomes confused and can cause subsequent execution errors.
ACPICA BZ 471.

Changed the allowable release order for ASL mutex objects. The ACPI 4.0 specification has been changed to make the SyncLevel for mutex objects more useful. When releasing a mutex, the SyncLevel of the mutex must now be the same as the current sync level. This makes more sense than the previous rule (SyncLevel less than or equal). This change updates the code to match the specification.

Fixed a problem with the local version of the AcpiOsPurgeCache function. The (local) cache must be locked during all cache object deletions. Andrew Baumann.

Updated the Load operator to use operation region interfaces. This replaces direct memory mapping with region access calls. Now, all region accesses go through the installed region handler as they should.

Simplified and optimized the NsGetNextNode function. Reduced parameter count and reduced code for this frequently used function.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 82.8K Code, 17.5K Data, 100.3K Total

Debug Version: 158.0K Code, 49.9K Data, 207.9K Total

Current Release:

Non-Debug Version: 83.4K Code, 17.5K Data, 100.9K Total

Debug Version: 158.9K Code, 50.0K Data, 208.9K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Fixed some issues with DMAR, HEST, MADT tables. Some problems

with sub-table disassembly and handling invalid sub-tables. Attempt recovery after an invalid sub-table ID.

22 April 2009. Summary of changes for version 20090422:

1) ACPI CA Core Subsystem:

Fixed a compatibility issue with the recently released I/O port protection mechanism. For windows compatibility, 1) On a port protection violation, simply ignore the request and do not return an exception (allow the control method to continue execution.) 2) If only part of the request overlaps a protected port, read/write the individual ports that are not protected.
Linux
BZ 13036. Lin Ming

Enhanced the execution of the ASL/AML BreakPoint operator so that it actually breaks into the AML debugger if the debugger is present. This matches the ACPI-defined behavior.

Fixed several possible warnings related to the use of the configurable ACPI_THREAD_ID. This type can now be configured as either an integer or a pointer with no warnings. Also fixes several warnings in printf-like statements for the 64-bit build when the type is configured as a pointer.
ACPICA BZ 766, 767.

Fixed a number of possible warnings when compiling with gcc 4+ (depending on warning options.) Examples include printf formats, aliasing, unused globals, missing prototypes, missing switch default statements, use of non-ANSI library functions, use of non-ANSI constructs. See generate/unix/Makefile for a list of warning options used with gcc 3 and 4. ACPICA BZ 735.

Example Code and Data Size: These are the sizes for the OS-independent apcica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 82.6K Code, 17.6K Data, 100.2K Total
Debug Version: 157.7K Code, 49.9K Data, 207.6K Total
Current Release:
Non-Debug Version: 82.8K Code, 17.5K Data, 100.3K Total
Debug Version: 158.0K Code, 49.9K Data, 207.9K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Fixed a generation warning from Bison 2.3 and fixed several warnings on the 64-bit build.

iASL: Fixed a problem where the Unix/Linux versions of the compiler could not correctly digest Windows/DOS formatted files (with CR/LF).

iASL: Added a new option for "quiet mode" (-va) that produces only the compilation summary, not individual errors and warnings. Useful for large batch compilations.

AcpiExec: Implemented a new option (-z) to enable a forced semaphore/mutex timeout that can be used to detect hang conditions during execution of AML code (includes both internal semaphores and AML-defined mutexes and events.)

Added new makefiles for the generation of acpica in a generic unix-like environment. These makefiles are intended to generate the acpica tools and utilities from the original acpica git source tree structure.

Test Suites: Updated and cleaned up the documentation files. Updated the copyrights to 2009, affecting all source files. Use the new version of iASL with quiet mode. Increased the number of available semaphores in the Windows OSL, allowing the aslts to execute fully on Windows. For the Unix OSL, added an alternate implementation of the semaphore timeout to allow aslts to execute fully on Cygwin.

20 March 2009. Summary
of changes for version 20090320:

1) ACPI CA Core Subsystem:

Fixed a possible race condition between AcpiWalkNamespace and dynamic table unloads. Added a reader/writer locking mechanism to allow multiple concurrent namespace walks (readers), but block a dynamic table unload until it can gain exclusive write access to the namespace. This fixes a problem where a table unload could (possibly catastrophically) delete the portion of the namespace that is currently being examined by a walk. Adds a new file, utlock.c, that implements the reader/writer lock mechanism. ACPICA BZ 749.

Fixed a regression introduced in version 20090220 where a change to the FADT handling could cause the ACPICA subsystem to access non-existent I/O ports.

Modified the handling of FADT register and table (FACS/DSDT) addresses. The FADT can contain both 32-bit and 64-bit versions of these addresses. Previously, the 64-bit versions were favored, meaning that if both 32 and 64 versions were valid, but not equal, the 64-bit version was used. This was found to cause some machines to fail. Now, in this case, the 32-bit version is used instead. This now matches the Windows behavior.

Implemented a new mechanism to protect certain I/O ports. Provides Microsoft compatibility and protects the standard PC I/O ports from access via AML code. Adds a new file, hwvalid.c

Fixed a possible extraneous warning message from the FADT support. The message warns of a 32/64 length mismatch between the legacy and GAS definitions for a register.

Removed the obsolete AcpiOsValidateAddress OSL interface. This interface is made obsolete by the port protection mechanism above. It was previously used to validate the entire address range of an operation region, which could be incorrect if the range included illegal ports, but fields within the

operation region did not actually access those ports. Validation is now performed on a per-field basis instead of the entire region.

Modified

the handling of the PM1 Status Register ignored bit (bit 11.) Ignored bits must be "preserved" according to the ACPI spec. Usually, this means a read/modify/write when writing to the register. However, for status registers, writing a one means clear the event. Writing a zero means preserve the event (do not clear.) This behavior is clarified in the ACPI 4.0 spec, and the ACPICA code now simply always writes a zero to the ignored bit.

Modified the handling of ignored bits for the PM1 A/B Control Registers.

As

per the ACPI specification, for the control registers, preserve (read/modify/write) all bits that are defined as either reserved or ignored.

Updated the handling of write-only bits in the PM1 A/B Control Registers. When reading the register, zero the write-only bits as per the ACPI spec. ACPICA BZ 443. Lin Ming.

Removed "Linux" from the list of supported _OSI strings. Linux no longer wants to reply true to this request. The Windows strings are the only paths through the AML that are tested and known to work properly.

Previous Release:

Non-Debug Version: 82.0K Code, 17.5K Data, 99.5K Total

Debug Version: 156.9K Code, 49.8K Data, 206.7K Total

Current Release:

Non-Debug Version: 82.6K Code, 17.6K Data, 100.2K Total

Debug Version: 157.7K Code, 49.9K Data, 207.6K Total

2) iASL Compiler/Disassembler and Tools:

Acpiexec: Split the large aeexec.c file into two new files, aehandlers.c and aetables.c

20 February 2009. Summary of changes for version 20090220:

1) ACPI CA Core Subsystem:

Optimized the ACPI register locking. Removed locking for reads from the ACPI bit registers in PM1 Status, Enable, Control, and PM2 Control. The lock is not required when reading the single-bit registers. The AcpiGetRegisterUnlocked function is no longer needed and has been removed. This will improve performance for reads on these registers. ACPICA BZ 760.

Fixed the parameter validation for AcpiRead/Write. Now return AE_BAD_PARAMETER if the input register pointer is null, and AE_BAD_ADDRESS if the register has an address of zero. Previously, these cases simply returned AE_OK. For optional registers such as PM1B status/enable/control, the caller should check for a valid register address before calling. ACPICA BZ 748.

Renamed the external ACPI bit register access functions. Renamed AcpiGetRegister and AcpiSetRegister to clarify the purpose of these functions. The new names are AcpiReadBitRegister and AcpiWriteBitRegister. Also, restructured the code for these functions by simplifying the code path and condensing duplicate code to reduce code size.

Added new functions to transparently handle the possibly split PM1 A/B registers. AcpiHwReadMultiple and AcpiHwWriteMultiple. These two functions now handle the split registers for PM1 Status, Enable, and Control. ACPICA BZ 746.

Added a function to handle the PM1 control registers, AcpiHwWritePm1Control.

This function writes both of the PM1 control registers (A/B). These registers are different than the PM1 A/B status and enable registers in that different values can be written to the A/B registers. Most notably, the SLP_TYP bits can be different, as per the values returned from the _Sx predefined

methods.

Removed an extra register write within `AcpiHwClearAcpiStatus`. This function was writing an optional PM1B status register twice. The existing call to the low-level `AcpiHwRegisterWrite` automatically handles a possibly split PM1 A/B register. ACPICA BZ 751.

Split out the PM1 Status registers from the FADT. Added new globals for these registers (A/B), similar to the way the PM1 Enable registers are handled. Instead of overloading the FADT Event Register blocks. This makes the code clearer and less prone to error.

Fixed the warning message for when the platform contains too many ACPI tables for the default size of the global root table data structure. The calculation

for the truncation value was incorrect.

Removed the `ACPI_GET_OBJECT_TYPE` macro. Removed all instances of this obsolete macro, since it is now a simple reference to `->common.type`. There were about 150 invocations of the macro across 41 files. ACPICA BZ 755.

Removed the redundant `ACPI_BITREG_SLEEP_TYPE_B`. This type is the same as `TYPE_A`. Removed this and all related instances. Renamed `SLEEP_TYPE_A` to simply `SLEEP_TYPE`. ACPICA BZ 754.

Conditionally compile the `AcpiSetFirmwareWakingVector64` function. This function is only needed on 64-bit host operating systems and is thus not included for 32-bit hosts.

Debug output: print the input and result for invocations of the `_OSI` reserved control method via the `ACPI_LV_INFO` debug level. Also, reduced some of the verbosity of this debug level. Len Brown.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a

much larger code and data size.

Previous Release:

Non-Debug Version: 82.3K Code, 17.5K Data, 99.8K Total

Debug Version: 157.3K Code, 49.8K Data, 207.1K Total

Current Release:

Non-Debug Version: 82.0K Code, 17.5K Data, 99.5K Total

Debug Version: 156.9K Code, 49.8K Data, 206.7K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Decode the FADT PM_Profile field. Emit ascii names for the various legal performance profiles.

23 January 2009. Summary of changes for version 20090123:

1) ACPI CA Core Subsystem:

Added the 2009 copyright to all module headers and signons. This affects virtually every file in the ACPI CA core subsystem, the iASL compiler, and the tools/utilities.

Implemented a change to allow the host to override any ACPI table, including dynamically loaded tables. Previously, only the DSDT could be replaced by the host. With this change, the AcpiOsTableOverride interface is called for each table found in the RSDT/XSDT during ACPI CA initialization, and also whenever a table is dynamically loaded via the AML Load operator.

Updated FADT flag definitions, especially the Boot Architecture flags.

Debugger: For the Find command, automatically pad the input ACPI name with underscores if the name is shorter than 4 characters. This enables a match with the actual namespace entry which is itself padded with underscores.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 82.3K Code, 17.4K Data, 99.7K Total

Debug Version: 157.1K Code, 49.7K Data, 206.8K Total

Current Release:

Non-Debug Version: 82.3K Code, 17.5K Data, 99.8K Total

Debug Version:

157.3K Code, 49.8K Data, 207.1K Total

2) iASL Compiler/Disassembler and Tools:

Fix build error under Bison-2.4.

Disassembler: Enhanced FADT support. Added decoding of the Boot Architecture

flags. Now decode all flags, regardless of the FADT version. Flag output includes the FADT version which first defined each flag.

The iASL -g option now dumps the RSDT to a file (in addition to the FADT and

DSDT). Windows only.

04 December 2008. Summary of changes for version 20081204:

1) ACPI CA Core Subsystem:

The ACPICA Programmer Reference has been completely updated and revamped for

this release. This includes updates to the external interfaces, OSL interfaces, the overview sections, and the debugger reference.

Several new ACPICA interfaces have been implemented and documented in the programmer reference:

AcpiReset - Writes the reset value to the FADT-defined reset register.

AcpiDisableAllGpes - Disable all available GPEs.

AcpiEnableAllRuntimeGpes

- Enable all available runtime GPEs.

AcpiGetGpeDevice - Get the GPE block device associated with a GPE.

AcpiGbl_CurrentGpeCount - Tracks the current number of available GPEs.

AcpiRead - Low-level read ACPI register (was HwLowLevelRead.)

AcpiWrite - Low-level write ACPI register (was HwLowLevelWrite.)

Most of the public ACPI hardware-related interfaces have been moved to a new

file, components/hardware/hwxface.c

Enhanced the FADT parsing and low-level ACPI register access: The ACPI register lengths within the FADT are now used, and the low level ACPI

register access no longer hardcodes the ACPI register lengths. Given that there may be some risk in actually trusting the FADT register lengths, a run-time option was added to fall back to the default hardcoded lengths if the FADT proves to contain incorrect values - UseDefaultRegisterWidths. This option is set to true for now, and a warning is issued if a suspicious FADT register length is overridden with the default value.

Fixed a reference count issue in NsRepairObject. This problem was introduced in version 20081031 as part of a fix to repair Buffer objects within Packages. Lin Ming.

Added semaphore support to the Linux/Unix application OS-services layer (OSL). ACPICA BZ 448. Lin Ming.

Added the ACPI_MUTEX_TYPE configuration option to select whether mutexes will be implemented in the OSL, or will binary semaphores be used instead.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 81.7K Code, 17.3K Data, 99.0K Total

Debug Version: 156.4K Code, 49.4K Data, 205.8K Total

Current Release:

Non-Debug Version: 82.3K Code, 17.4K Data, 99.7K Total

Debug Version: 157.1K Code, 49.7K Data, 206.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Completed the '-e' option to include additional ACPI tables in order to aid with disassembly and External statement generation. ACPICA BZ 742.
Lin Ming.

iASL: Removed the "named object in while loop" error. The compiler cannot determine how many times a loop will execute. ACPICA BZ 730.

Disassembler: Implemented support for FADT revision 2 (MS extension).
ACPICA
BZ 743.

Disassembler: Updates for several ACPI data tables (HEST, EINJ, and MCFG).

31 October 2008. Summary of changes for version 20081031:

1) ACPI CA Core Subsystem:

Restructured the ACPICA header files into public/private. acpi.h now includes only the "public" acpica headers. All other acpica headers are "private" and should not be included by acpica users. One new file, accommon.h is used to include the commonly used private headers for acpica code generation. Future plans include moving all private headers to a new subdirectory.

Implemented an automatic Buffer->String return value conversion for predefined ACPI methods. For these methods (such as _BIF), added automatic conversion for return objects that are required to be a String, but a Buffer was found instead. This can happen when reading string battery data from an operation region, because it used to be difficult to convert the data from buffer to string from within the ASL. Ensures that the host OS is provided with a valid null-terminated string. Linux BZ 11822.

Updated the FACS waking vector interfaces. Split AcpiSetFirmwareWakingVector into two: one for the 32-bit vector, another for the 64-bit vector. This is required because the host OS must setup the wake much differently for each vector (real vs. protected mode, etc.) and the interface itself should not be deciding which vector to use. Also, eliminated the GetFirmwareWakingVector

interface, as it served no purpose (only the firmware reads the vector, OS only writes the vector.)
ACPICA BZ 731.

Implemented a mechanism to escape infinite AML While() loops. Added a loop counter to force exit from AML While loops if the count becomes too large.
This can occur in poorly written AML when the hardware does not respond within a while loop and the loop does not implement a timeout. The maximum loop count is configurable. A new exception code is returned when a loop is broken, AE_AML_INFINITE_LOOP. Alexey Starikovskiy, Bob Moore.

Optimized the execution of AML While loops. Previously, a control state object was allocated and freed for each execution of the loop. The optimization is to simply reuse the control state for each iteration. This speeds up the raw loop execution time by about 5%.

Enhanced the implicit return mechanism. For Windows compatibility, return an implicit integer of value zero for methods that contain no executable code.
Such methods are seen in the field as stubs (presumably), and can cause drivers to fail if they expect a return value. Lin Ming.

Allow multiple backslashes as root prefixes in namepaths. In a fully qualified namepath, allow multiple backslash prefixes. This can happen (and is seen in the field) because of the use of a double-backslash in strings (since backslash is the escape character) causing confusion. ACPICA BZ 739
Lin Ming.

Emit a warning if two different FACS or DSDT tables are discovered in the FADT. Checks if there are two valid but different addresses for the FACS and DSDT within the FADT (mismatch between the 32-bit and 64-bit fields.)

Consolidated the method argument count validation code. Merged the code that validates control method argument counts into the predefined validation module. Eliminates possible multiple warnings for incorrect argument counts.

Implemented ACPICA example code. Includes code for ACPICA initialization, handler installation, and calling a control method. Available at [source/tools/examples](#).

Added a global pointer for FACS table to simplify internal FACS access.

Use

the global pointer instead of using `AcpiGetTableByIndex` for each FACS access.

This simplifies the code for the Global Lock and the Firmware Waking Vector(s).

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 81.2K Code, 17.0K Data, 98.2K Total

Debug Version: 155.8K Code, 49.1K Data, 204.9K Total

Current Release:

Non-Debug Version: 81.7K Code, 17.3K Data, 99.0K Total

Debug Version: 156.4K Code, 49.4K Data, 205.8K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Improved disassembly of external method calls. Added the `-e` option to allow the inclusion of additional ACPI tables to help with the disassembly of method invocations and the generation of external declarations during the disassembly. Certain external method invocations cannot be disassembled properly without the actual declaration of the method. Use the `-e` option to include the table where the external method(s) are actually declared.

Most

useful for disassembling SSDTs that make method calls back to the master DSDT. Lin Ming. Example: To disassemble an SSDT with calls to DSDT: `iasl -d -e dsdt.aml ssdt1.aml`

iASL: Fix to allow references to aliases within ASL namepaths. Fixes a problem where the use of an alias within a namepath would result in a not found error or cause the compiler to fault. Also now allows forward

references from the Alias operator itself. ACPICA BZ 738.

26 September 2008. Summary of changes for version 20080926:

1) ACPI CA Core Subsystem:

Designed and implemented a mechanism to validate predefined ACPI methods and objects. This code validates the predefined ACPI objects (objects whose names start with underscore) that appear in the namespace, at the time they are evaluated. The argument count and the type of the returned object are validated against the ACPI specification. The purpose of this validation is to detect problems with the BIOS-implemented predefined ACPI objects before the results are returned to the ACPI-related drivers. Future enhancements may include actual repair of incorrect return objects where possible. Two new files are nspredef.c and acpredef.h.

Fixed a fault in the AML parser if a memory allocation fails during the Op completion routine AcpiPsCompleteThisOp. Lin Ming. ACPICA BZ 492.

Fixed an issue with implicit return compatibility. This change improves the implicit return mechanism to be more compatible with the MS interpreter. Lin Ming, ACPICA BZ 349.

Implemented support for zero-length buffer-to-string conversions. Allow zero length strings during interpreter buffer-to-string conversions. For example, during the ToDecimalString and ToHexString operators, as well as implicit conversions. Fiodor Suietov, ACPICA BZ 585.

Fixed two possible memory leaks in the error exit paths of AcpiUtUpdateObjectReference and AcpiUtWalkPackageTree. These functions are similar in that they use a stack of state objects in order to eliminate recursion. The stack must be fully unwound and deallocated if an error occurs. Lin Ming. ACPICA BZ 383.

Removed the unused ACPI_BITREG_WAKE_ENABLE definition and entry in the global ACPI register table. This bit does not exist and is unused. Lin Ming, Bob Moore ACPICA BZ 442.

Removed the obsolete version number in module headers. Removed the "\$Revision" number that appeared in each module header. This version number was useful under SourceSafe and CVS, but has no meaning under git. It is not only incorrect, it could also be misleading.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total

Debug Version: 153.7K Code, 48.2K Data, 201.9K Total

Current Release:

Non-Debug Version: 81.2K Code, 17.0K Data, 98.2K Total

Debug Version: 155.8K Code, 49.1K Data, 204.9K Total

29 August 2008. Summary of changes for version 20080829:

1) ACPI CA Core Subsystem:

Completed a major cleanup of the internal ACPI_OPERAND_OBJECT of type Reference. Changes include the elimination of cheating on the Object field for the DdbHandle subtype, addition of a reference class field to differentiate the various reference types (instead of an AML opcode), and the cleanup of debug output for this object. Lin Ming, Bob Moore. BZ 723

Reduce an error to a warning for an incorrect method argument count. Previously aborted with an error if too few arguments were passed to a control method via the external ACPICA interface. Now issue a warning instead and continue. Handles the case where the method inadvertently declares too many arguments, but does not actually use the extra ones. Applies mainly to

the predefined methods. Lin Ming. Linux BZ 11032.

Disallow the evaluation of named object types with no intrinsic value.

Return

AE_TYPE for objects that have no value and therefore evaluation is undefined:

Device, Event, Mutex, Region, Thermal, and Scope. Previously, evaluation of these types were allowed, but an exception would be generated at some point during the evaluation. Now, the error is generated up front.

Fixed a possible memory leak in the AcpiNsGetExternalPathname function (nsnames.c). Fixes a leak in the error exit path.

Removed the obsolete debug levels ACPI_DB_WARN and ACPI_DB_ERROR. These debug levels were made obsolete by the ACPI_WARNING, ACPI_ERROR, and ACPI_EXCEPTION interfaces. Also added ACPI_DB_EVENTS to correspond with the existing ACPI_LV_EVENTS.

Removed obsolete and/or unused exception codes from the acexcep.h header. There is the possibility that certain device drivers may be affected if they use any of these exceptions.

The ACPICA documentation has been added to the public git source tree, under acpica/documents. Included are the ACPICA programmer reference, the iASL compiler reference, and the changes.txt release logfile.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total

Debug Version: 153.9K Code, 48.4K Data, 202.3K Total

Current Release:

Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total

Debug Version: 153.7K Code, 48.2K Data, 201.9K Total

2) iASL

Compiler/Disassembler and Tools:

Allow multiple argument counts for the predefined _SCP method. ACPI 3.0 defines _SCP with 3 arguments. Previous versions defined it with only 1 argument. iASL now allows both definitions.

iASL/disassembler: avoid infinite loop on bad ACPI tables. Check for zero-length subtables when disassembling ACPI tables. Also fixed a couple of errors where a full 16-bit table type field was not extracted from the input properly.

acpisrc: Improve comment counting mechanism for generating source code statistics. Count first and last lines of multi-line comments as whitespace, not comment lines. Handle Linux legal header in addition to standard acpica header.

29 July 2008. Summary of changes for version 20080729:

1) ACPI CA Core Subsystem:

Fix a possible deadlock in the GPE dispatch. Remove call to AcpiHwDisableAllGpes during wake in AcpiEvGpeDispatch. This call will attempt to acquire the GPE lock but can deadlock since the GPE lock is already held at dispatch time. This code was introduced in version 20060831 as a response to Linux BZ 6881 and has since been removed from Linux.

Add a function to dereference returned reference objects. Examines the return object from a call to AcpiEvaluateObject. Any Index or RefOf references are automatically dereferenced in an attempt to return something useful (these reference types cannot be converted into an external ACPI_OBJECT.) Provides MS compatibility. Lin Ming, Bob Moore. Linux BZ 11105

x2APIC support: changes for MADT and SRAT ACPI tables. There are 2 new subtables for the MADT and one new subtable for the SRAT. Includes

disassembler and AcpiSrc support. Data from the Intel 64 Architecture x2APIC Specification, June 2008.

Additional error checking for pathname utilities. Add error check after all calls to AcpiNsGetPathnameLength. Add status return from AcpiNsBuildExternalPath and check after all calls. Add parameter validation

to AcpiUtInitializeBuffer. Reported by and initial patch by Ingo Molnar.

Return status from the global init function AcpiUtGlobalInitialize. This is used by both the kernel subsystem and the utilities such as iASL compiler. The function could possibly fail when the caches are initialized. Yang Yi.

Add a function to decode reference object types to strings. Created for improved error messages.

Improve object conversion error messages. Better error messages during object conversion from internal to the external ACPI_OBJECT. Used for external calls to AcpiEvaluateObject.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.6K Code, 16.2K Data, 95.8K Total

Debug Version: 153.5K Code, 48.2K Data, 201.7K Total

Current Release:

Non-Debug Version: 79.7K Code, 16.4K Data, 96.1K Total

Debug Version: 153.9K Code, 48.4K Data, 202.3K Total

2) iASL Compiler/Disassembler and Tools:

Debugger: fix a possible hang when evaluating non-methods. Fixes a problem introduced in version 20080701. If the object being evaluated (via execute command) is not a method, the debugger can hang while trying to obtain

non-existent parameters.

iASL: relax error for using reserved "_T_x" identifiers. These names can appear in a disassembled ASL file if they were emitted by the original compiler. Instead of issuing an error or warning and forcing the user to manually change these names, issue a remark instead.

iASL: error if named object created in while loop. Emit an error if any named object is created within a While loop. If allowed, this code will generate a run-time error on the second iteration of the loop when an attempt is made to create the same named object twice. ACPICA bugzilla 730.

iASL: Support absolute pathnames for include files. Add support for absolute pathnames within the Include operator. previously, only relative pathnames were supported.

iASL: Enforce minimum 1 interrupt in interrupt macro and Resource Descriptor. The ACPI spec requires one interrupt minimum. BZ 423

iASL: Handle a missing ResourceSource arg, with a present SourceIndex. Handles the case for the Interrupt Resource Descriptor where the ResourceSource argument is omitted but ResourceSourceIndex is present. Now leave room for the Index. BZ 426

iASL: Prevent error message if CondRefOf target does not exist. Fixes cases where an error message is emitted if the target does not exist. BZ 516

iASL: Fix broken -g option (get Windows ACPI tables). Fixes the -g option (get ACPI tables on Windows). This was apparently broken in version 20070919.

AcpiXtract: Handle EOF while extracting data. Correctly handle the case where the EOF happens immediately after the last table in the input file. Print completion message. Previously, no message was displayed in this case.

01 July 2008. Summary of changes for version 20080701:

0) Git source tree / acpica.org

Fixed a problem where a git-clone from http would not transfer the entire source tree.

1) ACPI CA Core Subsystem:

Implemented a "careful" GPE disable in AcpiEvDisableGpe, only modify one enable bit. Now performs a read-change-write of the enable register instead of simply writing out the cached enable mask. This will prevent inadvertent enabling of GPEs if a rogue GPE is received during initialization (before GPE handlers are installed.)

Implemented a copy for dynamically loaded tables. Previously, dynamically loaded tables were simply mapped - but on some machines this memory is corrupted after suspend. Now copy the table to a local buffer. For the OpRegion case, added checksum verify. Use the table length from the table header, not the region length.

For the Buffer case, use the table length also. Dennis Noordsij, Bob Moore. BZ 10734

Fixed a problem where the same ACPI table could not be dynamically loaded and unloaded more than once. Without this change, a table cannot be loaded again once it has been loaded/unloaded one time. The current mechanism does not unregister a table upon an unload. During a load, if the same table is found, this no longer returns an exception. BZ 722

Fixed a problem where the wrong descriptor length was calculated for the EndTag descriptor in 64-bit mode. The "minimal" descriptors such as EndTag are calculated as 12 bytes long, but the actual length in the internal descriptor is 16 because of the round-up to 8 on the 64-bit build. Reported by Linn Crosetto. BZ 728

Fixed a possible memory leak in the Unload operator. The DdbHandle returned by Load() did not have its reference count decremented during unload, leading

to a memory leak. Lin Ming. BZ 727

Fixed a possible memory leak when deleting thermal/processor objects. Any associated notify handlers (and objects) were not being deleted. Fiodor Suietov. BZ 506

Fixed the ordering of the ASCII names in the global mutex table to match the actual mutex IDs. Used by AcpiUtGetMutexName, a function used for debug only. Vegard Nossun. BZ 726

Enhanced the AcpiGetObjectInfo interface to return the number of required arguments if the object is a control method. Added this call to the debugger so the proper number of default arguments are passed to a method. This prevents a warning when executing methods from AcpiExec.

Added a check for an invalid handle in AcpiGetObjectInfo. Return AE_BAD_PARAMETER if input handle is invalid. BZ 474

Fixed an extraneous warning from exconfig.c on the 64-bit build.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.3K Code, 16.2K Data, 95.5K Total

Debug Version: 153.0K Code, 48.2K Data, 201.2K Total

Current Release:

Non-Debug Version: 79.6K Code, 16.2K Data, 95.8K Total

Debug Version: 153.5K Code, 48.2K Data, 201.7K Total

2) iASL Compiler/Disassembler and Tools:

iASL: Added two missing ACPI reserved names. Added _MTP and _ASZ, both resource descriptor names.

iASL: Detect invalid ASCII characters in input (windows version). Removed the "-CF" flag from the flex compile, enables correct detection of non-ASCII characters in the input. BZ 441

iASL: Eliminate warning when result of LoadTable is not used. Eliminate the "result of operation not used" warning when the DDB handle returned from LoadTable is not used. The warning is not needed. BZ 590

AcpiExec: Add support for dynamic table load/unload. Now calls _CFG method to pass address of table to the AML. Added option to disable OpRegion simulation to allow creation of an OpRegion with a real address that was passed to _CFG. All of this allows testing of the Load and Unload operators from AcpiExec.

Debugger: update tables command for unloaded tables. Handle unloaded tables and use the standard table header output routine.

09 June 2008. Summary of changes for version 20080609:

1) ACPI CA Core Subsystem:

Implemented a workaround for reversed _PRT entries. A significant number of BIOSs erroneously reverse the _PRT SourceName and the SourceIndex. This change dynamically detects and repairs this problem. Provides compatibility with MS ACPI. BZ 6859

Simplified the internal ACPI hardware interfaces to eliminate the locking flag parameter from Register Read/Write. Added a new external interface, AcpiGetRegisterUnlocked.

Fixed a problem where the invocation of a GPE control method could hang. This was a regression introduced in 20080514. The new method argument count validation mechanism can enter an infinite loop when a GPE method is dispatched. Problem fixed by removing the obsolete code that passed GPE block information to the notify handler via the control method parameter pointer.

Fixed a problem where the _SST execution status was incorrectly returned to

the caller of AcpiEnterSleepStatePrep. This was a regression introduced in 20080514. _SST is optional and a NOT_FOUND exception should never be returned. BZ 716

Fixed a problem where a deleted object could be accessed from within the AML parser. This was a regression introduced in version 20080123 as a fix for the Unload operator. Lin Ming. BZ 10669

Cleaned up the debug operand dump mechanism. Eliminated unnecessary operands and eliminated the use of a negative index in a loop. Operands are now displayed in the correct order, not backwards. This also fixes a regression introduced in 20080514 on 64-bit systems where the elimination of ACPI_NATIVE_UINT caused the negative index to go large and positive. BZ 715

Fixed a possible memory leak in EvPciConfigRegionSetup where the error exit path did not delete a locally allocated structure.

Updated definitions for the DMAR and SRAT tables to synchronize with the current specifications. Includes disassembler support.

Fixed a problem in the mutex debug code (in utmutex.c) where an incorrect loop termination value was used. Loop terminated on iteration early, missing one mutex. Linn Crosetto

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.5K Code, 16.2K Data, 95.7K Total

Debug Version: 153.3K Code, 48.3K Data, 201.6K Total

Current Release:

Non-Debug Version: 79.3K Code, 16.2K Data, 95.5K Total

Debug Version:

153.0K Code, 48.2K Data, 201.2K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support for EisaId() within _CID objects. Now disassemble integer _CID objects back to EisaId invocations, including multiple integers within _CID packages. Includes single-step support for debugger also.

Disassembler: Added support for DMAR and SRAT table definition changes.

14 May 2008. Summary of changes for version 20080514:

1) ACPI CA Core Subsystem:

Fixed a problem where GPEs were enabled too early during the ACPICA initialization. This could lead to "handler not installed" errors on some machines. Moved GPE enable until after _REG/_STA/_INI methods are run.

This ensures that all operation regions and devices throughout the namespace have been initialized before GPEs are enabled. Alexey Starikovskiy, BZ 9916.

Implemented a change to the enter sleep code. Moved execution of the _GTS method to just before setting sleep enable bit. The execution was moved from AcpiEnterSleepStatePrep to AcpiEnterSleepState. _GTS is now executed immediately before the SLP_EN bit is set, as per the ACPI specification. Luming Yu, BZ 1653.

Implemented a fix to disable unknown GPEs (2nd version). Now always disable the GPE, even if ACPICA thinks that that it is already disabled. It is possible that the AML or some other code has enabled the GPE unbeknownst to the ACPICA code.

Fixed a problem with the Field operator where zero-length fields would return an AE_AML_NO_OPERAND exception during table load. Fix enables zero-length ASL field declarations in Field(), BankField(), and IndexField(). BZ 10606.

Implemented a fix for the Load operator, now load the table at the namespace root. This reverts a change introduced in version 20071019. The table is now loaded at the namespace root even though this goes against the ACPI specification. This provides compatibility with other ACPI

implementations.

The

ACPI specification will be updated to reflect this in ACPI 4.0. Lin Ming.

Fixed a problem where ACPICA would not Load() tables with unusual signatures.

Now ignore ACPI table signature for Load() operator. Only "SSDT" is acceptable to the ACPI spec, but tables are seen with OEMx and null sigs. Therefore, signature validation is worthless. Apparently MS ACPI accepts such signatures, ACPICA must be compatible. BZ 10454.

Fixed a possible negative array index in AcpiUtValidateException. Added NULL fields to the exception string arrays to eliminate a -1 subtraction on the SubStatus field.

Updated the debug tracking macros to reduce overall code and data size. Changed ACPI_MODULE_NAME and ACPI_FUNCTION_NAME to use arrays of strings instead of pointers to static strings. Jan Beulich and Bob Moore.

Implemented argument count checking in control method invocation via AcpiEvaluateObject. Now emit an error if too few arguments, warning if too many. This applies only to external programmatic control method execution, not method-to-method calls within the AML. Lin Ming.

Eliminated the ACPI_NATIVE_UINT type across all ACPICA code. This type is no longer needed, especially with the removal of 16-bit support. It was replaced mostly with UINT32, but also ACPI_SIZE where a type that changes 32/64 bit on 32/64-bit platforms is required.

Added the C const qualifier for appropriate string constants -- mostly MODULE_NAME and printf format strings. Jan Beulich.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 80.0K Code, 17.4K Data, 97.4K Total

Debug Version: 159.4K Code, 64.4K Data, 223.8K Total

Current Release:

Non-Debug Version: 79.5K Code, 16.2K Data, 95.7K Total

Debug Version: 153.3K

Code, 48.3K Data, 201.6K Total

2) iASL Compiler/Disassembler and Tools:

Implemented ACPI table revision ID validation in the disassembler. Zero is

always invalid. For DSDTs, the ID controls the interpreter integer width.

1

means 32-bit and this is unusual. 2 or greater is 64-bit.

21 March 2008. Summary of changes for version 20080321:

1) ACPI CA Core Subsystem:

Implemented an additional change to the GPE support in order to suppress

spurious or stray GPEs. The AcpiEvDisableGpe function will now

permanently

disable incoming GPEs that are neither enabled nor disabled -- meaning

that

the GPE is unknown to the system. This should prevent future interrupt

floods

from that GPE. BZ 6217 (Zhang Rui)

Fixed a problem where NULL package elements were not returned to the

AcpiEvaluateObject interface correctly. The element was simply ignored

instead of returning a NULL ACPI_OBJECT package element, potentially

causing

a buffer overflow

and/or confusing the caller who expected a fixed number

of

elements. BZ 10132 (Lin Ming, Bob Moore)

Fixed a problem with the CreateField, CreateXXXField (Bit, Byte, Word,

Dword,

Qword), Field, BankField, and IndexField operators when invoked from

inside

an executing control method. In this case, these operators created

namespace

nodes that were incorrectly left marked as permanent nodes instead of

temporary nodes. This could cause a problem if there is race condition

between an exiting control method and a running namespace walk. (Reported by Linn Crosetto)

Fixed a problem where the CreateField and CreateXXXField operators would incorrectly allow duplicate names (the name of the field) with no exception generated.

Implemented several changes for Notify handling. Added support for new Notify values (ACPI 2.0+) and improved the Notify debug output. Notify on PowerResource objects is no longer allowed, as per the ACPI specification. (Bob Moore, Zhang Rui)

All Reference

Objects returned via the AcpiEvaluateObject interface are now marked as type "REFERENCE" instead of "ANY". The type ANY is now reserved for NULL objects - either NULL package elements or unresolved named references.

Fixed a problem where an extraneous debug message was produced for package objects (when debugging enabled). The message "Package List length larger than NumElements count" is now produced in the correct case, and is now an error message rather than a debug message. Added a debug message for the opposite case, where NumElements is larger than the Package List (the package will be padded out with NULL elements as per the ACPI spec.)

Implemented several improvements for the output of the ASL "Debug" object to clarify and keep all data for a given object on one output line.

Fixed two size calculation issues with the variable-length Start Dependent resource descriptor.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.7K Code, 17.3K Data, 97.0K Total

Debug Version: 158.9K Code, 64.0K Data, 222.9K Total

Current Release:

Non-Debug Version: 80.0K Code, 17.4K Data, 97.4K Total

Debug Version: 159.4K Code, 64.4K Data, 223.8K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the use of the Switch operator where execution of the containing method by multiple concurrent threads could cause an AE_ALREADY_EXISTS exception. This is caused by the fact that there is no actual Switch opcode, it must be simulated with local named temporary variables and if/else pairs. The solution chosen was to mark any method that uses Switch as Serialized, thus preventing multiple thread entries. BZ 469.

13 February

2008. Summary of changes for version 20080213:

1) ACPI CA Core Subsystem:

Implemented another MS compatibility design change for GPE/Notify handling.

GPEs are now cleared/enabled asynchronously to allow all pending notifies to complete first. It is expected that the OSL will queue the enable request behind all pending notify requests (may require changes to the local host OSL in AcpiOsExecute). Alexey Starikovskiy.

Fixed a problem where buffer and package objects passed as arguments to a control method via the external AcpiEvaluateObject interface could cause an AE_AML_INTERNAL exception depending on the order and type of operators executed by the target control method.

Fixed a problem where resource descriptor size optimization could cause a problem when a _CRS resource template is passed to a _SRS method. The _SRS resource template must use the same descriptors (with the same size) as returned from _CRS. This change affects the following resource descriptors:
IRQ

/ IRQNoFlags and StartDependentFn / StartDependentFnNoPri. (BZ 9487)

Fixed a problem where a CopyObject to RegionField, BankField, and IndexField objects did not perform an implicit conversion as it should. These types must retain their initial type permanently as per the ACPI specification. However, a CopyObject to all other object types should not perform an implicit conversion, as per the ACPI specification. (Lin Ming, Bob Moore) BZ 388

Fixed a problem with the AcpiGetDevices interface where the mechanism to match device CIDs did not examine the entire list of available CIDs, but instead aborted on the first non-matching CID. Andrew Patterson.

Fixed a regression introduced in version 20071114. The ACPI_HIDWORD macro was inadvertently changed to return a 16-bit value instead of a 32-bit value, truncating the upper dword of a 64-bit value. This macro is only used to display debug output, so no incorrect calculations were made. Also, reimplemented the macro so that a 64-bit shift is not performed by inefficient compilers.

Added missing va_end statements that should correspond with each va_start statement.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.5K Code, 17.2K Data, 96.7K Total

Debug Version: 159.0K Code, 63.8K Data, 222.8K Total

Current Release:

Non-Debug Version: 79.7K Code, 17.3K Data, 97.0K Total

Debug Version: 158.9K Code, 64.0K Data, 222.9K Total

2) iASL Compiler/Disassembler and Tools:

Implemented full disassembler support for the following new ACPI tables: BERT, EINJ, and ERST. Implemented partial disassembler support for the complicated HEST table. These tables support the Windows Hardware Error Architecture (WHEA).

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January 2008. Summary of changes for version 20080123:

1) ACPI CA Core Subsystem:

Added the 2008 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, and the tools/utilities.

Fixed a problem with the SizeOf operator when used with Package and Buffer objects. These objects have deferred execution for some arguments, and the execution is now completed before the SizeOf is executed. This problem caused unexpected AE_PACKAGE_LIMIT errors on some systems (Lin Ming, Bob Moore) BZ 9558

Implemented an enhancement to the interpreter "slack mode". In the absence of an explicit return or an implicitly returned object from the last executed opcode, a control method will now implicitly return an integer of value 0 for Microsoft compatibility. (Lin Ming) BZ 392

Fixed a problem with the Load operator where an exception was not returned in the case where the table is already loaded. (Lin Ming) BZ 463

Implemented support for the use of DDBHandles as an Indexed Reference, as per the ACPI spec. (Lin Ming) BZ 486

Implemented support for UserTerm (Method invocation) for the Unload operator as per the ACPI spec. (Lin Ming) BZ 580

Fixed a problem with the LoadTable operator where the OemId and OemTableId input strings could cause unexpected failures if they were shorter than the maximum lengths allowed. (Lin Ming, Bob Moore) BZ 576

Implemented support for UserTerm (Method invocation) for the Unload operator
as per the ACPI spec. (Lin Ming) BZ 580

Implemented header file support for new ACPI tables - BERT, ERST, EINJ, HEST, IBFT, UEFI, WDAT. Disassembler support is forthcoming.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.3K Code, 17.2K Data, 96.5K Total

Debug Version: 158.6K Code, 63.8K Data, 222.4K Total

Current Release:

Non-Debug Version: 79.5K Code, 17.2K Data, 96.7K Total

Debug Version: 159.0K Code, 63.8K Data, 222.8K Total

2) iASL Compiler/Disassembler and Tools:

Implemented support in the disassembler for checksum validation on incoming binary DSDTs and SSDTs. If incorrect, a message is displayed within the table header dump at the start of the disassembly.

Implemented additional debugging information in the namespace listing file created during compilation. In addition to the namespace hierarchy, the full pathname to each namespace object is displayed.

Fixed a problem with the disassembler where invalid ACPI tables could cause faults or infinite loops.

Fixed an unexpected parse error when using the optional "parameter types" list in a control method declaration. (Lin Ming) BZ 397

Fixed a problem where two External declarations with the same name did not cause an error (Lin Ming) BZ 509

Implemented support for full TermArgs (adding Argx, Localx and method invocation) for the ParameterData parameter to the LoadTable operator.
(Lin
Ming) BZ 583,587

19 December 2007. Summary of changes for version 20071219:

1) ACPI CA Core Subsystem:

Implemented full support for deferred execution for the TermArg string arguments for DataTableRegion. This enables forward references and full operand resolution for the three string arguments. Similar to OperationRegion deferred argument execution.) Lin Ming. BZ 430

Implemented full argument resolution support for the BankValue argument to BankField. Previously, only constants were supported, now any TermArg may be used. Lin Ming BZ 387, 393

Fixed a problem with AcpiGetDevices where the search of a branch of the device tree could be terminated prematurely. In accordance with the ACPI specification, the search down the current branch is terminated if a device is both not present and not functional (instead of just not present.)
Yakui
Zhao.

Fixed a problem where "unknown" GPEs could be allowed to fire repeatedly if the underlying AML code changed the GPE enable registers. Now, any unknown incoming GPE (no _Lxx/_Exx method and not the EC GPE) is immediately disabled instead of simply ignored. Rui Zhang.

Fixed a problem with Index Fields where the Index register was incorrectly limited to a maximum of 32 bits. Now any size may be used.

Fixed a couple memory leaks associated with "implicit return" objects when the AML Interpreter slack mode is enabled. Lin Ming BZ 349

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.0K Code, 17.2K Data,
96.2K Total

Debug Version: 157.9K Code, 63.6K Data, 221.5K Total

Current Release:

Non-Debug Version: 79.3K Code, 17.2K Data, 96.5K Total

Debug Version: 158.6K Code, 63.8K Data, 222.4K Total

14 November 2007. Summary of changes for version 20071114:

1) ACPI CA Core Subsystem:

Implemented event counters for each of the Fixed Events, the ACPI SCI (interrupt) itself, and control methods executed. Named `AcpiFixedEventCount[]`, `AcpiSciCount`, and `AcpiMethodCount` respectively. These should be useful for debugging and statistics.

Implemented a new external interface, `AcpiGetStatistics`, to retrieve the contents of the various event counters. Returns the current values for `AcpiSciCount`, `AcpiGpeCount`, the `AcpiFixedEventCount` array, and `AcpiMethodCount`. The interface can be expanded in the future if new counters are added. Device drivers should use this interface rather than access the counters directly.

Fixed a problem with the `FromBCD` and `ToBCD` operators. With some compilers, the `ShortDivide` function worked incorrectly, causing problems with the `BCD` functions with large input values. A truncation from 64-bit to 32-bit inadvertently occurred. Internal BZ 435. Lin Ming

Fixed a problem with Index references passed as method arguments. References passed as arguments to control methods were dereferenced immediately (before control was passed to the called method). The references are now correctly

passed directly to the called method. BZ 5389. Lin Ming

Fixed a problem with CopyObject used in conjunction with the Index operator.

The reference was incorrectly dereferenced before the copy. The reference is

now correctly copied. BZ 5391. Lin Ming

Fixed a problem with Control Method references within Package objects.

These

references are now correctly generated. This completes the package construction overhaul that began in version 20071019.

Example Code and Data Size: These are the sizes

for the OS-independent

apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has

a much larger code and data size.

Previous Release:

Non-Debug Version: 78.8K Code, 17.2K Data, 96.0K Total

Debug Version: 157.2K Code, 63.4K Data, 220.6K Total

Current Release:

Non-Debug Version: 79.0K Code, 17.2K Data, 96.2K Total

Debug Version: 157.9K Code, 63.6K Data, 221.5K Total

2) iASL Compiler/Disassembler and Tools:

The AcpiExec utility now installs handlers for all of the predefined Operation Region types. New types supported are: PCI_Config, CMOS, and PCIBARTarget.

Fixed a problem with the 64-bit version of AcpiExec where the extended

(64-

bit) address fields for the DSDT and FACS within the FADT were not being used, causing truncation of the upper 32-bits of these addresses. Lin

Ming

and Bob Moore

19 October 2007. Summary

of changes for version 20071019:

1) ACPI CA Core Subsystem:

Fixed a problem with the Alias operator when the target of the alias is a

named ASL operator that opens a new scope -- Scope, Device, PowerResource, Processor, and ThermalZone. In these cases, any children of the original operator could not be accessed via the alias, potentially causing unexpected AE_NOT_FOUND exceptions. (BZ 9067)

Fixed a problem with the Package operator where all named references were created as object references and left otherwise unresolved. According to the ACPI specification, a Package can only contain Data Objects or references to control methods. The implication is that named references to Data Objects (Integer, Buffer, String, Package, BufferField, Field) should be resolved immediately upon package creation. This is the approach taken with this change. References to all other named objects (Methods, Devices, Scopes, etc.) are all now properly created as reference objects. (BZ 5328)

Reverted a change to Notify handling that was introduced in version 20070508. This version changed the Notify handling from asynchronous to fully synchronous (Device driver Notify handling with respect to the Notify ASL operator). It was found that this change caused more problems than it solved and was removed by most users.

Fixed a problem with the Increment and Decrement operators where the type of the target object could be unexpectedly and incorrectly changed. (BZ 353) Lin Ming.

Fixed a problem with the Load and LoadTable operators where the table location within the namespace was ignored. Instead, the table was always loaded into the root or current scope. Lin Ming.

Fixed a problem with the Load operator when loading a table from a buffer object. The input buffer was prematurely zeroed and/or deleted. (BZ 577)

Fixed a problem with the Debug object where a store of a DdbHandle reference object to the Debug object could cause a fault.

Added a table checksum verification for the Load operator, in the case where the load is from a buffer. (BZ 578).

Implemented additional parameter validation for the LoadTable operator.

The length of the input strings SignatureString, OemIdString, and OemTableId are now checked for maximum lengths. (BZ 582) Lin Ming.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.5K Code, 17.1K Data, 95.6K Total

Debug Version: 156.7K Code, 63.2K Data, 219.9K Total

Current Release:

Non-Debug Version: 78.8K Code, 17.2K Data, 96.0K Total

Debug Version: 157.2K Code, 63.4K Data, 220.6K Total

2) iASL Compiler/Disassembler:

Fixed a problem where if a single file was specified and the file did not exist, no error message was emitted. (Introduced with wildcard support in version 20070917.)

19 September 2007. Summary of changes for version 20070919:

1) ACPI CA Core Subsystem:

Designed and implemented new external interfaces to install and remove handlers for ACPI table-related events. Current events that are defined are LOAD and UNLOAD. These interfaces allow the host to track ACPI tables as they are dynamically loaded and unloaded. See `AcpiInstallTableHandler` and `AcpiRemoveTableHandler`. (Lin Ming and Bob Moore)

Fixed a problem where the use of the `AcpiGbl_AllMethodsSerialized` flag (`acpi_serialized` option on Linux) could cause some systems to hang during initialization. (Bob Moore) BZ 8171

Fixed a problem where objects of certain types (Device, ThermalZone, Processor, PowerResource) can be not found if they are declared and referenced from within the same control method (Lin Ming) BZ 341

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib`

produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.3K Code, 17.0K Data, 95.3K Total

Debug Version: 156.3K Code, 63.1K Data, 219.4K Total

Current Release:

Non-Debug Version: 78.5K Code, 17.1K Data, 95.6K Total

Debug Version: 156.7K Code, 63.2K Data, 219.9K Total

2) iASL Compiler/Disassembler:

Implemented support to allow multiple files to be compiled/disassembled in a single invocation. This includes command line wildcard support for both Windows and Unix versions of the compiler. This feature simplifies the disassembly and compilation of multiple ACPI tables in a single directory.

08 May 2007. Summary of changes for version 20070508:

1) ACPI CA Core Subsystem:

Implemented a Microsoft compatibility design change for the handling of the

Notify AML operator. Previously, notify handlers were dispatched and executed completely asynchronously in a deferred thread. The new design still executes the notify handlers in a different thread, but the original thread that executed the Notify() now waits at a synchronization point for the notify handler to complete. Some machines depend on a synchronous Notify operator in order to operate correctly.

Implemented support to allow Package objects to be passed as method arguments to the external AcpiEvaluateObject interface. Previously, this would return the AE_NOT_IMPLEMENTED exception. This feature had not been implemented since there were no reserved control methods that required it until recently.

Fixed a problem with the internal FADT conversion where ACPI 1.0 FADTs that contained invalid non-zero values in reserved fields could cause later failures because these fields have meaning in later revisions of the FADT. For incoming ACPI 1.0 FADTs, these fields are now always zeroed. (The fields are: Preferred_PM_Profile, PSTATE_CNT, CST_CNT, and IAPC_BOOT_FLAGS.)

Fixed a problem where the Global Lock handle was not properly updated if a thread that acquired the Global Lock via executing AML code then attempted to acquire the lock via the AcpiAcquireGlobalLock interface. Reported by Joe Liu.

Fixed a problem in AcpiEvDeleteGpeXrupt where the global interrupt list could be corrupted if the interrupt being removed was at the head of the list. Reported by Linn Crosetto.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version: 155.9K Code, 63.1K Data, 219.0K Total

Current Release:

Non-Debug Version: 78.3K Code, 17.0K Data, 95.3K

Total

Debug Version: 156.3K Code, 63.1K Data, 219.4K Total

20 March 2007. Summary of changes for version 20070320:

1) ACPI CA Core Subsystem:

Implemented a change to the order of interpretation and evaluation of AML operand objects within the AML interpreter. The interpreter now evaluates operands in the order that they appear in the AML stream (and the corresponding ASL code), instead of in the reverse order (after the entire operand list has been parsed). The previous behavior caused several subtle

incompatibilities with the Microsoft AML interpreter as well as being somewhat non-intuitive. BZ 7871, local BZ 263. Valery Podrezov.

Implemented a change to the ACPI Global Lock support. All interfaces to the global lock now allow the same thread to acquire the lock multiple times. This affects the AcpiAcquireGlobalLock external interface to the global lock as well as the internal use of the global lock to support AML fields -- a control method that is holding the global lock can now simultaneously access AML fields that require global lock protection. Previously, in both cases, this would have resulted in an AE_ALREADY_ACQUIRED exception. The change to AcpiAcquireGlobalLock is of special interest to drivers for the Embedded Controller. There is no change to the behavior of the AML Acquire operator, as this can already be used to acquire a mutex multiple times by the same thread. BZ 8066. With assistance from Alexey Starikovskiy.

Fixed a problem where invalid objects could be referenced in the AML Interpreter after error conditions. During operand evaluation, ensure that the internal "Return Object" field is cleared on error and only valid pointers are stored there. Caused occasional access to deleted objects that resulted in "large reference count" warning messages. Valery Podrezov.

Fixed a problem where an AE_STACK_OVERFLOW internal exception could occur on deeply nested control method invocations. BZ 7873, local BZ 487. Valery Podrezov.

Fixed an internal problem with the handling of result objects on the interpreter result stack. BZ 7872. Valery Podrezov.

Removed obsolete code that handled the case where AML_NAME_OP is the target of a reference (Reference.Opcode). This code was no longer necessary. BZ 7874. Valery Podrezov.

Removed obsolete ACPI_NO_INTEGER64_SUPPORT from two header files. This was a remnant from the previously discontinued 16-bit support.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

Current Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version:

155.9K Code, 63.1K Data, 219.0K Total

26 January 2007. Summary of changes for version 20070126:

1) ACPI CA Core Subsystem:

Added the 2007 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, the iASL compiler, and the utilities.

Implemented a fix for an incorrect parameter passed to AcpiTbDeleteTable during a table load. A bad pointer was passed in the case where the DSDT is overridden, causing a fault in this case.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

Current Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K

Total

Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

15 December 2006. Summary of changes for version 20061215:

1) ACPI CA Core Subsystem:

Support for 16-bit ACPICA has been completely removed since it is no longer necessary and it clutters the code. All 16-bit macros, types, and conditional compiles have been removed, cleaning up and simplifying the code across the entire subsystem. DOS support is no longer needed since the bootable Linux firmware kit is now available.

The handler for the Global Lock is now removed during AcpiTerminate to enable a clean subsystem restart, via the implementation of the AcpiEvRemoveGlobalLockHandler function. (With assistance from Joel Bretz, HP)

Implemented enhancements to the multithreading support within the debugger to enable improved multithreading debugging and evaluation of the subsystem. (Valery Podrezov)

Debugger: Enhanced the Statistics/Memory command to emit the total (maximum) memory used during the execution, as well as the maximum memory consumed by each of the various object types. (Valery Podrezov)

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 77.9K Code, 17.0K Data, 94.9K Total

Debug Version: 155.2K Code, 63.1K Data, 218.3K Total

Current Release:

Non-Debug Version: 78.0K Code, 17.1K Data, 95.1K Total

Debug Version: 155.8K Code, 63.3K Data, 219.1K Total

2) iASL Compiler/Disassembler and Tools:

AcpiExec: Implemented a new option (-m) to display full memory use statistics upon subsystem/program termination. (Valery Podrezov)

09 November 2006. Summary of changes for version 20061109:

1) ACPI CA Core Subsystem:

Optimized

the Load ASL operator in the case where the source operand is an operation region. Simply map the operation region memory, instead of performing a bitwise read. (Region must be of type SystemMemory, see below.)

Fixed the Load ASL operator for the case where the source operand is a region field. A buffer object is also allowed as the source operand. BZ 480

Fixed a problem where the Load ASL operator allowed the source operand to be an operation region of any type. It is now restricted to regions of type SystemMemory, as per the ACPI specification. BZ 481

Additional cleanup and optimizations for the new Table Manager code.

AcpiEnable will now fail if all of the required ACPI tables are not loaded (FADT, FACS, DSDT). BZ 477

Added #pragma pack(8/4) to aobject.h to ensure that the structures in this header are always compiled as aligned. The ACPI_OPERAND_OBJECT has been manually optimized to be aligned and will not work if it is byte-packed.

Example Code and Data

Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 78.1K Code, 17.1K Data, 95.2K Total

Debug Version: 155.4K Code, 63.1K Data, 218.5K Total

Current Release:

Non-Debug Version: 77.9K Code, 17.0K Data, 94.9K Total

Debug Version: 155.2K Code, 63.1K Data, 218.3K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem where the presence of the _OSI predefined control method within complex expressions could cause an internal compiler error.

AcpiExec: Implemented full region support for multiple address spaces.
SpaceId is now part of the REGION object. BZ 429

11 October 2006. Summary of changes for version 20061011:

1) ACPI CA Core Subsystem:

Completed an AML interpreter performance enhancement for control method execution. Previously a 2-pass parse/execution, control methods are now completely parsed and executed in a single pass. This improves overall interpreter performance by ~25%, reduces code size, and reduces CPU stack use. (Valery Podrezov + interpreter changes in version 20051202 that eliminated namespace loading during the pass one parse.)

Implemented _CID support for PCI Root Bridge detection. If the _HID does not match the predefined PCI Root Bridge IDs, the _CID list (if present) is now obtained and also checked for an ID match.

Implemented additional support for the PCI _ADR execution: upsearch until a device scope is found before executing _ADR. This allows PCI_Config operation regions to be declared locally within control methods underneath PCI device objects.

Fixed a problem with a possible race condition between threads executing AcpiWalkNamespace and the AML interpreter. This condition was removed by modifying AcpiWalkNamespace to (by default) ignore all temporary namespace entries created during any concurrent control method execution. An additional namespace race condition is known to exist between AcpiWalkNamespace and the Load/Unload ASL operators and is still under investigation.

Restructured the AML ParseLoop function, breaking it into several subfunctions in order to reduce CPU stack use and improve maintainability.
(Mikhail Kouzmich)

AcpiGetHandle: Fix for parameter validation to detect invalid combinations of prefix handle and pathname. BZ 478

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total

Debug Version: 154.6K Code, 63.0K Data, 217.6K Total

Current Release:

Non-Debug Version: 78.1K Code,
17.1K Data, 95.2K Total

Debug Version: 155.4K Code, 63.1K Data, 218.5K Total

2) iASL Compiler/Disassembler and Tools:

Ported the -g option (get local ACPI tables) to the new ACPICA Table Manager to restore original behavior.

27 September 2006. Summary of changes for version 20060927:

1) ACPI CA Core Subsystem:

Removed the "Flags" parameter from AcpiGetRegister and AcpiSetRegister. These functions now use a spinlock for mutual exclusion and the interrupt level indication flag is not needed.

Fixed a problem with the Global Lock where the lock could appear to be obtained before it is actually obtained. The global lock semaphore was inadvertently created with one unit instead of zero units. (BZ 464)

Fiodor
Suietov.

Fixed a possible memory leak and fault in AcpiExResolveObjectToValue during a read from a buffer or region field. (BZ 458) Fiodor Suietov.

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.7K Code, 63.0K Data, 217.7K Total
Current Release:
Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total
Debug Version: 154.6K Code, 63.0K Data, 217.6K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a compilation problem with the pre-defined Resource Descriptor field

names where an "object does not exist" error could be incorrectly generated

if the parent ResourceTemplate pathname places the template within a different namespace scope than the current scope. (BZ 7212)

Fixed a problem where the compiler could hang after syntax errors detected

in an ElseIf construct. (BZ 453)

Fixed a problem with the AmlFilename parameter to the DefinitionBlock() operator. An

incorrect output filename was produced when this parameter was

a null string (""). Now, the original input filename is used as the AML output filename, with an ".aml" extension.

Implemented a generic batch command mode for the AcpiExec utility (execute

any AML debugger command) (Valery Podrezov).

12 September 2006. Summary of changes for version 20060912:

1) ACPI CA Core Subsystem:

Enhanced the implementation of the "serialized mode" of the interpreter (enabled via the AcpiGbl_AllMethodsSerialized flag.) When this mode is specified, instead of creating a serialization semaphore per control method,

the interpreter lock is simply no longer released before a blocking operation during control method execution. This effectively makes the AML Interpreter single-threaded. The overhead of a semaphore per-method is eliminated.

Fixed a regression where an error was no longer emitted if a control method

attempts to create 2 objects of

the same name. This once again returns AE_ALREADY_EXISTS. When this exception occurs, it invokes the mechanism that will dynamically serialize the control method to possibly prevent future errors. (BZ 440)

Integrated a fix for a problem with PCI Express HID detection in the PCI Config Space setup procedure. (BZ 7145)

Moved all FADT-related functions to a new file, tbfadt.c. Eliminated the AcpiHwInitialize function - the FADT registers are now validated when the table is loaded.

Added two new warnings during FADT verification - 1) if the FADT is larger than the largest known FADT version, and 2) if there is a mismatch between a 32-bit block address and the 64-bit X counterpart (when both are non-zero.)

Example Code and Data Size: These are the sizes for the OS-independent apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 77.9K Code, 16.7K Data, 94.6K Total

Debug Version: 154.9K Code, 62.6K Data, 217.5K Total

Current Release:

Non-Debug Version: 77.9K Code, 17.1K Data, 95.0K Total

Debug Version: 154.7K Code, 63.0K Data, 217.7K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a problem with the implementation of the Switch() operator where the temporary variable was declared too close to the actual Switch, instead of at method level. This could cause a problem if the Switch() operator is within a while loop, causing an error on the second iteration. (BZ 460)

Disassembler - fix for error emitted for unknown type for target of scope operator. Now, ignore it and continue.

Disassembly of an FADT now verifies the input FADT and reports any errors

found. Fix for proper disassembly of full-sized (ACPI 2.0) FADTs.

Disassembly of raw data buffers with byte initialization data now prefixes each output line with the current buffer offset.

Disassembly of ASF! table now includes all variable-length data fields at the end of some of the subtables.

The disassembler now emits a comment if a buffer appears to be a ResourceTemplate, but cannot be disassembled as such because the EndTag does not appear at the very end of the buffer.

AcpiExec - Added the "-t" command line option to enable the serialized mode of the AML interpreter.

31 August 2006. Summary of changes for version 20060831:

1) ACPI CA Core Subsystem:

Miscellaneous fixes for the Table Manager:

- Correctly initialize internal common FADT for all 64-bit "X" fields
- Fixed a couple table mapping issues during table load
- Fixed a couple alignment issues for IA64
- Initialize input array to zero in AcpiInitializeTables
- Additional parameter validation for AcpiGetTable, AcpiGetTableHeader, AcpiGetTableByIndex

Change for GPE support: when a "wake" GPE is received, all wake GPEs are now immediately disabled to prevent the waking GPE from firing again and to prevent other wake GPEs from interrupting the wake process.

Added the AcpiGpeCount global that tracks the number of processed GPEs, to be used for debugging systems with a large number of ACPI interrupts.

Implemented support for the "DMAR" ACPI table (DMA Redirection Table) in both the ACPICA headers and the disassembler.

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and

has
a much larger code and data size.

Previous Release:

Non-Debug Version: 77.8K Code, 16.5K Data, 94.3K Total

Debug Version: 154.6K Code, 62.3K Data, 216.9K Total

Current Release:

Non-Debug Version: 77.9K Code, 16.7K Data, 94.6K Total

Debug Version: 154.9K Code, 62.6K Data, 217.5K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler support for the DMAR ACPI table.

23

August 2006. Summary of changes for version 20060823:

1) ACPI CA Core Subsystem:

The Table Manager component has been completely redesigned and reimplemented. The new design is much simpler, and reduces the overall code and data size of the kernel-resident ACPICA by approximately 5%. Also, it is now possible to obtain the ACPI tables very early during kernel initialization, even before dynamic memory management is initialized. (Alexey Starikovskiy, Fiodor Suietov, Bob Moore)

Obsolete ACPICA interfaces:

- AcpiGetFirmwareTable: Use AcpiGetTable instead (works at early kernel init time).
- AcpiLoadTable: Not needed.
- AcpiUnloadTable: Not needed.

New ACPICA interfaces:

- AcpiInitializeTables: Must be called before the table manager can be used.
- AcpiReallocateRootTable: Used to transfer the root table to dynamically allocated memory after it becomes available.
- AcpiGetTableByIndex: Allows the host to easily enumerate all ACPI

tables
in the RSDT/XSDT.

Other ACPICA changes:

- AcpiGetTableHeader returns the actual mapped table header, not a copy. Use AcpiOsUnmapMemory to free this mapping.
- AcpiGetTable returns the actual mapped table. The mapping is managed internally and must not be deleted by the caller. Use of this interface causes no additional dynamic memory allocation.
- AcpiFindRootPointer: Support for physical addressing has been eliminated, it appeared to be unused.
- The interface to AcpiOsMapMemory has changed to be consistent with the other allocation interfaces.
- The interface to AcpiOsGetRootPointer has changed to eliminate unnecessary parameters.
- ACPI_PHYSICAL_ADDRESS is now 32 bits on 32-bit platforms, 64 bits on 64-bit platforms. Was previously 64 bits on all platforms.
- The interface to the ACPI Global Lock acquire/release macros have changed slightly since ACPICA no longer keeps a local copy of the FACS with a constructed pointer to the actual global lock.

Porting

to the new table manager:

- AcpiInitializeTables: Must be called once, and can be called anytime during the OS initialization process. It allows the host to specify an area of memory to be used to store the internal version of the RSDT/XSDT (root table). This allows the host to access ACPI tables before memory management is initialized and running.
- AcpiReallocateRootTable: Can be called after memory management is running to copy the root table to a dynamically allocated array, freeing up the scratch memory specified in the call to AcpiInitializeTables.
- AcpiSubsystemInitialize: This existing interface is independent of the Table Manager, and does not have to be called before the Table Manager can be used, it only must be called before the rest of ACPICA can be used.
- ACPI Tables: Some changes have been made to the names and structure of the actbl.h and actbl1.h header files and may require changes to existing code.

For example, bitfields have been completely removed

because of their lack
of
portability across C compilers.
- Update interfaces to the Global Lock acquire/release macros if local
versions are used. (see acwin.h)

Obsolete files: tbconvrt.c, tbget.c, tbgetall.c, tbrsdt.c

New files: tbfind.c

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:

Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total

Debug Version: 161.0K Code, 65.1K Data, 226.1K Total

Current Release:

Non-Debug Version: 77.8K Code, 16.5K Data, 94.3K Total

Debug Version: 154.6K Code, 62.3K Data, 216.9K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

21 July 2006. Summary of changes for version 20060721:

1) ACPI CA Core Subsystem:

The full source
code for the ASL test suite used to validate the iASL
compiler and the ACPI CA core subsystem is being released with the ACPI CA
source for the first time. The source is contained in a separate package
and
consists of over 1100 files that exercise all ASL/AML operators. The
package
should appear on the Intel/ACPI web site shortly. (Valery Podrezov,
Fiodor
Suietov)

Completed a new design and implementation for support of the ACPI Global
Lock. On the OS side, the global lock is now treated as a standard AML
mutex. Previously, multiple OS threads could "acquire" the global lock
simultaneously. However, this could cause the BIOS to be starved out of

the
lock - especially in cases such as the Embedded Controller driver where
there is a tight coupling between the OS and the BIOS.

Implemented an optimization for the ACPI Global Lock interrupt mechanism.
The Global Lock interrupt handler no longer queues the execution of a
separate thread to signal the global lock semaphore.

Instead, the
semaphore
is signaled directly from the interrupt handler.

Implemented support within the AML interpreter for package objects that
contain a larger AML length (package list length) than the package
element
count. In this case, the length of the package is truncated to match the
package element count. Some BIOS code apparently modifies the package
length
on the fly, and this change supports this behavior. Provides
compatibility
with the MS AML interpreter. (With assistance from Fiodor Suietov)

Implemented a temporary fix for the BankValue parameter of a Bank Field
to
support all constant values, now including the Zero and One opcodes.
Evaluation of this parameter must eventually be converted to a full
TermArg
evaluation. A not-implemented error is now returned (temporarily) for
non-
constant values for this parameter.

Fixed problem reports (Fiodor Suietov) integrated:

- Fix for premature object deletion after CopyObject on Operation Region
(BZ
350)

Example

Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:

Non-Debug Version: 80.7K Code, 18.0K Data, 98.7K Total

Debug Version: 160.9K Code, 65.1K Data, 226.0K Total

Current Release:

Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total

Debug Version: 161.0K Code, 65.1K Data, 226.1K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

07 July 2006. Summary of changes for version 20060707:

1) ACPI CA Core Subsystem:

Added the `ACPI_PACKED_POINTERS_NOT_SUPPORTED` macro to support C compilers that do not allow the initialization of address pointers within packed structures - even though the hardware itself may support misaligned transfers. Some of the debug data structures are packed by default to minimize size.

Added an error message for the case where `AcpiOsGetThreadId()` returns zero.

A non-zero value is required by the core ACPICA code to ensure the proper operation of AML mutexes and recursive control methods.

The DSDT is now the only ACPI table that determines whether the AML interpreter is in 32-bit or 64-bit mode. Not really a functional change, but the hooks for per-table 32/64 switching have been removed from the code. A clarification to the ACPI specification is forthcoming in ACPI 3.0B.

Fixed a possible leak of an `OwnerId` in the error path of `AcpiTbInitTableDescriptor` (`tbinstal.c`), and migrated all table `OwnerId` deletion to a single place in `AcpiTbUninstallTable` to correct possible leaks when using the `AcpiTbDeleteTablesByType` interface (with assistance from Lance Ortiz.)

Fixed a problem with Serialized control methods where the semaphore associated with the method could be over-signaled after multiple method invocations.

Fixed two issues with the locking of the internal namespace data structure. Both the `Unload()` operator and `AcpiUnloadTable` interface now lock the namespace during the namespace deletion associated with the table unload (with assistance from Linn Crosetto.)

Fixed problem reports (Valery Podrezov) integrated:

- Eliminate unnecessary memory allocation for CreateXxxxField (BZ 5426)

Fixed problem reports (Fiodor Suietov) integrated:

- Incomplete cleanup branches in AcpiTbGetTableRsdT (BZ 369)
- On Address Space handler deletion, needless deactivation call (BZ 374)
- AcpiRemoveAddressSpaceHandler: validate Device handle parameter (BZ 375)
- Possible memory leak, Notify sub-objects of Processor, Power, ThermalZone (BZ 376)
- AcpiRemoveAddressSpaceHandler: validate Handler parameter (BZ 378)
- Minimum Length of RSDT should be validated (BZ 379)
- AcpiRemoveNotifyHandler: return AE_NOT_EXIST if Processor Obj has no Handler (BZ 380)
- AcpiUnloadTable: return AE_NOT_EXIST if no table of specified type loaded (BZ 381)

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 80.5K Code, 17.8K Data, 98.3K Total

Debug Version: 160.8K Code, 64.8K Data, 225.6K Total

Current Release:

Non-Debug Version: 80.7K Code, 17.9K Data, 98.6K Total

Debug Version: 161.0K Code, 65.1K Data, 226.1K Total

2) iASL Compiler/Disassembler and Tools:

Fixed problem reports:

- Compiler segfault when ASL contains a long (>1024) String declaration (BZ 436)

23 June 2006. Summary of changes for version 20060623:

1) ACPI CA Core Subsystem:

Implemented a new `ACPI_SPINLOCK` type for the OSL lock interfaces. This allows the type to be customized to the host OS for improved efficiency (since

a spinlock is usually a very small object.)

Implemented support for "ignored" bits in the ACPI registers. According to the ACPI specification, these bits should be preserved when writing the registers via a read/modify/write cycle. There are 3 bits preserved in this manner: PM1_CONTROL[0] (SCI_EN), PM1_CONTROL[9], and PM1_STATUS[11].

Implemented the initial deployment of new OSL mutex interfaces. Since some host operating systems have separate mutex and semaphore objects, this feature was requested. The base code now uses mutexes (and the new mutex interfaces) wherever a binary semaphore was used previously. However, for the current release, the mutex interfaces are defined as macros to map them to the existing semaphore interfaces. Therefore, no OSL changes are required at this time. (See `acpiosxf.h`)

Fixed several problems with the support for the control method SyncLevel parameter. The SyncLevel now works according to the ACPI specification and in concert with the Mutex SyncLevel parameter, since the current SyncLevel is a property of the executing thread. Mutual exclusion for control methods is now implemented with a mutex instead of a semaphore.

Fixed three instances of the use of the C shift operator in the bitfield support code (`exfldio.c`) to avoid the use of a shift value larger than the target data width. The behavior of C compilers is undefined in this case and can cause unpredictable results, and therefore the case must be detected and avoided. (Fiodor Suietov)

Added an info message whenever an SSDT or OEM table is loaded dynamically via the `Load()` or `LoadTable()` ASL operators. This should improve debugging capability since it will show exactly what tables have been loaded (beyond the tables present in the RSDT/XSDT.)

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The

debug version of the code includes the debug output
trace mechanism and
has
a much larger code and data size.

Previous Release:

Non-Debug Version: 80.0K Code, 17.6K Data, 97.6K Total

Debug Version: 160.2K Code, 64.7K Data, 224.9K Total

Current Release:

Non-Debug Version: 80.5K Code, 17.8K Data, 98.3K Total

Debug Version: 160.8K Code, 64.8K Data, 225.6K Total

2) iASL Compiler/Disassembler and Tools:

No changes for this release.

08 June 2006. Summary of changes for version 20060608:

1) ACPI CA Core Subsystem:

Converted the locking mutex used for the ACPI hardware to a spinlock.

This

change should eliminate all problems caused by attempting to acquire a
semaphore at interrupt level, and it means that all ACPICA external
interfaces that directly access the ACPI hardware can be safely called
from

interrupt level. OSL code that implements the semaphore interfaces should
be

able to eliminate any workarounds for being called at interrupt level.

Fixed a regression

introduced in 20060526 where the ACPI device

initialization could be prematurely aborted with an AE_NOT_FOUND if a
device

did not have an optional _INI method.

Fixed an IndexField issue where a write to the Data Register should be
limited in size to the AccessSize (width) of the IndexField itself. (BZ
433,

Fiodor Suietov)

Fixed problem reports (Valery Podrezov) integrated:

- Allow store of ThermalZone objects to Debug object (BZ 5369/5370)

Fixed problem reports (Fiodor Suietov) integrated:

- AcpiGetTableHeader doesn't handle multiple instances correctly (BZ 364)

Removed four global mutexes that were obsolete and were no longer being used.

Example Code and Data Size: These are the sizes for the OS-independent `apica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 80.0K Code, 17.7K Data, 97.7K

Total

Debug Version: 160.3K Code, 64.9K Data, 225.2K Total

Current Release:

Non-Debug Version: 80.0K Code, 17.6K Data, 97.6K Total

Debug Version: 160.2K Code, 64.7K Data, 224.9K Total

2) iASL Compiler/Disassembler and Tools:

Fixed a fault when using `-g` option (get tables from registry) on Windows machines.

Fixed problem reports integrated:

- Generate error if `CreateField NumBits` parameter is zero. (BZ 405)
- Fault if `Offset/Length` in Field unit is very large (BZ 432, Fiodor Suietov)
- Global table revision override (`-r`) is ignored (BZ 413)

26 May 2006. Summary of changes for version 20060526:

1) ACPI CA Core Subsystem:

Restructured, flattened, and simplified the internal interfaces for namespace object evaluation - resulting in smaller code, less CPU stack use, and fewer interfaces. (With assistance from Mikhail Kouzmich)

Fixed a problem with the `CopyObject` operator where the first parameter was not typed correctly for the parser, interpreter, compiler, and disassembler. Caused various errors and unexpected behavior.

Fixed a problem where a `ShiftLeft` or `ShiftRight` of more than 64 bits

produced incorrect results with some C compilers. Since the behavior of C compilers when the shift value is larger than the datatype width is apparently not well defined, the interpreter now detects this condition and simply returns zero as expected in all such cases. (BZ 395)

Fixed problem reports (Valery Podrezov) integrated:

- Update String-to-Integer conversion to match ACPI 3.0A spec (BZ 5329)
- Allow interpreter to handle nested method declarations (BZ 5361)

Fixed problem reports (Fiodor Suietov) integrated:

- AcpiTerminate doesn't free debug memory allocation list objects (BZ 355)
- After Core Subsystem shutdown, AcpiSubsystemStatus returns AE_OK (BZ 356)
- AcpiOsUnmapMemory for RSDP can be invoked inconsistently (BZ 357)
- Resource Manager should return AE_TYPE for non-device objects (BZ 358)
- Incomplete cleanup branch in AcpiNsEvaluateRelative (BZ 359)
- Use AcpiOsFree instead of ACPI_FREE in AcpiRsSetSrsMethodData (BZ 360)
- Incomplete cleanup branch in AcpiPsParseAml (BZ 361)
- Incomplete cleanup branch in AcpiDsDeleteWalkState (BZ 362)
- AcpiGetTableHeader returns AE_NO_ACPI_TABLES until DSDT is loaded (BZ 365)
- Status of the Global Initialization Handler call not used (BZ 366)
- Incorrect object parameter to Global Initialization Handler (BZ 367)

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 79.8K Code, 17.7K Data, 97.5K Total

Debug Version: 160.5K Code, 65.1K Data, 225.6K Total

Current Release:

Non-Debug Version: 80.0K Code, 17.7K Data, 97.7K Total

Debug Version: 160.3K Code, 64.9K Data, 225.2K Total

2) iASL Compiler/Disassembler and Tools:

Modified the parser to allow the names IO, DMA, and IRQ to be used as namespace identifiers with no collision with existing resource descriptor macro names. This provides compatibility with other ASL compilers and is most useful for disassembly/recompilation of existing tables without

parse
errors. (With assistance from Thomas Renninger)

Disassembler: fixed an incorrect disassembly problem with the
DataTableRegion and CopyObject operators. Fixed a possible fault during
disassembly of some Alias operators.

12 May 2006. Summary of changes for version 20060512:

1) ACPI CA Core Subsystem:

Replaced the AcpiOsQueueForExecution interface with a new interface named
AcpiOsExecute. The major difference is that the new interface does not
have
a Priority parameter, this appeared to be useless and has been replaced
by
a
Type parameter. The Type tells the host what type of execution
is being
requested, such as global lock handler, notify handler, GPE handler, etc.
This allows the host to queue and execute the request as appropriate for
the
request type, possibly using different work queues and different
priorities
for the various request types. This enables fixes for multithreading
deadlock problems such as BZ #5534, and will require changes to all
existing
OS interface layers. (Alexey Starikovskiy and Bob Moore)

Fixed a possible memory leak associated with the support for the so-
called
"implicit return" ACPI extension. Reported by FreeBSD, BZ #6514. (Fiodor
Suietov)

Fixed a problem with the Load() operator where a table load from an
operation region could overwrite an internal table buffer by up to 7
bytes
and cause alignment faults on IPF systems. (With assistance from Luming
Yu)

Example Code and Data Size: These are the sizes for the OS-independent
acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The
debug version
of the code includes the debug output trace mechanism and
has
a much larger code and data size.

Previous Release:

Non-Debug Version: 79.7K Code, 17.7K Data, 97.4K Total

Debug Version: 160.1K Code, 65.2K Data, 225.3K Total

Current Release:

Non-Debug Version: 79.8K Code, 17.7K Data, 97.5K Total

Debug Version: 160.5K Code, 65.1K Data, 225.6K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support to cross reference the internal namespace and automatically generate ASL External() statements for symbols not defined within the current table being disassembled. This will simplify the disassembly and recompilation of interdependent tables such as SSDTs since these statements will no longer have to be added manually.

Disassembler: Implemented experimental support to automatically detect invocations of external control methods and generate appropriate External() statements. This is problematic because the AML cannot be correctly parsed until the number of arguments for each control method is known. Currently, standalone method invocations and invocations as the source operand of a Store() statement are supported.

Disassembler: Implemented support for the ASL pseudo-operators LNotEqual, LLessEqual, and LGreaterEqual. Previously disassembled as LNot(LEqual()), LNot(LGreater()), and LNot(LLess()), this makes the disassembled ASL code more readable and likely closer to the original ASL source.

21 April 2006. Summary of changes for version 20060421:

1) ACPI CA Core Subsystem:

Removed a device initialization optimization introduced in 20051216 where the _STA method was not run unless an _INI was also present for the same device. This optimization could cause problems because it could allow _INI methods to be run within a not-present device subtree. (If a not-present device had no _INI, _STA would not be run, the not-present status would not

be discovered,
and the children of the device would be incorrectly
traversed.)

Implemented a new _STA optimization where namespace subtrees that do not
contain _INI are identified and ignored during device initialization.
Selectively running _STA can significantly improve boot time on large
machines (with assistance from Len Brown.)

Implemented support for the device initialization case where the returned
_STA flags indicate a device not-present but functioning. In this case,
_INI
is not run, but the device children are examined for presence, as per the
ACPI specification.

Implemented an additional change to the IndexField support in order to
conform to MS behavior. The value written to the Index Register is not
simply a byte offset, it is a byte offset in units of the access width of
the parent Index Field. (Fiodor Suietov)

Defined and deployed a new OSL interface, AcpiOsValidateAddress. This
interface is called during the creation of all AML operation regions, and
allows the
host OS to exert control over what addresses it will allow the
AML code to access. Operation Regions whose addresses are disallowed will
cause a runtime exception when they are actually accessed (will not
affect
or abort table loading.) See oswinxf or osunixxf for an example
implementation.

Defined and deployed a new OSL interface, AcpiOsValidateInterface. This
interface allows the host OS to match the various "optional"
interface/behavior strings for the _OSI predefined control method as
appropriate (with assistance from Bjorn Helgaas.) See oswinxf or osunixxf
for an example implementation.

Restructured and corrected various problems in the exception handling
code
paths within DsCallControlMethod and DsTerminateControlMethod in dsmethod
(with assistance from Takayoshi Kochi.)

Modified the Linux source converter to ignore quoted string literals
while
converting identifiers from mixed to lower case. This will correct
problems
with the disassembler and other areas where
such strings must not be
modified.

The `ACPI_FUNCTION_*` macros no longer require quotes around the function name. This allows the Linux source converter to convert the names, now that the converter ignores quoted strings.

Example Code and Data Size: These are the sizes for the OS-independent `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 81.1K Code, 17.7K Data, 98.8K Total

Debug Version: 158.9K Code, 64.9K Data, 223.8K Total

Current Release:

Non-Debug Version: 79.7K Code, 17.7K Data, 97.4K Total

Debug Version: 160.1K Code, 65.2K Data, 225.3K Total

2) iASL Compiler/Disassembler and Tools:

Implemented 3 new warnings for iASL, and implemented multiple warning levels (w2 flag).

1) Ignored timeouts: If the `TimeoutValue` parameter to `Wait` or `Acquire` is not `WAIT_FOREVER` (0xFFFF) and the code does not examine the return value to check for the possible timeout, a warning is issued.

2) Useless operators: If an ASL operator does not specify an optional target operand and it also does not use the function return value from the operator, a warning is issued since the operator effectively does nothing.

3) Unreferenced objects: If a namespace object is created, but never referenced, a warning is issued. This is a warning level 2 since there are cases where this is ok, such as when a secondary table is loaded that uses the unreferenced objects. Even so, care is taken to only flag objects that don't look like they will ever be used. For example, the reserved methods (starting with an underscore) are usually not referenced because it is

expected that the OS will invoke them.

31 March 2006. Summary of changes for version 20060331:

1) ACPI CA Core Subsystem:

Implemented header file support for the following additional ACPI tables:

ASF!, BOOT, CPEP, DBGP, MCFG, SPCR, SPMI, TCPA, and WDRT. With this support, all current and known ACPI tables are now defined in the ACPICA headers and are available for use by device drivers and other software.

Implemented support to allow tables that contain ACPI names with invalid characters to be loaded. Previously, this would cause the table load to fail, but since there are several known cases of such tables on existing machines, this change was made to enable ACPI support for them. Also, this matches the behavior of the Microsoft ACPI implementation.

Fixed a couple regressions introduced during the memory optimization in the 20060317 release. The namespace node definition required additional reorganization and an internal datatype that had been changed to 8-bit was restored to 32-bit. (Valery Podrezov)

Fixed a problem where a null pointer passed to `AcpiUtDeleteGenericState` could be passed through to `AcpiOsReleaseObject` which is unexpected. Such null pointers are now trapped and ignored, matching the behavior of the previous implementation before the deployment of `AcpiOsReleaseObject`. (Valery Podrezov, Fiodor Suietov)

Fixed a memory mapping leak during the deletion of a `SystemMemory` operation region where a cached memory mapping was not deleted. This became a noticeable problem for operation regions that are defined within frequently used control methods. (Dana Meyers)

Reorganized the ACPI table header files into two main files: one for the ACPI tables consumed by the ACPICA core, and another for the miscellaneous ACPI tables that are consumed by the drivers and other software. The various

FADT definitions were merged into one common section and three different tables (ACPI 1.0, 1.0+, and 2.0)

Example Code and Data Size: These are the sizes for the OS-independent acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Previous Release:

Non-Debug Version: 80.9K Code, 17.7K Data, 98.6K Total

Debug Version: 158.7K Code, 64.8K Data, 223.5K Total

Current Release:

Non-Debug Version: 81.1K Code, 17.7K Data, 98.8K Total

Debug Version: 158.9K Code, 64.9K Data, 223.8K Total

2) iASL Compiler/Disassembler and Tools:

Disassembler: Implemented support to decode and format all non-AML ACPI tables (tables other than DSDTs and SSDTs.) This includes the new tables added to the ACPICA headers, therefore all current and known ACPI tables are supported.

Disassembler: The change to allow ACPI names with invalid characters also enables the disassembly of such tables. Invalid characters within names are changed to '*' to make the name printable; the iASL compiler will still generate an error for such names, however, since this is an invalid ACPI character.

Implemented an option for AcpiXtract (-a) to extract all tables found in the input file. The default invocation extracts only the DSDTs and SSDTs.

Fixed a couple of gcc generation issues for iASL and AcpiExec and added a makefile for the AcpiXtract utility.

17 March 2006. Summary of changes for version 20060317:

1) ACPI CA Core Subsystem:

Implemented the use of a cache object for all internal namespace nodes. Since there are about 1000 static nodes in a typical system, this will

decrease memory use for cache implementations that minimize per-allocation overhead (such as a slab allocator.)

Removed the reference count mechanism for internal namespace nodes, since it was deemed unnecessary. This reduces the size of each namespace node by about 5%-10% on all platforms. Nodes are now 20 bytes for the 32-bit case, and 32 bytes for the 64-bit case.

Optimized several internal data structures to reduce object size on 64-bit platforms by packing data within the 64-bit alignment. This includes the frequently used `ACPI_OPERAND_OBJECT`, of which there can be ~1000 static instances corresponding to the namespace objects.

Added two new strings for the predefined `_OSI` method: "Windows 2001.1 SP1" and "Windows 2006".

Split the allocation tracking mechanism out to a separate file, from `utalloc.c` to `uttrack.c`. This mechanism appears to be only useful for application-level code. Kernels may wish to not include `uttrack.c` in distributions.

Removed all remnants of the obsolete `ACPI_REPORT_*` macros and the associated code. (These macros have been replaced by the `ACPI_ERROR` and `ACPI_WARNING` macros.)

Code and Data Size: These are the sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total

Debug Version: 161.6K Code, 65.7K Data, 227.3K Total

Current Release:

Non-Debug Version: 80.9K Code, 17.7K Data, 98.6K Total

Debug Version: 158.7K Code, 64.8K Data, 223.5K Total

2) iASL Compiler/Disassembler and Tools:

Implemented an ANSI C version of the acpixtract utility. This version will automatically extract the DSDT and all SSDTs from the input acpidump text file and dump the binary output to separate files. It can also display a summary of the input file including the headers for each table found and will extract any single ACPI table, with any signature. (See source/tools/acpixtract)

10 March 2006. Summary of changes for version 20060310:

1) ACPI CA Core Subsystem:

Tagged all external interfaces to the subsystem with the new `ACPI_EXPORT_SYMBOL` macro. This macro can be defined as necessary to assist

kernel integration. For Linux, the macro resolves to the `EXPORT_SYMBOL` macro. The default definition is `NULL`.

Added the `ACPI_THREAD_ID` type for the return value from `AcpiOsGetThreadId`.

This allows the host to define this as necessary to simplify kernel integration. The default definition is `ACPI_NATIVE_UINT`.

Fixed two interpreter problems related to error processing, the deletion of objects, and placing invalid pointers onto the internal operator result stack. BZ 6028, 6151 (Valery Podrezov)

Increased the reference count threshold where a warning is emitted for large reference counts in order to eliminate unnecessary warnings on systems with large namespaces (especially 64-bit.) Increased the value from `0x400` to `0x800`.

Due to universal disagreement as to the meaning of the 'c' in the `calloc()` function, the `ACPI_MEM_CALLOCATE` macro has been renamed to `ACPI_ALLOCATE_ZEROED` so that the purpose of the interface is 'clear'. `ACPI_MEM_ALLOCATE` and `ACPI_MEM_FREE` are

renamed to ACPI_ALLOCATE and
ACPI_FREE.

Code and Data Size: These are the sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 81.0K Code, 17.8K Data, 98.8K Total

Debug Version: 161.4K Code, 65.7K Data, 227.1K Total

Current Release:

Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total

Debug Version: 161.6K Code, 65.7K Data, 227.3K Total

2) iASL Compiler/Disassembler:

Disassembler: implemented support for symbolic resource descriptor references. If a CreateXxxxField operator references a fixed offset within

a

resource descriptor, a name is assigned to the descriptor and the offset

is

translated to the appropriate resource tag and pathname. The addition of this support brings the disassembled code very close to the original ASL source code and helps eliminate run-time errors when the disassembled code

is modified (and recompiled) in such a way as to invalidate the original fixed offsets.

Implemented support for a Descriptor Name as the last parameter to the ASL

Register() macro. This parameter was inadvertently left out of the ACPI specification, and will be added for ACPI 3.0b.

Fixed a problem where the use of the "_OSI" string (versus the full path "_\OSI") caused an internal compiler error. ("No back ptr to op")

Fixed a problem with the error message that occurs when an invalid string is

used for a _HID object (such as one with an embedded asterisk:

"*PNP010A".)

The correct message is now displayed.

17 February 2006. Summary of changes for version 20060217:

1) ACPI CA Core Subsystem:

Implemented a change to the IndexField support to match the behavior of the Microsoft AML interpreter. The value written to the Index register is now a byte offset, no longer an index based upon the width of the Data register. This should fix IndexField problems seen on some machines where the Data register is not exactly one byte wide. The ACPI specification will be clarified on this point.

Fixed a problem where several resource descriptor types could overrun the internal descriptor buffer due to size miscalculation: VendorShort, VendorLong, and Interrupt. This was noticed on IA64 machines, but could affect all platforms.

Fixed a problem where individual resource descriptors were misaligned within the internal buffer, causing alignment faults on IA64 platforms.

Code and Data Size: These are the sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. The values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total

Debug Version: 161.3K Code, 65.6K Data, 226.9K Total

Current Release:

Non-Debug Version: 81.0K Code, 17.8K Data, 98.8K Total

Debug Version: 161.4K Code, 65.7K Data, 227.1K Total

2) iASL Compiler/Disassembler:

Implemented support for new reserved names: `_WDG` and `_WED` are Microsoft extensions for Windows Instrumentation Management, `_TDL` is a new ACPI-defined method (Throttling Depth Limit.)

Fixed a problem where a zero-length `VendorShort` or `VendorLong` resource descriptor was incorrectly emitted as a descriptor of length one.

10 February 2006. Summary of changes for version 20060210:

1) ACPI CA Core Subsystem:

Removed a couple of extraneous `ACPI_ERROR` messages that appeared during normal execution. These became apparent after the conversion from `ACPI_DEBUG_PRINT`.

Fixed a problem where the `CreateField` operator could hang if the `BitIndex` or `NumBits` parameter referred to a named object. (Valery Podrezov, BZ 5359)

Fixed a problem where a `DeRefOf` operation on a buffer object incorrectly failed with an exception. This also fixes a couple of related `RefOf` and `DeRefOf` issues. (Valery Podrezov, BZ 5360/5392/5387)

Fixed a problem where the `AE_BUFFER_LIMIT` exception was returned instead of `AE_STRING_LIMIT` on an out-of-bounds `Index()` operation. (Valery Podrezov, BZ 5480)

Implemented a memory cleanup at the end of the execution of each iteration of an `AML While()` loop, preventing the accumulation of outstanding objects. (Valery Podrezov, BZ 5427)

Eliminated a chunk of duplicate code in the object resolution code. (Valery Podrezov, BZ 5336)

Fixed several warnings during the 64-bit code generation.

The `AcpiSrc` source code conversion tool now inserts one line of whitespace after an `if()` statement that is followed immediately by a comment,

improving
readability of the Linux code.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These

values do not include any ACPI driver or OSPM code. The debug version of the

code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency

of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 81.0K Code, 17.9K Data, 98.9K Total

Debug Version: 161.3K Code, 65.7K Data, 227.0K Total

Current Release:

Non-Debug Version: 81.1K Code, 17.8K Data, 98.9K Total

Debug Version: 161.3K Code, 65.6K Data, 226.9K Total

2) iASL Compiler/Disassembler:

Fixed

a problem with the disassembly of a BankField operator with a complex expression for the BankValue parameter.

27 January 2006. Summary of changes for version 20060127:

1) ACPI CA Core Subsystem:

Implemented support in the Resource Manager to allow unresolved namestring

references within resource package objects for the `_PRT` method. This support

is in addition to the previously implemented unresolved reference support within the AML parser. If the interpreter slack mode is enabled, these unresolved references will be passed through to the caller as a NULL package entry.

Implemented and deployed new macros and functions for error and warning messages across the subsystem. These macros are simpler and generate less code than their predecessors. The new macros `ACPI_ERROR`, `ACPI_EXCEPTION`, `ACPI_WARNING`, and `ACPI_INFO` replace the `ACPI_REPORT_*` macros. The older

macros remain defined to allow ACPI drivers time to migrate to the new macros.

Implemented the ACPI_CPU_FLAGS type to simplify host OS integration of the Acquire/Release Lock OSL interfaces.

Fixed a problem where Alias ASL operators are sometimes not correctly resolved, in both the interpreter and the iASL compiler.

Fixed several problems with the implementation of the ConcatenateResTemplate ASL operator. As per the ACPI specification, zero length buffers are now treated as a single EndTag. One-length buffers always cause a fatal exception. Non-zero length buffers that do not end with a full 2-byte EndTag cause a fatal exception.

Fixed a possible structure overwrite in the AcpiGetObjectInfo external interface. (With assistance from Thomas Renninger)

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 83.1K Code, 18.4K Data, 101.5K Total

Debug Version: 163.2K Code, 66.2K Data, 229.4K Total

Current Release:

Non-Debug Version: 81.0K Code, 17.9K Data, 98.9K Total

Debug Version: 161.3K Code, 65.7K Data, 227.0K Total

2) iASL Compiler/Disassembler:

Fixed an internal error that was generated for any forward references to ASL Alias objects.

13 January 2006. Summary of changes for version 20060113:

1) ACPI CA Core Subsystem:

Added 2006 copyright to all module headers and signons. This affects virtually every file in the ACPICA core subsystem, iASL compiler, and the utilities.

Enhanced the ACPICA error reporting in order to simplify user migration

to

the non-debug version of ACPICA. Replaced all instances of the ACPI_DEBUG_PRINT macro invoked at the ACPI_DB_ERROR and ACPI_DB_WARN debug

levels with the ACPI_REPORT_ERROR and ACPI_REPORT_WARNING macros, respectively. This preserves all error and warning messages in the non-debug

version of the ACPICA code (this has been referred to as the "debug lite" option.) Over 200 cases were converted to create a total of over 380 error/warning messages across the ACPICA code. This increases the code and

data size of the default non-debug version of the code somewhat (about 13K),

but all error/warning reporting may be disabled if desired (and code eliminated) by specifying the ACPI_NO_ERROR_MESSAGES compile-time configuration option. The size of the debug version of ACPICA remains about the same.

Fixed a memory leak within the AML Debugger "Set" command. One object was not properly deleted for every successful invocation of the command.

Code and Data Size: The current

and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler. These

values do not include any ACPI driver or OSPM code. The debug version of the

code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency

of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.6K Code, 12.3K Data, 88.9K Total

Debug Version: 163.7K Code, 67.5K Data, 231.2K Total

Current Release:

Non-Debug Version: 83.1K Code, 18.4K Data, 101.5K Total

Debug Version: 163.2K Code, 66.2K Data, 229.4K Total

2) iASL Compiler/Disassembler:

The compiler now officially supports the ACPI 3.0a specification that was released on December 30, 2005. (Specification is available at www.acpi.info)

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December 2005. Summary of changes for version 20051216:

1) ACPI CA Core Subsystem:

Implemented optional support to allow unresolved names within ASL Package objects. A null object is inserted in the package when a named reference cannot be located in the current namespace. Enabled via the interpreter slack flag, this should eliminate AE_NOT_FOUND exceptions seen on machines that contain such code.

Implemented an optimization to the initialization sequence that can improve boot time. During ACPI device initialization, the _STA method is now run if and only if the _INI method exists. The _STA method is used to determine if the device is present; An _INI can only be run if _STA returns present, but it is a waste of time to run the _STA method if the _INI does not exist. (Prototype and assistance from Dong Wei)

Implemented use of the C99 uintptr_t for the pointer casting macros if it is available in the current compiler. Otherwise, the default (void *) cast is used as before.

Fixed some possible memory leaks found within the execution path of the Break, Continue, If, and CreateField operators. (Valery Podrezov)

Fixed a problem introduced in the 20051202 release where an exception is generated during method execution if a control method attempts to declare another method.

Moved resource descriptor string constants that are used by both the AML disassembler and AML debugger to the common utilities directory so that these components are independent.

Implemented support in the AcpiExec utility (-e switch) to globally ignore exceptions during control method execution (method is not aborted.)

Added the rsinfo.c source file to the AcpiExec makefile for Linux/Unix generation.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These

values do not include any ACPI driver or OSPM code.

The debug version of

the

code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency

of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total

Debug Version: 163.2K Code, 67.4K Data, 230.6K Total

Current Release:

Non-Debug Version: 76.6K Code, 12.3K Data, 88.9K Total

Debug Version: 163.7K Code, 67.5K Data, 231.2K Total

2) iASL Compiler/Disassembler:

Fixed a problem where a CPU stack overflow fault could occur if a recursive

method call was made from within a Return statement.

02 December 2005. Summary of changes for version 20051202:

1) ACPI CA Core Subsystem:

Modified the parsing of control methods to no longer create namespace objects during the first pass of the parse. Objects are now created only during the execute phase, at

the moment the namespace creation operator

is

encountered in the AML (Name, OperationRegion, CreateByteField, etc.)

This

should eliminate ALREADY_EXISTS exceptions seen on some machines where reentrant control methods are protected by an AML mutex. The mutex will now correctly block multiple threads from attempting to create the same object more than once.

Increased the number of available Owner Ids for namespace object tracking from 32 to 255. This should eliminate the OWNER_ID_LIMIT exceptions seen on some machines with a large number of ACPI tables (either static or dynamic).

Fixed a problem with the AcpiExec utility where a fault could occur when the -b switch (batch mode) is used.

Enhanced the namespace dump routine to output the owner ID for each namespace object.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These

values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total

Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

Current Release:

Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total

Debug Version: 163.2K Code, 67.4K Data, 230.6K Total

2) iASL Compiler/Disassembler:

Fixed a parse error during compilation of certain Switch/Case constructs.

To

simplify the parse, the grammar now allows for multiple Default statements

and this error is now detected and flagged during the analysis phase.

Disassembler: The disassembly now includes the contents of the original table header within a comment at the start of the file. This includes the name and version of the original ASL compiler.

17 November 2005. Summary of changes for version 20051117:

1) ACPI CA Core Subsystem:

Fixed a problem in the AML parser where the method thread count could be decremented below zero if any errors occurred during the method parse phase.

This should eliminate AE_AML_METHOD_LIMIT exceptions seen on some machines.

This also fixed a related regression with the mechanism that detects and corrects methods that cannot properly handle reentrancy (related to the deployment of the new OwnerId mechanism.)

Eliminated the pre-parsing of control methods (to detect errors) during table load. Related to the problem above, this was causing unwind issues if

any errors occurred during the parse, and it seemed to be overkill. A table

load should not be aborted if there are problems with any single control method, thus rendering this feature rather pointless.

Fixed a problem with the new table-driven resource manager where an internal buffer overflow could occur for small resource templates.

Implemented a new external interface, AcpiGetVendorResource. This interface will find and return a vendor-defined resource descriptor within a _CRS or _PRS method via an ACPI 3.0 UUID match. With assistance from Bjorn Helgaas.

Removed the length limit (200) on string objects as per the upcoming ACPI 3.0A specification. This affects the following areas of the interpreter:

- 1) any implicit conversion of a Buffer to a String, 2) a String object result of the ASL Concatenate operator, 3) the String object result of the ASL ToString operator.

Fixed a problem in the Windows OS interface layer (OSL) where a WAIT_FOREVER on a semaphore object would incorrectly timeout. This allows the multithreading features of the AcpiExec utility to work properly under Windows.

Updated the Linux makefiles for the iASL compiler and AcpiExec to include the recently added file named "utresrc.c".

Code

and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These

values do not include any ACPI driver or OSPM code. The debug version of the

code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency

of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.2K Code, 12.3K Data, 88.5K Total

Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

Current Release:

Non-Debug Version: 76.3K Code, 12.3K Data, 88.6K Total

Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

2) iASL Compiler/Disassembler:

Removed the limit (200) on string objects as per the upcoming ACPI 3.0A specification. For the iASL compiler, this means that string literals

within

the source

ASL can be of any length.

Enhanced the listing output to dump the AML code for resource descriptors immediately after the ASL code for each descriptor, instead of in a block at

the end of the entire resource template.

Enhanced the compiler debug output to dump the entire original parse tree constructed during the parse phase, before any transforms are applied to the

tree. The transformed tree is dumped also.

02 November 2005. Summary of changes for version 20051102:

1) ACPI CA Core Subsystem:

Modified the subsystem initialization sequence to improve GPE support.

The

GPE initialization has been split into two parts in order to defer execution

of the _PRW methods (Power Resources for Wake) until after the hardware is

fully initialized and the SCI handler is installed. This allows the _PRW methods to access fields protected by the Global Lock. This will fix systems

where a NO_GLOBAL_LOCK exception has been seen during initialization.

Converted

the ACPI internal object disassemble and display code within the

AML debugger to fully table-driven operation, reducing code size and increasing maintainability.

Fixed a regression with the ConcatenateResTemplate() ASL operator introduced

in the 20051021 release.

Implemented support for "local" internal ACPI object types within the debugger "Object" command and the AcpiWalkNamespace external interfaces.

These local types include RegionFields, BankFields, IndexFields, Alias, and reference objects.

Moved common AML resource handling code into a new file, "utresrc.c".

This

code is shared by both the Resource Manager and the AML Debugger.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These

values do not include any ACPI driver or OSPM code. The debug version of the

code includes the debug

output trace mechanism and has a much larger code

and data size. Note that these values will vary depending on the efficiency

of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.1K Code, 12.2K Data, 88.3K Total

Debug Version: 163.5K Code, 67.0K Data, 230.5K Total

Current Release:

Non-Debug Version: 76.2K Code, 12.3K Data, 88.5K Total

Debug Version: 163.0K Code, 67.4K Data, 230.4K Total

2) iASL Compiler/Disassembler:

Fixed a problem with very large initializer lists (more than 4000 elements) for both Buffer and Package objects where the parse stack could overflow.

Enhanced the pre-compile source code scan for non-ASCII characters to ignore characters within comment fields. The scan is now always performed and is no longer optional, detecting invalid characters within a source file immediately rather than during the parse phase or later.

Enhanced the ASL grammar definition to force early reductions on all list-style grammar elements so that the overall parse stack usage is greatly reduced. This should improve performance and reduce the possibility of parse stack overflow.

Eliminated all reduce/reduce conflicts in the iASL parser generation. Also, with the addition of a %expected statement, the compiler generates from source with no warnings.

Fixed a possible segment fault in the disassembler if the input filename does not contain a ".dot" extension (Thomas Renninger).

21 October 2005. Summary of changes for version 20051021:

1) ACPI CA Core Subsystem:

Implemented support for the EM64T and other x86-64 processors. This essentially entails recognizing that these processors support non-aligned memory transfers. Previously, all 64-bit processors were assumed to lack hardware support for non-aligned transfers.

Completed conversion of the Resource Manager to nearly full table-driven

operation. Specifically, the resource conversion code (convert AML to internal format and the reverse) and the debug code to dump internal resource descriptors are fully table-driven, reducing code and data size and improving maintainability.

The OSL interfaces for Acquire and Release Lock now use a 64-bit flag word on 64-bit processors instead of a fixed 32-bit word. (With assistance from Alexey Starikovskiy)

Implemented support within the resource conversion code for the Type-Specific byte within the various ACPI 3.0 *WordSpace macros.

Fixed some issues within the resource conversion code for the type-specific flags for both Memory and I/O address resource descriptors. For Memory, implemented support for the MTP and TTP flags. For I/O, split the TRS and TTP flags into two separate fields.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 32-bit compiler. These

values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.1K Code, 12.1K Data, 89.2K Total

Debug Version: 168.0K Code, 68.3K Data, 236.3K Total

Current Release:

Non-Debug Version: 76.1K Code, 12.2K Data, 88.3K Total

Debug Version: 163.5K Code, 67.0K Data, 230.5K Total

2) iASL Compiler/Disassembler:

Relaxed a compiler restriction that disallowed a ResourceIndex byte if the corresponding ResourceSource string was not also present in a resource

descriptor declaration. This restriction caused problems with existing AML/ASL code that includes the Index byte without the string. When such AML was disassembled, it could not be compiled without modification. Further, the modified code created a resource template with a different size than the original, breaking code that used fixed offsets into the resource template buffer.

Removed a recent feature of the disassembler to ignore a lone ResourceIndex byte. This byte is now emitted if present so that the exact AML can be reproduced when the disassembled code is recompiled.

Improved comments and text alignment for the resource descriptor code emitted by the disassembler.

Implemented disassembler support for the ACPI 3.0 AccessSize field within a Register() resource descriptor.

30 September 2005. Summary of changes for version 20050930:

1) ACPI CA Core Subsystem:

Completed a major overhaul of the Resource Manager code - specifically, optimizations in the area of the AML/internal resource conversion code.

The code has been optimized to simplify and eliminate duplicated code, CPU stack use has been decreased by optimizing function parameters and local

variables, and naming conventions across the manager have been standardized

for clarity and ease of maintenance (this includes function, parameter, variable, and struct/typedef names.) The update may force changes in some driver code, depending on how resources are handled by the host OS.

All Resource Manager dispatch and information tables have been moved to a single location for clarity and ease of maintenance. One new file was created, named "rsinfo.c".

The ACPI return macros (return_ACPI_STATUS, etc.) have been modified to guarantee that the argument is not evaluated twice, making them less prone

to macro side-effects. However, since there exists the possibility of additional stack use if a particular compiler cannot optimize them (such as in the debug generation case), the original macros are optionally available.

Note that some invocations of the return_VALUE macro may now cause size mismatch warnings; the return_UINT8 and return_UINT32 macros are provided

to eliminate these. (From Randy Dunlap)

Implemented a new mechanism to enable debug tracing for individual control methods. A new external interface, AcpiDebugTrace, is provided to enable this mechanism. The intent is to allow the host OS to easily enable and disable tracing for problematic control methods. This interface can be easily exposed to a user or debugger interface if desired. See the file psxface.c for details.

AcpiUtCallocate will now return a valid pointer if a length of zero is specified - a length of one is used and a warning is issued. This matches the behavior of AcpiUtAllocate.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.5K Code, 12.0K Data, 89.5K Total

Debug Version: 168.1K Code, 68.4K Data, 236.5K Total

Current Release:

Non-Debug Version: 77.1K Code, 12.1K Data, 89.2K Total

Debug Version: 168.0K Code, 68.3K Data, 236.3K Total

2) iASL Compiler/Disassembler:

A remark is issued if the effective compile-time length of a package or buffer is zero. Previously, this was a warning.

16 September 2005. Summary of changes for version 20050916:

1) ACPI CA Core Subsystem:

Fixed a problem within the Resource Manager where support for the Generic Register descriptor was not fully implemented. This descriptor is now fully recognized, parsed, disassembled, and displayed.

Completely restructured the Resource Manager code to utilize table-driven dispatch and lookup, eliminating many of the large switch() statements.

This reduces overall subsystem code size and code complexity. Affects the resource parsing and construction, disassembly, and debug dump output.

Cleaned up and restructured the debug dump output for all resource descriptors. Improved readability of the output and reduced code size.

Fixed a problem where changes to internal data structures caused the optional ACPI_MUTEX_DEBUG code to fail compilation if specified.

Code and Data Size: The current and previous library sizes for the core subsystem are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 32-bit compiler.

These values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous

Release:

Non-Debug Version: 78.4K Code, 11.8K Data, 90.2K Total

Debug Version: 169.6K Code, 69.9K Data, 239.5K Total

Current Release:

Non-Debug Version: 77.5K Code, 12.0K Data, 89.5K Total

Debug Version: 168.1K Code, 68.4K Data, 236.5K Total

2) iASL Compiler/Disassembler:

Updated the disassembler to automatically insert an EndDependentFn() macro into the ASL stream if this macro is missing in the original AML code,

simplifying compilation of the resulting ASL module.

Fixed a problem in the disassembler where a disassembled ResourceSource string (within a large resource descriptor) was not surrounded by quotes and not followed by a comma, causing errors when the resulting ASL module was compiled. Also, escape sequences within a ResourceSource string are now handled correctly (especially "\\")

02 September 2005. Summary of changes for version 20050902:

1) ACPI CA Core Subsystem:

Fixed a problem with the internal Owner ID allocation and deallocation mechanisms for control method execution and recursive method invocation. This should eliminate the OWNER_ID_LIMIT exceptions and "Invalid OwnerId" messages seen on some systems. Recursive method invocation depth is currently limited to 255. (Alexey Starikovskiy)

Completely eliminated all vestiges of support for the "module-level executable code" until this support is fully implemented and debugged. This should eliminate the NO_RETURN_VALUE exceptions seen during table load on some systems that invoke this support.

Fixed a problem within the resource manager code where the transaction flags for a 64-bit address descriptor were handled incorrectly in the type-specific flag byte.

Consolidated duplicate code within the address descriptor resource manager code, reducing overall subsystem code size.

Fixed a fault when using the AML debugger "disassemble" command to disassemble individual control methods.

Removed references to the "release_current" directory within the Unix release package.

Code and Data Size: The current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler. These values do not include any ACPI driver or OSPM code. The debug version of the code includes

the debug output trace mechanism and has a much larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total

Debug Version: 170.0K Code, 69.9K Data, 239.9K Total

Current Release:

Non-Debug Version: 78.4K Code, 11.8K Data, 90.2K Total

Debug Version: 169.6K Code, 69.9K Data, 239.5K Total

2) iASL Compiler/Disassembler:

Implemented an error check for illegal duplicate values in the interrupt and

dma lists for the following

ASL macros: Dma(), Irq(), IrqNoFlags(), and Interrupt().

Implemented error checking for the Irq() and IrqNoFlags() macros to detect

too many values in the interrupt list (16 max) and invalid values in the list (range 0 - 15)

The maximum length string literal within an ASL file is now restricted to 200 characters as per the ACPI specification.

Fixed a fault when using the -ln option (generate namespace listing).

Implemented an error check to determine if a DescriptorName within a resource descriptor has already been used within the current scope.

15 August 2005. Summary of changes for version 20050815:

1) ACPI CA Core Subsystem:

Implemented a full bitwise compare to determine if a table load request is

attempting to load a duplicate table. The compare is performed if the table

signatures and table lengths match. This will allow different tables with the same OEM Table ID and revision to be loaded - probably against the ACPI

specification, but discovered in the field nonetheless.

Added the changes.txt logfile to each of the zipped release packages.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total

Debug Version: 167.0K Code, 69.9K Data, 236.9K Total

Current Release:

Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total

Debug Version: 170.0K Code, 69.9K Data, 239.9K Total

2) iASL Compiler/Disassembler:

Fixed a problem where incorrect AML code could be generated for Package objects if optimization is disabled (via the -oa switch).

Fixed a problem with where incorrect AML code is generated for variable-length packages when the package length is not specified and the number of initializer values is greater than 255.

29 July 2005. Summary of changes for version 20050729:

1) ACPI CA Core Subsystem:

Implemented support to ignore an attempt to install/load a particular ACPI table more than once. Apparently there exists BIOS code that repeatedly attempts to load the same SSDT upon certain events. With assistance from Venkatesh Pallipadi.

Restructured the main interface to the AML parser in order to correctly

handle all exceptional conditions. This will prevent leakage of the OwnerId resource and should eliminate the AE_OWNER_ID_LIMIT exceptions seen on some machines. With assistance from Alexey Starikovskiy.

Support for "module level code" has been disabled in this version due to a number of issues that have appeared on various machines. The support can be enabled by defining ACPI_ENABLE_MODULE_LEVEL_CODE during subsystem compilation. When the issues are fully resolved, the code will be enabled by default again.

Modified the internal functions for debug print support to define the FunctionName parameter as a (const char *) for compatibility with compiler built-in macros such as __FUNCTION__, etc.

Linted the entire ACPICA source tree for both 32-bit and 64-bit.

Implemented support to display an object count summary for the AML Debugger commands Object and Methods.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.6K Code, 11.6K Data, 90.2K Total

Debug Version: 170.0K Code, 69.7K Data, 239.7K Total

Current Release:

Non-Debug Version: 78.6K Code, 11.7K Data, 90.3K Total

Debug Version: 167.0K Code, 69.9K Data, 236.9K Total

2) iASL Compiler/Disassembler:

Fixed a regression that appeared in the 20050708 version of the compiler where an error message was inadvertently emitted for invocations of the `_OSI` reserved control method.

08 July 2005. Summary of changes for version 20050708:

1) ACPI CA Core Subsystem:

The use of the CPU stack in the debug version of the subsystem has been considerably reduced. Previously, a debug structure was declared in every function that used the debug macros. This structure has been removed in favor of declaring the individual elements as parameters to the debug functions. This reduces the cumulative stack use during nested execution of ACPI function calls at the cost of a small increase in the code size of the debug version of the subsystem. With assistance from Alexey Starikovskiy and Len Brown.

Added the `ACPI_GET_FUNCTION_NAME` macro to enable the compiler-dependent headers to define a macro that will return the current function name at runtime (such as `__FUNCTION__` or `_func_`, etc.) The function name is used by the debug trace output. If `ACPI_GET_FUNCTION_NAME` is not defined in the compiler-dependent header, the function name is saved on the CPU stack (one pointer per function.) This mechanism is used because apparently there exists no standard ANSI-C defined macro that returns the function name.

Redesigned and reimplemented the "Owner ID" mechanism used to track namespace objects created/deleted by ACPI tables and control method execution. A bitmap is now used to allocate and free the IDs, thus solving the wraparound problem present in the previous implementation. The size of the namespace node descriptor was reduced by 2 bytes as a result (Alexey Starikovskiy).

Removed the `UINT32_BIT` and `UINT16_BIT` types that were used for the bitfield flag definitions within the headers for the predefined ACPI tables. These

have been replaced by UINT8_BIT in order to increase the code portability of the subsystem. If the use of UINT8 remains a problem, we may be forced to eliminate bitfields entirely because of a lack of portability.

Enhanced the performance of the AcpiUtUpdateObjectReference procedure. This is a frequently used function and this improvement increases the performance of the entire subsystem (Alexey Starikovskiy).

Fixed several possible memory leaks and the inverse - premature object deletion (Alexey Starikovskiy).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.6K Code, 11.5K Data, 90.1K Total

Debug Version: 165.2K Code, 69.6K Data, 234.8K Total

Current Release:

Non-Debug Version: 78.6K Code, 11.6K Data, 90.2K Total

Debug Version: 170.0K Code, 69.7K Data, 239.7K Total

24 June 2005. Summary of changes for version 20050624:

1) ACPI CA Core Subsystem:

Modified the new OSL cache interfaces to use ACPI_CACHE_T as the type for the host-defined cache object. This allows the OSL implementation to define and type this object in any manner desired, simplifying the OSL implementation. For example, ACPI_CACHE_T is defined as kmem_cache_t for Linux, and should be defined in the OS-specific header file for other operating systems as required.

Changed the interface to AcpiOsAcquireObject to directly return the

requested object as the function return (instead of ACPI_STATUS.) This change was made for performance reasons, since this is the purpose of the interface in the first place. AcpiOsAcquireObject is now similar to the AcpiOsAllocate interface.

Implemented a new AML debugger command named Businfo. This command displays information about all devices that have an associate _PRT object. The _ADR, _HID, _UID, and _CID are displayed for these devices.

Modified the initialization sequence in AcpiInitializeSubsystem to call the OSL interface AcpiOsInitialize first, before any local initialization. This change was required because the global initialization now calls OSL interfaces.

Enhanced the Dump command to display the entire contents of Package objects (including all sub-objects and their values.)

Restructured the code base to split some files because of size and/or because the code logically belonged in a separate file. New files are listed below. All makefiles and project files included in the ACPI CA release have been updated.

```
utilities/utcache.c      /* Local cache interfaces */
utilities/utmutex.c     /* Local mutex support */
utilities/utstate.c     /* State object support */
interpreter/parser/psloop.c /* Main AML parse loop */
```

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.3K Code, 11.6K Data, 89.9K Total

Debug Version: 164.0K Code, 69.1K Data, 233.1K Total
Current Release:
Non-Debug Version: 78.6K Code, 11.5K Data, 90.1K Total
Debug Version: 165.2K Code, 69.6K Data, 234.8K Total

2) iASL Compiler/Disassembler:

Fixed a regression introduced in version 20050513 where the use of a Package object within a Case() statement caused a compile time exception. The original behavior has been restored (a Match() operator is emitted.)

17 June 2005. Summary of changes for version 20050617:

1) ACPI CA Core Subsystem:

Moved the object cache operations into the OS interface layer (OSL) to allow the host OS to handle these operations if desired (for example, the Linux OSL will invoke the slab allocator). This support is optional; the compile time define `ACPI_USE_LOCAL_CACHE` may be used to utilize the original cache code in the ACPI CA core. The new OSL interfaces are shown below. See `utalloc.c` for an example implementation, and `acpiosxf.h` for the exact interface definitions. With assistance from Alexey Starikovskiy.

- AcpiOsCreateCache
- AcpiOsDeleteCache
- AcpiOsPurgeCache
- AcpiOsAcquireObject
- AcpiOsReleaseObject

Modified the interfaces to `AcpiOsAcquireLock` and `AcpiOsReleaseLock` to return and restore a flags parameter. This fits better with many OS lock models. Note: the current execution state (interrupt handler or not) is no longer passed to these interfaces. If necessary, the OSL must determine this state by itself, a simple and fast operation. With assistance from Alexey Starikovskiy.

Fixed a problem in the ACPI table handling where a valid XSDT was assumed present if the revision of the RSDP was 2 or greater. According to the ACPI specification, the XSDT is optional in all cases, and the table manager

therefore now checks for both
an RSDP ≥ 2 and a valid XSDT pointer.
Otherwise, the RSDT pointer is used. Some ACPI 2.0 compliant BIOSs
contain
only the RSDT.

Fixed an interpreter problem with the Mid() operator in the case of an
input
string where the resulting output string is of zero length. It now
correctly
returns a valid, null terminated string object instead of a string object
with a null pointer.

Fixed a problem with the control method argument handling to allow a
store
to an Arg object that already contains an object of type Device. The
Device
object is now correctly overwritten. Previously, an error was returned.

Enhanced the debugger Find command to emit object values in addition to
the
found object pathnames. The output format is the same as the dump
namespace
command.

Enhanced the debugger Set command. It now has the ability to set the
value
of any Named integer object in the namespace (Previously, only method
locals
and args could be set.)

Code and Data Size: Current and previous
core subsystem library sizes are
shown below. These are the code and data sizes for the acpica.lib
produced
by the Microsoft Visual C++ 6.0 compiler, and these values do not include
any ACPI driver or OSPM code. The debug version of the code includes the
debug output trace mechanism and has a much larger code and data size.
Note
that these values will vary depending on the efficiency of the compiler
and
the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.1K Code, 11.6K Data, 89.7K Total

Debug Version: 164.0K Code, 69.3K Data, 233.3K Total

Current Release:

Non-Debug Version: 78.3K Code, 11.6K Data, 89.9K Total

Debug Version: 164.0K Code, 69.1K Data, 233.1K Total

2) iASL Compiler/Disassembler:

Fixed a regression in the disassembler where if/else/while constructs were output incorrectly. This problem was introduced in the previous release (20050526). This problem also affected the single-step disassembly in the debugger.

Fixed a problem where compiling the reserved _OSI method would randomly (but rarely) produce compile errors.

Enhanced the disassembler to emit compilable code in the face of incorrect AML resource descriptors. If the optional ResourceSourceIndex is present, but the ResourceSource is not, do not emit the ResourceSourceIndex in the disassembly. Otherwise, the resulting code cannot be compiled without errors.

26 May 2005. Summary of changes for version 20050526:

1) ACPI CA Core Subsystem:

Implemented support to execute Type 1 and Type 2 AML opcodes appearing at the module level (not within a control method.) These opcodes are executed exactly once at the time the table is loaded. This type of code was legal up until the release of ACPI 2.0B (2002) and is now supported within ACPI CA in order to provide backwards compatibility with earlier BIOS implementations. This eliminates the "Encountered executable code at module level" warning that was previously generated upon detection of such code.

Fixed a problem in the interpreter where an AE_NOT_FOUND exception could inadvertently be generated during the lookup of namespace objects in the second pass parse of ACPI tables and control methods. It appears that this problem could occur during the resolution of forward references to namespace

objects.

Added the ACPI_MUTEX_DEBUG #ifdef to the AcpiUtReleaseMutex function, corresponding to the same #ifdef in the AcpiUtAcquireMutex function. This allows the deadlock detection debug code to be compiled out in the normal case, improving mutex performance (and overall subsystem performance) considerably.

Implemented a handful of miscellaneous fixes for possible memory leaks on error conditions and error handling control paths. These fixes were suggested by FreeBSD and the Coverity Prevent source code analysis tool.

Added a check for a null RSDT pointer in AcpiGetFirmwareTable (tbxfroot.c)

to prevent a fault in this error case.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total

Debug Version: 163.7K Code, 69.3K Data, 233.0K Total

Current Release:

Non-Debug Version: 78.1K Code, 11.6K Data, 89.7K Total

Debug Version: 164.0K Code, 69.3K Data, 233.3K Total

2) iASL Compiler/Disassembler:

Implemented support to allow Type 1 and Type 2 ASL operators to appear at the module level (not within a control method.) These operators will be executed once at the time the table is loaded. This type of code was legal up until the release of ACPI 2.0B (2002) and is now supported by the iASL compiler in order to provide backwards compatibility with earlier BIOS ASL code.

The ACPI integer width (specified via the table revision ID or the -r override, 32 or 64 bits) is now used internally during compile-time constant folding to ensure that constants are truncated to 32 bits if necessary. Previously, the revision ID value was only emitted in the AML table header.

An error message is now generated for the Mutex and Method operators if the SyncLevel parameter is outside the legal range of 0 through 15.

Fixed a problem with the Method operator ParameterTypes list handling (ACPI 3.0). Previously, more than 2 types or 2 arguments generated a syntax error.

The actual underlying implementation of method argument typechecking is still under development, however.

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May 2005. Summary of changes for version 20050513:

1) ACPI CA Core Subsystem:

Implemented support for PCI Express root bridges -- added support for device PNP0A08 in the root bridge search within AcpiEvPciConfigRegionSetup.

The interpreter now automatically truncates incoming 64-bit constants to 32

bits if currently executing out of a 32-bit ACPI table (Revision < 2).

This

also affects the iASL compiler constant folding. (Note: as per below, the iASL compiler no longer allows 64-bit constants within 32-bit tables.)

Fixed a problem where string and buffer objects with "static" pointers (pointers to initialization data within an ACPI table) were not handled consistently. The internal object copy operation now always copies the data

to a newly allocated buffer, regardless of whether the source object is static or not.

Fixed a problem with the FromBCD operator where an implicit result conversion was improperly performed while storing the result to the target operand.

Since this is an "explicit conversion" operator, the implicit conversion should never be performed on the output.

Fixed a problem with the CopyObject operator where a copy to an existing named object did not always completely overwrite the existing object stored at name. Specifically, a buffer-to-buffer copy did not delete the existing buffer.

Replaced "InterruptLevel" with "InterruptNumber" in all GPE interfaces and structs for consistency.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version:

78.2K Code, 11.6K Data, 89.8K Total

Debug Version: 163.7K Code, 69.3K Data, 233.0K Total

Current Release: (Same sizes)

Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total

Debug Version: 163.7K Code, 69.3K Data, 233.0K Total

2) iASL Compiler/Disassembler:

The compiler now emits a warning if an attempt is made to generate a 64-bit integer constant from within a 32-bit ACPI table (Revision < 2). The integer is truncated to 32 bits.

Fixed a problem with large package objects: if the static length of the package is greater than 255, the "variable length package" opcode is emitted. Previously, this caused an error. This requires an update to the ACPI spec, since it currently (incorrectly) states that packages larger than 255 elements are not allowed.

The disassembler now correctly handles variable length packages and

packages
larger than 255 elements.

08 April 2005. Summary of changes for version 20050408:

1)

ACPI CA Core Subsystem:

Fixed three cases in the interpreter where an "index" argument to an ASL function was still (internally) 32 bits instead of the required 64 bits. This was the Index argument to the Index, Mid, and Match operators.

The "strupr" function is now permanently local (AcpiUtStrupr), since this is not a POSIX-defined function and not present in most kernel-level C libraries. All references to the C librarystrupr function have been removed from the headers.

Completed the deployment of static functions/prototypes. All prototypes with the static attribute have been moved from the headers to the owning C file.

Implemented an extract option (-e) for the AcpiBin utility (AML binary utility). This option allows the utility to extract individual ACPI tables from the output of AcpiDmp. It provides the same functionality of the acpixtract.pl perl script without the worry of setting the correct perl options. AcpiBin runs on Windows and has not yet been generated/validated in the Linux/Unix environment (but should be soon).

Updated and fixed the table dump option for AcpiBin (-d). This option converts a single ACPI table to a hex/ascii file, similar to the output of AcpiDmp.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler

and
the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.0K Code, 11.6K Data, 89.6K Total

Debug Version: 163.5K Code, 69.3K Data, 232.8K Total

Current Release:

Non-Debug Version: 78.2K Code, 11.6K Data, 89.8K Total

Debug Version: 163.7K Code, 69.3K

Data, 233.0K Total

2) iASL Compiler/Disassembler:

Disassembler fix: Added a check to ensure that the table length found in the
ACPI table header within the input file is not longer than the actual
input
file size. This indicates some kind of file or table corruption.

29 March 2005. Summary of changes for version 20050329:

1) ACPI CA Core Subsystem:

An error is now generated if an attempt is made to create a Buffer Field of
length zero (A CreateField with a length operand of zero.)

The interpreter now issues a warning whenever executable code at the
module
level is detected during ACPI table load. This will give some idea of the
prevalence of this type of code.

Implemented support for references to named objects (other than control
methods) within package objects.

Enhanced package object output for the debug object. Package objects are
now
completely dumped, showing all elements.

Enhanced miscellaneous object output for
the debug object. Any object can
now be written to the debug object (for example, a device object can be
written, and the type of the object will be displayed.)

The "static" qualifier has been added to all local functions across both
the

core subsystem and the iASL compiler.

The number of "long" lines (> 80 chars) within the source has been significantly reduced, by about 1/3.

Cleaned up all header files to ensure that all CA/iASL functions are prototyped (even static functions) and the formatting is consistent.

Two new header files have been added, acopcode.h and acnames.h.

Removed several obsolete functions that were no longer used.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.4K Code, 69.7K Data, 236.1K Total

Current Release:

Non-Debug Version: 78.0K Code, 11.6K Data, 89.6K Total

Debug Version: 163.5K Code, 69.3K Data, 232.8K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the resource descriptor generation/support. For the ResourceSourceIndex and the ResourceSource fields, both must be present, or both must be not present - can't have one without the other.

The compiler now returns non-zero from the main procedure if any errors have occurred during the compilation.

09 March 2005. Summary of changes for version 20050309:

1) ACPI CA Core Subsystem:

The string-to-buffer implicit conversion code has been modified again

after

a change to the ACPI specification. In order to match the behavior of

the

other major ACPI implementation, the target buffer is no longer truncated

if

the source string is smaller than an existing target buffer. This change

requires an update to the ACPI spec, and should eliminate the recent

AE_AML_BUFFER_LIMIT issues.

The "implicit return" support was rewritten to a new algorithm that

solves

the general case. Rather than attempt to determine when a method is about

to

exit, the result of every ASL operator is saved momentarily until the

very

next ASL operator is executed. Therefore, no matter how the method exits,

there will always be a saved implicit return value. This feature is only

enabled with the AcpiGbl_EnableInterpreterSlack flag, and should

eliminate

AE_AML_NO_RETURN_VALUE errors when enabled.

Implemented implicit conversion support for the predicate (operand) of

the

If, Else, and While operators. String and Buffer arguments are

automatically

converted

to Integers.

Changed the string-to-integer conversion behavior to match the new ACPI

errata: "If no integer object exists, a new integer is created. The ASCII

string is interpreted as a hexadecimal constant. Each string character is

interpreted as a hexadecimal value ('0'-'9', 'A'-'F', 'a', 'f'), starting

with the first character as the most significant digit, and ending with

the

first non-hexadecimal character or end-of-string." This means that the

first

non-hex character terminates the conversion and this is the code that was

changed.

Fixed a problem where the ObjectType operator would fail (fault) when

used

on an Index of a Package which pointed to a null package element. The

operator now properly returns zero (Uninitialized) in this case.

Fixed a problem where the While operator used excessive memory by not properly popping the result stack during execution. There was no memory leak after execution, however. (Code provided by Valery Podrezov.)

Fixed a problem where references to control methods within Package objects caused the method to be invoked, instead of producing a reference object pointing to the method.

Restructured and simplified the pswalk.c module (AcpiPsDeleteParseTree) to improve performance and reduce code size. (Code provided by Alexey Starikovskiy.)

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.4K Code, 69.6K Data, 236.0K Total

Current Release:

Non-Debug

Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.4K Code, 69.7K Data, 236.1K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the Return operator with no arguments. Since the AML grammar for the byte encoding requires an operand for the Return opcode, the compiler now emits a Return(Zero) for this case. An ACPI specification update has been written for this case.

For tables other than the DSDT, namepath optimization is automatically disabled. This is because SSDTs can be loaded anywhere in the namespace, the compiler has no knowledge of where, and thus cannot optimize namepaths.

Added "ProcessorObj" to the ObjectTypeKeyword list. This object type was inadvertently omitted from the ACPI specification, and will require an update to the spec.

The source file scan for ASCII characters is now optional (-a). This change was made because some vendors place non-ascii characters within comments. However, the scan is simply a brute-force byte compare to ensure all characters in the file are in the range 0x00 to 0x7F.

Fixed a problem with the CondRefOf operator where the compiler was inappropriately checking for the existence of the target. Since the point of the operator is to check for the existence of the target at run-time, the compiler no longer checks for the target existence.

Fixed a problem where errors generated from the internal AML interpreter during constant folding were not handled properly, causing a fault.

Fixed a problem with overly aggressive range checking for the Stall operator. The valid range (max 255) is now only checked if the operand is of type Integer. All other operand types cannot be statically checked.

Fixed a problem where control method references within the RefOf, DeRefOf, and ObjectType operators were not treated properly. They are now treated as actual references, not method invocations.

Fixed and enhanced the "list namespace" option (-ln). This option was broken a number of releases ago.

Improved error handling for the Field, IndexField, and BankField operators. The compiler now cleanly reports and recovers from errors in the field component (FieldUnit) list.

Fixed a disassembler problem where the optional ResourceDescriptor fields TRS and TTP were not always handled correctly.

Disassembler - Comments in output now use "/" instead of "/*"

28 February 2005. Summary of changes for version 20050228:

1) ACPI CA Core Subsystem:

Fixed a problem where the result of an Index() operator (an object reference) must increment the reference count on the target object for the life of the object reference.

Implemented AML Interpreter and Debugger support for the new ACPI 3.0 Extended Address (IO, Memory, Space), QwordSpace, DwordSpace, and WordSpace resource descriptors.

Implemented support in the _OSI method for the ACPI 3.0 "Extended Address Space Descriptor" string, indicating interpreter support for the descriptors above.

Implemented header support for the new ACPI 3.0 FADT flag bits.

Implemented header support for the new ACPI 3.0 PCI Express bits for the PM1 status/enable registers.

Updated header support for the MADT processor local Apic struct and MADT platform interrupt source struct for new ACPI 3.0 fields.

Implemented header support for the SRAT and SLIT ACPI tables.

Implemented the -s switch in AcpiExec to enable the "InterpreterSlack" flag at runtime.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous

Release:

Non-Debug Version: 78.2K Code, 11.5K Data, 89.7K Total

Debug Version: 164.9K Code, 69.2K Data, 234.1K Total

Current Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.4K Code, 69.6K Data, 236.0K Total

2) iASL Compiler/Disassembler:

Fixed a problem with the internal 64-bit String-to-integer conversion with strings less than two characters long.

Fixed a problem with constant folding where the result of the Index() operator can not be considered a constant. This means that Index() cannot be a type3 opcode and this will require an update to the ACPI specification.

Disassembler: Implemented support for the TTP, MTP, and TRS resource descriptor fields. These fields were inadvertently ignored and not output in the disassembly of the resource descriptor.

11 February 2005. Summary of changes for version 20050211:

1) ACPI CA Core Subsystem:

Implemented ACPI 3.0 support for implicit conversion within the Match() operator. MatchObjects can now be of type integer, buffer, or string instead of just type integer. Package elements are implicitly converted to the type of the MatchObject. This change aligns the behavior of Match() with the behavior of the other logical operators (LLess(), etc.) It also requires an errata change to the ACPI specification as this support was intended for ACPI 3.0, but was inadvertently omitted.

Fixed a problem with the internal implicit "to buffer" conversion. Strings that are converted to buffers will cause buffer truncation if the string is smaller than the target buffer. Integers that are converted to buffers will

not cause buffer truncation, only zero extension (both as per the ACPI spec.) The problem was introduced when code was added to truncate the buffer, but this should not be performed in all cases, only the string case.

Fixed a problem with the Buffer and Package operators where the interpreter

would get confused if two such operators were used as operands to an ASL operator (such as LLess(Buffer(1){0},Buffer(1){1})). The internal result stack was not being popped after the execution of these operators, resulting in an AE_NO_RETURN_VALUE exception.

Fixed a problem with constructs of the form Store(Index(...),...). The reference object returned from Index was inadvertently resolved to an actual value. This problem was introduced in version 20050114 when the behavior of Store() was modified to restrict the object types that can be used as the source operand (to match the ACPI specification.)

Reduced excessive stack use within the AcpiGetObjectInfo procedure.

Added a fix to aclinux.h to allow generation of AcpiExec on Linux.

Updated the AcpiSrc utility to add the FADT_DESCRIPTOR_REV2_MINUS struct.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft

Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.1K Code, 11.5K Data, 89.6K Total

Debug Version: 164.8K Code, 69.2K Data, 234.0K Total

Current Release:

Non-Debug Version: 78.2K Code, 11.5K Data, 89.7K Total

Debug Version: 164.9K Code, 69.2K Data, 234.1K Total

2) iASL Compiler/Disassembler:

Fixed a code generation problem in the constant folding optimization code where incorrect code was generated if a constant was reduced to a buffer object (i.e., a reduced type 5 opcode.)

Fixed a typechecking problem for the ToBuffer operator. Caused by an incorrect return type in the internal opcode information table.

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January 2005. Summary of changes for version 20050125:

1) ACPI CA Core Subsystem:

Fixed a recently introduced problem with the Global Lock where the underlying semaphore was not created. This problem was introduced in version 20050114, and caused an AE_AML_NO_OPERAND exception during an Acquire() operation on _GL.

The local object cache is now optional, and is disabled by default. Both AcpiExec and the iASL compiler enable the cache because they run in user mode and this enhances their performance. #define
ACPI_ENABLE_OBJECT_CACHE
to enable the local cache.

Fixed an issue in the internal function AcpiUtEvaluateObject concerning the optional "implicit return" support where an error was returned if no return object was expected, but one was implicitly returned. AE_OK is now returned in this case and the implicitly returned object is deleted. AcpiUtEvaluateObject is only occasionally used, and only to execute reserved methods such as _STA and _INI where the return type is known up front.

Fixed a few issues with the internal convert-to-integer code. It now returns an error if an attempt is made to convert a null string, a string of only blanks/tabs, or a zero-length buffer. This affects both implicit conversion and explicit conversion via the ToInteger() operator.

The internal debug code in AcpiUtAcquireMutex has been commented out. It is not needed for normal operation and should increase the performance of

the entire subsystem. The code remains in case it is needed for debug purposes again.

The AcpiExec source and makefile are included in the Unix/Linux package for the first time.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.4K Code, 11.5K Data, 89.9K Total

Debug Version: 165.4K Code, 69.4K Data, 234.8K Total

Current Release:

Non-Debug Version: 78.1K Code, 11.5K Data, 89.6K Total

Debug Version: 164.8K Code, 69.2K Data, 234.0K Total

2) iASL Compiler/Disassembler:

Switch/Case support: A warning is now issued if the type of the Switch value cannot be determined at compile time. For example, `Switch(Arg0)` will generate the warning, and the type is assumed to be an integer. As per the ACPI spec, use a construct such as `Switch(ToInteger(Arg0))` to eliminate the warning.

Switch/Case support: Implemented support for buffer and string objects as the switch value. This is an ACPI 3.0 feature, now that `LEqual` supports buffers and strings.

Switch/Case support:

The emitted code for the `LEqual()` comparisons now uses the switch value as the first operand, not the second. The case value is now

the second operand, and this allows the case value to be implicitly converted to the type of the switch value, not the other way around.

Switch/Case support: Temporary variables are now emitted immediately within the control method, not at the global level. This means that there are now 36 temps available per-method, not 36 temps per-module as was the case with the earlier implementation (_T_0 through _T_9 and _T_A through _T_Z.)

14 January 2005. Summary of changes for version 20050114:

Added 2005 copyright to all module headers. This affects every module in the core subsystem, iASL compiler, and the utilities.

1) ACPI CA Core Subsystem:

Fixed an issue with the String-to-Buffer conversion code where the string null terminator was not included in the buffer after conversion, but there is existing ASL that assumes the string null terminator is included. This is the root of the ACPI_AML_BUFFER_LIMIT regression. This problem was introduced in the previous version when the code was updated to correctly set the converted buffer size as per the ACPI specification. The ACPI spec is ambiguous and will be updated to specify that the null terminator must be included in the converted buffer. This also affects the ToBuffer() ASL operator.

Fixed a problem with the Mid() ASL/AML operator where it did not work correctly on Buffer objects. Newly created sub-buffers were not being marked as initialized.

Fixed a problem in AcpiTbFindTable where incorrect string compares were performed on the OemId and OemTableId table header fields. These fields are not null terminated, so strncmp is now used instead of strcmp.

Implemented a restriction on the Store() ASL/AML operator to align the behavior with the ACPI specification. Previously, any object could be used

as the source operand. Now, the only objects that may be used are Integers, Buffers, Strings, Packages, Object References, and DDB Handles. If necessary, the original behavior can be restored by enabling the EnableInterpreterSlack flag.

Enhanced the optional "implicit return" support to allow an implicit return value from methods that are invoked externally via the AcpiEvaluateObject interface. This enables implicit returns from the _STA and _INI methods, for example.

Changed the Revision() ASL/AML operator to return the current version of the AML interpreter, in the YYYYMMDD format. Previously, it incorrectly returned the supported ACPI version (This is the function of the _REV method).

Updated the _REV predefined method to return the currently supported version of ACPI, now 3.

Implemented batch mode option for the AcpiExec utility (-b).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib

produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.3K Code, 69.4K Data, 234.7K Total

Current Release:

Non-Debug Version: 78.4K Code, 11.5K Data, 89.9K Total

Debug Version: 165.4K Code, 69.4K Data, 234.8K Total

10 December 2004. Summary of changes for version 20041210:

ACPI 3.0 support is nearing completion in both the iASL compiler and the

ACPI CA core subsystem.

1) ACPI CA Core Subsystem:

Fixed a problem in the ToDecimalString operator where the resulting string length was incorrectly calculated. The length is now calculated exactly, eliminating incorrect AE_STRING_LIMIT exceptions.

Fixed a problem in the ToHexString operator to allow a maximum 200 character string to be produced.

Fixed a problem in the internal string-to-buffer and buffer-to-buffer copy routine where the length of the resulting buffer was not truncated to the new size (if the target buffer already existed).

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version:

164.7K Code, 68.5K Data, 233.2K Total

Current Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 165.3K Code, 69.4K Data, 234.7K Total

2) iASL Compiler/Disassembler:

Implemented the new ACPI 3.0 resource template macros - DWordSpace, ExtendedIO, ExtendedMemory, ExtendedSpace, QWordSpace, and WordSpace. Includes support in the disassembler.

Implemented support for the new (ACPI 3.0) parameter to the Register macro, AccessSize.

Fixed a problem where the _HE resource name for the Interrupt macro was referencing bit 0 instead of bit 1.

Implemented check for maximum 255 interrupts in the Interrupt macro.

Fixed a problem with the predefined resource descriptor names where incorrect AML code was generated if the offset within the resource buffer was 0 or 1. The optimizer shortened the AML code to a single byte opcode but did not update the surrounding package lengths.

Changes to the Dma macro: All channels within the channel list must be in the range 0-7. Maximum 8 channels can be specified. BusMaster operand is optional (default is BusMaster).

Implemented check for maximum 7 data bytes for the VendorShort macro.

The ReadWrite parameter is now optional for the Memory32 and similar macros.

03 December 2004. Summary of changes for version 20041203:

1) ACPI CA Core Subsystem:

The low-level field insertion/extraction code (exfldio) has been completely rewritten to eliminate unnecessary complexity, bugs, and boundary conditions.

Fixed a problem in the ToInteger, ToBuffer, ToHexString, and ToDecimalString operators where the input operand could be inadvertently deleted if no conversion was necessary (e.g., if the input to ToInteger was an Integer object.)

Fixed a problem with the ToDecimalString and ToHexString where an incorrect exception code was returned if the resulting string would be > 200 chars. AE_STRING_LIMIT is now returned.

Fixed a problem with the Concatenate operator where AE_OK was always returned, even if the operation failed.

Fixed a problem in oswinxf (used by AcpiExec and iASL) to allow > 128

semaphores to be allocated.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total

Debug Version: 165.2K Code, 68.6K Data, 233.8K Total

Current Release:

Non-Debug Version: 78.3K Code, 11.5K Data, 89.8K Total

Debug Version: 164.7K Code, 68.5K Data, 233.2K Total

2) iASL

Compiler/Disassembler:

Fixed typechecking for the ObjectType and SizeOf operators. Problem was recently introduced in 20041119.

Fixed a problem with the ToUUID macro where the upper nybble of each buffer byte was inadvertently set to zero.

19 November 2004. Summary of changes for version 20041119:

1) ACPI CA Core Subsystem:

Fixed a problem in the internal ConvertToInteger routine where new integers were not truncated to 32 bits for 32-bit ACPI tables. This routine converts buffers and strings to integers.

Implemented support to store a value to an Index() on a String object. This is an ACPI 2.0 feature that had not yet been implemented.

Implemented new behavior for storing objects to individual package elements

(via the Index() operator). The previous behavior was to invoke the implicit conversion rules if an object was already present at the index. The new behavior is to simply delete any existing object and directly store the new object. Although the ACPI specification seems unclear on this subject, other ACPI implementations behave in this manner. (This is the root of the AE_BAD_HEX_CONSTANT issue.)

Modified the RSDP memory scan mechanism to support the extended checksum for ACPI 2.0 (and above) RSDPs. Note that the search continues until a valid RSDP signature is found with a valid checksum.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total

Debug Version:

165.2K Code, 68.6K Data, 233.8K Total

Current Release:

Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total

Debug Version: 165.2K Code, 68.6K Data, 233.8K Total

2) iASL Compiler/Disassembler:

Fixed a missing semicolon in the aslcompiler.y file.

05 November 2004. Summary of changes for version 20041105:

1) ACPI CA Core Subsystem:

Implemented support for FADT revision 2. This was an interim table (between ACPI 1.0 and ACPI 2.0) that adds support for the FADT reset register.

Implemented optional support to allow uninitialized LocalX and ArgX variables in a control method. The variables are initialized to an Integer object with a value of zero. This support is enabled by setting the AcpiGbl_EnableInterpreterSlack flag to TRUE.

Implemented support for Integer objects for the SizeOf operator. Either 4 or 8 is returned, depending on the current integer size (32-bit or 64-bit, depending on the parent table revision).

Fixed a problem in the implementation of the SizeOf and ObjectType operators where the operand was resolved to a value too early, causing incorrect return values for some objects.

Fixed some possible memory leaks during exceptional conditions.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total

Debug Version: 164.8K Code, 68.6K Data, 233.4K Total

Current Release:

Non-Debug Version: 78.5K Code, 11.5K Data, 90.0K Total

Debug Version: 165.2K Code, 68.6K Data, 233.8K Total

2) iASL Compiler/Disassembler:

Implemented support for all ACPI 3.0 reserved names and methods.

Implemented all ACPI 3.0 grammar elements in the front-end, including support for semicolons.

Implemented the ACPI 3.0 Function() and ToUUID() macros

Fixed a problem in the disassembler where a Scope() operator would not be emitted properly if the target of the scope was in another table.

15 October 2004. Summary of changes for version 20041015:

Note: ACPI CA is currently undergoing an in-depth and complete formal evaluation to test/verify the following areas. Other suggestions are welcome. This will result in an increase in the frequency of releases and the number of bug fixes in the next few months.

- Functional tests for all ASL/AML operators
- All implicit/explicit type conversions
- Bit fields and operation regions
- 64-bit math support and 32-bit-only "truncated" math support
- Exceptional conditions, both compiler and interpreter
- Dynamic object deletion and memory leaks
- ACPI 3.0 support when implemented
- External interfaces to the ACPI subsystem

1) ACPI CA Core Subsystem:

Fixed two alignment issues on 64-bit platforms - within debug statements in AcpiEvGpeDetect and AcpiEvCreateGpeBlock. Removed references to the Address field within the non-aligned ACPI generic address structure.

Fixed a problem in the Increment and Decrement operators where incorrect operand resolution could result in the inadvertent modification of the original integer when the integer is passed into another method as an argument and the arg is then incremented/decremented.

Fixed a problem in the FromBCD operator where the upper 32-bits of a 64-bit BCD number were truncated during conversion.

Fixed a problem in the ToDecimal operator where the length of the resulting string could be set incorrectly too long if the input operand was a Buffer object.

Fixed

a problem in the Logical operators (LLess, etc.) where a NULL byte (0) within a buffer would prematurely terminate a compare between buffer objects.

Added a check for string overflow (>200 characters as per the ACPI specification) during the Concatenate operator with two string operands.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total

Debug Version: 164.6K Code, 68.5K Data, 233.1K Total

Current Release:

Non-Debug Version:

78.0K Code, 11.5K Data, 89.5K Total

Debug Version: 164.8K Code, 68.6K Data, 233.4K Total

2) iASL Compiler/Disassembler:

Allow the use of the ObjectType operator on uninitialized Locals and Args (returns 0 as per the ACPI specification).

Fixed a problem where the compiler would fault if there was a syntax error in the fieldName of all of the various CreateXXXField operators.

Disallow the use of lower case letters within the EISAID macro, as per the ACPI specification. All EISAID strings must be of the form "UUUNNNN" Where U is an uppercase letter and N is a hex digit.

06 October 2004. Summary of changes for version 20041006:

1) ACPI CA Core Subsystem:

Implemented support for the ACPI 3.0 Timer operator. This ASL function implements a 64-bit timer with 100 nanosecond granularity.

Defined a new OSL interface, `AcpiOsGetTimer`. This interface is used to implement the ACPI 3.0 Timer operator. This allows the host OS to implement the timer with the best clock available. Also, it keeps the core subsystem out of the clock handling business, since the host OS (usually) performs this function.

Fixed an alignment issue on 64-bit platforms. The `HwLowLevelRead(Write)` functions use a 64-bit address which is part of the packed ACPI Generic Address Structure. Since the structure is non-aligned, the alignment macros are now used to extract the address to a local variable before use.

Fixed a problem where the `ToInteger` operator assumed all input strings were hexadecimal. The operator now handles both decimal strings and hex strings (prefixed with "0x").

Fixed a problem where the string length in the string object created as a result of the internal `ConvertToString` procedure could be incorrect. This potentially affected all implicit conversions and also the `ToDecimalString` and `ToHexString` operators.

Fixed two problems in the `ToString` operator. If the length parameter was zero, an incorrect string object was created and the value of the input length parameter was inadvertently changed from zero to Ones.

Fixed a problem where the optional `ResourceSource` string in the `ExtendedIRQ` resource macro was ignored.

Simplified the interfaces to the internal division functions, reducing code size and complexity.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced

by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.9K Code, 11.4K Data, 89.3K Total

Debug Version: 164.5K Code, 68.3K Data, 232.8K Total

Current Release:

Non-Debug

Version: 77.8K Code, 11.5K Data, 89.3K Total

Debug Version: 164.6K Code, 68.5K Data, 233.1K Total

2) iASL Compiler/Disassembler:

Implemented support for the ACPI 3.0 Timer operator.

Fixed a problem where the Default() operator was inadvertently ignored in a

Switch/Case block. This was a problem in the translation of the Switch statement to If..Else pairs.

Added support to allow a standalone Return operator, with no parentheses (or operands).

Fixed a problem with code generation for the ElseIf operator where the translated Else...If parse tree was improperly constructed leading to the loss of some code.

22 September 2004. Summary of changes for version 20040922:

1) ACPI CA Core Subsystem:

Fixed a problem with the implementation of the LNot() operator where "Ones"

was not returned for the TRUE case. Changed the code to return Ones instead

of (!Arg) which was usually 1. This change affects iASL constant folding

for

this operator also.

Fixed a problem in AcpiUtInitializeBuffer where an existing buffer was not initialized properly -- Now zero the entire buffer in this case where the buffer already exists.

Changed the interface to AcpiOsSleep from (UINT32 Seconds, UINT32 Milliseconds) to simply (ACPI_INTEGER Milliseconds). This simplifies all related code considerably. This will require changes/updates to all OS interface layers (OSLs.)

Implemented a new external interface, AcpiInstallExceptionHandler, to allow a system exception handler to be installed. This handler is invoked upon any run-time exception that occurs during control method execution.

Added support for the DSDT in AcpiTbFindTable. This allows the DataTableRegion() operator to access the local copy of the DSDT.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.8K Code, 11.4K Data, 89.2K Total

Debug Version: 164.2K Code, 68.2K Data, 232.4K Total

Current Release:

Non-Debug Version: 77.9K Code, 11.4K Data, 89.3K Total

Debug Version: 164.5K Code, 68.3K Data, 232.8K Total

2) iASL Compiler/Disassembler:

Fixed a problem with constant folding and the LNot operator. LNot was returning 1 in the TRUE case, not Ones as per the ACPI specification. This could result in the generation of an incorrect folded/reduced constant.

End-Of-File is now allowed within a "///"-style comment. A parse error no longer occurs if such a comment is at the very end of the input ASL

source

file.

Implemented the "-r" option to override the Revision in the table header. The initial use of this option will be to simplify the evaluation of the AML interpreter by allowing a single ASL source module to be compiled for either 32-bit or 64-bit integers.

27 August 2004. Summary of changes for version 20040827:

1) ACPI CA Core Subsystem:

- Implemented support for implicit object conversion in the non-numeric logical operators (LEqual, LGreater, LGreaterEqual, LLess, LLessEqual, and LNotEqual.) Any combination of Integers/Strings/Buffers may now be used; the second operand is implicitly converted on the fly to match the type of the first operand. For example:

LEqual (Source1, Source2)

Source1 and Source2 must each evaluate to an integer, a string, or a buffer.

The data type of Source1 dictates the required type of Source2. Source2 is implicitly converted if necessary to match the type of Source1.

- Updated and corrected the behavior of the string conversion support. The rules concerning conversion of buffers to strings (according to the ACPI specification) are as follows:

ToDecimalString - explicit byte-wise conversion of buffer to string of decimal values (0-255) separated by commas. ToHexString - explicit byte-wise conversion of buffer to string of hex values (0-FF) separated by commas. ToString - explicit byte-wise conversion of buffer to string. Byte-by-byte copy with no transform except NULL terminated. Any other implicit buffer-to-string conversion - byte-wise conversion of buffer to string of hex

values
(0-FF) separated by spaces.

- Fixed typo in definition of AcpiGbl_EnableInterpreterSlack.

- Fixed a problem in AcpiNsGetPathnameLength where the returned length was one byte too short in the case of a node in the root scope. This could cause a fault during debug output.

- Code and Data Size: Current and previous core subsystem library sizes are shown below.

These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.9K Code, 11.5K Data, 89.4K Total

Debug Version: 164.1K Code, 68.3K Data, 232.4K Total

Current Release:

Non-Debug Version: 77.8K Code, 11.4K Data, 89.2K Total

Debug Version: 164.2K Code, 68.2K Data, 232.4K Total

2) iASL Compiler/Disassembler:

- Fixed a Linux generation error.

16 August 2004. Summary of changes for version 20040816:

1) ACPI CA Core Subsystem:

Designed and implemented support within the AML interpreter for the so-called "implicit return".

This support returns the result of the last ASL

operation within a control method, in the absence of an explicit Return() operator. A few machines depend on this behavior, even though it is not explicitly supported by the ASL language. It is optional support that

can

be enabled at runtime via the `AcpiGbl_EnableInterpreterSlack` flag.

Removed support for the `PCI_Config` address space from the internal low level

hardware interfaces (`AcpiHwLowLevelRead` and `AcpiHwLowLevelWrite`). This support was not used internally, and would not work correctly anyway because

the PCI bus number and segment number were not supported. There are separate interfaces for PCI configuration space access because of the unique interface.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code.

The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total

Debug Version: 164.1K Code, 68.2K Data, 232.3K Total

Current Release:

Non-Debug Version: 77.9K Code, 11.5K Data, 89.4K Total

Debug Version: 164.1K Code, 68.3K Data, 232.4K Total

2) iASL Compiler/Disassembler:

Fixed a problem where constants in ASL expressions at the root level (not within a control method) could be inadvertently truncated during code generation. This problem was introduced in the 20040715 release.

15 July 2004. Summary of changes for version 20040715:

1) ACPI CA Core Subsystem:

Restructured the internal HW GPE interfaces to pass/track the current state of interrupts

(enabled/disabled) in order to avoid possible deadlock and increase flexibility of the interfaces.

Implemented a "lexicographical compare" for String and Buffer objects within the logical operators -- LGreater, LLess, LGreaterEqual, and LLessEqual - as per further clarification to the ACPI specification. Behavior is similar to C library "strcmp".

Completed a major reduction in CPU stack use for the AcpiGetFirmwareTable external function. In the 32-bit non-debug case, the stack use has been reduced from 168 bytes to 32 bytes.

Deployed a new run-time configuration flag, AcpiGbl_EnableInterpreterSlack, whose purpose is to allow the AML interpreter to forgive certain bad AML constructs. Default setting is FALSE.

Implemented the first use of AcpiGbl_EnableInterpreterSlack in the Field IO support code. If enabled, it allows field access to go beyond the end of a region definition if the field is within the region length rounded up to the next access width boundary (a common coding error.)

Renamed OSD_HANDLER to ACPI_OSD_HANDLER, and OSD_EXECUTION_CALLBACK to ACPI_OSD_EXEC_CALLBACK for consistency with other ACPI symbols. Also, these symbols are lowercase by the latest version of the AcpiSrc tool.

The prototypes for the PCI interfaces in acpiosxf.h have been updated to rename "Register" to simply "Reg" to prevent certain compilers from complaining.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.8K Code, 11.5K Data, 89.3K Total

Debug

Version: 163.8K Code, 68.2K Data, 232.0K Total

Current Release:

Non-Debug Version: 78.0K Code, 11.5K Data, 89.5K Total

Debug Version: 164.1K Code, 68.2K Data, 232.3K Total

2) iASL Compiler/Disassembler:

Implemented full support for Package objects within the Case() operator.

Note: The Break() operator is currently not supported within Case blocks (TermLists) as there is some question about backward compatibility with ACPI

1.0 interpreters.

Fixed a problem where complex terms were not supported properly within the

Switch() operator.

Eliminated extraneous warning for compiler-emitted reserved names of the form "_T_x". (Used in Switch/Case operators.)

Eliminated optimization messages for "_T_x" objects and small constants within the DefinitionBlock operator.

15 June 2004. Summary of changes for version 20040615:

1) ACPI CA Core Subsystem:

Implemented support for Buffer and String objects (as per ACPI

2.0) for

the

following ASL operators: LEqual, LGreater, LLess, LGreaterEqual, and LLessEqual.

All directory names in the entire source package are lower case, as they were in earlier releases.

Implemented "Disassemble" command in the AML debugger that will disassemble

a single control method.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.7K Code, 11.5K Data, 89.2K Total
Debug Version: 163.3K Code, 67.2K Data, 230.5K Total

Current Release:

Non-Debug Version:
77.8K Code, 11.5K Data, 89.3K Total
Debug Version: 163.8K Code, 68.2K Data, 232.0K Total

2) iASL Compiler/Disassembler:

Implemented support for Buffer and String objects (as per ACPI 2.0) for the following ASL operators: LEqual, LGreater, LLess, LGreaterEqual, and LLessEqual.

All directory names in the entire source package are lower case, as they were in earlier releases.

Fixed a fault when using the -g or -d<nofilename> options if the FADT was not found.

Fixed an issue with the Windows version of the compiler where later versions of Windows place the FADT in the registry under the name "FADT" and not "FACP" as earlier versions did. This applies when using the -g or -d<nofilename> options. The compiler now looks for both strings as necessary.

Fixed a problem with compiler namepath optimization where a namepath within the Scope() operator could not be optimized if the namepath was a subpath of the current scope path.

May 2004. Summary of changes for version 20040527:

1) ACPI CA Core Subsystem:

Completed a new design and implementation for EBDA (Extended BIOS Data Area)

support in the RSDP scan code. The original code improperly scanned for the

EBDA by simply scanning from memory location 0 to 0x400. The correct method

is to first obtain the EBDA pointer from within the BIOS data area, then scan 1K of memory starting at the EBDA pointer. There appear to be few if

any machines that place the RSDP in the EBDA, however.

Integrated a fix for a possible fault during evaluation of BufferField arguments. Obsolete code that was causing the problem was removed.

Found and fixed a problem in the Field Support Code where data could be corrupted on a bit field read that starts on an aligned boundary but does not end on an aligned boundary. Merged the read/write "datum length" calculation code into a common procedure.

Rolled in a couple of changes to the FreeBSD-specific header.

Code

and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced

by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and

the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total

Debug Version: 163.2K Code, 67.2K Data, 230.4K Total

Current Release:

Non-Debug Version: 77.7K Code, 11.5K Data, 89.2K Total

Debug Version: 163.3K Code, 67.2K Data, 230.5K Total

2) iASL Compiler/Disassembler:

Fixed a generation warning produced by some overly-verbose compilers for a 64-bit constant.

14 May 2004. Summary of changes for version 20040514:

1) ACPI CA Core Subsystem:

Fixed a problem where hardware GPE enable bits sometimes not set properly during and after GPE method execution. Result of 04/27 changes.

Removed extra "clear all GPEs" when sleeping/waking.

Removed AcpiHwEnableGpe and AcpiHwDisableGpe, replaced by the single AcpiHwWriteGpeEnableReg. Changed a couple of calls to the functions above to the new AcpiEv* calls as appropriate.

ACPI_OS_NAME was removed from the OS-specific headers. The default name is now "Microsoft Windows NT" for maximum compatibility. However this can be changed by modifying the acconfig.h file.

Allow a single invocation of AcpiInstallNotifyHandler for a handler that traps both types of notifies (System, Device). Use ACPI_ALL_NOTIFY flag.

Run _INI methods on ThermalZone objects. This is against the ACPI specification, but there is apparently ASL code in the field that has these _INI methods, and apparently "other" AML interpreters execute them.

Performed a full 16/32/64 bit lint that resulted in some small changes.

Added a sleep simulation command to the AML debugger to test sleep code.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler

and
the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total

Debug Version: 162.9K Code, 67.0K Data, 229.9K Total

Current Release:

Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K Total

Debug Version: 163.2K Code, 67.2K Data, 230.4K Total

27 April

2004. Summary of changes for version 20040427:

1) ACPI CA Core Subsystem:

Completed a major overhaul of the GPE handling within ACPI CA. There are now three types of GPEs: wake-only, runtime-only, and combination wake/run.

The only GPEs allowed to be combination wake/run are for button-style devices such as a control-method power button, control-method sleep button,

or a notebook lid switch. GPEs that have an `_Lxx` or `_Exx` method and are not

referenced by any `_PRW` methods are marked for "runtime" and hardware enabled. Any GPE that is referenced by a `_PRW` method is marked for "wake"

(and disabled at runtime). However, at sleep time, only those GPEs that have been specifically enabled for wake via the `AcpiEnableGpe` interface will

actually be hardware enabled.

A new external interface has been added, `AcpiSetGpeType()`, that is meant to

be used by device drivers to force a GPE to a particular type. It will be

especially useful for the drivers for the button devices mentioned above.

Completed restructuring of the ACPI CA initialization sequence so that default operation region handlers are installed before GPEs are initialized

and the `_PRW` methods are executed. This will prevent errors when the `_PRW`

methods attempt to access system memory or I/O space.

GPE enable/disable no longer reads the GPE enable register. We now keep the

enable info for runtime and wake separate and in the GPE_EVENT_INFO. We thus no longer depend on the hardware to maintain these bits.

Always clear the wake status and fixed/GPE status bits before sleep, even for state S5.

Improved the AML debugger output for displaying the GPE blocks and their current status.

Added new strings for the _OSI method, of the form "Windows 2001 SPx" where x = 0,1,2,3,4.

Fixed a problem where the physical address was incorrectly calculated when the Load() operator was used to directly load from an Operation Region (vs. loading from a Field object.) Also added check for minimum table length for this case.

Fix for multiple mutex acquisition. Restore original thread SyncLevel on mutex release.

Added ACPI_VALID_SXDS flag to the AcpiGetObjectInfo interface for consistency with the other fields returned.

Shrunk the ACPI_GPE_EVENT_INFO structure by 40%. There is one such structure for each GPE in the system, so the size of this structure is important.

CPU stack requirement reduction: Cleaned up the method execution and object evaluation paths so that now a parameter structure is passed, instead of copying the various method parameters over and over again.

In evregion.c: Correctly exit and reenter the interpreter region if and only if dispatching an operation region request to a user-installed handler.

Do not exit/reenter when dispatching to a default handler (e.g., default system memory or I/O handlers)

Notes for updating drivers for the new GPE support. The following changes must be made to ACPI-related device drivers that are

attached to one or

more

GPEs: (This information will be added to the ACPI CA Programmer Reference.)

1) AcpiInstallGpeHandler no longer automatically enables the GPE, you must

explicitly call AcpiEnableGpe.

2) There is a new interface called AcpiSetGpeType. This should be called before enabling the GPE. Also, this interface will automatically disable the GPE if it is currently enabled.

3) AcpiEnableGpe no longer supports a GPE type flag.

Specific drivers that must be changed:

1) EC driver:

```
AcpiInstallGpeHandler (NULL, GpeNum, ACPI_GPE_EDGE_TRIGGERED, AeGpeHandler, NULL);
```

```
AcpiSetGpeType (NULL, GpeNum, ACPI_GPE_TYPE_RUNTIME);
```

```
AcpiEnableGpe (NULL, GpeNum, ACPI_NOT_ISR);
```

2) Button Drivers (Power, Lid, Sleep):

Run _PRW method under parent device

If _PRW exists: /* This is a control-method button */

```
Extract GPE number and possibly GpeDevice
```

```
AcpiSetGpeType (GpeDevice, GpeNum, ACPI_GPE_TYPE_WAKE_RUN);
```

```
AcpiEnableGpe (GpeDevice, GpeNum, ACPI_NOT_ISR);
```

For all

other devices that have _PRWs, we automatically set the GPE type to

ACPI_GPE_TYPE_WAKE, but the GPE is NOT automatically (wake) enabled.

This

must be done on a selective basis, usually requiring some kind of user app

to allow the user to pick the wake devices.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced

by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.

Note

that these values will vary depending on the efficiency of the compiler and

the compiler options used during generation.

Previous Release:

Non-Debug Version: 77.0K Code, 11.4K Data, 88.4K Total

Debug Version: 161.0K Code, 66.3K Data, 227.3K Total

Current Release:

Non-Debug Version: 77.6K Code, 11.5K Data, 89.1K

Total

Debug Version: 162.9K Code, 67.0K Data, 229.9K Total

02 April 2004. Summary of changes for version 20040402:

1) ACPI CA Core Subsystem:

Fixed an interpreter problem where an indirect store through an ArgX parameter was incorrectly applying the "implicit conversion rules" during the store. From the ACPI specification: "If the target is a method local or argument (LocalX or ArgX), no conversion is performed and the result is stored directly to the target". The new behavior is to disable implicit conversion during ALL stores to an ArgX.

Changed the behavior of the _PRW method scan to ignore any and all errors returned by a given _PRW. This prevents the scan from aborting from the failure of any single _PRW.

Moved the runtime configuration parameters from the global init procedure to static variables in acglobal.h. This will allow the host to override the default values easily.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size.
Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.9K Code, 11.4K Data, 88.3K Total

Debug Version: 160.8K Code, 66.1K Data, 226.9K Total

Current Release:

Non-Debug Version: 77.0K Code, 11.4K Data, 88.4K Total

Debug Version: 161.0K Code, 66.3K Data, 227.3K Total

2) iASL Compiler/Disassembler:

iASL now fully disassembles SSDTs. However, External() statements are not generated automatically for unresolved symbols at this time. This is a planned feature for future implementation.

Fixed

a scoping problem in the disassembler that occurs when the type of the target of a Scope() operator is overridden. This problem caused an incorrectly nested internal namespace to be constructed.

Any warnings or errors that are emitted during disassembly are now commented out automatically so that the resulting file can be recompiled without any hand editing.

26 March 2004. Summary of changes for version 20040326:

1) ACPI CA Core Subsystem:

Implemented support for "wake" GPEs via interaction between GPEs and the _PRW methods. Every GPE that is pointed to by one or more _PRWs is identified as a WAKE GPE and by default will no longer be enabled at runtime. Previously, we were blindly enabling all GPEs with a corresponding _Lxx or _Exx method - but most of these turn out to be WAKE GPEs anyway. We believe this has been the cause of thousands of "spurious" GPEs on some systems.

This new GPE behavior is can be reverted to the original behavior (enable ALL GPEs at runtime) via a runtime flag.

Fixed a problem where aliased control methods could not access objects properly. The proper scope within the namespace was not initialized (transferred to the target of the aliased method) before executing the target method.

Fixed a potential race condition on internal object deletion on the return object in AcpiEvaluateObject.

Integrated a fix for resource descriptors where both _MEM and _MTP were being extracted instead of just _MEM. (i.e. bitmask was incorrectly too wide, 0x0F instead of 0x03.)

Added a special case for ACPI_ROOT_OBJECT in AcpiUtGetNodeName, preventing a fault in some cases.

Updated Notify() values for debug statements in evmisc.c

Return proper status from AcpiUtMutexInitialize, not just simply AE_OK.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 76.5K Code, 11.3K Data, 87.8K Total

Debug Version: 160.3K Code, 66.0K Data, 226.3K Total

Current Release:

Non-Debug Version: 76.9K Code, 11.4K Data, 88.3K Total

Debug Version: 160.8K Code, 66.1K Data, 226.9K Total

11 March 2004. Summary of changes for version 20040311:

1) ACPI CA Core Subsystem:

Fixed a problem where errors occurring during the parse phase of control method execution did not abort cleanly. For example, objects created and installed in the namespace were not deleted. This caused all subsequent invocations of the method to return the AE_ALREADY_EXISTS exception.

Implemented a mechanism to force a control method to "Serialized" execution if the method attempts to create namespace objects. (The root of the AE_ALREADY_EXISTS problem.)

Implemented support for the predefined _OSI "internal" control method. Initial supported strings are "Linux", "Windows 2000", "Windows 2001", and "Windows 2001.1", and can be easily upgraded for new strings as necessary. This feature will allow "other" operating systems to execute the fully tested, "Windows" code path through the ASL code

Global Lock Support: Now allows multiple acquires and releases with any internal thread. Removed concept of "owning thread" for this special mutex.

Fixed two functions that were inappropriately declaring large objects on the CPU stack: PsParseLoop, NsEvaluateRelative. Reduces the stack usage during method execution considerably.

Fixed a problem in the ACPI 2.0 FACS descriptor (actbl2.h) where the S4Bios_f field was incorrectly defined as UINT32 instead of UINT32_BIT.

Fixed a problem where AcpiEvGpeDetect would fault if there were no GPEs defined on the machine.

Implemented two runtime options: One to force all control method execution to "Serialized" to mimic Windows behavior, another to disable _OSI support if it causes problems on a given machine.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 74.8K Code, 10.1K Data, 84.9K Total

Debug Version: 158.7K Code, 65.1K Data, 223.8K Total

Current Release:

Non-Debug Version: 76.5K Code, 11.3K Data, 87.8K Total

Debug Version: 160.3K Code, 66.0K Data, 226.3K Total

2) iASL Compiler/Disassembler:

Fixed an array size problem for FreeBSD that would cause the compiler to fault.

20 February 2004. Summary of changes for version 20040220:

1) ACPI CA Core Subsystem:

Implemented execution of _SxD methods for Device objects in the GetObjectInfo interface.

Fixed calls to _SST method to pass the correct arguments.

Added a call to _SST on wake to restore to "working" state.

Check for End-Of-Buffer failure case in the WalkResources interface.

Integrated fix for 64-bit alignment issue in acglobal.h by moving two structures to the beginning of the file.

After wake, clear GPE status register(s) before enabling GPEs.

After wake, clear/enable power button. (Perhaps we should clear/enable all fixed events upon wake.)

Fixed a couple of possible memory leaks in the Namespace manager.

Integrated latest acnetbsd.h file.

11 February 2004. Summary of changes for version 20040211:

1) ACPI CA Core Subsystem:

Completed investigation and implementation of the call-by-reference

mechanism for control method arguments.

Fixed a problem where a store of an object into an indexed package could fail if the store occurs within a different method than the method that created the package.

Fixed a problem where the ToDecimal operator could return incorrect results.

Fixed a problem where the CopyObject operator could fail on some of the more obscure objects (e.g., Reference objects.)

Improved the output of the Debug object to display buffer, package, and index objects.

Fixed a problem where constructs of the form "RefOf (ArgX)" did not return the expected result.

Added permanent ACPI_REPORT_ERROR macros for all instances of the ACPI_AML_INTERNAL exception.

Integrated latest version of acfreebsd.h

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January 2004. Summary of changes for version 20040116:

The purpose of this release is primarily to update the copyright years in each module, thus causing a huge number of diffs. There are a few small functional changes, however.

1) ACPI CA Core Subsystem:

Improved error messages when there is a problem finding one or more of the required base ACPI tables

Reintroduced the definition of APIC_HEADER in actbl.h

Changed definition of MADT_ADDRESS_OVERRIDE to 64 bits (actbl.h)

Removed extraneous reference to NewObj in dsmthdat.c

2) iASL compiler

Fixed a problem introduced in December that disabled the correct

disassembly
of Resource Templates

03 December 2003. Summary of changes for version 20031203:

1) ACPI CA Core Subsystem:

Changed the initialization of Operation Regions during subsystem init to perform two entire walks of the ACPI namespace; The first to initialize the regions themselves, the second to execute the _REG methods. This fixed some interdependencies across _REG methods found on some machines.

Fixed a problem where a Store(Local0, Local1) could simply update the object reference count, and not create a new copy of the object if the Local1 is uninitialized.

Implemented support for the _SST reserved method during sleep transitions.

Implemented support to clear the SLP_TYP and SLP_EN bits when waking up, this is apparently required by some machines.

When sleeping, clear the wake status only if SleepState is not S5.

Fixed a problem in AcpiRsExtendedIrqResource() where an incorrect pointer arithmetic advanced a string pointer too far.

Fixed a problem in AcpiTbGetTablePtr() where a garbage pointer could be returned if the requested table has not been loaded.

Within the support for IRQ resources, restructured the handling of the active and edge/level bits.

Fixed a few problems in AcpiPsxExecute() where memory could be leaked under certain error conditions.

Improved error messages for the cases where the ACPI mode could not be entered.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20031029):

Non-Debug Version: 74.4K Code, 10.1K Data, 84.5K Total

Debug Version: 158.3K Code, 65.0K Data, 223.3K Total

Current Release:

Non-Debug Version: 74.8K Code, 10.1K Data, 84.9K Total

Debug Version: 158.7K Code, 65.1K Data, 223.8K Total

2) iASL Compiler/Disassembler:

Implemented a fix for the iASL disassembler where a bad index was generated. This was most noticeable on 64-bit platforms

29 October 2003. Summary of changes for version 20031029:

1) ACPI CA Core Subsystem:

Fixed a problem where a level-triggered GPE with an associated `_Lxx` control method was incorrectly cleared twice.

Fixed a problem with the Field support code where an access can occur beyond the end-of-region if the field is non-aligned but extends to the very end of the parent region (resulted in an `AE_AML_REGION_LIMIT` exception.)

Fixed a problem with ACPI Fixed Events where an RT Clock handler would not get invoked on an RTC event. The RTC event bitmasks for the PM1 registers were not being initialized properly.

Implemented support for executing `_STA` and `_INI` methods for Processor objects. Although this is currently not part of the ACPI specification, there is existing ASL code that depends on the init-time execution of these methods.

Implemented and deployed a `GetDescriptorName` function to decode the various types of internal descriptors. Guards against null descriptors during debug output also.

Implemented and deployed a `GetNodeName` function to extract the 4-

character namespace node name. This function simplifies the debug and error output, as well as guarding against null pointers during output.

Implemented and deployed the ACPI_FORMAT_UINT64 helper macro to simplify the debug and error output of 64-bit integers. This macro replaces the HIDWORD and LODWORD macros for dumping these integers.

Updated the implementation of the Stall() operator to only call AcpiOsStall(), and also return an error if the operand is larger than 255. This preserves the required behavior of not relinquishing the processor, as would happen if AcpiOsSleep() was called for "long stalls".

Constructs of the form "Store(LocalX,LocalX)" where LocalX is not initialized are now treated as NOOPs.

Cleaned up a handful of warnings during 64-bit generation.

Fixed a reported error where an incorrect GPE number was passed to the GPE dispatch handler. This value is only used for error output, however. Used this opportunity to clean up and streamline the GPE dispatch code.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The

debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20031002):

Non-Debug Version: 74.1K Code, 9.7K Data, 83.8K Total

Debug Version: 157.9K Code, 64.8K Data, 222.7K Total

Current Release:

Non-Debug Version: 74.4K Code, 10.1K Data, 84.5K Total

Debug Version: 158.3K Code, 65.0K Data, 223.3K Total

2) iASL Compiler/Disassembler:

Updated

the iASL compiler to return an error if the operand to the Stall() operator is larger than 255.

02 October 2003. Summary of changes for version 20031002:

1) ACPI CA Core Subsystem:

Fixed a problem with Index Fields where the index was not incremented for fields that require multiple writes to the index/data registers (Fields that are wider than the data register.)

Fixed a problem with all Field objects where a write could go beyond the end-of-field if the field was larger than the access granularity and therefore required multiple writes to complete the request. An extra write beyond the end of the field could happen inadvertently.

Fixed a problem with Index Fields where a BUFFER_OVERFLOW error would incorrectly be returned if the width of the Data Register was larger than the specified field access width.

Completed fixes for LoadTable() and Unload() and verified their operation. Implemented full support for the "DdbHandle" object throughout the ACPI CA subsystem.

Implemented full support for the MADT and ECDT tables in the ACPI CA header files. Even though these tables are not directly consumed by ACPI CA, the header definitions are useful for ACPI device drivers.

Integrated resource descriptor fixes posted to the Linux ACPI list. This included checks for minimum descriptor length, and support for trailing NULL strings within descriptors that have optional string elements.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20030918):

Non-Debug Version:

73.9K Code, 9.7K Data, 83.6K Total

Debug Version: 157.3K Code, 64.5K Data, 221.8K Total

Current Release:

Non-Debug Version: 74.1K Code, 9.7K Data, 83.8K Total

Debug Version: 157.9K Code, 64.8K Data, 222.7K Total

2) iASL Compiler:

Implemented detection of non-ASCII characters within the input source ASL file. This catches attempts to compile binary (AML) files early in the compile, with an informative error message.

Fixed a problem where the disassembler would fault if the output filename could not be generated or if the output file could not be opened.

18 September 2003. Summary of changes for version 20030918:

1) ACPI CA Core Subsystem:

Found and fixed a longstanding problem with the late execution of the various deferred AML opcodes (such as Operation Regions, Buffer Fields, Buffers, and Packages). If the name string specified for the name of the new object placed the object in a scope other than the current scope, the initialization/execution of the opcode failed. The solution to this problem was to implement a mechanism where the late execution of such opcodes does not attempt to lookup/create the name a second time in an incorrect scope. This fixes the "region size computed incorrectly" problem.

Fixed a call to AcpiHwRegisterWrite in hwregs.c that was causing a Global Lock AE_BAD_PARAMETER error.

Fixed several 64-bit issues with prototypes, casting and data types.

Removed duplicate prototype from acdisasm.h

Fixed an issue involving EC Operation Region Detach (Shaohua Li)

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release:

Non-Debug Version: 73.7K Code, 9.7K Data, 83.4K Total
Debug Version: 156.9K Code, 64.2K Data, 221.1K Total
Current Release:
Non-Debug Version: 73.9K Code, 9.7K Data, 83.6K Total
Debug Version: 157.3K Code, 64.5K Data, 221.8K Total

2) Linux:

Fixed the AcpiOsSleep implementation in osunixxf.c to pass the correct sleep time in seconds.

14 July 2003. Summary of changes for version 20030619:

1) ACPI CA Core Subsystem:

Parse SSDTs in order discovered, as opposed to reverse order
(Hrvoje Habjanic)

Fixes from FreeBSD and NetBSD. (Frank van der Linden, Thomas Klausner,
Nate Lawson)

2) Linux:

Dynamically allocate SDT list (suggested by Andi Kleen)

proc function return value cleanups (Andi Kleen)

Correctly handle NMI watchdog during long stalls (Andrew Morton)

Make it so acpism=force works (reported by Andrew Morton)

19 June 2003. Summary of changes for version 20030619:

1) ACPI CA Core Subsystem:

Fix To/FromBCD, eliminating the need for an arch-specific #define.

Do not acquire a semaphore in the S5 shutdown path.

Fix ex_digits_needed for 0. (Takayoshi Kochi)

Fix sleep/stall code reversal. (Andi Kleen)

Revert a change having to do with control method calling semantics.

2) Linux:

acpiphp update (Takayoshi Kochi)

Export acpi_disabled for sonypi (Stelian Pop)

Mention acpism=force in config help

Re-add acpitable.c and acpism=force. This improves backwards compatibility and also cleans up the code to a significant degree.

Add ASUS Value-add driver (Karol Kozimor and Julien Lerouge)

22 May 2003. Summary of changes for version 20030522:

1) ACPI CA Core Subsystem:

Found and fixed a reported problem where an AE_NOT_FOUND error occurred occasionally during _BST evaluation.

This turned out to be an Owner ID allocation issue where a called method did not get a new ID assigned to it. Eventually, (after 64k calls), the Owner ID UINT16 would wraparound so that the ID would be the same as the caller's and the called method would delete the caller's namespace.

Implemented extended error reporting for control methods that are aborted due to a run-time exception. Output includes the exact AML instruction that caused the method abort, a dump of the method

locals and arguments at the time of the abort, and a trace of all nested control method calls.

Modified the interpreter to allow the creation of buffers of zero length from the AML code. Implemented new code to ensure that no attempt is made to actually allocate a memory buffer (of length zero) - instead, a simple buffer object with a NULL buffer pointer and length zero is created. A warning is no longer issued when the AML attempts to create a zero-length buffer.

Implemented a workaround for the "leading asterisk issue" in `_HIDs`, `_UIDs`, and `_CIDs` in the AML interpreter. One leading asterisk is automatically removed if present in any HID, UID, or CID strings. The iASL compiler will still flag this asterisk as an error, however.

Implemented full support for `_CID` methods that return a package of multiple CIDs (Compatible IDs). The `AcpiGetObjectInfo()` interface now additionally returns a device `_CID` list if present. This required a change to the external interface in order to pass an `ACPI_BUFFER` object as a parameter since the `_CID` list is of variable length.

Fixed a problem with the new `AE_SAME_HANDLER` exception where handler initialization code did not know about this exception.

Code and Data Size: Current and previous core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (20030509):

Non-Debug Version: 73.4K Code, 9.7K Data, 83.1K Total

Debug Version: 156.1K Code, 63.9K Data, 220.0K Total

Current Release:

Non-Debug Version: 73.7K Code, 9.7K Data, 83.4K Total

Debug Version: 156.9K Code, 64.2K Data, 221.1K Total

2) Linux:

Fixed a bug in which we would reinitialize the ACPI interrupt

after it was already working, thus disabling all ACPI and the IRQs for any other device sharing the interrupt. (Thanks to Stian Jordet)

Toshiba driver update (John Belmonte)

Return only 0 or 1 for our interrupt handler status (Andrew Morton)

3) iASL Compiler:

Fixed a reported problem where multiple (nested) ElseIf() statements were not handled correctly by the compiler, resulting in incorrect warnings and incorrect AML code. This was a problem in both the ASL parser and the code generator.

4) Documentation:

Added changes to existing interfaces, new exception codes, and new text concerning reference count object management versus garbage collection.

09 May 2003. Summary of changes for version 20030509.

1) ACPI CA Core Subsystem:

Changed the subsystem initialization sequence to hold off installation of address space handlers until the hardware has been initialized and the system has entered ACPI mode. This is because the installation of space handlers can cause _REG methods to be run. Previously, the _REG methods could potentially be run before ACPI mode was enabled.

Fixed some memory leak issues related to address space handler and notify handler installation. There were some problems with the reference count mechanism caused by the fact that the handler objects are shared across several namespace objects.

Fixed a reported problem where reference counts within the namespace were not properly updated when named objects created by method execution were deleted.

Fixed a reported problem where multiple SSDTs caused a deletion issue during subsystem termination. Restructured the table data structures to simplify the linked lists and the related code.

Fixed a problem where the table ID associated with secondary tables (SSDTs) was not being propagated into the namespace objects created by those tables. This would only present a problem for tables that are unloaded at run-time, however.

Updated AcpiOsReadable and AcpiOsWritable to use the ACPI_SIZE type as the length parameter (instead of UINT32).

Solved a long-standing problem where an ALREADY_EXISTS error appears on various systems. This problem could happen when there are multiple PCI_Config operation regions under a single PCI root bus. This doesn't happen very frequently, but there are some systems that do this in the ASL.

Fixed a reported problem where the internal DeleteNode function was incorrectly handling the case where a namespace node was the first in the parent's child list, and had additional peers (not the only child, but first in the list of children.)

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 73.7K Code, 9.5K Data, 83.2K Total

Debug Version: 156.1K Code, 63.6K Data, 219.7K Total

Current Release:

Non-Debug Version: 73.4K Code, 9.7K Data, 83.1K Total

Debug Version: 156.1K Code, 63.9K Data, 220.0K Total

2) Linux:

Allow ":" in OS

override string (Ducrot Bruno)

Kobject fix (Greg KH)

3 iASL Compiler/Disassembler:

Fixed a problem in the generation of the C source code files (AML is emitted in C source statements for BIOS inclusion) where the Ascii dump that appears within a C comment at the end of each line could cause a compile time error if the AML sequence happens to have an open comment or close comment sequence embedded.

24 April 2003. Summary of changes for version 20030424.

1) ACPI CA Core Subsystem:

Support for big-endian systems has been implemented. Most of the support has been invisibly added behind big-endian versions of the ACPI_MOVE_* macros.

Fixed a problem in AcpiHwDisableGpeBlock() and AcpiHwClearGpeBlock() where an incorrect offset was passed to the low level hardware write routine. The offset parameter was actually eliminated from the low level read/write routines because they had become obsolete.

Fixed a problem where a handler object was deleted twice during the removal of a fixed event handler.

2) Linux:

A fix for SMP systems with link devices was contributed by

Compaq's Dan Zink.

(2.5) Return whether we handled the interrupt in our IRQ handler. (Linux ISRs no longer return void, so we can propagate the handler return value from the ACPI CA core back to the OS.)

3) Documentation:

The ACPI CA Programmer Reference has been updated to reflect new interfaces and changes to existing interfaces.

28 March 2003. Summary of changes for version 20030328.

1) ACPI CA Core Subsystem:

The GPE Block Device support has been completed. New interfaces are AcpiInstallGpeBlock and AcpiRemoveGpeBlock. The Event interfaces (enable, disable, clear, getstatus) have been split into separate interfaces for Fixed Events and General Purpose Events (GPEs) in order to support GPE Block Devices properly.

Fixed a problem where the error message "Failed to acquire semaphore" would appear during operations on the embedded controller (EC).

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 72.3K Code, 9.5K Data, 81.8K Total

Debug Version: 154.0K Code, 63.4K Data, 217.4K Total

Current Release:

Non-Debug Version: 73.7K Code, 9.5K Data, 83.2K Total

Debug Version: 156.1K Code, 63.6K Data, 219.7K Total

28 February 2003. Summary of changes for version 20030228.

1) ACPI CA Core Subsystem:

The GPE handling and dispatch code has been completely overhauled in preparation for support of GPE Block Devices (ID ACPI0006). This affects internal data structures and code only; there should be no differences visible externally. One new file has been added, evgpeblk.c

The FADT fields GPE0_BLK_LEN and GPE1_BLK_LEN are now the only fields that are used to determine the GPE block lengths. The

REGISTER_BIT_WIDTH field of the X_GPEx_BLK extended address structures are ignored. This is per the ACPI specification but it isn't very clear. The full 256 Block 0/1 GPEs are now supported (the use of REGISTER_BIT_WIDTH limited the number of GPEs to 128).

In the SCI interrupt handler, removed the read of the PM1_CONTROL register to look at the SCI_EN bit. On some machines, this read causes an SMI event and greatly slows down SCI events. (This may in fact be the cause of slow battery status response on some systems.)

Fixed a problem where a store of a NULL string to a package object could cause the premature deletion of the object.

This was seen during execution of the battery _BIF method on some systems, resulting in no battery data being returned.

Added AcpiWalkResources interface to simplify parsing of resource lists.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total

Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

Current Release:

Non-Debug Version: 72.3K Code, 9.5K Data, 81.8K Total

Debug Version: 154.0K Code, 63.4K Data, 217.4K Total

2) Linux

S3 fixes (Ole Rohne)

Update

ACPI PHP driver with to use new acpi_walk_resource API
(Bjorn Helgaas)

Add S4BIOS support (Pavel Machek)

Map in entire table before performing checksum (John Stultz)

Expand the mem= cmdline to allow the specification of reserved and ACPI DATA blocks (Pavel Machek)

Never use ACPI on VISWS

Fix derive_pci_id (Ducrot Bruno, Alvaro Lopez)

Revert a change that allowed P_BLK lengths to be 4 or 5. This is causing us to think that some systems support C2 when they really don't.

Do not count processor objects for non-present CPUs (Thanks to Dominik Brodowski)

3) iASL Compiler:

Fixed a problem where ASL include files could not be found and opened.

Added support for the _PDC reserved name.

22 January 2003. Summary of changes for version 20030122.

1) ACPI CA Core Subsystem:

Added a check for constructs of the form: Store (Local0, Local0) where Local0 is not initialized. Apparently, some BIOS programmers believe that this is a NOOP.

Since this store doesn't do anything anyway, the new prototype behavior will ignore this error. This is a case where we can relax the strict checking in the interpreter in the name of compatibility.

2) Linux

The AcpiSrc Source Conversion Utility has been released with the Linux package for the first time. This is the utility that is used to convert the ACPI CA base source code to the Linux version.

(Both) Handle P_BLK lengths shorter than 6 more gracefully

(Both) Move more headers to include/acpi, and delete an unused

header.

(Both) Move drivers/acpi/include directory to include/acpi

(Both) Boot functions don't use cmdline, so don't pass it around

(Both) Remove include of unused header (Adrian Bunk)

(Both) acpiphp.h includes both linux/acpi.h and acpi_bus.h. Since the former now also includes the latter, acpiphp.h only needs the one, now.

(2.5) Make it possible to select method of bios restoring after S3 resume. [=> no more ugly ifdefs] (Pavel Machek)

(2.5) Make proc write interfaces work (Pavel Machek)

(2.5) Properly init/clean up in cpufreq/acpi (Dominik Brodowski)

(2.5) Break out ACPI Perf code into its own module, under cpufreq (Dominik Brodowski)

(2.4) S4BIOS support (Ducrot Bruno)

(2.4) Fix acpiphp_glue.c for latest ACPI struct changes (Sergio Visinoni)

3) iASL Compiler:

Added support to disassemble SSDT and PSDTs.

Implemented support to obtain SSDTs from the Windows registry if available.

09 January 2003. Summary of changes for version 20030109.

1) ACPI CA Core Subsystem:

Changed the behavior of the internal Buffer-to-String conversion function. The current ACPI specification states that the contents of the buffer are "converted to a string of two-character hexadecimal numbers, each separated by a space". Unfortunately, this definition is not backwards compatible with existing ACPI 1.0

implementations (although the behavior was not defined in the ACPI 1.0 specification). The new behavior simply copies data from the buffer to the string until a null character is found or the end of the buffer is reached. The new String object is always null terminated. This problem was seen during the generation of _BIF battery data where incorrect strings were returned for battery type, etc. This will also require an errata to the ACPI specification.

Renamed all instances of NATIVE_UINT and NATIVE_INT to ACPI_NATIVE_UINT and ACPI_NATIVE_INT, respectively.

Copyright in all module headers (both Linux and non-Linux) has been updated to 2003.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total

Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

Current Release:

Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total

Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

2) Linux

Fixed an oops on module insertion/removal (Matthew Tippet)

(2.4) Fix to handle dynamic size of mp_irqs (Joerg Prante)

(2.5) Replace pr_debug (Randy Dunlap)

(2.5) Remove usage of CPUFREQ_ALL_CPUS (Dominik Brodowski)

(Both) Eliminate spawning of thread from timer callback, in favor of schedule_work()

(Both) Show Lid status in /proc (Zdenek OGAR Skalak)

(Both) Added define for Fixed Function HW region (Matthew Wilcox)

(Both) Add missing statics to button.c (Pavel Machek)

Several changes have been made to the source code translation utility that generates the Linux Code in order to make the code more "Linux-like":

All typedefs on structs and unions have been removed in keeping with the Linux coding style.

Removed the non-Linux SourceSafe module revision number from each module header.

Completed major overhaul of symbols to be lowercase for linux. Doubled the number of symbols that are lowercase.

Fixed a problem where identifiers within procedure headers and within quotes were not fully lower cased (they were left with a starting capital.)

Some C macros whose only purpose is to allow the generation of 16-bit code are now completely removed in the Linux code, increasing readability and maintainability.

12 December 2002. Summary of changes for version 20021212.

1) ACPI CA Core Subsystem:

Fixed a problem where the creation of a zero-length AML Buffer would cause a fault.

Fixed a problem where a Buffer object that pointed to a static AML buffer (in an ACPI table) could inadvertently be deleted, causing memory corruption.

Fixed a problem where a user buffer (passed in to the external ACPI CA interfaces) could be overwritten if the buffer was too small to complete the operation, causing memory corruption.

Fixed a problem in the Buffer-to-String conversion code where a string of length one was always returned, regardless of the size

of the input Buffer object.

Removed the NATIVE_CHAR data type across the entire source due to lack of need and lack of consistent use.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 72.1K Code, 9.5K Data, 81.6K Total

Debug Version: 152.7K Code, 62.7K

Data, 215.4K Total

Current Release:

Non-Debug Version: 72.0K Code, 9.5K Data, 81.5K Total

Debug Version: 153.0K Code, 62.9K Data, 215.9K Total

05 December 2002. Summary of changes for version 20021205.

1) ACPI CA Core Subsystem:

Fixed a problem where a store to a String or Buffer object could cause corruption of the DSDT if the object type being stored was the same as the target object type and the length of the object being stored was equal to or smaller than the original (existing) target object. This was seen to cause corruption of battery _BIF buffers if the _BIF method modified the buffer on the fly.

Fixed a problem where an internal error was generated if a control method invocation was used in an OperationRegion, Buffer, or Package declaration. This was caused by the deferred parsing of the control method and thus the deferred creation of the internal method object. The solution to this problem was to create the internal method object at the moment the method is encountered in the first pass - so that subsequent references to the method will be able to obtain the required parameter count and thus properly parse the method invocation. This problem presented itself as an AE_AML_INTERNAL during the pass 1 parse phase during table load.

Fixed a problem where the internal String object copy routine did

not always allocate sufficient memory for the target String object and caused memory corruption. This problem was seen to cause "Allocation already present in list!" errors as memory allocation became corrupted.

Implemented a new function for the evaluation of namespace objects that allows the specification of the allowable return object types. This simplifies a lot of code that checks for a return object of one or more specific objects returned from the evaluation (such as _STA, etc.) This may become an external function if it would be useful to ACPI-related drivers.

Completed another round of prefixing #defines with "ACPI_" for clarity.

Completed additional code restructuring to allow more modular linking for iASL compiler and AcpiExec. Several files were split creating new files. New files: nsparse.c dsinit.c evgpe.c

Implemented an abort mechanism to terminate an executing control method via the AML debugger. This feature is useful for debugging control methods that depend (wait) for specific hardware responses.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 71.4K Code, 9.0K Data, 80.4K

Total

Debug Version: 152.9K Code, 63.3K Data, 216.2K Total

Current Release:

Non-Debug Version: 72.1K Code, 9.5K Data, 81.6K Total

Debug Version: 152.7K Code, 62.7K Data, 215.4K Total

2) iASL Compiler/Disassembler

Fixed a compiler code generation problem for "Interrupt" Resource Descriptors. If specified in the ASL, the optional "Resource Source Index" and "Resource Source" fields were not inserted into

the correct location within the AML resource descriptor, creating an invalid descriptor.

Fixed a disassembler problem for "Interrupt" resource descriptors. The optional "Resource Source Index" and "Resource Source" fields were ignored.

22 November 2002. Summary of changes for version 20021122.

1) ACPI CA Core Subsystem:

Fixed a reported problem where an object stored to a Method Local or Arg was not copied to a new object during the store - the object pointer was simply copied to the Local/Arg. This caused all subsequent operations on the Local/Arg to also affect the original source of the store operation.

Fixed a problem where a store operation to a Method Local or Arg was not completed properly if the Local/Arg contained a reference (from RefOf) to a named field. The general-purpose store-to-namespace-node code is now used so that this case is handled automatically.

Fixed a problem where the internal object copy routine would cause a protection fault if the object being copied was a Package and contained either 1) a NULL package element or 2) a nested sub-package.

Fixed a problem with the GPE initialization that resulted from an ambiguity in the ACPI specification. One section of the specification states that both the address and length of the GPE block must be zero if the block is not supported. Another section implies that only the address need be zero if the block is not supported. The code has been changed so that both the address and the length must be non-zero to indicate a valid GPE block (i.e., if either the address or the length is zero, the GPE block is invalid.)

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and

has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 71.3K Code, 9.0K Data, 80.3K Total

Debug Version: 152.7K Code, 63.2K Data, 215.5K Total

Current Release:

Non-Debug Version: 71.4K Code, 9.0K Data, 80.4K Total

Debug Version: 152.9K Code, 63.3K Data, 216.2K Total

2) Linux

Cleaned up EC driver. Exported an external EC read/write interface. By going through this, other drivers (most notably sonypi) will be able to serialize access to the EC.

3) iASL Compiler/Disassembler

Implemented support to optionally generate include files for both ASM and C (the -i switch). This simplifies BIOS development by automatically creating include files that contain external declarations for the symbols that are created within the

(optionally generated) ASM and C AML source files.

15 November 2002. Summary of changes for version 20021115.

1) ACPI CA Core Subsystem:

Fixed a memory leak problem where an error during resolution of method arguments during a method invocation from another method failed to cleanup properly by deleting all successfully resolved argument objects.

Fixed a problem where the target of the Index() operator was not correctly constructed if the source object was a package. This problem has not been detected because the use of a target operand with Index() is very rare.

Fixed a problem with the Index() operator

where an attempt was made to delete the operand objects twice.

Fixed a problem where an attempt was made to delete an operand twice during execution of the CondRefOf() operator if the target did not exist.

Implemented the first of perhaps several internal create object functions that create and initialize a specific object type. This consolidates duplicated code wherever the object is created, thus shrinking the size of the subsystem.

Implemented improved debug/error messages for errors that occur during nested method invocations. All executing method pathnames are displayed (with the error) as the call stack is unwound - thus simplifying debug.

Fixed a problem introduced in the 10/02 release that caused premature deletion of a buffer object if a buffer was used as an ASL operand where an integer operand is required (Thus causing an implicit object conversion from Buffer to Integer.) The change in the 10/02 release was attempting to fix a memory leak (albeit incorrectly.)

Code

and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 71.9K Code, 9.1K Data, 81.0K Total

Debug Version: 153.1K Code, 63.3K Data, 216.4K Total

Current Release:

Non-Debug Version: 71.3K Code, 9.0K Data, 80.3K Total

Debug Version: 152.7K Code, 63.2K Data, 215.5K Total

2) Linux

Changed the implementation of the ACPI semaphores to use down() instead of down_interruptable(). It is important that the execution of ACPI control methods not be interrupted by signals.

Methods must run to completion,

or the system may be left in an unknown/unstable state.

Fixed a compilation error when CONFIG_SOFTWARE_SUSPEND is not set.
(Shawn Starr)

3) iASL Compiler/Disassembler

Changed the default location of output files. All output files are now placed in the current directory by default instead of in the directory of the source file. This change may affect some existing makefiles, but it brings the behavior of the compiler in line with other similar tools. The location of the output files can be overridden with the -p command line switch.

11 November 2002. Summary of changes for version 20021111.

0) ACPI Specification 2.0B is released and is now available at:
<http://www.acpi.info/index.html>

1) ACPI CA Core Subsystem:

Implemented support for the ACPI 2.0 SMBus Operation Regions. This includes the early detection and handoff of the request to the SMBus region handler (avoiding all of the complex field support code), and support for the bidirectional return packet from an SMBus write operation. This paves the way for the development of SMBus drivers in each host operating system.

Fixed a problem where the semaphore WAIT_FOREVER constant was defined as 32 bits, but must be 16 bits according to the ACPI specification. This had the side effect of causing ASL Mutex/Event timeouts even though the ASL code requested a wait forever. Changed all internal references to the ACPI timeout parameter to 16 bits to prevent future problems. Changed the name of WAIT_FOREVER to ACPI_WAIT_FOREVER.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug

version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 71.4K Code, 9.0K Data, 80.4K Total

Debug Version: 152.3K Code, 63.0K Data, 215.3K Total

Current Release:

Non-Debug Version: 71.9K Code, 9.1K Data, 81.0K Total

Debug Version: 153.1K Code, 63.3K Data, 216.4K Total

2) Linux

Module loading/unloading fixes (John Cagle)

3) iASL Compiler/Disassembler

Added support for the SMBBlockProcessCall keyword (ACPI 2.0)

Implemented support for the disassembly of all SMBus protocol keywords (SMBQuick, SMBWord, etc.)

01 November 2002. Summary of changes for version 20021101.

1) ACPI CA Core Subsystem:

Fixed a problem where platforms that have a GPE1 block but no GPE0 block were not handled correctly. This resulted in a "GPE overlap" error message. GPE0 is no longer required.

Removed code added in the previous release that inserted nodes into the namespace in alphabetical order.

This caused some side-effects on various machines. The root cause of the problem is still under investigation since in theory, the internal ordering of the namespace nodes should not matter.

Enhanced error reporting for the case where a named object is not found during control method execution. The full ACPI namepath (name reference) of the object that was not found is displayed in this case.

Note: as a result of the overhaul of the namespace object types in the previous release, the namespace nodes for the predefined scopes (_TZ, _PR, etc.) are now of the type ACPI_TYPE_LOCAL_SCOPE instead of ACPI_TYPE_ANY. This simplifies the namespace management code but may affect code that walks the namespace tree looking for specific object types.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 70.7K Code, 8.6K Data, 79.3K Total

Debug Version: 151.7K Code, 62.4K Data, 214.1K Total

Current Release:

Non-Debug Version: 71.4K Code, 9.0K Data, 80.4K Total

Debug Version: 152.3K Code, 63.0K Data, 215.3K Total

2) Linux

Fixed a problem introduced in the previous release where the Processor and Thermal objects were not recognized and installed in /proc. This was related to the scope type change described above.

3) iASL Compiler/Disassembler

Implemented the -g option to get all of the required ACPI tables from the registry and save them to files (Windows version of the compiler only.) The required tables are the FADT, FACS, and DSDT.

Added ACPI table checksum validation during table disassembly in order to catch corrupted tables.

22 October 2002. Summary of changes for version 20021022.

1) ACPI CA Core Subsystem:

Implemented a restriction on the Scope operator that the target must already exist in the namespace at the time the operator is encountered (during table load or method execution). In other words, forward references are not allowed and Scope() cannot create a new object. This changes the previous behavior where the interpreter would create the name if not found. This new behavior correctly enables the search-to-root algorithm during namespace lookup of the target name. Because of this upsearch, this fixes the known Compaq _SB_.OKEC problem and makes both the AML interpreter and iASL compiler compatible with other ACPI implementations.

Completed a major overhaul of the internal ACPI object types for the ACPI Namespace and the associated operand objects. Many of these types had become obsolete with the introduction of the two-pass namespace load. This cleanup simplifies the code and makes the entire namespace load mechanism much clearer and easier to understand.

Improved debug output for tracking scope opening/closing to help diagnose scoping issues. The old scope name as well as the new scope name are displayed. Also improved error messages for problems with ASL Mutex objects and error messages for GPE problems.

Cleaned up the namespace dump code, removed obsolete code.

All string output (for all namespace/object dumps) now uses the common ACPI string output procedure which handles escapes properly and does not emit non-printable characters.

Fixed some issues with constants in the 64-bit version of the local C library (utclib.c)

2) Linux

EC Driver: No longer attempts to acquire the Global Lock at interrupt level.

3) iASL Compiler/Disassembler

Implemented ACPI 2.0B grammar change that disallows all Type 1 and 2 opcodes outside of a control method. This means

that the "executable" operators (versus the "namespace" operators) cannot be used at the table level; they can only be used within a control method.

Implemented the restriction on the Scope() operator where the target must already exist in the namespace at the time the operator is encountered (during ASL compilation). In other words, forward references are not allowed and Scope() cannot create a new object. This makes the iASL compiler compatible with other ACPI implementations and makes the Scope() implementation adhere to the ACPI specification.

Fixed a problem where namepath optimization for the Alias operator was optimizing the wrong path (of the two namepaths.) This caused a "Missing alias link" error message.

Fixed a problem where an "unknown reserved name" warning could be incorrectly generated for names like "_SB" when the trailing underscore is not used in the original ASL.

Fixed a problem where the reserved name check did not handle NamePaths with multiple NameSegs correctly. The first nameseg of the NamePath was examined instead of the last NameSeg.

02 October 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem version 20021002:

Fixed a problem where a store/copy of a string to an existing string did not always set the string length properly in the String object.

Fixed a reported problem with the ToString operator where the behavior was identical to the ToHexString operator instead of just simply converting a raw buffer to a string data type.

Fixed a problem where CopyObject and the other "explicit" conversion operators were not updating the internal namespace node type as part of the store operation.

Fixed a memory leak during implicit source operand conversion where the original object was not deleted if it was converted to a

new object of a different type.

Enhanced error messages for all problems associated with namespace lookups. Common procedure generates and prints the lookup name as well as the formatted status.

Completed implementation of a new design for the Alias support within the namespace. The existing design did not handle the case where a new object was assigned to one of the two names due to the use of an explicit conversion operator, resulting in the two names pointing to two different objects. The new design simply points the Alias name to the original name node - not to the object. This results in a level of indirection that must be handled in the name resolution mechanism.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 69.6K Code, 8.3K Data, 77.9K Total

Debug Version: 150.0K Code, 61.7K Data, 211.7K Total

Current Release:

Non-Debug Version: 70.7K Code, 8.6K Data, 79.3K Total

Debug Version: 151.7K Code, 62.4K Data, 214.1K Total

2) Linux

Initialize thermal driver's timer before it is used. (Knut Neumann)

Allow handling negative celsius values. (Kochi Takayoshi)

Fix thermal management and make trip points. R/W (Pavel Machek)

Fix /proc/acpi/sleep. (P. Christeas)

IA64 fixes. (David Mosberger)

Fix reversed logic in blacklist code. (Sergio Monteiro Basto)

Replace ACPI_DEBUG define with ACPI_DEBUG_OUTPUT. (Dominik Brodowski)

3) iASL Compiler/Disassembler

Clarified some warning/error messages.

18 September 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem version 20020918:

Fixed a reported problem with reference chaining (via the Index() and RefOf()

operators) in the ObjectType() and SizeOf() operators.

The definition of these operators includes the dereferencing of all chained references to return information on the base object.

Fixed a problem with stores to indexed package elements - the existing code would not complete the store if an "implicit conversion" was not performed. In other words, if the existing object (package element) was to be replaced completely, the code didn't handle this case.

Relaxed typechecking on the ASL "Scope" operator to allow the target name to refer to an object of type Integer, String, or Buffer, in addition to the scoping object types (Device, predefined Scopes, Processor, PowerResource, and ThermalZone.) This allows existing AML code that has workarounds for a bug in Windows to function properly. A warning is issued, however. This affects both the AML interpreter and the iASL compiler. Below is an example of this type of ASL code:

```
Name(DEB,0x00)
Scope(DEB)
{
```

Fixed some reported problems with 64-bit integer support in the local implementation of C library functions (clib.c)

2) Linux

Use ACPI fix map region instead of IOAPIC region, since it is

undefined in non-SMP.

Ensure that the SCI has the proper polarity and trigger, even on systems that do not have an interrupt override entry in the MADT.

2.5 big driver reorganization (Pat Mochel)

Use early table mapping code from acpitable.c (Andi Kleen)

New blacklist entries (Andi Kleen)

Blacklist improvements. Split blacklist code out into a separate file. Move checking the blacklist to very early. Previously, we would use ACPI tables, and then halfway through init, check the blacklist -- too late. Now, it's early enough to completely fall-back to non-ACPI.

3) iASL Compiler/Disassembler version 20020918:

Fixed a problem where the typechecking code didn't know that an alias could point to a method. In other words, aliases were not being dereferenced during typechecking.

29

August 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020829:

If the target of a Scope() operator already exists, it must be an object type that actually opens a scope -- such as a Device, Method, Scope, etc. This is a fatal runtime error. Similar error check has been added to the iASL compiler also.

Tightened up the namespace load to disallow multiple names in the same scope. This previously was allowed if both objects were of the same type. (i.e., a lookup was the same as entering a new name).

2) Linux

Ensure that the ACPI interrupt has the proper trigger and polarity.

local_irq_disable is extraneous. (Matthew Wilcox)

Make "acpi=off" actually do what it says, and not use the ACPI interpreter *or* the tables.

Added arch-neutral support for parsing SLIT and SRAT tables (Kochi Takayoshi)

3) iASL Compiler/Disassembler Version 20020829:

Implemented namepath optimization for name declarations. For example, a declaration

like "Method (_SB_.ABCD)" would get optimized to "Method (ABCD)" if the declaration is within the _SB_ scope. This optimization is in addition to the named reference path optimization first released in the previous version. This would seem to complete all possible optimizations for namepaths within the ASL/AML.

If the target of a Scope() operator already exists, it must be an object type that actually opens a scope -- such as a Device, Method, Scope, etc.

Implemented a check and warning for unreachable code in the same block below a Return() statement.

Fixed a problem where the listing file was not generated if the compiler aborted if the maximum error count was exceeded (200).

Fixed a problem where the typechecking of method return values was broken. This includes the check for a return value when the method is invoked as a TermArg (a return value is expected.)

Fixed a reported problem where EOF conditions during a quoted string or comment caused a fault.

15

August 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020815:

Fixed a reported problem where a Store to a method argument that contains a reference did not perform the indirect store correctly.

This problem was created during the conversion to the new reference object model - the indirect store to a method argument code was not updated to reflect the new model.

Reworked the ACPI mode change code to better conform to ACPI 2.0, handle corner cases, and improve code legibility (Kochi Takayoshi)

Fixed a problem with the pathname parsing for the caret (^) prefix. The heavy use of the caret operator by the new namepath optimization in the iASL compiler uncovered a problem with the AML interpreter handling of this prefix. In the case where one or more carats precede a single nameseg, the nameseg was treated as standalone and the search rule (to root) was inadvertently applied. This could cause both the iASL compiler and the interpreter to find the wrong object or to miss the error that should occur if the object does not exist at that exact pathname.

Found and fixed the problem where the HP Pavilion DSDT would not load. This was a relatively minor tweak to the table loading code (a problem caused by the unexpected encounter with a method invocation not within a control method), but it does not solve the overall issue of the execution of AML code at the table level. This investigation is still ongoing.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug

Version: 69.1K Code, 8.2K Data, 77.3K Total

Debug Version: 149.4K Code, 61.6K Data, 211.0K Total

Current Release:

Non-Debug Version: 69.6K Code, 8.3K Data, 77.9K Total

Debug Version: 150.0K Code, 61.7K Data, 211.7K Total

2) Linux

Remove redundant slab.h include (Brad Hards)

Fix several bugs in thermal.c (Herbert Nachtnebel)

Make CONFIG_ACPI_BOOT work properly (Pavel Machek)

Change acpi_system_suspend to use updated irq functions (Pavel Machek)

Export acpi_get_firmware_table (Matthew Wilcox)

Use proper root proc entry for ACPI (Kochi Takayoshi)

Fix early-boot table parsing (Bjorn Helgaas)

3) iASL Compiler/Disassembler

Reworked the compiler options to make them more consistent and to use two-letter options where appropriate. We were running out of sensible letters. This may break some makefiles, so check the current options list by invoking the compiler with no parameters.

Completed the design and implementation of the ASL namepath optimization

option for the compiler. This option optimizes all references to named objects to the shortest possible path. The first attempt tries to utilize a single nameseg (4 characters) and the "search-to-root" algorithm used by the interpreter. If that cannot be used (because either the name is not in the search path or there is a conflict with another object with the same name), the pathname is optimized using the caret prefix (usually a shorter string than specifying the entire path from the root.)

Implemented support to obtain the DSDT from the Windows registry (when the disassembly option is specified with no input file).

Added this code as the implementation for AcpiOsTableOverride in the Windows OSL. Migrated the 16-bit code (used in the AcpiDump utility) to scan memory for the DSDT to the AcpiOsTableOverride function in the DOS OSL to make the disassembler truly OS independent.

Implemented a new option to disassemble and compile in one step.

When used without an input filename,

this option will grab the

DSDT from the local machine, disassemble it, and compile it in one step.

Added a warning message for invalid escapes (a backslash followed by any character other than the allowable escapes). This catches the quoted string error "_SB_" (which should be "_SB_").

Also, there are numerous instances in the ACPI specification where this error occurs.

Added a compiler option to disable all optimizations. This is basically the "compatibility mode" because by using this option, the AML code will come out exactly the same as other ASL compilers.

Added error messages for incorrectly ordered dependent resource functions. This includes: missing EndDependentFn macro at end of dependent resource list, nested dependent function macros (both start and end), and missing StartDependentFn macro. These are common errors that should be caught at compile time.

Implemented _OSI support for the disassembler and compiler. _OSI must be included in the namespace for proper disassembly (because the disassembler must know the number of arguments.)

Added an "optimization" message type that is optional (off by default). This message is used for all optimizations - including constant folding, integer optimization, and namepath optimization.

25 July 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020725:

The AML Disassembler has been enhanced to produce compilable ASL code and has been integrated into the iASL compiler (see below) as well as the single-step disassembly for the AML debugger and the disassembler for the AcpiDump utility. All ACPI 2.0A opcodes, resource templates and macros are fully supported. The disassembler has been tested on over 30 different AML files, producing identical AML when the resulting disassembled ASL file is recompiled with the same ASL compiler.

Modified the Resource Manager to allow zero interrupts and zero dma channels during the GetCurrentResources call. This was causing problems on some platforms.

Added the AcpiOsRedirectOutput interface to the OSL to simplify output redirection for the AcpiOsPrintf and AcpiOsVprintf interfaces.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these

values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 68.7K Code, 7.4K Data, 76.1K Total

Debug Version: 142.9K Code, 58.7K Data, 201.6K Total

Current Release:

Non-Debug Version: 69.1K Code, 8.2K Data, 77.3K Total

Debug Version: 149.4K Code, 61.6K Data, 211.0K Total

2) Linux

Fixed a panic in the
EC driver (Dominik Brodowski)

Implemented checksum of the R/XSDT itself during Linux table scan
(Richard Schaal)

3) iASL compiler

The AML disassembler is integrated into the compiler. The "-d" option invokes the disassembler to completely disassemble an input AML file, producing as output a text ASL file with the extension ".dsl" (to avoid name collisions with existing .asl source files.) A future enhancement will allow the disassembler to obtain the BIOS DSDT from the registry under Windows.

Fixed a problem with the VendorShort and VendorLong resource descriptors where an invalid AML sequence was created.

Implemented a fix for BufferData term in the ASL parser. It was inadvertently defined twice, allowing invalid syntax to pass and causing reduction conflicts.

Fixed a problem where the Ones opcode could get converted to a value of zero if "Ones" was used where a byte, word or dword value was expected. The 64-bit value is now truncated to the correct size with the correct value.

02 July 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020702:

The Table Manager code has been restructured to add several new features. Tables that are not required by the core subsystem (other than the FADT, DSDT, FACS, PSDTs, etc.) are no longer validated in any way and are returned from `AcpiGetFirmwareTable` if requested. The `AcpiOsTableOverride` interface is now called for each table that is loaded by the subsystem in order to allow the host to override any table it chooses. Previously, only the DSDT could be overridden. Added one new files, `tbrsdt.c` and `tbgetall.c`.

Fixed a problem with the conversion of internal package objects to external objects (when a package is returned from a control method.) The return buffer length was set to zero instead of the proper length of the package object.

Fixed a reported problem with the use of the `RefOf` and `DeRefOf` operators when passing reference arguments to control methods. A new type of Reference object is used internally for references produced by the `RefOf` operator.

Added additional error messages in the Resource Manager to explain `AE_BAD_DATA` errors when they occur during resource parsing.

Split the `AcpiEnableSubsystem` into two primitives to enable a finer granularity initialization sequence. These two calls should be called in this order: `AcpiEnableSubsystem (flags)`, `AcpiInitializeObjects (flags)`. The flags parameter remains the same.

2) Linux

Updated the ACPI utilities module to understand the new style of fully resolved package objects that are now returned from the core subsystem. This eliminates errors of the form:

```
ACPI: PCI Interrupt Routing Table [_SB_.PCI0.PPB._.PRT]
acpi_utils-0430 [145] acpi_evaluate_reference:
  Invalid element in package (not a device reference)
```

The method evaluation utility uses the new buffer allocation scheme instead of calling `AcpiEvaluateObject` twice.

Added support
for ECDT. This allows the use of the Embedded

Controller before the namespace has been fully initialized, which
is necessary for ACPI 2.0 support, and for some laptops to
initialize properly. (Laptops using ECDT are still rare, so only
limited testing was performed of the added functionality.)

Fixed memory leaks in the EC driver.

Eliminated a brittle code structure in `acpi_bus_init()`.

Eliminated the `acpi_evaluate()` helper function in `utils.c`. It is
no longer needed since `acpi_evaluate_object` can optionally
allocate memory for the return object.

Implemented fix for keyboard hang when getting battery readings on
some systems (Stephen White)

PCI IRQ routing update (Dominik Brodowski)

Fix an `ifdef` to allow compilation on UP with LAPIC but no IOAPIC
support

11 June 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020611:

Fixed a reported problem where constants such as `Zero` and `One`
appearing within `_PRT` packages
were not handled correctly within
the resource manager code. Originally reported against the ASL
compiler because the code generator now optimizes integers to
their minimal AML representation (i.e. AML constants if possible.)
The `_PRT` code now handles all AML constant opcodes correctly
(`Zero`, `One`, `Ones`, `Revision`).

Fixed a problem with the `Concatenate` operator in the AML
interpreter where a buffer result object was incorrectly marked as
not fully evaluated, causing a run-time error of `AE_AML_INTERNAL`.

All package sub-objects are now fully resolved before they are
returned from the external ACPI interfaces. This means that name
strings are resolved to object handles, and constant operators
(`Zero`, `One`, `Ones`, `Revision`) are resolved to Integers.

Implemented immediate resolution of the AML Constant opcodes (Zero, One, Ones, Revision) to Integer objects upon detection within the AML stream. This has simplified and reduced the generated code size of the subsystem by eliminating about 10 switch statements for these constants (which previously were contained in Reference objects.) The complicating issues are that the Zero opcode is used as a "placeholder" for unspecified optional target operands and stores to constants are defined to be no-ops.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 69.3K Code, 7.4K Data, 76.7K Total

Debug Version: 143.8K Code, 58.8K Data, 202.6K Total

Current Release:

Non-Debug Version: 68.7K Code, 7.4K Data, 76.1K Total

Debug Version: 142.9K

Code, 58.7K Data, 201.6K Total

2) Linux

Added preliminary support for obtaining `_TRA` data for PCI root bridges (Bjorn Helgaas).

3) iASL Compiler Version X2046:

Fixed a problem where the `"_DDN"` reserved name was defined to be a control method with one argument. There are no arguments, and `_DDN` does not have to be a control method.

Fixed a problem with the Linux version of the compiler where the source lines printed with error messages were the wrong lines. This turned out to be the "LF versus CR/LF" difference between Windows and Unix. This appears to be the longstanding issue concerning listing output and error messages.

Fixed a problem with the Linux version of compiler where opcode names within error messages were wrong. This was caused by a slight difference in the output of the Flex tool on Linux versus Windows.

Fixed a problem with the Linux compiler where the hex output files contained some garbage data caused by an internal buffer overrun.

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May 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020517:

Implemented a workaround to an BIOS bug discovered on the HP OmniBook where the FADT revision number and the table size are inconsistent (ACPI 2.0 revision vs. ACPI 1.0 table size). The new behavior is to fallback to using only the ACPI 1.0 fields of the FADT if the table is too small to be a ACPI 2.0 table as claimed by the revision number. Although this is a BIOS bug, this is a case where the workaround is simple enough and with no side effects, so it seemed prudent to add it. A warning message is issued, however.

Implemented minimum size checks for the fixed-length ACPI tables -
- the FADT and FACS, as well as consistency checks between the revision number and the table size.

Fixed a reported problem in the table override support where the new table pointer was incorrectly treated as a physical address instead of a logical address.

Eliminated the use of the AE_AML_ERROR exception and replaced it with more descriptive codes.

Fixed a problem where an exception would occur if an ASL Field was defined with no named Field Units underneath it (used by some index fields).

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and

has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 68.8K Code, 7.1K Data, 75.9K Total

Debug Version: 142.9K Code, 58.4K Data, 201.3K Total

Current Release:

Non-Debug Version: 69.3K Code, 7.4K Data, 76.7K Total

Debug Version: 143.8K Code, 58.8K Data, 202.6K Total

2) Linux

Much work

done on ACPI init (MADT and PCI IRQ routing support).

(Paul D. and Dominik Brodowski)

Fix PCI IRQ-related panic on boot (Sam Revitch)

Set BM_ARB_DIS when entering a sleep state (Ducrot Bruno)

Fix "MHz" typo (Dominik Brodowski)

Fix RTC year 2000 issue (Dominik Brodowski)

Preclude multiple button proc entries (Eric Brunet)

Moved arch-specific code out of include/platform/aclinux.h

3) iASL Compiler Version X2044:

Implemented error checking for the string used in the EISAID macro (Usually used in the definition of the _HID object.) The code now strictly enforces the PnP format - exactly 7 characters, 3 uppercase letters and 4 hex digits.

If a raw string is used in the definition of the _HID object (instead of the EISAID macro), the string must contain all alphanumeric characters (e.g., "*PNP0011" is not allowed because of the asterisk.)

Implemented checking for invalid use of ACPI reserved names for most of the name creation operators (Name, Device, Event, Mutex, OperationRegion,

PowerResource, Processor, and ThermalZone.)

Previously, this check was only performed for control methods.

Implemented an additional check on the Name operator to emit an error if a reserved name that must be implemented in ASL as a control method is used. We know that a reserved name must be a method if it is defined with input arguments.

The warning emitted when a namespace object reference is not found during the cross reference phase has been changed into an error. The "External" directive should be used for names defined in other modules.

4) Tools and Utilities

The 16-bit tools (adump16 and aexec16) have been regenerated and tested.

Fixed a problem with the output of both acpidump and adump16 where the indentation of closing parentheses and brackets was not

aligned properly with the parent block.

03 May 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020503:

Added support a new OSL interface that allows the host operating

system software to override the DSDT found in the firmware - AcpiOsTableOverride. With this interface, the OSL can examine the version of the firmware DSDT and replace it with a different one if desired.

Added new external interfaces for accessing ACPI registers from device drivers and other system software - AcpiGetRegister and AcpiSetRegister. This was simply an externalization of the existing AcpiHwBitRegister interfaces.

Fixed a regression introduced in the previous build where the ASL/AML CreateField operator always returned an error, "destination must be a NS Node".

Extended the maximum time (before failure) to successfully enable ACPI mode to 3 seconds.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 68.5K Code, 7.0K Data, 75.5K Total

Debug Version: 142.4K Code, 58.3K Data, 200.7K Total

Current Release:

Non-Debug Version: 68.8K Code, 7.1K Data, 75.9K Total

Debug Version: 142.9K Code, 58.4K Data, 201.3K Total

2) Linux

Enhanced ACPI init code for SMP. We are now fully MPS and \$PIR-free. While 3 out of 4 of our in-house systems work fine, the last one still hangs when testing the LAPIC timer.

Renamed many files in 2.5 kernel release to omit "acpi_" from the name.

Added warning on boot for Presario 711FR.

Sleep improvements (Pavel Machek)

ACPI can now be built without CONFIG_PCI enabled.

IA64: Fixed memory map functions (JI Lee)

3) iASL Compiler Version X2043:

Added support to allow the compiler to be integrated into the MS

VC++ development environment for one-button compilation of single files or entire projects -- with error-to-source-line mapping.

Implemented support for compile-time constant folding for the Type3, Type4, and Type5 opcodes first defined in the ACPI 2.0 specification. This allows the ASL writer to use expressions instead of Integer/Buffer/String constants in terms that must

evaluate to constants at compile time and will also simplify the emitted AML in any such sub-expressions that can be folded (evaluated at compile-time.) This increases the size of the compiler significantly because a portion of the ACPI CA AML interpreter is included within the compiler in order to pre-evaluate constant expressions.

Fixed a problem with the "Unicode" ASL macro that caused the compiler to fault. (This macro is used in conjunction with the `_STR` reserved name.)

Implemented an AML opcode optimization to use the Zero, One, and Ones opcodes where possible to further reduce the size of integer constants and thus reduce the overall size of the generated AML code.

Implemented error checking for new reserved terms for ACPI version 2.0A.

Implemented the `-qr` option to display the current list of ACPI reserved names known to the compiler.

Implemented the `-qc` option to display the current list of ASL operators that are allowed within constant expressions and can therefore be folded at compile time if the operands are constants.

4) Documentation

Updated the Programmer's Reference for new interfaces, data types, and memory allocation model options.

Updated the iASL Compiler User Reference to apply new format and add information about new features and options.

19 April 2002. Summary of changes for this release.

1) ACPI CA Core Subsystem Version 20020419:

The source code base for the Core Subsystem has been completely cleaned with PC-lint (FlexLint) for both 32-bit and 64-bit versions. The Lint option files used are included in the `/acpi/generate/lint` directory.

Implemented enhanced status/error checking across the entire Hardware manager subsystem. Any hardware errors (reported from the OSL) are now bubbled up and will abort a running control method.

Fixed a problem where the per-ACPI-table integer width (32 or 64) was stored only with control method nodes, causing a fault when non-control method code was executed during table loading. The solution implemented uses a global variable to indicate table width across the entire ACPI subsystem. Therefore, ACPI CA does not support mixed integer widths across different ACPI tables (DSDT, SSDT).

Fixed a problem where NULL extended fields (X fields) in an ACPI 2.0 ACPI FADT caused the table load to fail. Although the existing ACPI specification is a bit fuzzy on this topic, the new behavior is to fall back on a ACPI 1.0 field if the corresponding ACPI 2.0 X field is zero (even though the table revision indicates a full ACPI 2.0 table.) The ACPI specification will be updated to clarify this issue.

Fixed a problem with the SystemMemory operation region handler where memory was always accessed byte-wise even if the AML-specified access width was larger than a byte. This caused problems on systems with memory-mapped I/O. Memory is now accessed with the width specified. On systems that do not support non-aligned transfers, a check is made to guarantee proper address alignment before proceeding in order to avoid an AML-caused alignment fault within the kernel.

Fixed a problem with the ExtendedIrq resource where only one byte of the 4-byte Irq field was extracted.

Fixed the AcpiExDigitsNeeded() procedure to support _UID. This function was out of date and required a rewrite.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 66.6K Code, 6.5K Data, 73.1K Total

Debug Version: 139.8K Code, 57.4K Data, 197.2K Total

Current Release:

Non-Debug Version: 68.5K Code, 7.0K Data, 75.5K Total

Debug Version: 142.4K Code, 58.3K Data, 200.7K Total

2) Linux

PCI IRQ routing fixes (Dominik Brodowski)

3) iASL Compiler Version X2042:

Implemented an additional compile-time error check for a field unit whose size + minimum access width would cause a run-time access beyond the end-of-region. Previously, only the field size itself was checked.

The Core subsystem and iASL compiler now share a common parse object in preparation for compile-time evaluation of the type 3/4/5 ASL operators.

Summary

of changes for this release: 03_29_02

1) ACPI CA Core Subsystem Version 20020329:

Implemented support for late evaluation of TermArg operands to Buffer and Package objects. This allows complex expressions to be used in the declarations of these object types.

Fixed an ACPI 1.0 compatibility issue when reading Fields. In ACPI 1.0, if the field was larger than 32 bits, it was returned as a buffer - otherwise it was returned as an integer. In ACPI 2.0, the field is returned as a buffer only if the field is larger than 64 bits. The TableRevision is now considered when making this conversion to avoid incompatibility with existing ASL code.

Implemented logical addressing for AcpiOsGetRootPointer. This allows an RSDP with either a logical or physical address. With this support, the host OS can now override all ACPI tables with one logical RSDP. Includes implementation of "typed" pointer support to allow a common data type for both physical and logical

pointers internally. This required a change to the AcpiOsGetRootPointer interface.

Implemented the use of ACPI 2.0 Generic Address Structures for all GPE, Fixed Event, and PM Timer I/O. This allows the use of memory mapped I/O for these ACPI features.

Initialization now ignores not only non-required tables (All tables other than the FADT, FACS, DSDT, and SSDTs), but also does not validate the table headers of unrecognized tables.

Fixed a problem where a notify handler could only be installed/removed on an object of type Device. All "notify"

objects are now supported -- Devices, Processor, Power, and Thermal.

Removed most verbosity from the ACPI_DB_INFO debug level. Only critical information is returned when this debug level is enabled.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release

Non-Debug Version: 65.4K Code, 6.2K Data, 71.6K Total

Debug Version: 138.0K Code, 56.6K Data, 194.6K Total

Current Release:

Non-Debug Version: 66.6K Code, 6.5K Data, 73.1K Total

Debug Version: 139.8K Code, 57.4K Data, 197.2K Total

2) Linux:

The processor driver (acpi_processor.c) now fully supports ACPI 2.0-based processor performance control (e.g. Intel(R) SpeedStep(TM) technology) Note that older laptops that only have the Intel "applet" interface are not supported through this. The 'limit' and 'performance' interface (/proc) are fully functional. [Note that basic policy for controlling performance state transitions will be included in the next version of ospmd.] The

idle handler was modified to more aggressively use C2,
and PIIX4
errata handling underwent a complete overhaul (big thanks to
Dominik Brodowski).

Added support for ACPI-PCI device binding (acpi_pci_root.c). _ADR-
based devices in the ACPI namespace are now dynamically bound
(associated) with their PCI counterparts (e.g. PCI1->01:00.0).
This allows, among other things, ACPI to resolve bus numbers for
subordinate PCI bridges.

Enhanced PCI IRQ routing to get the proper bus number for _PRT
entries defined underneath PCI bridges.

Added IBM 600E to bad bios list due to invalid _ADR value for
PIIX4 PCI-ISA bridge, resulting in improper PCI IRQ routing.

In the process of adding full MADT support (e.g. IOAPIC) for IA32
(acpi.c, mpparse.c) -- stay tuned.

Added back visual differentiation between fixed-feature and
control-method buttons in dmesg. Buttons are also subtyped (e.g.
button/power/PWRF) to simplify button identification.

We no longer use -Wno-unused when compiling debug. Please ignore
any "_THIS_MODULE defined but not used" messages.

Can
now shut down the system using "magic sysrq" key.

3) iASL Compiler version 2041:

Fixed a problem where conversion errors for hex/octal/decimal
constants were not reported.

Implemented a fix for the General Register template Address field.
This field was 8 bits when it should be 64.

Fixed a problem where errors/warnings were no longer being emitted
within the listing output file.

Implemented the ACPI 2.0A restriction on ACPI Table Signatures to
exactly 4 characters, alphanumeric only.

Summary of changes for this release: 03_08_02

1) ACPI CA Core Subsystem Version 20020308:

Fixed a problem with AML Fields where the use of the "AccessAny" keyword could cause an interpreter error due to attempting to read or write beyond the end of the parent Operation Region.

Fixed a problem in the SystemMemory Operation Region handler where an attempt was made to map memory beyond the end of the region.

This was the root cause of the "AE_ERROR" and "AE_NO_MEMORY" errors on some Linux systems.

Fixed a problem where the interpreter/namespace "search to root" algorithm was not functioning for some object types. Relaxed the internal restriction on the search to allow upsearches for all external object types as well as most internal types.

2) Linux:

We now use safe_halt() macro versus individual calls to sti | hlt.

Writing to the processor limit interface should now work. "echo 1" will increase the limit, 2 will decrease, and 0 will reset to the

default.

3) ASL compiler:

Fixed segfault on Linux version.

Summary of changes for this release: 02_25_02

1) ACPI CA Core Subsystem:

Fixed a problem where the GPE bit masks were not initialized properly, causing erratic GPE behavior.

Implemented limited support for multiple calling conventions. The code can be generated with either the VPL (variable parameter

list, or "C") convention, or the FPL (fixed parameter list, or "Pascal") convention. The core subsystem is about 3.4% smaller when generated with FPL.

2) Linux

Re-add some /proc/acpi/event functionality that was lost during the rewrite

Resolved issue with /proc events for fixed-feature buttons showing up as the system device.

Fixed checks on C2/C3 latencies to be inclusive of maximum values.

Replaced AE_ERRORS in acpi_osl.c with more specific error codes.

Changed ACPI PRT option from "pci=noacpi-routing" to "pci=noacpi"

Fixed limit interface & usage to fix bugs with passive cooling hysteresis.

Restructured PRT support.

Summary of changes for this label: 02_14_02

1) ACPI CA Core Subsystem:

Implemented support in AcpiLoadTable to allow loading of FACS and FADT tables.

Support for the now-obsolete interim 0.71 64-bit ACPI tables has been removed. All 64-bit platforms should be migrated to the ACPI 2.0 tables. The actbl71.h header has been removed from the source tree.

All C macros defined within the subsystem have been prefixed with "ACPI_" to avoid collision with other system include files.

Removed the return value for the two AcpiOsPrint interfaces, since it is never used and causes lint warnings for ignoring the return value.

Added error checking to all internal mutex acquire and release calls. Although a failure from one of these interfaces is probably a fatal system error, these checks will cause the immediate abort of the currently executing method or interface.

Fixed a problem where the AcpiSetCurrentResources interface could fault. This was a side effect of the deployment of the new memory allocation model.

Fixed a couple of problems with the Global Lock support introduced in the last major build. The "common" (1.0/2.0) internal FACS was being overwritten with the FACS signature and clobbering the Global Lock pointer. Also, the actual firmware FACS was being unmapped after construction of the "common" FACS, preventing access to the actual Global Lock field within it.

The "common" internal FACS is no longer installed as an actual ACPI table; it is used simply as a global.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the apica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (02_07_01)

Non-Debug Version: 65.2K Code, 6.2K Data, 71.4K Total

Debug Version: 136.9K Code, 56.4K Data, 193.3K Total

Current Release:

Non-Debug Version: 65.4K Code, 6.2K Data, 71.6K Total

Debug Version: 138.0K Code, 56.6K Data, 194.6K Total

2) Linux

Updated Linux-specific code for core macro and OSL interface changes described above.

Improved /proc/acpi/event.

It now can be opened only once and has proper poll functionality.

Fixed and restructured power management (acpi_bus).

Only create /proc "view by type" when devices of that class exist.

Fixed "charging/discharging" bug (and others) in acpi_battery.

Improved thermal zone code.

3) ASL Compiler, version X2039:

Implemented the new compiler restriction on ASL String hex/octal escapes to non-null, ASCII values. An error results if an invalid value is used. (This will require an ACPI 2.0 specification change.)

AML object labels that are output to the optional C and ASM source are now prefixed with both the ACPI table signature and table ID to help guarantee uniqueness within a large BIOS project.

Summary of changes for this label: 02_01_02

1) ACPI CA Core Subsystem:

ACPI 2.0 support is complete in the entire Core Subsystem and the ASL compiler. All new ACPI 2.0 operators are implemented and all other changes for ACPI 2.0 support are complete. With simultaneous code and data optimizations throughout the subsystem, ACPI 2.0 support has been implemented with almost no additional cost in terms of code and data size.

Implemented a new mechanism for allocation of return buffers. If the buffer length is set to `ACPI_ALLOCATE_BUFFER`, the buffer will be allocated on behalf of the caller. Consolidated all return buffer validation and allocation to a common procedure. Return buffers will be allocated via the primary OSL allocation interface since it appears that a separate pool is not needed by most users. If a separate pool is required for these buffers, the caller can still use the original mechanism and pre-allocate the buffer(s).

Implemented support for string operands within the `DerefOf` operator.

Restructured the Hardware and Event managers to be table driven, simplifying the source code and reducing the amount of generated code.

Split the common read/write low-level ACPI register bitfield procedure into a separate read and write, simplifying the code considerably.

Obsoleted the AcpiOsCallocate OSL interface. This interface was used only a handful of times and didn't have enough critical mass for a separate interface. Replaced with a common calloc procedure in the core.

Fixed a reported problem with the GPE number mapping mechanism that allows GPE1 numbers to be non-contiguous with GPE0. Reorganized the GPE information and shrunk a large array that was originally large enough to hold info for all possible GPEs (256) to simply large enough to hold all GPEs up to the largest GPE number on the machine.

Fixed a reported problem with resource structure alignment on 64-bit platforms.

Changed the AcpiEnableEvent and AcpiDisableEvent external interfaces to not require any flags for the common case of enabling/disabling a GPE.

Implemented support to allow a "Notify" on a Processor object.

Most TBDs in comments within the source code have been resolved and eliminated.

Fixed a problem in the interpreter where a standalone parent prefix (^) was not handled correctly in the interpreter and debugger.

Removed obsolete and unnecessary GPE save/restore code.

Implemented Field support in the ASL Load operator. This allows a table to be loaded from a named field, in addition to loading a table directly from an Operation Region.

Implemented timeout and handle support in the external Global Lock interfaces.

Fixed a problem in the AcpiDump utility where pathnames were no longer being generated correctly during the dump of named objects.

Modified the AML debugger to give a full display of if/while

predicates instead of just one AML opcode at a time. (The predicate can have several nested ASL statements.) The old method was confusing during single stepping.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the `acpica.lib` produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (12_18_01)

Non-Debug Version: 66.1K Code, 5.5K Data, 71.6K Total

Debug Version: 138.3K Code, 55.9K Data, 194.2K Total

Current Release:

Non-Debug Version: 65.2K Code, 6.2K Data, 71.4K Total

Debug Version: 136.9K Code, 56.4K Data, 193.3K Total

2) Linux

Implemented fix for PIIX reverse throttling errata (Processor driver)

Added new Limit interface (Processor and Thermal drivers)

New thermal policy (Thermal driver)

Many updates to `/proc`

Battery "low" event support (Battery driver)

Supports ACPI PCI IRQ routing (PCI Link and PCI root drivers)

IA32 - IA64 initialization unification, no longer experimental

Menuconfig options redesigned

3) ASL Compiler, version

X2037:

Implemented several new output features to simplify integration of AML code into firmware: 1) Output the AML in C source code with labels for each named ASL object. The original ASL source code is interleaved as C comments. 2) Output the AML in ASM source code with labels and interleaved ASL source. 3) Output the AML in

raw hex table form, in either C or ASM.

Implemented support for optional string parameters to the LoadTable operator.

Completed support for embedded escape sequences within string literals. The compiler now supports all single character escapes as well as the Octal and Hex escapes. Note: the insertion of a null byte into a string literal (via the hex/octal escape) causes the string to be immediately terminated. A warning is issued.

Fixed a problem where incorrect AML was generated for the case where an ASL namepath consists of a single parent prefix (

) with no trailing name segments.

The compiler has been successfully generated with a 64-bit C compiler.

Summary of changes for this label: 12_18_01

1) Linux

Enhanced blacklist with reason and severity fields. Any table's signature may now be used to identify a blacklisted system.

Call _PIC control method to inform the firmware which interrupt model the OS is using. Turn on any disabled link devices.

Cleaned up busmgr /proc error handling (Andreas Dilger)

2) ACPI CA Core Subsystem:

Implemented ACPI 2.0 semantics for the "Break" operator (Exit from while loop)

Completed implementation of the ACPI 2.0 "Continue", "ConcatenateResTemplate", "DataTableRegion", and "LoadTable" operators. All new ACPI 2.0 operators are now implemented in both the ASL compiler and the AML interpreter. The only remaining ACPI 2.0 task is support for the String data type in the DerefOf operator. Fixed a problem with AcquireMutex where the status code was lost if the caller had to actually wait for the mutex.

Increased the maximum ASL Field size from 64K bits to 4G bits.

Completed implementation of the external Global Lock interfaces -- AcpiAcquireGlobalLock and AcpiReleaseGlobalLock. The Timeout and Handler parameters were added.

Completed another pass at removing warnings and issues when compiling with 64-bit compilers. The code now compiles cleanly with the Intel 64-bit C/C++ compiler. Most notably, the pointer add and subtract (diff) macros have changed considerably.

Created and deployed a new ACPI_SIZE type that is 64-bits wide on 64-bit platforms, 32-bits on all others. This type is used wherever memory allocation and/or the C sizeof() operator is used, and affects the OSL memory allocation interfaces AcpiOsAllocate and AcpiOsCallocate.

Implemented sticky user breakpoints in the AML debugger.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (12_05_01)

Non-Debug Version: 64.7K Code, 5.3K Data, 70.0K Total

Debug Version: 136.2K Code, 55.6K Data, 191.8K Total

Current Release:

Non-Debug Version: 66.1K Code, 5.5K Data, 71.6K Total

Debug Version: 138.3K Code, 55.9K Data, 194.2K Total

3) ASL Compiler, version X2034:

Now checks for (and generates an error if detected) the use of a Break or Continue statement without an enclosing While statement.

Successfully generated the compiler with the Intel 64-bit C compiler.

Summary of changes for this label: 12_05_01

1) ACPI CA Core Subsystem:

The ACPI 2.0 CopyObject operator is fully implemented. This operator creates a new copy of an object (and is also used to bypass the "implicit conversion" mechanism of the Store operator.)

The ACPI 2.0 semantics for the SizeOf operator are fully implemented. The change is that performing a SizeOf on a reference object causes an automatic dereference of the object to the actual value before the size is evaluated. This behavior was undefined in ACPI 1.0.

The ACPI 2.0 semantics for the Extended IRQ resource descriptor have been implemented. The interrupt polarity and mode are now independently set.

Fixed a problem where ASL Constants (Zero, One, Ones, Revision) appearing in Package objects were not properly converted to integers when the internal Package was converted to an external object (via the AcpiEvaluateObject interface.)

Fixed a problem with the namespace object deletion mechanism for objects created by control methods. There were two parts to this problem: 1) Objects created during the initialization phase method parse were not being deleted, and 2) The object owner ID mechanism to track objects was broken.

Fixed a problem where the use of the ASL Scope operator within a control method would result in an invalid opcode exception.

Fixed a problem introduced in the previous label where the buffer length required for the _PRT structure was not being returned correctly.

Code and Data Size: Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (11_20_01)

Non-Debug Version: 64.1K Code, 5.3K Data, 69.4K Total

Debug Version: 135.1K Code, 55.4K Data, 190.5K Total

Current Release:

Non-Debug Version:

64.7K Code, 5.3K Data, 70.0K Total

Debug Version: 136.2K Code, 55.6K Data, 191.8K Total

2) Linux:

Updated all files to apply cleanly against 2.4.16.

Added basic PCI Interrupt Routing Table (PRT) support for IA32 (acpi_pci.c), and unified the PRT code for IA32 and IA64. This version supports both static and dynamic PRT entries, but dynamic entries are treated as if they were static (not yet reconfigurable). Architecture- specific code to use this data is absent on IA32 but should be available shortly.

Changed the initialization sequence to start the ACPI interpreter (acpi_init) prior to initialization of the PCI driver (pci_init) in init/main.c. This ordering is required to support PRT and facilitate other (future) enhancement. A side effect is that the ACPI bus driver and certain device drivers can no longer be loaded as modules.

Modified the 'make menuconfig' options to allow PCI Interrupt Routing support to be included without the ACPI Bus and other device drivers.

3) ASL Compiler, version X2033:

Fixed some issues with the use of the new CopyObject and DataTableRegion operators. Both are fully functional.

Summary of changes for this label: 11_20_01

20 November 2001. Summary of changes for this release.

1) ACPI CA Core Subsystem:

Updated Index support to match ACPI 2.0 semantics. Storing a Integer, String, or Buffer to an Index of a Buffer will store only the least-significant byte of the source to the Indexed buffer byte. Multiple writes are not performed.

Fixed a problem where the access type used in an AccessAs ASL operator was not recorded correctly into the field object.

Fixed a problem where ASL Event objects were created in a signalled state. Events are now created in an unsignalled state.

The internal object cache is now purged after table loading and initialization to reduce the use of dynamic kernel memory -- on the assumption that object use is greatest during the parse phase of the entire table (versus the run-time use of individual control methods.)

ACPI 2.0 variable-length packages are now fully operational.

Code and Data Size: Code and Data optimizations have permitted new feature development with an actual reduction in the library size. Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (11_09_01):

Non-Debug Version: 63.7K Code, 5.2K Data, 68.9K Total

Debug Version: 134.5K Code, 55.4K Data, 189.9K Total

Current Release:

Non-Debug Version: 64.1K Code, 5.3K Data, 69.4K Total

Debug Version:

135.1K Code, 55.4K Data, 190.5K Total

2) Linux:

Enhanced the ACPI boot-time initialization code to allow the use of Local APIC tables for processor enumeration on IA-32, and to pave the way for a fully MPS-free boot (on SMP systems) in the near future. This functionality replaces arch/i386/kernel/acpitables.c, which was introduced in an earlier 2.4.15-preX release. To enable this feature you must add "acpi_boot=on" to the kernel command line -- see the help entry for CONFIG_ACPI_BOOT for more information. An IA-64 release is in the works...

Restructured the configuration options to allow boot-time table

parsing support without inclusion of the ACPI Interpreter (and other) code.

NOTE: This release does not include fixes for the reported events, power-down, and thermal passive cooling issues (coming soon).

3) ASL Compiler:

Added additional typechecking for Fields within restricted access Operation Regions. All fields within EC and CMOS regions must be declared with ByteAcc.

All fields within SMBus regions must be declared with the BufferAcc access type.

Fixed a problem where the listing file output of control methods no longer interleaved the actual AML code with the ASL source code.

Summary of changes for this label: 11_09_01

1) ACPI CA Core Subsystem:

Implemented ACPI 2.0-defined support for writes to fields with a Buffer, String, or Integer source operand that is smaller than the target field. In these cases, the source operand is zero-extended to fill the target field.

Fixed a problem where a Field starting bit offset (within the parent operation region) was calculated incorrectly if the

alignment of the field differed from the access width. This affected CreateWordField, CreateDwordField, CreateQwordField, and possibly other fields that use the "AccessAny" keyword.

Fixed a problem introduced in the 11_02_01 release where indirect stores through method arguments did not operate correctly.

2) Linux:

Implemented
boot-time ACPI table parsing support
(CONFIG_ACPI_BOOT) for IA32 and IA64 UP/SMP systems. This code facilitates the use of ACPI tables (e.g. MADT, SRAT) rather than legacy BIOS interfaces (e.g. MPS) for the configuration of system

processors, memory, and interrupts during setup_arch(). Note that this patch does not include the required architecture-specific changes required to apply this information -- subsequent patches will be posted for both IA32 and IA64 to achieve this.

Added low-level sleep support for IA32 platforms, courtesy of Pat Mochel. This allows IA32 systems to transition to/from various sleeping states (e.g. S1, S3), although the lack of a centralized driver model and power-manageable drivers will prevent its (successful) use on most systems.

Revamped the ACPI 'menuconfig' layout: created new "ACPI Support" submenu, unified IA32 and IA64 options, added new "Boot using ACPI tables" option, etc.

Increased the default timeout for the EC driver from 1ms to 10ms (1000 cycles of 10us) to try to address AE_TIME errors during EC transactions.

Summary of changes for this label: 11_02_01

1) ACPI CA Core Subsystem:

ACPI 2.0 Support: Implemented ACPI 2.0 64-bit Field access (QWordAcc keyword). All ACPI 2.0 64-bit support is now implemented.

OSL Interfaces: Several of the OSL (AcpiOs*) interfaces required changes to support ACPI 2.0 Qword field access. Read/Write PciConfiguration(), Read/Write Memory(), and Read/Write Port() now accept an ACPI_INTEGER (64 bits) as the value parameter. Also, the value parameter for the address space handler interface is now an ACPI_INTEGER. OSL implementations of these interfaces must now handle the case where the Width parameter is 64.

Index Fields: Fixed a problem where unaligned bit assembly and disassembly for IndexFields was not supported correctly.

Index and Bank Fields: Nested Index and Bank Fields are now supported. During field access, a check is performed to ensure that the value written to an Index or Bank register is not out of the range of the register. The Index (or Bank) register is written before each access to the field data. Future support will include allowing individual IndexFields to be wider than the DataRegister width.

Fields: Fixed a problem where the AML interpreter was incorrectly attempting to write beyond the end of a Field/OpRegion. This was a boundary case that occurred when a DWORD field was written to a BYTE access OpRegion, forcing multiple writes and causing the interpreter to write one datum too many.

Fields: Fixed a problem with Field/OpRegion access where the starting bit address of a field was incorrectly calculated if the current access type was wider than a byte (WordAcc, DwordAcc, or QwordAcc).

Fields: Fixed a problem where forward references to individual FieldUnits (individual Field names within a Field definition) were not resolved during the AML table load.

Fields: Fixed a problem where forward references from a Field definition to the parent Operation Region definition were not resolved during the AML table load.

Fields: Duplicate FieldUnit names within a scope are now detected during AML table load.

Acpi Interfaces: Fixed a problem where the AcpiGetName() interface returned an incorrect name for the root node.

Code and Data Size: Code and Data optimizations have permitted new feature development with an actual reduction in the library size. Current core subsystem library sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the debug output trace mechanism and has a larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Release (10_18_01):

Non-Debug Version: 63.9K Code, 5.1K
Data, 69.0K Total
Debug Version: 136.7K Code, 57.4K Data, 194.2K Total

Current Release:

Non-Debug Version: 63.7K Code, 5.2K Data, 68.9K Total
Debug Version: 134.5K Code, 55.4K Data, 189.9K Total

2) Linux:

Improved /proc processor output (Pavel Machek) Re-added
MODULE_LICENSE("GPL") to all modules.

3) ASL Compiler version X2030:

Duplicate FieldUnit names within a scope are now detected and
flagged as errors.

4) Documentation:

Programmer Reference updated to reflect OSL and address space
handler interface changes described above.

Summary of changes for this label: 10_18_01

ACPI CA Core Subsystem:

Fixed a problem with the internal object reference count mechanism
that occasionally caused premature object deletion. This resolves
all of the outstanding problem reports where an object is deleted
in the middle of an interpreter evaluation. Although this problem
only showed up in rather obscure cases, the
solution to the
problem involved an adjustment of all reference counts involving
objects attached to namespace nodes.

Fixed a problem with Field support in the interpreter where
writing to an aligned field whose length is an exact multiple (2
or greater) of the field access granularity would cause an attempt
to write beyond the end of the field.

The top level AML opcode execution functions within the
interpreter have been renamed with a more meaningful and
consistent naming convention. The modules exmonad.c and
exdyadic.c were eliminated. New modules are exoparg1.c,
exoparg2.c, exoparg3.c, and exoparg6.c.

Support for the ACPI 2.0 "Mid" ASL operator has been implemented.

Fixed a problem where the AML debugger was causing some internal
objects to not be deleted during subsystem termination.

Fixed a problem with the external AcpiEvaluateObject interface
where the subsystem would fault if the named object to be
evaluated referred to a constant such as Zero, Ones, etc.

Fixed a problem with IndexFields and BankFields where the subsystem would fault if the index, data, or bank registers were not defined in the same scope as the field itself.

Added printf format string checking for compilers that support this feature. Corrected more than 50 instances of issues with format specifiers within invocations of ACPI_DEBUG_PRINT throughout the core subsystem code.

The ASL "Revision" operator now returns the ACPI support level implemented in the core - the value "2" since the ACPI 2.0 support is more than 50% implemented.

Enhanced the output of the AML debugger "dump namespace" command to output in a more human-readable form.

Current core subsystem library code sizes are shown below. These

are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the full debug trace mechanism -- leading to a much

larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Previous Label (09_20_01):

Non-Debug Version: 65K Code, 5K Data, 70K Total

Debug Version: 138K Code, 58K Data, 196K Total

This Label:

Non-Debug Version: 63.9K Code, 5.1K Data, 69.0K Total

Debug Version: 136.7K Code, 57.4K Data, 194.2K Total

Linux:

Implemented a "Bad BIOS Blacklist" to track machines that have known ASL/AML problems.

Enhanced the /proc interface for the thermal zone driver and added support for _HOT (the critical suspend trip point). The 'info' file now includes threshold/policy information, and allows setting of _SCP (cooling preference) and _TZP (polling frequency) values to the 'info' file. Examples: "echo tzp=5 > info" sets the polling

frequency to 5 seconds, and "echo scp=1 > info" sets the cooling preference to the passive/quiet mode (if supported by the ASL).

Implemented

a workaround for a gcc bug that resulted in an OOPs when loading the control method battery driver.

Summary of changes for this label: 09_20_01

ACPI CA Core Subsystem:

The AcpiEnableEvent and AcpiDisableEvent interfaces have been modified to allow individual GPE levels to be flagged as wake-enabled (i.e., these GPEs are to remain enabled when the platform sleeps.)

The AcpiEnterSleepState and AcpiLeaveSleepState interfaces now support wake-enabled GPEs. This means that upon entering the sleep state, all GPEs that are not wake-enabled are disabled. When leaving the sleep state, these GPEs are re-enabled.

A local double-precision divide/modulo module has been added to enhance portability to OS kernels where a 64-bit math library is not available. The new module is "utmath.c".

Several optimizations have been made to reduce the use of CPU stack. Originally over 2K, the maximum stack usage is now below 2K at 1860 bytes (1.82k)

Fixed a

problem with the AcpiGetFirmwareTable interface where the root table pointer was not mapped into a logical address properly.

Fixed a problem where a NULL pointer was being dereferenced in the interpreter code for the ASL Notify operator.

Fixed a problem where the use of the ASL Revision operator returned an error. This operator now returns the current version of the ACPI CA core subsystem.

Fixed a problem where objects passed as control method parameters to AcpiEvaluateObject were always deleted at method termination. However, these objects may end up being stored into the namespace by the called method. The object reference count mechanism was applied to these objects instead of a force delete.

Fixed a problem where static strings or buffers (contained in the

AML code) that are declared as package elements within the ASL code could cause a fault because the interpreter would attempt to delete them. These objects are now marked with the "static object" flag to prevent any attempt to delete them.

Implemented an interpreter optimization to use operands directly from the state object instead of extracting the operands to local variables. This reduces stack use and code size, and improves performance.

The module exxface.c was eliminated as it was an unnecessary extra layer of code.

Current core subsystem library code sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the full debug trace mechanism -- leading to a much larger code and data size. Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Non-Debug Version: 65K Code, 5K Data, 70K Total
(Previously 69K) Debug Version: 138K Code, 58K Data, 196K Total (Previously 195K)

Linux:

Support for ACPI 2.0 64-bit integers has been added. All ACPI Integer objects are now 64 bits wide

All Acpi data types and structures are now in lower case. Only Acpi macros are upper case for differentiation.

Documentation:

Changes to the external interfaces as described above.

Summary of changes for this label: 08_31_01

ACPI CA Core Subsystem:

A bug with interpreter implementation of the ASL Divide operator was found and fixed. The implicit function return value (not the explicit store operands) was returning the remainder instead of

the quotient. This was a longstanding bug and it fixes several known outstanding issues on various platforms.

The ACPI_DEBUG_PRINT and function trace entry/exit macros have been further optimized for size. There are 700 invocations of the DEBUG_PRINT macro alone, so each optimization reduces the size of the debug version of the subsystem significantly.

A stack trace mechanism has been implemented. The maximum stack usage is about 2K on 32-bit platforms. The debugger command "stat stack" will display the current maximum stack usage.

All public symbols and global variables within the subsystem are now prefixed with the string "Acpi". This keeps all of the symbols grouped together in a kernel map, and avoids conflicts with other kernel subsystems.

Most of the internal fixed lookup tables have been moved into the code segment via the const operator.

Several enhancements have been made to the interpreter to both reduce the code size and improve performance.

Current core subsystem library code sizes are shown below. These are the code and data sizes for the acpica.lib produced by the Microsoft Visual C++ 6.0 compiler, and these values do not include any ACPI driver or OSPM code. The debug version of the code includes the full debug trace mechanism which contains over 700 invocations of the DEBUG_PRINT macro, 500 function entry macro invocations, and over 900 function exit macro invocations -- leading to a much larger code and data size.

Note that these values will vary depending on the efficiency of the compiler and the compiler options used during generation.

Non-Debug Version: 64K Code, 5K Data, 69K Total
Debug Version: 137K Code, 58K Data, 195K Total

Linux:

Implemented wbinvd() macro, pending a kernel-wide definition.

Fixed /proc/acpi/event to handle poll() and short reads.

ASL Compiler, version X2026:

Fixed a problem introduced in the previous label where the AML

code emitted for package objects produced packages with zero length.

Summary of changes for this label: 08_16_01

ACPI CA Core Subsystem:

The following ACPI 2.0 ASL operators have been implemented in the AML interpreter (These are already supported by the Intel ASL compiler): ToDecimalString, ToHexString, ToString, ToInteger, and ToBuffer. Support for 64-bit AML constants is implemented in the AML parser, debugger, and disassembler.

The internal memory tracking mechanism (leak detection code) has been upgraded to reduce the memory overhead (a separate tracking block is no longer allocated for each memory allocation), and now supports all of the internal object caches.

The data structures and code for the internal object caches have been coalesced and optimized so that there is a single cache and memory list data structure and a single group of functions that implement generic cache management. This has reduced the code size in both the debug and release versions of the subsystem.

The DEBUG_PRINT macro(s) have been optimized for size and replaced by ACPI_DEBUG_PRINT. The syntax for this macro is slightly different, because it generates a single call to an internal function. This results in a savings of about 90 bytes per invocation, resulting in an overall code and data savings of about 16% in the debug version of the subsystem.

Linux:

Fixed C3 disk corruption problems and re-enabled C3 on supporting machines.

Integrated low-level sleep code by Patrick Mochel.

Further tweaked source code Linuxization.

Other minor fixes.

ASL Compiler:

Support for ACPI 2.0 variable length packages is fixed/completed.

Fixed a problem where the optional length parameter for the ACPI 2.0 ToString operator.

Fixed multiple extraneous error messages when a syntax error is detected within the declaration line of a control method.

Summary of changes for this label: 07_17_01

ACPI CA Core Subsystem:

Added a new interface named AcpiGetFirmwareTable to obtain any ACPI table via the ACPI signature. The interface can be called at any time during kernel initialization, even before the kernel virtual memory manager is initialized and paging is enabled. This allows kernel subsystems to obtain ACPI tables very early, even before the ACPI CA subsystem is initialized.

Fixed a problem where Fields defined with the AnyAcc attribute could be resolved to the incorrect address under the following conditions: 1) the field width is larger than 8 bits and 2) the parent operation region is not defined on a DWORD boundary.

Fixed a problem where the interpreter is not being locked during namespace initialization (during execution of the _INI control methods), causing an error when an attempt is made to release it later.

ACPI 2.0 support in the AML Interpreter has begun and will be ongoing throughout the rest of this year. In this label, The Mod operator is implemented.

Added a new data type to contain full PCI addresses named ACPI_PCI_ID. This structure contains the PCI Segment, Bus, Device, and Function values.

Linux:

Enhanced the Linux version of the source code to change most capitalized ACPI type names to lowercase. For example, all instances of ACPI_STATUS are changed to acpi_status. This will result in a large diff, but the change is strictly cosmetic and aligns the CA code closer to the Linux coding standard.

OSL Interfaces:

The interfaces to the PCI configuration space have been changed to add the PCI Segment number and to split the single 32-bit combined DeviceFunction field into two 16-bit fields. This was accomplished by moving the four values that define an address in PCI configuration space (segment, bus, device, and function) to the new ACPI_PCI_ID structure.

The changes to the PCI configuration space interfaces led to a reexamination of the complete set of address space access interfaces for PCI, I/O, and Memory. The previously existing 18 interfaces have proven difficult to maintain (any small change must be propagated across at least 6 interfaces) and do not easily allow for future expansion to 64 bits if necessary. Also, on some systems, it would not be appropriate to demultiplex the access width (8, 16, 32, or 64) before calling the OSL if the corresponding native OS interfaces contain a similar access width parameter. For these reasons, the 18 address space interfaces have been replaced by these 6 new ones:

- AcpiOsReadPciConfiguration
- AcpiOsWritePciConfiguration
- AcpiOsReadMemory
- AcpiOsWriteMemory
- AcpiOsReadPort
- AcpiOsWritePort

Added a new interface named AcpiOsGetRootPointer to allow the OSL to perform the platform and/or OS-specific actions necessary to obtain the ACPI RSDP table pointer. On IA-32 platforms, this interface will simply call down to the CA core to perform the low-memory search for the table. On IA-64, the RSDP is obtained from EFI. Migrating this interface to the OSL allows the CA core to remain OS and platform independent.

Added a new interface named AcpiOsSignal to provide a generic "function code and pointer" interface for various miscellaneous signals and notifications that must be made to the host OS. The first such signals are intended to support the ASL Fatal and Breakpoint operators. In the latter case, the AcpiOsBreakpoint interface has been obsoleted.

The definition of the AcpiFormatException interface has been changed to simplify its use. The caller no longer must supply a buffer to the call; A pointer

to a const string is now returned directly. This allows the call to be easily used in printf statements, etc. since the caller does not have to manage a local buffer.

ASL Compiler, Version X2025:

The ACPI 2.0 Switch/Case/Default operators have been implemented and are fully functional. They will work with all ACPI 1.0 interpreters, since the operators are simply translated to If/Else pairs.

The ACPI 2.0 ElseIf operator is implemented and will also work with 1.0 interpreters, for the same reason.

Implemented support for ACPI 2.0 variable-length packages. These packages have a separate opcode, and their size is determined by the interpreter at run-time.

Documentation The ACPI CA Programmer Reference has been updated to reflect the new interfaces and changes to existing interfaces.

Summary of changes for this label: 06_15_01

ACPI CA Core Subsystem:

Fixed a problem where a DWORD-accessed field within a Buffer object would get its byte address inadvertently rounded down to the nearest DWORD. Buffers are always Byte-accessible.

ASL Compiler, version X2024:

Fixed a problem where the Switch() operator would either fault or hang the compiler. Note however, that the AML code for this ACPI 2.0 operator is not yet implemented.

Compiler uses the new AcpiOsGetTimer interface to obtain compile timings.

Implementation of the CreateField operator automatically converts a reference to a named field within a resource descriptor from a byte offset to a bit offset if required.

Added some missing named fields from the resource descriptor support. These are the names that are automatically created by the

compiler to reference fields within a descriptor. They are only valid at compile time and are not passed through to the AML interpreter.

Resource descriptor named fields are now typed as Integers and subject to compile-time typechecking when used in expressions.

Summary

of changes for this label: 05_18_01

ACPI CA Core Subsystem:

Fixed a couple of problems in the Field support code where bits from adjacent fields could be returned along with the proper field bits. Restructured the field support code to improve performance, readability and maintainability.

New DEBUG_PRINTP macro automatically inserts the procedure name into the output, saving hundreds of copies of procedure name strings within the source, shrinking the memory footprint of the debug version of the core subsystem.

Source Code Structure:

The source code directory tree was restructured to reflect the current organization of the component architecture. Some files and directories have been moved and/or renamed.

Linux:

Fixed leaking kacpidpc processes.

Fixed queueing event data even when /proc/acpi/event is not opened.

ASL Compiler, version X2020:

Memory allocation performance enhancement - over 24X compile time improvement on large ASL files. Parse nodes and namestring buffers are now allocated from a large internal compiler buffer.

The temporary .SRC file is deleted unless the "-s" option is specified

The "-d" debug output option now sends all output to the .DBG file instead of the console.

"External" second parameter is now optional

"ElseIf" syntax now properly allows the predicate

Last operand to "Load" now recognized as a Target operand

Debug object can now be used anywhere as a normal object.

ResourceTemplate now returns an object of type BUFFER

EISAID now returns an object of type INTEGER

"Index" now works with a STRING operand

"LoadTable" now accepts optional parameters

"ToString" length parameter is now optional

"Interrupt (ResourceType," parse error fixed.

"Register" with a user-defined region space parse error fixed

Escaped backslash at the end of a string ("\\") scan/parse error fixed

"Revision" is now an object of type INTEGER.

Summary of changes for this label: 05_02_01

Linux:

/proc/acpi/event
now blocks properly.

Removed /proc/sys/acpi. You can still dump your DSDT from
/proc/acpi/dsdt.

ACPI CA Core Subsystem:

Fixed a problem introduced in the previous label where some of the
"small" resource descriptor types were not recognized.

Improved error messages for the case where an ASL Field is outside
the range of the parent operation region.

ASL Compiler, version X2018:

Added error detection for ASL Fields that extend beyond the length of the parent operation region (only if the length of the region is known at compile time.) This includes fields that have a minimum access width that is smaller than the parent region, and individual field units that are partially or entirely beyond the extent of the parent.

Summary of changes for this label: 04_27_01

ACPI CA Core Subsystem:

Fixed a problem where the namespace mutex could be released at the wrong time during execution of AcpiRemoveAddressSpaceHandler.

Added optional thread ID output for debug traces, to simplify debugging of multiple threads. Added context switch notification when the debug code realizes that a different thread is now executing ACPI code.

Some additional external data types have been prefixed with the string "ACPI_" for consistency. This may effect existing code. The data types affected are the external callback typedefs - e.g.,

WALK_CALLBACK becomes ACPI_WALK_CALLBACK.

Linux:

Fixed an issue with the OSL semaphore implementation where a thread was waking up with an error from receiving a SIGCHLD signal.

Linux version of ACPI CA now uses the system C library for string manipulation routines instead of a local implementation.

Cleaned up comments and removed TBDs.

ASL Compiler, version X2017:

Enhanced error detection and reporting for all file I/O operations.

Documentation:

Programmer Reference updated to version 1.06.

Summary of changes for this label: 04_13_01

ACPI

CA Core Subsystem:

Restructured support for BufferFields and RegionFields. BankFields support is now fully operational. All known 32-bit limitations on field sizes have been removed. Both BufferFields and (Operation) RegionFields are now supported by the same field management code.

Resource support now supports QWORD address and IO resources. The 16/32/64 bit address structures and the Extended IRQ structure have been changed to properly handle Source Resource strings.

A ThreadId of -1 is now used to indicate a "mutex not acquired" condition internally and must never be returned by AcpiOsThreadId. This reserved value was changed from 0 since Unix systems allow a thread ID of 0.

Linux:

Driver code reorganized to enhance portability

Added a kernel configuration option to control ACPI_DEBUG

Fixed the EC driver to honor _GLK.

ASL Compiler, version X2016:

Fixed support for the "FixedHw" keyword. Previously, the FixedHw address space was set to 0, not 0x7f as it should be.

Summary of changes for this label: 03_13_01

ACPI CA Core Subsystem:

During ACPI initialization, the _SB._INI method is now run if present.

Notify handler fix - notifies are deferred until the parent method completes execution. This fixes the "mutex already acquired" issue seen occasionally.

Part of the "implicit conversion" rules in ACPI 2.0 have been found to cause compatibility problems with existing ASL/AML. The convert "result-to-target-type" implementation has been removed for stores to method Args and Locals. Source operand conversion is still fully implemented. Possible changes to ACPI 2.0 specification pending.

Fix to AcpiRsCalculatePciRoutingTableLength to return correct length.

Fix for compiler warnings for 64-bit compiles.

Linux:

/proc output aligned for easier parsing.

Release-version compile problem fixed.

New kernel configuration options documented in Configure.help.

IBM 600E - Fixed Sleep button may generate "Invalid <NULL> context" message.

OSPM:

Power resource driver integrated with bus manager.

Fixed kernel fault during active cooling for thermal zones.

Source Code:

The source code tree has been restructured.

Summary of changes for this label: 03_02_01

Linux OS Services Layer (OSL):

Major revision of all Linux-specific code.

Modularized all ACPI-specific drivers.

Added new thermal zone and power resource drivers.

Revamped /proc interface (new functionality is under /proc/acpi).

New kernel configuration options.

Linux known issues:

New kernel configuration options not documented in Configure.help yet.

Module dependencies not currently implemented. If used, they should be loaded in this order: busmgr, power, ec, system, processor, battery, ac_adapter, button, thermal.

Modules will not load if CONFIG_MODVERSION is set.

IBM 600E - entering S5 may reboot instead of shutting down.

IBM 600E - Sleep button may generate "Invalid <NULL> context" message.

Some systems may fail with "execution mutex already acquired" message.

ACPI CA Core Subsystem:

Added a new OSL Interface, AcpiOsGetThreadId. This was required for the deadlock detection code. Defined to return a non-zero, 32-bit thread ID for the currently executing thread. May be a non-zero constant integer on single-thread systems.

Implemented deadlock detection for internal subsystem mutexes. We may add conditional compilation for this code (debug only) later.

ASL/AML Mutex object semantics are now fully supported. This includes multiple acquires/releases by owner and support for the

Mutex SyncLevel parameter.

A new "Force Release" mechanism automatically frees all ASL Mutexes that have been acquired but not released when a thread exits the interpreter. This forces conformance to the ACPI spec ("All mutexes must be released when an invocation exits") and

prevents deadlocked ASL threads. This mechanism can be expanded (later) to monitor other resource acquisitions if OEM ASL code continues to misbehave (which it will).

Several new ACPI exception codes have been added for the Mutex support.

Recursive method calls are now allowed and supported (the ACPI spec does in fact allow recursive method calls.) The number of recursive calls is subject to the restrictions imposed by the `SERIALIZED` method keyword and `SyncLevel` (ACPI 2.0) method parameter.

Implemented support for the `SyncLevel` parameter for control methods (ACPI 2.0 feature)

Fixed a deadlock problem when multiple threads attempted to use the interpreter.

Fixed a problem where the string length of a String package element was not always set in a package returned from `AcpiEvaluateObject`.

Fixed a problem where the length of a String package element was not always included in the length of the overall package returned from `AcpiEvaluateObject`.

Added external interfaces (`Acpi*`) to the ACPI debug memory manager. This manager keeps a list of all outstanding allocations, and can therefore detect memory leaks and attempts to free memory blocks more than once. Useful for code such as the power manager, etc. May not be appropriate for device drivers. Performance with the debug code enabled is slow.

The ACPI Global Lock is now an optional hardware element.

ASL Compiler Version X2015:

Integrated changes to allow the compiler to be generated on multiple platforms.

Linux makefile added to generate the compiler on Linux

Source Code:

All platform-specific headers have been moved to their own

subdirectory, Include/Platform.

New source file added, Interpreter/ammutex.c

New header file, Include/acstruct.h

Documentation:

The programmer reference has been updated for the following new interfaces: AcpiOsGetThreadId AcpiAllocate AcpiCallocate AcpiFree

Summary of changes for this label: 02_08_01

Core ACPI CA Subsystem: Fixed a problem where an error was incorrectly returned if the return resource buffer was larger than the actual data (in the resource interfaces).

References to named objects within packages are resolved to the full pathname string before packages are returned directly (via the AcpiEvaluateObject interface) or indirectly via the resource interfaces.

Linux OS Services Layer (OSL):

Improved /proc battery interface.

Added C-state debugging output and other miscellaneous fixes.

ASL Compiler Version X2014:

All defined method arguments can now be used as local variables, including the ones that are not actually passed in as parameters. The compiler tracks initialization of the arguments and issues an exception if they are used without prior assignment (just like locals).

The -o option now specifies a filename prefix that is used for all output files, including the AML output file. Otherwise, the default behavior is as follows: 1) the AML goes to the file specified in the DSDT. 2) all other output files use the input source filename as the base.

Summary

of changes for this label: 01_25_01

Core ACPI CA Subsystem: Restructured the implementation of object store support within the interpreter. This includes support for the Store operator as well as any ASL operators that include a target operand.

Partially implemented support for Implicit Result-to-Target conversion. This is when a result object is converted on the fly to the type of an existing target object. Completion of this support is pending further analysis of the ACPI specification concerning this matter.

CPU-specific code has been removed from the subsystem (hardware directory).

New Power Management Timer functions added

Linux OS Services Layer (OSL): Moved system state transition code to the core, fixed it, and modified Linux OSL accordingly.

Fixed C2 and C3 latency calculations.

We no longer use the compilation date for the version message on initialization, but retrieve the version from AcpiGetSystemInfo().

Incorporated for fix Sony VAIIO machines.

Documentation: The Programmer Reference has been updated and reformatted.

ASL Compiler: Version X2013: Fixed a problem where the line numbering and error reporting could get out of sync in the presence of multiple include files.

Summary of changes for this label: 01_15_01

Core ACPI CA Subsystem:

Implemented support for type conversions in the execution of the ASL Concatenate operator (The second operand is converted to match the type of the first operand before concatenation.)

Support for implicit source operand conversion is partially

implemented. The ASL source operand types Integer, Buffer, and String are freely interchangeable for most ASL operators and are converted by the interpreter on the fly as required. Implicit Target operand conversion (where the result is converted to the target type before storing) is not yet implemented.

Support for 32-bit and 64-bit BCD integers is implemented.

Problem fixed

where a field read on an aligned field could cause a read past the end of the field.

New exception, AE_AML_NO_RETURN_VALUE, is returned when a method does not return a value, but the caller expects one. (The ASL compiler flags this as a warning.)

ASL Compiler:

Version X2011:

1. Static typechecking of all operands is implemented. This prevents the use of invalid objects (such as using a Package where an Integer is required) at compile time instead of at interpreter run-time.
2. The ASL source line is printed with ALL errors and warnings.
3. Bug fix for source EOF without final linefeed.
4. Debug option is split into a parse trace and a namespace trace.
5. Namespace output option (-n) includes initial values for integers and strings.
6. Parse-only option added for quick syntax checking.
7. Compiler checks for duplicate ACPI name declarations

Version X2012:

1. Relaxed typechecking to allow interchangeability between strings, integers, and buffers. These types are now converted by the interpreter at runtime.
2. Compiler reports time taken by each internal subsystem in the debug output file.

Summary of changes for this label: 12_14_00

ASL Compiler:

This is the first official release of the compiler. Since the compiler requires elements of the Core Subsystem, this label synchronizes everything.

Summary of changes for this label: 12_08_00

Fixed a problem where named references within the ASL definition of both OperationRegions and CreateXXXFields did not work properly. The symptom was an AE_AML_OPERAND_TYPE during initialization of the region/field. This is similar (but not related internally) to the problem that was fixed in the last label.

Implemented both 32-bit and 64-bit support for the BCD ASL functions ToBCD and FromBCD.

Updated all legal headers to include "2000" in the copyright years.

Summary of changes for
this label: 12_01_00

Fixed a problem where method invocations within the ASL definition of both OperationRegions and CreateXXXFields did not work properly. The symptom was an AE_AML_OPERAND_TYPE during initialization of the region/field:

nsinit-0209: AE_AML_OPERAND_TYPE while getting region arguments
[DEBG] ammonad-0284: Exec_monadic2_r/Not: bad operand(s)
(0x3005)

Fixed a problem where operators with more than one nested subexpression would fail. The symptoms were varied, by mostly AE_AML_OPERAND_TYPE errors. This was actually a rather serious problem that has gone unnoticed until now.

Subtract (Add (1,2), Multiply (3,4))

Fixed a problem where AcpiGetHandle didn't quite get fixed in the previous build (The prefix part of a relative path was handled incorrectly).

Fixed a problem where Operation Region initialization failed if the operation region name was a "namepath" instead of a simple "nameseg". Symptom was an AE_NO_OPERAND error.

Fixed a problem where an assignment

to a local variable via the indirect RefOf mechanism only worked for the first such assignment. Subsequent assignments were ignored.

Summary of changes for this label: 11_15_00

ACPI 2.0 table support with backwards support for ACPI 1.0 and the 0.71 extensions. Note: although we can read ACPI 2.0 BIOS tables, the AML interpreter does NOT have support for the new 2.0 ASL grammar terms at this time.

All ACPI hardware access is via the GAS structures in the ACPI 2.0 FADT.

All physical memory addresses across all platforms are now 64 bits wide. Logical address width remains dependent on the platform (i.e., "void *").

AcpiOsMapMemory interface changed to a 64-bit physical address.

The AML interpreter integer size is now 64 bits, as per the ACPI 2.0 specification.

For backwards compatibility with ACPI 1.0, ACPI tables with a revision number less than 2 use 32-bit integers only.

Fixed a problem where the evaluation of OpRegion operands did not always resolve them to numbers properly.

Summary of changes for this label: 10_20_00

Fix for CBN_._STA issue. This fix will allow correct access to CBN_ OpRegions when the _STA returns 0x8.

Support to convert ACPI constants (Ones, Zeros, One) to actual values before a package object is returned

Fix for method call as predicate to if/while construct causing incorrect if/while behavior

Fix for Else block package lengths sometimes calculated wrong (if block > 63 bytes)

Fix for Processor object length field, was always zero

Table load abort if FACP sanity check fails

Fix for problem with Scope(name) if name already exists

Warning emitted if a named object referenced cannot be found (resolved) during method execution.

Summary of changes for this label: 9_29_00

New table initialization interfaces: AcpiInitializeSubsystem no longer has any parameters AcpiFindRootPointer - Find the RSDP (if necessary)

AcpiLoadTables (RSDP) - load all tables found at RSDP-
>RSDT Obsolete Interfaces AcpiLoadFirmwareTables - replaced by AcpiLoadTables

Note: These interface changes require changes to all existing OSDs

The PCI_Config default address space handler is always installed at the root namespace object.

Summary of changes for this label: 09_15_00

The new initialization architecture is implemented. New interfaces are: AcpiInitializeSubsystem (replaces AcpiInitialize) AcpiEnableSubsystem Obsolete Interfaces: AcpiLoadNamespace

(Namespace is automatically loaded when a table is loaded)

The ACPI_OPERAND_OBJECT has been optimized to shrink its size from 52 bytes to 32 bytes. There is usually one of these for every namespace object, so the memory savings is significant.

Implemented just-in-time evaluation of the CreateField operators.

Bug fixes for IA-64 support have been integrated.

Additional code review comments have been implemented

The so-called "third pass parse" has been replaced by a final walk through the namespace to initialize all operation regions (address

spaces) and fields that have not yet been initialized during the execution of the various _INI and REG methods.

New file - namespace/nsinit.c

Summary of changes for this label: 09_01_00

Namespace manager data structures have been reworked to change the primary object from a table to a single object. This has resulted in dynamic memory savings of 3X within the namespace and 2X overall in the ACPI CA subsystem.

Fixed problem where the call to AcpiEvFindPciRootBuses was inadvertently left commented out.

Reduced the warning count when generating the source with the GCC compiler.

Revision numbers added to each module header showing the SourceSafe version of the file. Please refer to this version number when giving us feedback or comments on individual modules.

The main object types within the subsystem have been renamed to clarify their purpose:

ACPI_INTERNAL_OBJECT -> ACPI_OPERAND_OBJECT
ACPI_GENERIC_OP -> ACPI_PARSE_OBJECT
ACPI_NAME_TABLE_ENTRY -> ACPI_NAMESPACE_NODE

NOTE: no changes to the initialization sequence are included in this label.

Summary of changes for this label: 08_23_00

Fixed problem where TerminateControlMethod was being called multiple times per method

Fixed debugger problem where single stepping caused a semaphore to be oversignalled

Improved performance through additional parse object caching - added ACPI_EXTENDED_OP type

Summary of changes for this label: 08_10_00

Parser/Interpreter integration: Eliminated the creation of complete parse trees for ACPI tables and control methods. Instead, parse subtrees are created and then deleted as soon as they are processed (Either entered into the namespace or executed by the interpreter). This reduces the use of dynamic kernel memory significantly. (about 10X)

Exception codes broken into classes and renumbered. Be sure to recompile all code that includes acexcep.h. Hopefully we won't have to renumber the codes again now that they are split into classes (environment, programmer, AML code, ACPI table, and internal).

Fixed some additional alignment issues in the Resource Manager subcomponent

Implemented semaphore tracking in the AcpiExec utility, and fixed several places where mutexes/semaphores were being unlocked without a corresponding lock operation. There are no known semaphore or mutex "leaks" at this time.

Fixed the case where an ASL Return operator is used to return an unnamed package.

Summary of changes for this label: 07_28_00

Fixed a problem with the way addresses were calculated in AcpiAmlReadFieldData() and AcpiAmlWriteFieldData(). This problem manifested itself when a Field was created with WordAccess or DwordAccess, but the field unit defined within the Field was less than a Word or Dword.

Fixed a problem in AmlDumpOperands() module's loop to pull operands off of the operand stack to display information. The problem manifested itself as a TLB error on 64-bit systems when accessing an operand stack with two or more operands.

Fixed a problem with the PCI configuration space handlers where context was getting confused between accesses. This required a change to the generic address space handler and address space setup definitions. Handlers now get both a global handler context (this is the one passed in by the user when executing AcpiInstallAddressSpaceHandler()) and a specific region context

that is unique to each region (For example, the `_ADR`, `_SEG` and `_BBN` values associated with a specific region). The generic function definitions have changed to the following:

```
typedef ACPI_STATUS (*ADDRESS_SPACE_HANDLER) ( UIN32 Function,
UIN32 Address, UIN32 BitWidth, UIN32 *Value, void
*HandlerContext,
// This used to be void *Context void
*RegionContext); // This is an additional parameter
```

```
typedef ACPI_STATUS (*ADDRESS_SPACE_SETUP) ( ACPI_HANDLE
RegionHandle, UIN32 Function, void *HandlerContext, void
**RegionContext); // This used to be **ReturnContext
```

Summary of changes for this label: 07_21_00

Major file consolidation and rename. All files within the interpreter have been renamed as well as most header files. This was done to prevent collisions with existing files in the host OSs -- filenames such as "config.h" and "global.h" seem to be quite common. The VC project files have been updated. All makefiles will require modification.

The parser/interpreter integration continues in Phase 5 with the implementation of a complete 2-pass parse (the AML is parsed twice) for each table; This avoids the construction of a huge parse tree and therefore reduces the amount of dynamic memory required by the subsystem. Greater use of the parse object cache means that performance is unaffected.

Many comments from the two code reviews have been rolled in.

The 64-bit alignment support is complete.

Summary of changes for this label: 06_30_00

With a nod and a tip of the hat to the technology of yesteryear, we've added support in the source code for 80 column output devices. The code is now mostly constrained to 80 columns or less to support environments and editors that 1) cannot display or print more than 80 characters on a single line, and 2) cannot disable line wrapping.

A major restructuring of the namespace data structure has been completed. The result is 1) cleaner and more

understandable/maintainable code, and 2) a significant reduction in the dynamic memory requirement for each named ACPI object (almost half).

Summary of changes for this label: 06_23_00

Linux support has been added. In order to obtain approval to get the ACPI CA subsystem into the Linux kernel, we've had to make quite a few changes to the base subsystem that will affect all users (all the changes are generic and OS- independent). The effects of these global changes have been somewhat far reaching. Files have been merged and/or renamed and interfaces have been renamed. The major changes are described below.

Osd* interfaces renamed to AcpiOs* to eliminate namespace pollution/confusion within our target kernels. All OSD interfaces must be modified to match the new naming convention.

Files merged across the subsystem. A number of the smaller source and header files have been merged to reduce the file count and increase the density of the existing files. There are too many to list here. In general, makefiles that call out individual files will require rebuilding.

Interpreter files renamed. All interpreter files now have the prefix am* instead of ie* and is*.

Header files renamed: The acapi.h file is now acpixf.h. The acpiosd.h file is now acpiosxf.h. We are removing references to the acronym "API" since it is somewhat windowsy. The new name is "external interface" or xface or xf in the filenames.j

All manifest constants have been forced to upper case (some were mixed case.) Also, the string "ACPI_" has been prepended to many (not all) of the constants, typedefs, and structs.

The globals "DebugLevel" and "DebugLayer" have been renamed "AcpiDbgLevel" and "AcpiDbgLayer" respectively.

All other globals within the subsystem are now prefixed with "AcpiGbl_" Internal procedures within the subsystem are now prefixed with "Acpi" (with only a few exceptions). The original two-letter abbreviation for the subcomponent remains after "Acpi" - for example, CmCallocate became AcpiCmCallocate.

Added a source code translation/conversion utility. Used to generate the Linux source code, it can be modified to generate other types of source as well. Can also be used to cleanup existing source

by removing extraneous spaces and blank lines.

Found in tools/acpiscrc/*

OsdUnMapMemory was renamed to OsdUnmapMemory and then AcpiOsUnmapMemory. (UnMap became Unmap).

A "MaxUnits" parameter has been added to AcpiOsCreateSemaphore. When set to one, this indicates that the caller wants to use the

semaphore as a mutex, not a counting semaphore. ACPI CA uses both types. However, implementers of this call may want to use different OS primitives depending on the type of semaphore requested. For example, some operating systems provide separate

"mutex" and "semaphore" interfaces - where the mutex interface is much faster because it doesn't have all the overhead of a full semaphore implementation.

Fixed a deadlock problem where a method that accesses the PCI address space can block forever if it is the first access to the space.

Summary of changes for this label: 06_02_00

Support for environments that cannot handle unaligned data accesses

(e.g. firmware and OS environments devoid of alignment handler technology namely SAL/EFI and the IA-64 Linux kernel) has been added (via configurable macros) in these three areas: - Transfer of data from the raw AML byte stream is done via byte moves instead of word/dword/qword moves. - External objects are aligned within the user buffer, including package elements (sub-objects). - Conversion of name strings to UIN32 Acpi Names is now done byte-wise.

The Store operator was modified to mimic Microsoft's implementation when storing to a Buffer Field.

Added a check of the BM_STS bit before entering C3.

The methods subdirectory has been obsoleted and removed. A new file, cmeval.c subsumes the functionality.

A 16-bit (DOS) version of AcpiExec has been developed. The makefile is under the acpiexec directory.

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/changes.txt

No license file was found, but licenses were detected in source scan.

%{

/*****

*

* Module Name: dtcompilerparser.y - Bison input file for table compiler parser

*

*****/

/*****

*

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*****/

```
#include "aslcompiler.h"
```

```
#define _COMPONENT      DT_COMPILER
        ACPI_MODULE_NAME  ("dtcompilerparser")
```

```
void *      AslLocalAllocate (unsigned int Size);
```

```
/* Bison/yacc configuration */
```

```
#undef alloca
```

```
#define alloca      AslLocalAllocate
```

```
int      DtCompilerParserlex (void);
```

```
int      DtCompilerParserparse (void);
```

```
void      DtCompilerParsererror (char const *msg);
```

```
extern char      *DtCompilerParsertext;
```

```
extern DT_FIELD      *AslGbl_CurrentField;
```

```
extern
```

```
int      DtLabelByteOffset;
```

```
extern UINT64      DtCompilerParserResult; /* Expression return value */
```

```
extern UINT64      DtCompilerParserlineno; /* Current line number */
```

```
extern UINT32      DtTokenFirstLine;
```

```

extern UINT32      DtTokenFirstColumn;

/* Bison/yacc configuration */

#define yyname      DtCompilerParsername
#define YYDEBUG     1      /* Enable debug output */
#define YYERROR_VERBOSE 1      /* Verbose error messages */
#define YYFLAG      -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors */

#define YYMALLOC     malloc
#define YYFREE       free

% }

%union {
    char      *s;
    DT_FIELD  *f;
    DT_TABLE_UNIT *u;
}

%type <f> Table
%token <u> DT_PARSEOP_DATA
%token <u> DT_PARSEOP_LABEL
%token <u> DT_PARSEOP_STRING_DATA
%token <u> DT_PARSEOP_LINE_CONTINUATION
%type <u> Data
%type <u> Datum
%type <u> MultiLineData
%type
    <u> MultiLineDataList

%%

Table
:
    FieldList { }
;

FieldList
: Field FieldList
| Field
;

```

Field

```
: DT_PARSEOP_LABEL ':' Data { DtCreateField ($1, $3, DtLabelByteOffset); }  
;
```

Data

```
: MultiLineDataList { $$ = $1; }  
| Datum { $$ = $1; }  
| Datum MultiLineDataList { $$ = $1; } /* combine the string with strcat */  
;
```

MultiLineDataList

```
: MultiLineDataList MultiLineData { $$ = DtCreateTableUnit (AcpiUtStrcat(AcpiUtStrcat($1->Value, " "), $2->Value), $1->Line, $1->Column); } /* combine the strings with strcat */  
| MultiLineData { $$ = $1; }  
;
```

MultiLineData

```
: DT_PARSEOP_LINE_CONTINUATION Datum { DbgPrint (ASL_PARSE_OUTPUT, "line continuation  
detected\n"); $$ = $2; }  
;
```

Datum

```
: DT_PARSEOP_DATA {  
    DbgPrint (ASL_PARSE_OUTPUT, "parser data: [%s]\n", DtCompilerParserlval.s);  
    $$ = DtCreateTableUnit  
(AcpiUtStrdup(DtCompilerParserlval.s), DtTokenFirstLine, DtTokenFirstColumn);  
}  
| DT_PARSEOP_STRING_DATA {  
    DbgPrint (ASL_PARSE_OUTPUT, "parser string data: [%s]\n", DtCompilerParserlval.s);  
    $$ = DtCreateTableUnit (AcpiUtStrdup(DtCompilerParserlval.s), DtTokenFirstLine,  
DtTokenFirstColumn);  
}  
;
```

%%

/*

* Local support functions, including parser entry point

*/

*

* FUNCTION: DtCompilerParsererror

*

* PARAMETERS: Message - Parser-generated error message

*

* RETURN: None

```
*
* DESCRIPTION: Handler for parser errors
*
*****/
```

```
void
DtCompilerParsererror (
    char const      *Message)
{
    DtError (ASL_ERROR, ASL_MSG_SYNTAX,
        AslGbl_CurrentField, (char *) Message);
}
```

```
int
DtCompilerParserwrap(void)
{
    return (1);
}
```

Found in path(s):
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtcompilerparser.y
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```
NoEcho('
/*****
*
* Module Name: aslstyle.y - Production rules for symbolic operators
*
*****/
```

```
/*****
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*

*****/

')

/******

*

* Production rules for the symbolic (c-style) operators

*

*****/

```

/*
* ASL Extensions: C-style math/logical operators and expressions.
* The implementation transforms these operators into the standard
* AML opcodes and syntax.
*
* Supported operators and precedence rules (high-to-low)
*
* NOTE: The operator precedence and associativity rules are
* implemented by the tokens in asltokens.y
*
* (left-to-right):
* 1)  ( ) expr++ expr--
*
* (right-to-left):
* 2)  ! ~
*
* (left-to-right):
* 3)  * / %
* 4)  + -
* 5)  >> <<
* 6)  < > <= >=
* 7)  == !=
* 8)  &
* 9)  ^
* 10) |
* 11) &&
* 12) ||
*
* (right-to-left):
* 13) = += -= *= /= %= <<= >>= &= ^= |=
*/

/*****
*
* Basic operations for math and logical expressions.
*
*****/

```

Expression

```
/* Unary operators */
```

```

: PARSEOP_EXP_LOGICAL_NOT      {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>2,1,$3);}
| PARSEOP_EXP_NOT              {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>2,2,$3,TrCreateNullTargetOp ());}

```

```

| SuperName PARSEOP_EXP_INCREMENT
  {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
    {$$ = TrLinkOpChildren ($<n>3,1,$1);}
| SuperName PARSEOP_EXP_DECREMENT  {$<n>$ = TrCreateLeafOp (PARSEOP_DECREMENT);}
    {$$ = TrLinkOpChildren ($<n>3,1,$1);}

/* Binary operators: math and logical */

| TermArg PARSEOP_EXP_ADD      {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_DIVIDE   {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
    TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_MODULO   {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_MULTIPLY
  {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_SHIFT_LEFT  {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLLEFT);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_SHIFT_RIGHT {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_SUBTRACT   {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}

| TermArg PARSEOP_EXP_AND      {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_OR       {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_XOR      {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}

| TermArg PARSEOP_EXP_GREATER   {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_GREATER_EQUAL {$<n>$ = TrCreateLeafOp
(PARSEOP_LGREATEREQUAL);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LESS      {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LESS_EQUAL {$<n>$ = TrCreateLeafOp (PARSEOP_LLESSEQUAL);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

| TermArg PARSEOP_EXP_EQUAL
  {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_NOT_EQUAL  {$<n>$ = TrCreateLeafOp (PARSEOP_LNOTEQUAL);}
  TermArg      {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

```

```

| TermArg PARSEOP_EXP_LOGICAL_AND  {<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
  TermArg                          {$$ = TrLinkOpChildren (<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LOGICAL_OR   {<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
  TermArg                          {$$ = TrLinkOpChildren (<n>3,2,$1,$4);}

/* Parentheses */

| PARSEOP_OPEN_PAREN
  Expression
  PARSEOP_CLOSE_PAREN      {$$ = $2;}

/* Index term -- "= BUF1[5]" on right-hand side of an equals (source) */

| IndexExpTerm
;

/*
 * Index term -- "BUF1[5] = " or " = BUF1[5]" on either the left side
 * of an equals (target) or the right side (source)
 * Currently used in
these terms:
 *   Expression
 *   ObjectTypeSource
 *   DerefOfSource
 *   Type6Opcode
 */
IndexExpTerm

: SuperName
  PARSEOP_EXP_INDEX_LEFT
  TermArg
  PARSEOP_EXP_INDEX_RIGHT  {$$ = TrCreateLeafOp (PARSEOP_INDEX);
                             TrLinkOpChildren ($$,3,$1,$3,TrCreateNullTargetOp ());}
;

/*****
 *
 * All assignment-type operations -- math and logical. Includes simple
 * assignment and compound assignments.
 *
 *****/

EqualsTerm

/* Allow parens anywhere */

: PARSEOP_OPEN_PAREN

```

```

EqualsTerm
PARSEOP_CLOSE_PAREN      {$$ = $2;}

/* Simple Store() operation */

| SuperName
  PARSEOP_EXP_EQUALS
  TermArg                  {$$ = TrCreateAssignmentOp ($1, $3);}

/* Chained equals: (a=RefOf)=b, a=b=c=d
etc. */

| PARSEOP_OPEN_PAREN
  EqualsTerm
  PARSEOP_CLOSE_PAREN
  PARSEOP_EXP_EQUALS
  TermArg                  {$$ = TrCreateAssignmentOp ($2, $5);}

/* Compound assignments -- Add (operand, operand, target) */

| TermArg PARSEOP_EXP_ADD_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_DIV_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_MOD_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_MUL_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SHL_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLEFT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SHR_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SUB_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
  TermArg

```

```

    {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                          TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_AND_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
  TermArg                        {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                          TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_OR_EQ     {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
  TermArg                        {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                          TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_XOR_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
  TermArg                        {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                          TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

;

```

Found in path(s):

```
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslclstyle.y
```

No license file was found, but licenses were detected in source scan.

NoEcho('

```

/*****

```

```

*
```

```
* Module Name: aslresources.y - Bison/Yacc production rules for resources
```

```
* - Keep this file synched with the
```

```
* CvParseOpBlockType function in cvcompiler.c
```

```

*
```

```

*****/
```

```

/*****

```

```

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```

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*

*****/

)

/******

*

* ASL Resource Template Terms

*

*****/

/*

* Note: Create two default nodes to allow conversion to a Buffer AML opcode

* Also, insert the EndTag at the end of the template.

*/

ResourceTemplateTerm

```
: PARSEOP_RESOURCETEMPLATE {COMMENT_CAPTURE_OFF;}
  OptionalParentheses
  '{'
  ResourceMacroList '{'    {$$ = TrCreateOp (PARSEOP_RESOURCETEMPLATE,4,
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                                $5,
                                TrCreateLeafOp (PARSEOP_ENDTAG));
                                COMMENT_CAPTURE_ON;}
  ;
```

OptionalParentheses

```
:          {$$ = NULL;}
| PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN    {$$ = NULL;}
;
```

ResourceMacroList

```
:          {$$ = NULL;}
| ResourceMacroList
  ResourceMacroTerm      {$$ = TrLinkPeerOp ($1,$2);}
;
```

ResourceMacroTerm

```
: DMATerm          {}
| DWordIOTerm       {}
| DWordMemoryTerm   {}
| DWordSpaceTerm    {}
| EndDependentFnTerm
{}
| ExtendedIOTerm     {}
| ExtendedMemoryTerm {}
| ExtendedSpaceTerm  {}
| FixedDmaTerm       {}
| FixedIOTerm        {}
| GpioIntTerm        {}
| GpioIoTerm         {}
| I2cSerialBusTerm   {}
| I2cSerialBusTermV2 {}
| InterruptTerm      {}
| IOTerm             {}
| IRQNoFlagsTerm     {}
| IRQTerm           {}
| Memory24Term       {}
| Memory32FixedTerm  {}
```

```

| Memory32Term      {}
| PinConfigTerm     {}
| PinFunctionTerm   {}
| PinGroupTerm      {}
| PinGroupConfigTerm {}
| PinGroupFunctionTerm {}
| QWordIOTerm       {}
| QWordMemoryTerm   {}
| QWordSpaceTerm    {}
| RegisterTerm      {}
| SpiSerialBusTerm
    {}
| SpiSerialBusTermV2 {}
| StartDependentFnNoPriTerm {}
| StartDependentFnTerm {}
| UartSerialBusTerm {}
| UartSerialBusTermV2 {}
| VendorLongTerm    {}
| VendorShortTerm   {}
| WordBusNumberTerm {}
| WordIOTerm        {}
| WordSpaceTerm     {}
;

```

DMATerm

```

: PARSEOP_DMA
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DMA);}
  DMATypeKeyword
  OptionalBusMasterKeyword
  ',' XferTypeKeyword
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$7,$8,$11);}
| PARSEOP_DMA
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

DWordIOTerm

```

: PARSEOP_DWORDIO
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  ',' DWordConstExpr
  ',' DWordConstExpr

```

```

'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
OptionalByteConstExpr
OptionalStringData
OptionalNameString
OptionalType
OptionalTranslationType_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_DWORDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DWordMemoryTerm
: PARSEOP_DWORDMEMORY
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  OptionalMemType
  '| OptionalReadWriteKeyword
  '|
;

DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
OptionalByteConstExpr
OptionalStringData
OptionalNameString
OptionalAddressRange
OptionalType_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,16,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
| PARSEOP_DWORDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DWordSpaceTerm
: PARSEOP_DWORDSPACE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDSPACE);}
  ByteConstExpr          {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType

```

```

OptionalMinType
OptionalMaxType
'| ByteConstExpr
'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
'| DWordConstExpr
OptionalByteConstExpr
OptionalStringData
OptionalNameString_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,14,
                        $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_DWORDSPACE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

EndDependentFnTerm
: PARSEOP_ENDDEPENDENTFN
  PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateLeafOp (PARSEOP_ENDDEPENDENTFN);}
| PARSEOP_ENDDEPENDENTFN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ExtendedIOTerm
: PARSEOP_EXTENDEDEDIO
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEDEDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  OptionalQWordConstExpr
  OptionalNameString
  OptionalType
  OptionalTranslationType_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,14,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22);}
| PARSEOP_EXTENDEDEDIO
  PARSEOP_OPEN_PAREN

```

```

error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ExtendedMemoryTerm
: PARSEOP_EXTENDEDMEMORY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  OptionalMemType
  '|' OptionalReadWriteKeyword
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  OptionalQWordConstExpr
  OptionalNameString

  OptionalAddressRange
  OptionalType_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,15,
                                $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24);}
| PARSEOP_EXTENDEDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ExtendedSpaceTerm
: PARSEOP_EXTENDEDSPACE PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp
(PARSEOP_EXTENDEDSPACE);}
  ByteConstExpr          {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  '|' ByteConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  '|' QWordConstExpr
  OptionalQWordConstExpr
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,13,
                                $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23);}

```

```

| PARSEOP_EXTENDEDSPACE
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN          {$$ = AslDoError(); yyclearin;}
;

```

FixedDmaTerm

```

: PARSEOP_FIXEDDMA
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDDMA);}
  WordConstExpr           /* 04: DMA RequestLines */
  ',' WordConstExpr       /* 06: DMA Channels */
  OptionalXferSize        /* 07: DMA TransferSize */
  OptionalNameString      /* 08: DescriptorName */
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$7,$8);}
| PARSEOP_FIXEDDMA
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN          {$$ = AslDoError(); yyclearin;}
;

```

FixedIOTerm

```

: PARSEOP_FIXEDIO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDIO);}
  WordConstExpr
  ',' ByteConstExpr
  OptionalNameString_Last

  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
| PARSEOP_FIXEDIO
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN          {$$ = AslDoError(); yyclearin;}
;

```

GpioIntTerm

```

: PARSEOP_GPIO_INT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_INT);}
  InterruptTypeKeyword    /* 04: InterruptType */
  ',' InterruptLevel      /* 06: InterruptLevel */
  OptionalShareType       /* 07: SharedType */
  ',' PinConfigByte       /* 09: PinConfig */
  OptionalWordConstExpr   /* 10: DebounceTimeout */
  ',' StringData          /* 12: ResourceSource */
  OptionalByteConstExpr   /* 13: ResourceSourceIndex */
  OptionalResourceType     /* 14: ResourceType */
  OptionalNameString      /* 15: DescriptorName */
  OptionalBuffer_Last     /* 16: VendorData */
  PARSEOP_CLOSE_PAREN '{'
    DWordConstExpr
  '}' {$$ = TrLinkOpChildren ($<n>3,11,
    $4,$6,$7,$9,$10,$12,$13,$14,$15,$16,$19);}

```

```

| PARSEOP_GPIO_INT
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

GpioIoTerm

```

: PARSEOP_GPIO_IO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_IO);}
  OptionalShareType_First /* 04: SharedType */
  ',' PinConfigByte       /* 06: PinConfig */
  OptionalWordConstExpr  /* 07: DebounceTimeout */
  OptionalWordConstExpr  /* 08: DriveStrength */
  OptionalIoRestriction  /* 09: IoRestriction */
  ',' StringData          /* 11: ResourceSource */
  OptionalByteConstExpr  /* 12: ResourceSourceIndex */
  OptionalResourceType   /* 13: ResourceType */
  OptionalNameString     /* 14: DescriptorName */
  OptionalBuffer_Last    /* 15: VendorData */
  PARSEOP_CLOSE_PAREN '{
    DWordList '}'        {$$ = TrLinkOpChildren ($<n>3,11,
      $4,$6,$7,$8,$9,$11,$12,$13,$14,$15,$18);}
| PARSEOP_GPIO_IO
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN          {$$ = AslDoError(); yyclearin;}
;

```

I2cSerialBusTerm

```

: PARSEOP_I2C_SERIALBUS
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS);}
  WordConstExpr           /* 04: SlaveAddress */
  OptionalSlaveMode       /* 05: SlaveMode */
  ',' DWordConstExpr     /* 07: ConnectionSpeed */
  OptionalAddressingMode  /* 08: AddressingMode */
  ',' StringData          /* 10: ResourceSource */
  OptionalByteConstExpr  /* 11: ResourceSourceIndex */
  OptionalResourceType   /* 12: ResourceType */
  OptionalNameString     /* 13: DescriptorName */
  OptionalBuffer_Last    /* 14: VendorData */
  PARSEOP_CLOSE_PAREN
  {$$ = TrLinkOpChildren ($<n>3,10,
    $4,$5,$7,$8,$10,$11,$12,$13,
    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$14);}
| PARSEOP_I2C_SERIALBUS
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

I2cSerialBusTermV2


```

: PARSEOP_I2C_SERIALBUS_V2
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS_V2);}
  WordConstExpr           /* 04: SlaveAddress */
  OptionalSlaveMode       /* 05: SlaveMode */
  ' DWordConstExpr       /* 07: ConnectionSpeed */
  OptionalAddressingMode  /* 08: AddressingMode */
  ' StringData           /* 10: ResourceSource */
  OptionalByteConstExpr   /* 11: ResourceSourceIndex */
  OptionalResourceType    /* 12: ResourceType */
  OptionalNameString      /* 13: DescriptorName */
  OptionalShareType       /* 14: Share */

OptionalBuffer_Last      /* 15: VendorData */
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,10,
                                     $4,$5,$7,$8,$10,$11,$12,$13,$14,$15);}
| PARSEOP_I2C_SERIALBUS_V2
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

InterruptTerm

```

: PARSEOP_INTERRUPT
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_INTERRUPT);}
  OptionalResourceType_First
  ' InterruptTypeKeyword
  ' InterruptLevel
  OptionalShareType
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN '{
    DWordList '}'      {$$ = TrLinkOpChildren (<n>3,8,
                                     $4,$6,$8,$9,$10,$11,$12,$15);}
| PARSEOP_INTERRUPT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

IOTerm

```

: PARSEOP_IO
  PARSEOP_OPEN_PAREN
    {<n>$ = TrCreateLeafOp (PARSEOP_IO);}
  IODecodeKeyword
  ' WordConstExpr
  ' WordConstExpr
  ' ByteConstExpr
  ' ByteConstExpr
  OptionalNameString_Last

```

```

    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_IO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IRQNoFlagsTerm
: PARSEOP_IRQNOFLAGS
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_IRQNOFLAGS);}
    OptionalNameString_First
    PARSEOP_CLOSE_PAREN '{'
        ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_IRQNOFLAGS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IRQTerm
: PARSEOP_IRQ
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_IRQ);}
    InterruptTypeKeyword
    ',' InterruptLevel
    OptionalShareType
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN '{'
        ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,5,$4,$6,$7,$8,$11);}
| PARSEOP_IRQ
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

Memory24Term
: PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY24);}
    OptionalReadWriteKeyword
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    ',' WordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

Memory32FixedTerm
: PARSEOP_MEMORY32FIXED

```

```

    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32FIXED);}
    OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$8,$9);}
| PARSEOP_MEMORY32FIXED
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

Memory32Term

```

: PARSEOP_MEMORY32
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32);}
    OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_MEMORY32
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

PinConfigTerm

```

: PARSEOP_PINCONFIG
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PINCONFIG);}
    OptionalShareType_First /* 04: ShareType */
    ',' ByteConstExpr      /* 06: PinConfigType */
    ','
    DWordConstExpr         /* 08: PinConfigValue */
    ',' StringData         /* 10: ResourceSource */
    OptionalByteConstExpr /* 11: ResourceSourceIndex */
    OptionalResourceType   /* 12: ResourceType */
    OptionalNameString     /* 13: DescriptorName */
    OptionalBuffer_Last    /* 14: VendorData */
    PARSEOP_CLOSE_PAREN '{'
        DWordList '}'      {$$ = TrLinkOpChildren ($<n>3,9,
            $4,$6,$8,$10,$11,$12,$13,$14,$17);}
| PARSEOP_PINCONFIG
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

PinFunctionTerm

```

: PARSEOP_PINFUNCTION

```

```

PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_PINFUNCTION);}
OptionalShareType_First /* 04: SharedType */
',' PinConfigByte       /* 06: PinConfig */
',' WordConstExpr       /* 08: FunctionNumber */
',' StringData          /* 10: ResourceSource
*/
OptionalByteConstExpr   /* 11: ResourceSourceIndex */
OptionalResourceType     /* 12: ResourceType */
OptionalNameString       /* 13: DescriptorName */
OptionalBuffer_Last      /* 14: VendorData */
PARSEOP_CLOSE_PAREN '{
    DWordList '}'      {$$ = TrLinkOpChildren (<n>3,9,
                                $4,$6,$8,$10,$11,$12,$13,$14,$17);}
| PARSEOP_PINFUNCTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

PinGroupTerm

```

: PARSEOP_PINGROUP
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_PINGROUP);}
  StringData              /* 04: ResourceLabel */
  OptionalProducerResourceType /* 05: ResourceType */
  OptionalNameString       /* 06: DescriptorName */
  OptionalBuffer_Last      /* 07: VendorData */
  PARSEOP_CLOSE_PAREN '{
    DWordList '}'      {$$ = TrLinkOpChildren
(<n>3,5,$4,$5,$6,$7,$10);}
| PARSEOP_PINGROUP
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

PinGroupConfigTerm

```

: PARSEOP_PINGROUPCONFIG
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPCONFIG);}
  OptionalShareType_First /* 04: SharedType */
  ',' ByteConstExpr       /* 06: PinConfigType */
  ',' DWordConstExpr      /* 08: PinConfigValue */
  ',' StringData          /* 10: ResourceSource */
  OptionalByteConstExpr   /* 11: ResourceSourceIndex */
  ',' StringData          /* 13: ResourceSourceLabel */
  OptionalResourceType     /* 14: ResourceType */
  OptionalNameString       /* 15: DescriptorName */
  OptionalBuffer_Last      /* 16: VendorData */
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren (<n>3,9,
                                $4,$6,$8,$10,$11,$13,$14,$15,$16);}
| PARSEOP_PINGROUPCONFIG

```

```

    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

PinGroupFunctionTerm
: PARSEOP_PINGROUPFUNCTION
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPFUNCTION);}
  OptionalShareType_First /* 04: SharedType */
  ',' WordConstExpr       /* 06: FunctionNumber */
  ',' StringData          /* 08: ResourceSource */
  OptionalByteConstExpr   /* 09: ResourceSourceIndex */
  ',' StringData          /* 11: ResourceSourceLabel */
  OptionalResourceType     /* 12: ResourceType */
  OptionalNameString       /* 13: DescriptorName */
  OptionalBuffer_Last     /* 14: VendorData */
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,8,
                                     $4,$6,$8,$9,$11,$12,$13,$14);}
| PARSEOP_PINGROUPFUNCTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

QWordIOTerm
: PARSEOP_QWORDIO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString
  OptionalType
  OptionalTranslationType_Last
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,15,
                                     $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_QWORDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

QWordMemoryTerm
: PARSEOP_QWORDMEMORY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  OptionalMemType
  ';' OptionalReadWriteKeyword
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString
  OptionalAddressRange
  OptionalType_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,16,
                                $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
| PARSEOP_QWORDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

QWordSpaceTerm
: PARSEOP_QWORDSPACE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDSPACE);}
  ByteConstExpr           {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType

```

```

OptionalMaxType
  ';' ByteConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  ';' QWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,14,
                                $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_QWORDSPACE
  PARSEOP_OPEN_PAREN

```

```

error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

RegisterTerm
: PARSEOP_REGISTER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_REGISTER);}
  AddressSpaceKeyword
  ',' ByteConstExpr
  ',' ByteConstExpr
  ',' QWordConstExpr
  OptionalAccessSize
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$11,$12);}
| PARSEOP_REGISTER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  {$$ = AslDoError(); yyclearin;}
;

```

SpiSerialBusTerm

```

: PARSEOP_SPI_SERIALBUS
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS);}
  WordConstExpr           /* 04: DeviceSelection */
  OptionalDevicePolarity  /* 05: DevicePolarity */
  OptionalWireMode        /* 06: WireMode */
  ',' ByteConstExpr       /* 08: DataBitLength */
  OptionalSlaveMode       /* 09: SlaveMode */
  ',' DWordConstExpr      /* 11: ConnectionSpeed */
  ',' ClockPolarityKeyword /* 13: ClockPolarity */
  ',' ClockPhaseKeyword   /* 15: ClockPhase */
  ',' StringData          /* 17: ResourceSource */
  OptionalByteConstExpr   /* 18: ResourceSourceIndex */
  OptionalResourceType    /* 19: ResourceType */
  OptionalNameString      /* 20: DescriptorName */
  OptionalBuffer_Last     /* 21: VendorData */
  PARSEOP_CLOSE_PAREN
  {$$ = TrLinkOpChildren ($<n>3,14,
                          $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,
                          TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
| PARSEOP_SPI_SERIALBUS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

SpiSerialBusTermV2

```

: PARSEOP_SPI_SERIALBUS_V2
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS_V2);}
  WordConstExpr           /* 04: DeviceSelection */

```

```

OptionalDevicePolarity /* 05: DevicePolarity */
OptionalWireMode /* 06: WireMode */
',' ByteConstExpr /* 08: DataBitLength */
OptionalSlaveMode /* 09: SlaveMode */
',' DWordConstExpr /* 11: ConnectionSpeed */
',' ClockPolarityKeyword /* 13: ClockPolarity */
',' ClockPhaseKeyword /* 15: ClockPhase */
',' StringData /* 17: ResourceSource
*/
OptionalByteConstExpr /* 18: ResourceSourceIndex */
OptionalResourceType /* 19: ResourceType */
OptionalNameString /* 20: DescriptorName */
OptionalShareType /* 21: Share */
OptionalBuffer_Last /* 22: VendorData */
PARSEOP_CLOSE_PAREN {$$ = TrLinkOpChildren ($<n>3,14,
                    $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
| PARSEOP_SPI_SERIALBUS_V2
PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

StartDependentFnNoPriTerm
: PARSEOP_STARTDEPENDENTFN_NOPRI
  PARSEOP_OPEN_PAREN {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN_NOPRI);}
  PARSEOP_CLOSE_PAREN '{'
  ResourceMacroList '}' {$$ = TrLinkOpChildren ($<n>3,1,$6);}
| PARSEOP_STARTDEPENDENTFN_NOPRI
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

StartDependentFnTerm
: PARSEOP_STARTDEPENDENTFN
  PARSEOP_OPEN_PAREN {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN);}
  ByteConstExpr
  ',' ByteConstExpr
  PARSEOP_CLOSE_PAREN '{'
  ResourceMacroList '}' {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$9);}
| PARSEOP_STARTDEPENDENTFN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

UartSerialBusTerm
: PARSEOP_UART_SERIALBUS
  PARSEOP_OPEN_PAREN {$<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS);}
  DWordConstExpr /* 04: ConnectionSpeed */

```



```

OptionalBitsPerByte    /* 05: BitsPerByte */
OptionalStopBits      /* 06: StopBits */
',' ByteConstExpr     /* 08: LinesInUse */
OptionalEndian        /* 09: Endianness */
OptionalParityType    /* 10: Parity */
OptionalFlowControl   /* 11: FlowControl */
',' WordConstExpr
/* 13: Rx BufferSize */
',' WordConstExpr     /* 15: Tx BufferSize */
',' StringData        /* 17: ResourceSource */
OptionalByteConstExpr /* 18: ResourceSourceIndex */
OptionalResourceType  /* 19: ResourceType */
OptionalNameString    /* 20: DescriptorName */
OptionalBuffer_Last   /* 21: VendorData */
PARSEOP_CLOSE_PAREN   { $$ = TrLinkOpChildren ($<n>3,15,
                    $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,
                    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
| PARSEOP_UART_SERIALBUS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN { $$ = AslDoError(); yyclearin;}
;

UartSerialBusTermV2
: PARSEOP_UART_SERIALBUS_V2
  PARSEOP_OPEN_PAREN   { $<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS_V2);}
  DWordConstExpr      /* 04: ConnectionSpeed */
  OptionalBitsPerByte
  /* 05: BitsPerByte */
  OptionalStopBits    /* 06: StopBits */
  ',' ByteConstExpr   /* 08: LinesInUse */
  OptionalEndian      /* 09: Endianness */
  OptionalParityType  /* 10: Parity */
  OptionalFlowControl /* 11: FlowControl */
  ',' WordConstExpr   /* 13: Rx BufferSize */
  ',' WordConstExpr   /* 15: Tx BufferSize */
  ',' StringData      /* 17: ResourceSource */
  OptionalByteConstExpr /* 18: ResourceSourceIndex */
  OptionalResourceType /* 19: ResourceType */
  OptionalNameString  /* 20: DescriptorName */
  OptionalShareType   /* 21: Share */
  OptionalBuffer_Last /* 22: VendorData */
  PARSEOP_CLOSE_PAREN { $$ = TrLinkOpChildren ($<n>3,15,
                    $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
| PARSEOP_UART_SERIALBUS_V2
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN { $$ = AslDoError(); yyclearin;}
;

```

VendorLongTerm

```
: PARSEOP_VENDORLONG
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORLONG);}
  OptionalNameString_First
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_VENDORLONG
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

VendorShortTerm

```
: PARSEOP_VENDORSHORT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORSHORT);}
  OptionalNameString_First
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_VENDORSHORT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

WordBusNumberTerm

```
: PARSEOP_WORDBUSNUMBER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WORDBUSNUMBER);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,12,
    $4,$5,$6,$7,$9,$11,$13,$15,$17,$18,$19,$20);}
| PARSEOP_WORDBUSNUMBER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

WordIOTerm

```
: PARSEOP_WORDIO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WORDIO);}
  OptionalResourceType_First
```

```

OptionalMinType
OptionalMaxType
OptionalDecodeType
OptionalRangeType
'| WordConstExpr
'| WordConstExpr
'| WordConstExpr
'| WordConstExpr
'| WordConstExpr
OptionalByteConstExpr
OptionalStringData
OptionalNameString
OptionalType
OptionalTranslationType_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_WORDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

WordSpaceTerm

```

: PARSEOP_WORDSAPCE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_WORDSAPCE);}
  ByteConstExpr        {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  '| ByteConstExpr
  '| WordConstExpr
  '| WordConstExpr
  '| WordConstExpr
  '| WordConstExpr
  '| WordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN
    {$$ = TrLinkOpChildren ($<n>3,14,
                          $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_WORDSAPCE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

20200110/source/compiler/aslresources.y

No license file was found, but licenses were detected in source scan.

```
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/*****
*
* Module Name: aslcompiler.l - Flex/lex input file
*
*****/

/*****
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*
*****/

```

```

#include "aslcompiler.h"
#include "aslcompiler.y.h"
#include "acconvert.h"

```

```

#include <stdlib.h>
#include <string.h>
YYSTYPE AslCompilerlval;

```

```

/*
* Generation: Use the following command line:
*
* flex.exe -PAslCompiler -i -o$(InputPath).c $(InputPath)
*
* -i: Scanner must be case-insensitive
*/

```

```

#define _COMPONENT      ACPI_COMPILER
        ACPI_MODULE_NAME  ("aslscanner")

```

```

/* Local prototypes */

```

```

static void
AslDoLineDirective (void);

```

```

static BOOLEAN
AslDoComment (void);

```

```

static BOOLEAN
AslDoCommentType2 (void);

static char
AslDoStringLiteral (void);

static void
count
(int type);

/*! [Begin] no source code translation */

% }
/* Definitions */

LeadNameChar      [A-Za-z_]
DigitChar          [0-9]
OctalChar          [0-7]
HexDigitChar      [A-Fa-f0-9]
RootChar           [\]
Nothing            []

NameChar           [A-Za-z_0-9]
NameSeg1           {LeadNameChar}{NameChar}
NameSeg2           {LeadNameChar}{NameChar}{NameChar}
NameSeg3           {LeadNameChar}{NameChar}{NameChar}{NameChar}
NameSeg            {LeadNameChar}{{NameSeg1}}{{NameSeg2}}{{NameSeg3}}

NameString         {RootChar}{{RootChar}{NamePath}}[^\^+{NamePath}]{NonEmptyNamePath}
NamePath           {NonEmptyNamePath}?
NonEmptyNamePath  {NameSeg}{NamePathTail}*
NamePathTail      [.]{{NameSeg}}

%%
/* Rules */

[]                { count (0); }
[\n]              { count (0); } /* Handle files with both LF and CR/LF */
[\r]
                  { count (0); } /* termination on both Unix and Windows */
[ \t]             { count (0); }

"/*"              { if (!AslDoComment ()) {yyterminate ();} }
"//"              { if (!AslDoCommentType2 ()) {yyterminate ();} }

"\""              { if (AslDoStringLiteral ()) {return (PARSEOP_STRING_LITERAL);} }

```



```

        else {yyterminate ();} }
", "
        { count (0); return(';'); }

/* ASL Extension: Standard C operators */

"~"
        { count (3); return (PARSEOP_EXP_NOT); }
"! "
        { count (3); return (PARSEOP_EXP_LOGICAL_NOT); }
"* "
        { count (3); return (PARSEOP_EXP_MULTIPLY); }
"/ "
        { count (3); return (PARSEOP_EXP_DIVIDE); }
"% "
        { count (3); return (PARSEOP_EXP_MODULO); }
"+ "
        { count (3); return (PARSEOP_EXP_ADD); }
"- "
        { count (3); return
(PARSEOP_EXP_SUBTRACT); }
">>"
        { count (3); return (PARSEOP_EXP_SHIFT_RIGHT); }
"<<"
        { count (3); return (PARSEOP_EXP_SHIFT_LEFT); }
"<"
        { count (3); return (PARSEOP_EXP_LESS); }
">"
        { count (3); return (PARSEOP_EXP_GREATER); }
"&"
        { count (3); return (PARSEOP_EXP_AND); }
"<="
        { count (3); return (PARSEOP_EXP_LESS_EQUAL); }
">="
        { count (3); return (PARSEOP_EXP_GREATER_EQUAL); }
"=="
        { count (3); return (PARSEOP_EXP_EQUAL); }
"!="
        { count (3); return (PARSEOP_EXP_NOT_EQUAL); }
"|"
        { count (3); return (PARSEOP_EXP_OR); }
"&&"
        { count (3); return (PARSEOP_EXP_LOGICAL_AND); }
"||"
        { count (3); return (PARSEOP_EXP_LOGICAL_OR); }
"++"
        { count (3); return (PARSEOP_EXP_INCREMENT); }
"--"
        { count (3); return (PARSEOP_EXP_DECREMENT); }
"^ "
        { count (3); return (PARSEOP_EXP_XOR); }

/* ASL Extension: Standard C assignment operators */

"="
        { count (3); return (PARSEOP_EXP_EQUALS); }
"+="
        { count (3); return (PARSEOP_EXP_ADD_EQ); }
"-="
        { count (3); return (PARSEOP_EXP_SUB_EQ); }
"*="
        { count (3); return (PARSEOP_EXP_MUL_EQ); }
"/="
        { count (3); return (PARSEOP_EXP_DIV_EQ); }
"%="
        { count (3); return (PARSEOP_EXP_MOD_EQ); }
"<<="
        { count (3); return (PARSEOP_EXP_SHL_EQ); }
">>="
        { count (3); return (PARSEOP_EXP_SHR_EQ); }
"&="
        { count (3); return (PARSEOP_EXP_AND_EQ); }
"^="
        { count (3); return (PARSEOP_EXP_XOR_EQ); }
"|="
        { count (3); return (PARSEOP_EXP_OR_EQ); }

"["
        { count (3); return (PARSEOP_EXP_INDEX_LEFT); }
"]"
        { count (0); return (PARSEOP_EXP_INDEX_RIGHT); }
"("
        { count (0); return (PARSEOP_OPEN_PAREN); }

```

```

")"          { count (0); return (PARSEOP_CLOSE_PAREN); }

"{"         { count (0); return ('{'); }
"}"        { count (0); return ('}'); }
";"        { count (0); return (','); }

/*
 * Begin standard ASL grammar
 */
[0-9][a-zA-Z0-9]*      { AslCompilerIval.i = UtDoConstant ((char *) AslCompilerText);
                        count (1); return (PARSEOP_INTEGER); }

"Include"      { count (1); return (PARSEOP_INCLUDE); }
"External"     { count (1); return (PARSEOP_EXTERNAL); }

/*
 * The #line directive is emitted by the preprocessor and handled
 * here in the main iASL lexer - simply set the line number and
 * optionally the current filename.
 */
"#line"
    { AslDoLineDirective ();}

/*****
 *
 * Main ASL operators
 *
 *****/

"AccessAs"    { count (1); return (PARSEOP_ACCESSAS); }
"Acquire"     { count (3); return (PARSEOP_ACQUIRE); }
"Add"         { count (3); return (PARSEOP_ADD); }
"Alias"       { count (2); return (PARSEOP_ALIAS); }
"And"         { count (3); return (PARSEOP_AND); }
"BankField"   { count (2); return (PARSEOP_BANKFIELD); }
"Break"       { count (3); return (PARSEOP_BREAK); }
"BreakPoint"  { count (3); return (PARSEOP_BREAKPOINT); }
"Buffer"      { count (1); return (PARSEOP_BUFFER); }
"Case"        { count (3); return (PARSEOP_CASE); }
"Concatenate" { count (3); return (PARSEOP_CONCATENATE); }
"ConcatenateResTemplate"
    { count (3); return (PARSEOP_CONCATENATERESTEMPLATE); }
"CondRefOf"   { count (3); return (PARSEOP_CONDREFOF); }
"Connection"  { count (2); return (PARSEOP_CONNECTION); }
"Continue"    { count (3); return (PARSEOP_CONTINUE); }
"CopyObject"  { count (3); return (PARSEOP_COPYOBJECT); }

```

```

"CreateBitField"      { count (2); return (PARSEOP_CREATEBITFIELD); }
"CreateByteField"    { count (2); return (PARSEOP_CREATEBYTEFIELD); }
"CreateDWordField"   { count (2); return (PARSEOP_CREATEDWORDFIELD); }
"CreateField"        { count (2); return (PARSEOP_CREATEFIELD); }
"CreateQWordField"   { count (2); return (PARSEOP_CREATEQWORDFIELD); }
"CreateWordField"    { count (2); return (PARSEOP_CREATEWORDFIELD); }
"DataTableRegion"    { count (2); return (PARSEOP_DATATABLEREGION); }
"Debug"              { count (1); return (PARSEOP_DEBUG); }
"Decrement"          { count (3);
return (PARSEOP_DECREMENT); }
"Default"            { count (3); return (PARSEOP_DEFAULT); }
"DefinitionBlock"    { count (1); return (PARSEOP_DEFINITION_BLOCK); }
"DeRefOf"            { count (3); return (PARSEOP_DEREOF); }
"Device"              { count (2); return (PARSEOP_DEVICE); }
"Divide"              { count (3); return (PARSEOP_DIVIDE); }
"Eisaid"              { count (1); return (PARSEOP_EISAID); }
"Else"                { count (3); return (PARSEOP_ELSE); }
"ElseIf"             { count (3); return (PARSEOP_ELSEIF); }
"Event"               { count (2); return (PARSEOP_EVENT); }
"Fatal"               { count (3); return (PARSEOP_FATAL); }
"Field"               { count (2); return (PARSEOP_FIELD); }
"FindSetLeftBit"     { count (3); return (PARSEOP_FINDSETLEFTBIT); }
"FindSetRightBit"    { count (3); return (PARSEOP_FINDSETRIGHTBIT); }
"FromBcd"             { count (3); return (PARSEOP_FROMBCD);
}
"Function"            { count (2); return (PARSEOP_FUNCTION); }
"If"                  { count (3); return (PARSEOP_IF); }
"Increment"           { count (3); return (PARSEOP_INCREMENT); }
"Index"               { count (3); return (PARSEOP_INDEX); }
"IndexField"         { count (2); return (PARSEOP_INDEXFIELD); }
"LAnd"                { count (3); return (PARSEOP_LAND); }
"LEqual"              { count (3); return (PARSEOP_LEQUAL); }
"LGreater"           { count (3); return (PARSEOP_LGREATER); }
"LGreaterEqual"      { count (3); return (PARSEOP_LGREATEREQUAL); }
"LLess"               { count (3); return (PARSEOP_LLESS); }
"LLessEqual"         { count (3); return (PARSEOP_LLESSEQUAL); }
"LNot"                { count (3); return (PARSEOP_LNOT); }
"LNotEqual"          { count (3); return (PARSEOP_LNOTEQUAL); }
"Load"                { count (3); return (PARSEOP_LOAD); }
"LoadTable"          { count (3); return (PARSEOP_LOADTABLE); }
"LOr"                 { count (3); return (PARSEOP_LOR); }
"Match"               { count (3); return (PARSEOP_MATCH); }
"Method"              { count (2); return (PARSEOP_METHOD); }
"Mid"                 { count (3); return (PARSEOP_MID); }
"Mod"                 { count (3); return (PARSEOP_MOD); }
"Multiply"            { count (3); return (PARSEOP_MULTIPLY); }
"Mutex"               { count (2); return (PARSEOP_MUTEX); }

```

```

>Name"           { count (2); return (PARSEOP_NAME); }
"NAnd"          { count (3); return (PARSEOP_NAND); }
"Noop"          { if (!AcpiGbl_IgnoreNoopOperator) {count (3); return (PARSEOP_NOOP);} }
"NOR"           { count (3); return (PARSEOP_NOR); }
"Not"           { count (3); return (PARSEOP_NOT); }
"Notify"        { count (3); return (PARSEOP_NOTIFY); }
"ObjectType"    { count (3); return (PARSEOP_OBJECTTYPE);
}
"Offset"        { count (1); return (PARSEOP_OFFSET); }
"One"           { count (1); return (PARSEOP_ONE); }
"Ones"          { count (1); return (PARSEOP_ONES); }
"OperationRegion" { count (2); return (PARSEOP_OPERATIONREGION); }
"Or"            { count (3); return (PARSEOP_OR); }
"Package"       { count (1); return (PARSEOP_PACKAGE); }
"PowerResource" { count (2); return (PARSEOP_POWERRESOURCE); }
"Processor"     { count (2); return (PARSEOP_PROCESSOR); }
"RefOf"         { count (3); return (PARSEOP_REFOF); }
"Release"       { count (3); return (PARSEOP_RELEASE); }
"Reset"         { count (3); return (PARSEOP_RESET); }
"Return"        { count (3); return (PARSEOP_RETURN); }
"Revision"      { count (1); return (PARSEOP_REVISION); }
"Scope"        { count (2); return (PARSEOP_SCOPE); }
"ShiftLeft"    { count (3); return (PARSEOP_SHIFTLEFT); }
"ShiftRight"   { count (3); return (PARSEOP_SHIFTRIGHT); }
"Signal"        { count (3); return (PARSEOP_SIGNAL); }
"SizeOf"        { count (3); return (PARSEOP_SIZEOF); }
"Sleep"         { count (3); return (PARSEOP_SLEEP); }
"Stall"         { count (3); return (PARSEOP_STALL); }
"Store"         { count (3); return (PARSEOP_STORE); }
"Subtract"     { count (3); return (PARSEOP_SUBTRACT); }
"Switch"        { count (3); return (PARSEOP_SWITCH); }
"ThermalZone"  { count (2); return (PARSEOP_THERMALZONE); }
"Timer"         { count (3); return (PARSEOP_TIMER); }
"ToBcd"         { count (3); return (PARSEOP_TOBCD); }
"ToBuffer"      { count (3); return (PARSEOP_TOBUFFER); }
"ToDecimalString" { count (3); return (PARSEOP_TODECIMALSTRING); }
"ToHexString"   { count (3); return
(PARSEOP_TOHEXSTRING); }
"ToInteger"     { count (3); return (PARSEOP_TOINTEGER); }
"ToString"     { count (3); return (PARSEOP_TOSTRING); }
"ToUuid"       { count (1); return (PARSEOP_TOUUID); }
"Unicode"      { count (1); return (PARSEOP_UNICODE); }
"Unload"       { count (3); return (PARSEOP_UNLOAD); }
"Wait"         { count (3); return (PARSEOP_WAIT); }
"While"        { count (3); return (PARSEOP_WHILE); }
"XOr"          { count (3); return (PARSEOP_XOR); }
"Zero"         { count (1); return (PARSEOP_ZERO); }

```

```

/* Control method arguments and locals */

"Arg0"          { count (1); return (PARSEOP_ARG0); }
"Arg1"          { count (1); return (PARSEOP_ARG1); }
"Arg2"          { count (1); return (PARSEOP_ARG2); }
"Arg3"          { count (1); return (PARSEOP_ARG3); }
"Arg4"          { count (1); return (PARSEOP_ARG4);
}
"Arg5"          { count (1); return (PARSEOP_ARG5); }
"Arg6"          { count (1); return (PARSEOP_ARG6); }
"Local0"        { count (1); return (PARSEOP_LOCAL0); }
"Local1"        { count (1); return (PARSEOP_LOCAL1); }
"Local2"        { count (1); return (PARSEOP_LOCAL2); }
"Local3"        { count (1); return (PARSEOP_LOCAL3); }
"Local4"        { count (1); return (PARSEOP_LOCAL4); }
"Local5"        { count (1); return (PARSEOP_LOCAL5); }
"Local6"        { count (1); return (PARSEOP_LOCAL6); }
"Local7"        { count (1); return (PARSEOP_LOCAL7); }

/*****
*
* Resource Descriptor macros
*
*****/

"ResourceTemplate"    { count (1); return (PARSEOP_RESOURCETEMPLATE); }
"RawDataBuffer"      { count
(1); return (PARSEOP_DATABUFFER); }

"DMA"                { count (1); return (PARSEOP_DMA); }
"DWordIO"            { count (1); return (PARSEOP_DWORDIO); }
"DWordMemory"        { count (1); return (PARSEOP_DWORDMEMORY); }
"DWordSpace"         { count (1); return (PARSEOP_DWORDSPACE); }
"EndDependentFn"     { count (1); return (PARSEOP_ENDDEPENDENTFN); }
"ExtendedIO"         { count (1); return (PARSEOP_EXTENDEDIO); }
"ExtendedMemory"     { count (1); return (PARSEOP_EXTENDEDMEMORY); }
"ExtendedSpace"      { count (1); return (PARSEOP_EXTENDEDSPACE); }
"FixedDma"           { count (1); return (PARSEOP_FIXEDDMA); }
"FixedIO"            { count (1); return (PARSEOP_FIXEDIO); }
"GpioInt"            { count (1); return (PARSEOP_GPIO_INT); }
"GpioIo"             { count (1); return (PARSEOP_GPIO_IO); }
"I2cSerialBus"       { count (1); return (PARSEOP_I2C_SERIALBUS); }
"I2cSerialBusV2"
{ count (1); return (PARSEOP_I2C_SERIALBUS_V2); }
"Interrupt"          { count (1); return (PARSEOP_INTERRUPT); }
"IO"                 { count (1); return (PARSEOP_IO); }

```

```

"IRQ"                { count (1); return (PARSEOP_IRQ); }
"IRQNoFlags"        { count (1); return (PARSEOP_IRQNOFLAGS); }
"Memory24"          { count (1); return (PARSEOP_MEMORY24); }
"Memory32"          { count (1); return (PARSEOP_MEMORY32); }
"Memory32Fixed"     { count (1); return (PARSEOP_MEMORY32FIXED); }
"PinConfig"         { count (1); return (PARSEOP_PINCONFIG); }
"PinFunction"       { count (1); return (PARSEOP_PINFUNCTION); }
"PinGroup"          { count (1); return (PARSEOP_PINGROUP); }
"PinGroupConfig"    { count (1); return (PARSEOP_PINGROUPCONFIG); }
"PinGroupFunction"  { count (1); return (PARSEOP_PINGROUPFUNCTION); }
"QWordIO"           { count (1); return (PARSEOP_QWORDIO); }
"QWordMemory"       { count (1); return (PARSEOP_QWORDMEMORY); }
"QWordSpace"        { count (1); return (PARSEOP_QWORDSPACE); }
"Register"          { count (1); return (PARSEOP_REGISTER); }
"SpiSerialBus"      { count (1); return (PARSEOP_SPI_SERIALBUS); }
"SpiSerialBusV2"    { count (1); return (PARSEOP_SPI_SERIALBUS_V2); }
"StartDependentFn"  { count (1); return (PARSEOP_STARTDEPENDENTFN); }
"StartDependentFnNoPri" { count (1); return (PARSEOP_STARTDEPENDENTFN_NOPRI); }
"UartSerialBus"     { count (1); return (PARSEOP_UART_SERIALBUS); }
"UartSerialBusV2"   { count (1); return (PARSEOP_UART_SERIALBUS_V2); }
"VendorLong"        { count (1); return (PARSEOP_VENDORLONG); }
"VendorShort"       { count (1); return (PARSEOP_VENDORSHORT); }
"WordBusNumber"     { count (1); return (PARSEOP_WORDBUSNUMBER); }
"WordIO"            { count (1); return (PARSEOP_WORDIO); }
"WordSpace"         { count (1); return (PARSEOP_WORDSPACE); }
}

```

```

/*****
*
* Keywords used as arguments to ASL operators and macros
*
*****/

```

```

/* AccessAttribKeyword: Serial Bus Attributes (ACPI 5.0) */

```

```

"AttribQuick"       { count (0); return (PARSEOP_ACCESSATTRIB_QUICK); }
"AttribSendReceive" { count (0); return (PARSEOP_ACCESSATTRIB_SND_RCV); }
"AttribByte"        { count (0); return (PARSEOP_ACCESSATTRIB_BYTE); }
"AttribWord"        { count (0); return (PARSEOP_ACCESSATTRIB_WORD); }
"AttribBlock"       { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK); }
"AttribProcessCall" { count (0); return (PARSEOP_ACCESSATTRIB_WORD_CALL); }
"AttribBlockProcessCall" { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK_CALL); }

```

```

/* AccessAttribKeyword: Legacy synonyms for above (pre-ACPI 5.0) */

```

```

"SMBQuick"          { count (0); return

```

```

(PARSEOP_ACCESSATTRIB_QUICK); }
"SMBSendReceive"      { count (0); return (PARSEOP_ACCESSATTRIB_SND_RCV); }
"SMBByte"            { count (0); return (PARSEOP_ACCESSATTRIB_BYTE); }
"SMBWord"            { count (0); return (PARSEOP_ACCESSATTRIB_WORD); }
"SMBBlock"           { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK); }
"SMBProcessCall"     { count (0); return (PARSEOP_ACCESSATTRIB_WORD_CALL); }
"SMBBlockProcessCall" { count (0); return (PARSEOP_ACCESSATTRIB_BLOCK_CALL); }

```

/ AccessTypeKeyword: Field Access Types */*

```

"AnyAcc"              { count (0); return (PARSEOP_ACCESSTYPE_ANY); }
"ByteAcc"             { count (0); return (PARSEOP_ACCESSTYPE_BYTE); }
"WordAcc"             { count (0); return (PARSEOP_ACCESSTYPE_WORD); }
"DWordAcc"           { count (0); return (PARSEOP_ACCESSTYPE_DWORD); }
"QWordAcc"           { count (0); return (PARSEOP_ACCESSTYPE_QWORD); }
"BufferAcc"          { count (0);
return (PARSEOP_ACCESSTYPE_BUF); }

```

/ AddressingModeKeyword: Mode - Resource Descriptors (ACPI 5.0) */*

```

"AddressingMode7Bit"  { count (0); return (PARSEOP_ADDRESSINGMODE_7BIT); }
"AddressingMode10Bit" { count (0); return (PARSEOP_ADDRESSINGMODE_10BIT); }

```

/ AddressKeyword: ACPI memory range types */*

```

"AddressRangeMemory"  { count (0); return (PARSEOP_ADDRESSTYPE_MEMORY); }
"AddressRangeReserved" { count (0); return (PARSEOP_ADDRESSTYPE_RESERVED); }
"AddressRangeNVS"     { count (0); return (PARSEOP_ADDRESSTYPE_NV); }
"AddressRangeACPI"    { count (0); return (PARSEOP_ADDRESSTYPE_ACPI); }

```

/ BusMasterKeyword: DMA Bus Mastering */*

```

"BusMaster"          { count (0); return (PARSEOP_BUSMASTERTYPE_MASTER); }
"NotBusMaster"       { count (0); return (PARSEOP_BUSMASTERTYPE_NOTMASTER); }

```

/ ByteLengthKeyword: Bits per Byte - Resource Descriptors (ACPI 5.0) */*

```

"DataBitsFive"       { count (0); return (PARSEOP_BITSPERBYTE_FIVE);
}
"DataBitsSix"        { count (0); return (PARSEOP_BITSPERBYTE_SIX); }
"DataBitsSeven"      { count (0); return (PARSEOP_BITSPERBYTE_SEVEN); }
"DataBitsEight"      { count (0); return (PARSEOP_BITSPERBYTE_EIGHT); }
"DataBitsNine"       { count (0); return (PARSEOP_BITSPERBYTE_NINE); }

```

/ ClockPhaseKeyword: Resource Descriptors (ACPI 5.0) */*

```

"ClockPhaseFirst"    { count (0); return (PARSEOP_CLOCKPHASE_FIRST); }
"ClockPhaseSecond"   { count (0); return (PARSEOP_CLOCKPHASE_SECOND); }

```

```

/* ClockPolarityKeyword: Resource Descriptors (ACPI 5.0) */

"ClockPolarityLow"    { count (0); return (PARSEOP_CLOCKPOLARITY_LOW); }
"ClockPolarityHigh"  { count (0); return (PARSEOP_CLOCKPOLARITY_HIGH); }

/* DecodeKeyword: Type of Memory Decoding - Resource Descriptors */

"PosDecode"          { count (0); return (PARSEOP_DECODETYPE_POS); }
"SubDecode"          { count (0); return (PARSEOP_DECODETYPE_SUB); }

/* DmaTypeKeyword: DMA Types - DMA Resource Descriptor */

"Compatibility"      { count (0); return (PARSEOP_DMATYPE_COMPATIBILITY); }
"TypeA"              { count (0); return (PARSEOP_DMATYPE_A); }
"TypeB"              { count (0); return (PARSEOP_DMATYPE_B); }
"TypeF"              { count (0); return (PARSEOP_DMATYPE_F); }

/* EndianKeyword: Endian type - Resource Descriptor (ACPI 5.0) */

"LittleEndian"       { count (0); return (PARSEOP_ENDIAN_LITTLE); }
"BigEndian"          { count (0); return (PARSEOP_ENDIAN_BIG); }

/* ExtendedAttribKeyword: Bus attributes, AccessAs operator (ACPI 5.0) */

"AttribBytes"        { count (0); return (PARSEOP_ACCESSATTRIB_BYTES); }
"AttribRawBytes"     { count (0); return (PARSEOP_ACCESSATTRIB_RAW_BYTES); }
"AttribRawProcessBytes" { count (0); return (PARSEOP_ACCESSATTRIB_RAW_PROCESS); }

/* FlowControlKeyword: Resource Descriptors (ACPI 5.0) */

"FlowControlHardware"
{ count (0); return (PARSEOP_FLOWCONTROL_HW); }
"FlowControlNone"    { count (0); return (PARSEOP_FLOWCONTROL_NONE); }
"FlowControlXon"     { count (0); return (PARSEOP_FLOWCONTROL_SW); }

/* InterruptLevelKeyword: Interrupt Active Types */

"ActiveBoth"         { count (0); return (PARSEOP_INTLEVEL_ACTIVEBOTH); }
"ActiveHigh"         { count (0); return (PARSEOP_INTLEVEL_ACTIVEHIGH); }
"ActiveLow"          { count (0); return (PARSEOP_INTLEVEL_ACTIVELOW); }

/* InterruptTypeKeyword: Interrupt Types */

"Edge"               { count (0); return (PARSEOP_INTTYPE_EDGE); }
"Level"              { count (0); return (PARSEOP_INTTYPE_LEVEL); }

/* IoDecodeKeyword: Type of Memory Decoding - Resource Descriptors */

```



```

"Decode10"          { count (0); return (PARSEOP_IODECODETYPE_10); }
"Decode16"          { count (0); return (PARSEOP_IODECODETYPE_16); }

/* IoRestrictionKeyword: I/O Restriction - GPIO Resource Descriptors
(ACPI 5.0) */

"IoRestrictionNone"    { count (0); return (PARSEOP_IORESTRICT_NONE); }
"IoRestrictionInputOnly" { count (0); return (PARSEOP_IORESTRICT_IN); }
"IoRestrictionOutputOnly" { count (0); return (PARSEOP_IORESTRICT_OUT); }
"IoRestrictionNoneAndPreserve" { count (0); return (PARSEOP_IORESTRICT_PRESERVE); }

/* LockRuleKeyword: Global Lock use for Field Operator */

"Lock"                { count (0); return (PARSEOP_LOCKRULE_LOCK); }
"NoLock"               { count (0); return (PARSEOP_LOCKRULE_NOLOCK); }

/* MatchOpKeyword: Types for Match Operator */

"MTR"                  { count (0); return (PARSEOP_MATCHTYPE_MTR); }
"MEQ"                  { count (0); return (PARSEOP_MATCHTYPE_MEQ); }
"MLE"                  { count (0); return (PARSEOP_MATCHTYPE_MLE); }
"MLT"                  { count (0); return (PARSEOP_MATCHTYPE_MLT); }
"MGE"                  { count (0); return (PARSEOP_MATCHTYPE_MGE); }
"MGT"
    { count (0); return (PARSEOP_MATCHTYPE_MGT); }

/* MaxKeyword: Max Range Type - Resource Descriptors */

"MaxFixed"             { count (0); return (PARSEOP_MAXTYPE_FIXED); }
"MaxNotFixed"          { count (0); return (PARSEOP_MAXTYPE_NOTFIXED); }

/* MemTypeKeyword: Memory Types - Resource Descriptors */

"Cacheable"           { count (0); return (PARSEOP_MEMTYPE_CACHEABLE); }
"WriteCombining"      { count (0); return (PARSEOP_MEMTYPE_WRITECOMBINING); }
"Prefetchable"        { count (0); return (PARSEOP_MEMTYPE_PREFETCHABLE); }
"NonCacheable"        { count (0); return (PARSEOP_MEMTYPE_NONCACHEABLE); }

/* MinKeyword: Min Range Type - Resource Descriptors */

"MinFixed"             { count (0); return (PARSEOP_MINTYPE_FIXED); }
"MinNotFixed"          { count (0); return (PARSEOP_MINTYPE_NOTFIXED); }

/* ObjectTypeKeyword: ACPI Object Types */

"UnknownObj"          { count (0); return (PARSEOP_OBJECTTYPE_UNK); }
"IntObj"

```

```

        { count (0); return (PARSEOP_OBJECTTYPE_INT); }
"StrObj"          { count (0); return (PARSEOP_OBJECTTYPE_STR); }
"BuffObj"        { count (0); return (PARSEOP_OBJECTTYPE_BUF); }
"PkgObj"         { count (0); return (PARSEOP_OBJECTTYPE_PKG); }
"FieldUnitObj"  { count (0); return (PARSEOP_OBJECTTYPE_FLD); }
"DeviceObj"     { count (0); return (PARSEOP_OBJECTTYPE_DEV); }
"EventObj"      { count (0); return (PARSEOP_OBJECTTYPE_EVT); }
"MethodObj"     { count (0); return (PARSEOP_OBJECTTYPE_MTH); }
"MutexObj"      { count (0); return (PARSEOP_OBJECTTYPE_MTX); }
"OpRegionObj"   { count (0); return (PARSEOP_OBJECTTYPE_OPR); }
"PowerResObj"   { count (0); return (PARSEOP_OBJECTTYPE_POW); }
"ProcessorObj"  { count (0); return (PARSEOP_OBJECTTYPE_PRO); }
"ThermalZoneObj" { count (0); return (PARSEOP_OBJECTTYPE_THZ); }
"BuffFieldObj"  { count (0); return (PARSEOP_OBJECTTYPE_BFF); }
"DDBHandleObj"  { count (0); return (PARSEOP_OBJECTTYPE_DDB); }

/* ParityKeyword: Resource Descriptors (ACPI 5.0) */

"ParityTypeSpace" { count (0); return (PARSEOP_PARITYTYPE_SPACE); }
"ParityTypeMark"  { count (0); return (PARSEOP_PARITYTYPE_MARK); }
"ParityTypeOdd"   { count (0); return (PARSEOP_PARITYTYPE_ODD); }
"ParityTypeEven"  { count (0); return (PARSEOP_PARITYTYPE_EVEN); }
"ParityTypeNone"  { count (0); return (PARSEOP_PARITYTYPE_NONE); }

/* PinConfigKeyword: Pin Configuration - GPIO Resource Descriptors (ACPI 5.0) */

"PullDefault"    { count (0); return (PARSEOP_PIN_PULLDEFAULT); }
"PullUp"         { count (0); return (PARSEOP_PIN_PULLUP); }
"PullDown"       { count (0); return (PARSEOP_PIN_PULLDOWN); }
"PullNone"       { count (0); return (PARSEOP_PIN_NOPULL); }

/* PolarityKeyword: Resource Descriptors
(ACPI 5.0) */

"PolarityLow"    { count (0); return (PARSEOP_DEVICEPOLARITY_LOW); }
"PolarityHigh"   { count (0); return (PARSEOP_DEVICEPOLARITY_HIGH); }

/* RangeTypeKeyword: I/O Range Types - Resource Descriptors */

"ISAOnlyRanges" { count (0); return (PARSEOP_RANGETYPE_ISAONLY); }
"NonISAOnlyRanges" { count (0); return (PARSEOP_RANGETYPE_NONISAONLY); }
"EntireRange"   { count (0); return (PARSEOP_RANGETYPE_ENTIRE); }

/* ReadWriteKeyword: Memory Access Types - Resource Descriptors */

"ReadWrite"      { count (0); return (PARSEOP_READWRITETYPE_BOTH); }
"ReadOnly"       { count (0); return (PARSEOP_READWRITETYPE_READONLY); }

```

```

/* RegionSpaceKeyword: Operation Region Address Space Types */

"SystemIO"          { count (0); return (PARSEOP_REGIONSPACE_IO); }
"SystemMemory"     { count (0); return (PARSEOP_REGIONSPACE_MEM); }
"PCI_Config"       { count (0); return
(PARSEOP_REGIONSPACE_PCI); }
"EmbeddedControl"  { count (0); return (PARSEOP_REGIONSPACE_EC); }
"SMBus"            { count (0); return (PARSEOP_REGIONSPACE_SMBUS); }
"SystemCMOS"       { count (0); return (PARSEOP_REGIONSPACE_CMOS); }
"PciBarTarget"     { count (0); return (PARSEOP_REGIONSPACE_PCIBAR); }
"IPMI"             { count (0); return (PARSEOP_REGIONSPACE_IPMI); }
"GeneralPurposeIo" { count (0); return (PARSEOP_REGIONSPACE_GPIO); } /* ACPI 5.0 */
"GenericSerialBus" { count (0); return (PARSEOP_REGIONSPACE_GSBUS); } /* ACPI 5.0 */
"PlatformCommChannel" { count (0); return (PARSEOP_REGIONSPACE_PCC); } /* ACPI 5.0 */
"FFixedHW"         { count (0); return (PARSEOP_REGIONSPACE_FFIXEDHW); }

/* ResourceTypeKeyword: Resource Usage - Resource Descriptors */

"ResourceConsumer" { count (0); return (PARSEOP_RESOURCECTYPE_CONSUMER); }
"ResourceProducer" { count (0); return
(PARSEOP_RESOURCECTYPE_PRODUCER); }

/* SerializeRuleKeyword: Control Method Serialization */

"Serialized"       { count (0); return (PARSEOP_SERIALIZERULE_SERIAL); }
"NotSerialized"    { count (0); return (PARSEOP_SERIALIZERULE_NOTSERIAL); }

/* ShareTypeKeyword: Interrupt Sharing - Resource Descriptors */

"Shared"           { count (0); return (PARSEOP_SHARETYPE_SHARED); }
"Exclusive"        { count (0); return (PARSEOP_SHARETYPE_EXCLUSIVE); }
"SharedAndWake"    { count (0); return (PARSEOP_SHARETYPE_SHAREDWAKE); } /* ACPI 5.0 */
"ExclusiveAndWake" { count (0); return (PARSEOP_SHARETYPE_EXCLUSIVEWAKE); } /* ACPI 5.0
*/

/* SlaveModeKeyword: Resource Descriptors (ACPI 5.0) */

"ControllerInitiated" { count (0); return (PARSEOP_SLAVEMODE_CONTROLLERINIT); }
"DeviceInitiated"    { count (0); return (PARSEOP_SLAVEMODE_DEVICEINIT); }

/* StopBitsKeyword: Resource Descriptors (ACPI 5.0) */

"StopBitsOne"      { count (0); return (PARSEOP_STOPBITS_ONE); }
"StopBitsOnePlusHalf" { count (0); return (PARSEOP_STOPBITS_ONEPLUSHALF); }
"StopBitsTwo"      { count (0); return (PARSEOP_STOPBITS_TWO); }
"StopBitsZero"     { count (0); return (PARSEOP_STOPBITS_ZERO); }

```

```

/* TransferWidthKeyword: DMA Widths - Fixed DMA Resource Descriptor (ACPI 5.0) */

"Width8bit"          { count (0); return (PARSEOP_XFERSIZE_8); }
"Width16bit"         { count (0); return (PARSEOP_XFERSIZE_16); }
"Width32bit"         { count (0); return (PARSEOP_XFERSIZE_32); }
"Width64bit"         { count (0); return (PARSEOP_XFERSIZE_64); }
"Width128bit"        { count (0); return (PARSEOP_XFERSIZE_128); }
"Width256bit"        { count (0); return (PARSEOP_XFERSIZE_256); }

/* TranslationKeyword: Translation Density Types - Resource Descriptors */

"SparseTranslation"  { count (0); return (PARSEOP_TRANSLATIONTYPE_SPARSE); }
"DenseTranslation"  { count (0); return (PARSEOP_TRANSLATIONTYPE_DENSE); }

/* TypeKeyword: Translation Types - Resource Descriptors */

"TypeTranslation"    { count (0); return (PARSEOP_TYPE_TRANSLATION); }
"TypeStatic"         { count (0); return (PARSEOP_TYPE_STATIC); }

/* UpdateRuleKeyword: Field Update Rules */

"Preserve"           { count (0); return (PARSEOP_UPDATERULE_PRESERVE); }
"WriteAsOnes"        { count (0); return (PARSEOP_UPDATERULE_ONES); }
"WriteAsZeros"       { count (0); return (PARSEOP_UPDATERULE_ZEROS); }

/* WireModeKeyword: SPI Wire Mode - Resource Descriptors (ACPI 5.0) */

"FourWireMode"       { count (0); return (PARSEOP_WIREMODE_FOUR); }
"ThreeWireMode"      { count (0); return (PARSEOP_WIREMODE_THREE); }

/* XferTypeKeyword: DMA Transfer Types */

"Transfer8"           { count (0); return (PARSEOP_XFERTYPE_8); }
"Transfer8_16"        { count (0); return (PARSEOP_XFERTYPE_8_16); }
"Transfer16"          { count (0); return (PARSEOP_XFERTYPE_16); }

/* ToPld macro */

"TOPLD"              { count (0); return (PARSEOP_TOPLD); }

"PLD_Revision"       { count (0); return (PARSEOP_PLD_REVISION); }
"PLD_IgnoreColor"    { count (0); return (PARSEOP_PLD_IGNORECOLOR); }
"PLD_Red"            { count (0); return (PARSEOP_PLD_RED); }
"PLD_Green"          { count (0); return (PARSEOP_PLD_GREEN); }
"PLD_Blue"           { count (0); return (PARSEOP_PLD_BLUE); }

```

```

"PLD_Width"          { count (0); return (PARSEOP_PLD_WIDTH); }
"PLD_Height"         { count (0); return (PARSEOP_PLD_HEIGHT); }
"PLD_UserVisible"    { count (0); return (PARSEOP_PLD_USERVISIBLE); }
"PLD_Dock"           { count (0); return (PARSEOP_PLD_DOCK); }
"PLD_Lid"            { count (0); return (PARSEOP_PLD_LID); }
"PLD_Panel"          { count (0); return (PARSEOP_PLD_PANEL); }
"PLD_VerticalPosition" { count (0); return
(PARSEOP_PLD_VERTICALPOSITION); }
"PLD_HorizontalPosition" { count (0); return (PARSEOP_PLD_HORIZONTALPOSITION); }
"PLD_Shape"          { count (0); return (PARSEOP_PLD_SHAPE); }
"PLD_GroupOrientation" { count (0); return (PARSEOP_PLD_GROUPORIENTATION); }
"PLD_GroupToken"     { count (0); return (PARSEOP_PLD_GROUPTOKEN); }
"PLD_GroupPosition"  { count (0); return (PARSEOP_PLD_GROUPPOSITION); }
"PLD_Bay"            { count (0); return (PARSEOP_PLD_BAY); }
"PLD_Ejectable"      { count (0); return (PARSEOP_PLD_EJECTABLE); }
"PLD_EjectRequired"  { count (0); return (PARSEOP_PLD_EJECTREQUIRED); }
"PLD_CabinetNumber"  { count (0); return (PARSEOP_PLD_CABINETNUMBER); }
"PLD_CardCageNumber" { count (0); return (PARSEOP_PLD_CARDCAGENUMBER); }
"PLD_Reference"      { count (0); return (PARSEOP_PLD_REFERENCE); }
"PLD_Rotation"       { count (0); return (PARSEOP_PLD_ROTATION); }
"PLD_Order"          { count (0);
return (PARSEOP_PLD_ORDER); }
"PLD_Reserved"       { count (0); return (PARSEOP_PLD_RESERVED); }
"PLD_VerticalOffset" { count (0); return (PARSEOP_PLD_VERTICALOFFSET); }
"PLD_HorizontalOffset" { count (0); return (PARSEOP_PLD_HORIZONTALOFFSET); }

```

/* printf debug macros */

```

"printf"             { count (0); return (PARSEOP_PRINTF); }
"fprintf"            { count (0); return (PARSEOP_FPRINTF); }

```

/* Other macros */

```

"For"                { count (0); return (PARSEOP_FOR); }

```

/* Predefined compiler names */

```

"__DATE__"           { count (0); return (PARSEOP__DATE__); }
"__FILE__"           { count (0); return (PARSEOP__FILE__); }
"__LINE__"           { count (0); return (PARSEOP__LINE__); }
"__PATH__"           { count (0); return (PARSEOP__PATH__); }
"__METHOD__"         { count (0); return (PARSEOP__METHOD__); }

```

```

{NameSeg}            { char *s;
count (0);
s=UtLocalCacheCalloc (ACPI_NAMESEG_SIZE + 1);
if (strcmp (AslCompilerText, "\\"))

```

```

{
    /*
     * According to the ACPI specification,
     * NameSegments must have length of 4. If
     * the NameSegment has length less than 4,
     * they are padded with underscores to meet
     * the required length.
     */
    strcpy (s, "____");
    AcpiUtStrupr (AslCompilerText);
}
memcpy (s, AslCompilerText, strlen (AslCompilerText));
AslCompilerIval.s = s;
DbgPrint (ASL_PARSE_OUTPUT, "NameSeg:
%s\n", s);
return (PARSEOP_NAMESEG); }

{NameString}      { char *s;
                  count (0);
                  s=UtLocalCacheCalloc (strlen (AslCompilerText)+1);
                  AcpiUtStrupr (AslCompilerText);
                  strcpy (s, AslCompilerText);
                  AslCompilerIval.s = s;
                  DbgPrint (ASL_PARSE_OUTPUT, "NameString: %s\n", s);
                  return (PARSEOP_NAMESTRING); }

.
{ count (1);
  if (isprint ((int) *AslCompilerText))
  {
    sprintf (AslGbl_MsgBuffer,
            "Invalid character (%c), expecting ASL keyword or name",
            *AslCompilerText);
  }
  else
  {
    sprintf (AslGbl_MsgBuffer,
            "Invalid character (0x%2.2X), expecting ASL keyword or name",
            *AslCompilerText);
  }
  AslCompilerError (AslGbl_MsgBuffer); }

<<EOF>>      { if (AslPopInputFileStack ())
              {yyterminate();}
              else
              {return (PARSEOP_INCLUDE_END);} };

%%

```

```
/*! [End] no source code translation !*/
```

```
/*
```

```
* Bring in the scanner support routines
```

```
*/
```

```
#include "aslsupport.l"
```

```
Found in path(s):
```

```
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslcompiler.l
```

```
No license file was found, but licenses were detected in source scan.
```

```
%{
```

```
/*  
*****  
*/
```

```
* Module Name: dtcompilerparser.l - Flex input file for table compiler lexer
```

```
*/
```

```
*****  
/
```

```
/*  
*****  
*/
```

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 *
 *****/

```
#include "aslcompiler.h"
#include "dtcompilerparser.y.h"
```

```
YYSTYPE DtCompilerlval;
```

```
#define _COMPONENT      ACPI_COMPILER
      ACPI_MODULE_NAME  ("dtcompilerscanner")
```

```
/* handle locations */
```

```
int DtCompilerParsercolumn = 1;
int DtLabelByteOffset = 0;
int DtCompilerParserByteOffset = 0;
```

```
UINT32 DtTokenFirstLine = 0;
UINT32 DtTokenFirstColumn = 0;
```

```
#define YY_USER_ACTION \
      DtTokenFirstLine = DtCompilerParserlineno; \
      DtTokenFirstColumn = DtCompilerParsercolumn; \
      DtCompilerParsercolumn += DtCompilerParserleng; \
```

```

        DtCompilerParserByteOffset += DtCompilerParserleng; \
        DbgPrint (ASL_PARSE_OUTPUT,\
            "user action occurred. DtCompilerParserlloc.first_line: %u\n",\
            DtTokenFirstLine);
    % }

%option nounput noinput yylineno

/* Indicates a state used for parsing multiline C comments */
%x ML_COMMENT
%x DATA_STATE

WhiteSpace    [ \t\v\r]+
NewLines      [\n]+

/* Avoid ", \n, and [] as a part of label name. These are not valid characters of a label name */
LabelName     [^ "\n\[\]]( ["^ "\n\[\]]* ["^ "\n\[\]])?

/* Avoid ", \n, \, and [] as a part of data. These are not valid characters of data */
Data          [^ "\n\[\]]( ["^ "\n\[\]]* ["^ "\n\[\]]\])?

Text          [^ "\n][^ "\n]*
Comment       \[[^ "\n\[\]]*\]
CommentField  {LabelName} {WhiteSpace}* {WhiteSpace} {Comment} ?$

%%

<DATA_STATE>{ WhiteSpace} "\\n" {
    DbgPrint(ASL_PARSE_OUTPUT,"Continuation matched\n");
    return (DT_PARSEOP_LINE_CONTINUATION);
}

":"
{
    DbgPrint(ASL_PARSE_OUTPUT, ": Matched\n");
    BEGIN (DATA_STATE);
    return (');
}

<INITIAL,DATA_STATE>{ WhiteSpace} { DbgPrint(ASL_PARSE_OUTPUT,"Whitespace matched\n"); }

<INITIAL,DATA_STATE>{ Comment} { DbgPrint(ASL_PARSE_OUTPUT,"Comment matched\n"); }

"/*"          { BEGIN (ML_COMMENT); }
<ML_COMMENT>"*/"      { BEGIN (INITIAL); }
<ML_COMMENT>"*\n"     { BEGIN (INITIAL); }
<ML_COMMENT>([^\n]+|. /* Ignore */

```

```
"/".* /* Ignore */
```

```
<DATA_STATE>{Data} {  
    char *s;  
    int size = strlen (DtCompilerParsertext);  
    s=UtLocalCacheCalloc (size + 1);  
    AcpiUtSafeStrncpy (s, DtCompilerParsertext, size + 1);  
    DtCompilerParserlval.s = s;  
    DbgPrint (ASL_PARSE_OUTPUT, "Data: %s\n", s);  
    return (DT_PARSEOP_DATA);  
}
```

```
{CommentField} /* ignore */
```

```
{LabelName} {  
    char *s;  
    int size = strlen (DtCompilerParsertext);  
    s=UtLocalCacheCalloc (size + 1);  
    AcpiUtSafeStrncpy (s, DtCompilerParsertext,  
size + 1);  
    DtCompilerParserlval.u = (DT_TABLE_UNIT *) UtLocalCacheCalloc (sizeof (DT_TABLE_UNIT));  
    DtCompilerParserlval.u->Value = s;  
    DtCompilerParserlval.u->Line = DtCompilerParserlineno;  
    DtCompilerParserlval.u->Column = DtCompilerParsercolumn;  
    DtLabelByteOffset = DtCompilerParserByteOffset;  
    DbgPrint (ASL_PARSE_OUTPUT, "Label: %s\n", s);  
    return (DT_PARSEOP_LABEL);  
}
```

```
<DATA_STATE>\"{Text}?\" { // remove outer quotes from the string, they are unnecessary  
    char *s;  
    int size = strlen (DtCompilerParsertext);  
    s=UtLocalCacheCalloc (size - 1);  
    AcpiUtSafeStrncpy (s, DtCompilerParsertext + 1, size - 1);  
    DtCompilerParserlval.s = s;  
    DbgPrint (ASL_PARSE_OUTPUT, "String Data: %s\n", s);  
    BEGIN (INITIAL);  
    return (DT_PARSEOP_STRING_DATA);  
}
```

```
<INITIAL,DATA_STATE>{NewLines} {  
    DbgPrint(ASL_PARSE_OUTPUT,  
        "Newline matched (data state). Current line number: %u\n",DtCompilerParserlineno);  
    BEGIN (INITIAL); DtCompilerParsercolumn =
```

```

1;
}

%%

/*
 * Local support functions
 */

void
DtCompilerInitLexer (
    FILE      *inFile)
{
    yyin = inFile;
}

void
DtCompilerTerminateLexer (
    void)
{
    /*
     * Flex/Bison increments the lineno for the EOF so decrement by 1 to get
     * the correct number of lines.
     */
    AslGbl_CurrentLineNumber = DtCompilerParserlineno - 1;
    AslGbl_InputByteCount = DtCompilerParserByteOffset;
}

```

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtcompilerparser.l

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*
*****/
/*****
*
* SLIC - Software Licensing Description Table. This table contains the standard
* ACPI header followed by proprietary data structures
*
*****/

/* Single subtable, a proprietary format, so treat it as a buffer */

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmtbinfo3.c

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%{

/*

*/

* Module Name: dtparser.l - Flex input file for table compiler lexer

*

*/

/*

*/

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*****/

```

```

#include "aslcompiler.h"
#include "dtparser.y.h"

```

```

#define YY_NO_INPUT /* No file input, we use strings only */

```

```

#define _COMPONENT      ACPI_COMPILER
  ACPI_MODULE_NAME    ("dtscanner")
% }

```

```

%option noyywrap
%option nounput

```

```

Number      [0-9a-fA-F]+
HexNumber   0[xX][0-9a-fA-F]+
DecimalNumber 0[dD][0-9]+
LabelRef    ${a-zA-Z}[0-9a-zA-Z]*
WhiteSpace  [ \t\v\r]+
NewLine     [\n]

```

```

%%

```

```

\ (      return (OP_EXP_PAREN_OPEN);
\ )      return (OP_EXP_PAREN_CLOSE);
\ ~      return (OP_EXP_ONES_COMPLIMENT);
\ !

```

```

    return (OP_EXP_LOGICAL_NOT);
\*      return (OP_EXP_MULTIPLY);
\      return (OP_EXP_DIVIDE);
\%      return (OP_EXP_MODULO);
\+      return (OP_EXP_ADD);
\ -     return (OP_EXP_SUBTRACT);
">>"   return (OP_EXP_SHIFT_RIGHT);
"<<"   return (OP_EXP_SHIFT_LEFT);
\<     return (OP_EXP_LESS);
\>     return (OP_EXP_GREATER);
"<="   return (OP_EXP_LESS_EQUAL);
">="   return (OP_EXP_GREATER_EQUAL);
"=="   return (OP_EXP_EQUAL);
"!="   return (OP_EXP_NOT_EQUAL);
\&     return (OP_EXP_AND);
\^     return (OP_EXP_XOR);
\|     return (OP_EXP_OR);
"&&"   return (OP_EXP_LOGICAL_AND);
"||"   return (OP_EXP_LOGICAL_OR);
<<EOF>> return (OP_EXP_EOF); /* null end-of-string */

{LabelRef} return (OP_EXP_LABEL);
{Number}   return (OP_EXP_NUMBER);
{HexNumber} return (OP_EXP_HEX_NUMBER);
{NewLine}  return (OP_EXP_NEW_LINE);
{WhiteSpace}
    /* Ignore */

.        return (OP_EXP_EOF);

%%

/*
 * Local support functions
 */
YY_BUFFER_STATE LexBuffer;

/*****
 *
 * FUNCTION: DtInitLexer, DtTerminateLexer
 *
 * PARAMETERS: String - Input string to be parsed
 *
 * RETURN: None
 *
 * DESCRIPTION: Initialization and termination routines for lexer. Lexer needs
 * a buffer to handle strings instead of a file.
 */

```

*****/

```
int
DtInitLexer (
    char      *String)
{
    LexBuffer = yy_scan_string (String);
    return (LexBuffer == NULL);
}
```

```
void
DtTerminateLexer (
    void)
{
    yy_delete_buffer (LexBuffer);
}
```

Found in path(s):
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtparser.l

No license file was found, but licenses were detected in source scan.

```
% {
/*****/
*
* Module Name: prparser.y - Bison input file for preprocessor parser
*
*****/
```

```
/*****/
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*****/

```
#include "aslcompiler.h"

#define _COMPONENT      ASL_PREPROCESSOR
        ACPI_MODULE_NAME  ("prparser")

void *      AslLocalAllocate (unsigned int Size);

/* Bison/yacc configuration */

#undef alloca
#define alloca      AslLocalAllocate
```

```

int          PrParserlex (void);
int          PrParserparse (void);
void        PrParsererror (char const *msg);
extern char  *PrParsertext;

UINT64      PrParserResult; /* Expression return value */

/* Bison/yacc configuration
*/

#define yyname      PrParsername
#define YYDEBUG      1      /* Enable debug output */
#define YYERROR_VERBOSE 1      /* Verbose error messages */
#define YYFLAG      -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors */

#define YYMALLOC      malloc
#define YYFREE        free
% }

%union
{
    UINT64      value;
    UINT32      op;
    char        *str;
}

/*! [Begin] no source code translation */

%type <value> Expression

%token <op>      EXPOP_EOF
%token <op>      EXPOP_NEW_LINE
%token <op>      EXPOP_NUMBER
%token <op>      EXPOP_HEX_NUMBER
%token <op>      EXPOP_RESERVED1
%token <op>      EXPOP_RESERVED2
%token <op>      EXPOP_PAREN_OPEN
%token <op>      EXPOP_PAREN_CLOSE

%left <op>      EXPOP_LOGICAL_OR
%left <op>      EXPOP_LOGICAL_AND
%left <op>      EXPOP_OR
%left <op>      EXPOP_XOR
%left <op>      EXPOP_AND
%left <op>      EXPOP_EQUAL EXPOP_NOT_EQUAL

```

```

%left <op>
    EXPOP_GREATER EXPOP_LESS EXPOP_GREATER_EQUAL EXPOP_LESS_EQUAL
%left <op>  EXPOP_SHIFT_RIGHT EXPOP_SHIFT_LEFT
%left <op>  EXPOP_ADD EXPOP_SUBTRACT
%left <op>  EXPOP_MULTIPLY EXPOP_DIVIDE EXPOP_MODULO
%right <op> EXPOP_ONES_COMPLIMENT EXPOP_LOGICAL_NOT

/* Tokens above must be kept in synch with dtparser.y */

%token <op>  EXPOP_DEFINE
%token <op>  EXPOP_IDENTIFIER

%%

/*
* Operator precedence rules (from K&R)
*
* 1)  ( )
* 2)  ! ~ (unary operators that are supported here)
* 3)  * / %
* 4)  + -
* 5)  >> <<
* 6)  < > <= >=
* 7)  == !=
* 8)  &
* 9)  ^
* 10) |
* 11) &&
* 12) ||
*/

/*! [End] no source code translation !*/

Value
: Expression EXPOP_NEW_LINE          { PrParserResult=$1; return 0; } /* End of line (newline) */
| Expression EXPOP_EOF               { PrParserResult=$1; return 0; } /* End of string (0) */
;

Expression

/*
Unary operators */

: EXPOP_LOGICAL_NOT    Expression    { $$ = DtDoOperator ($2, EXPOP_LOGICAL_NOT,  $2);}
| EXPOP_ONES_COMPLIMENT Expression   { $$ = DtDoOperator ($2,
EXPOP_ONES_COMPLIMENT, $2);}

/* Binary operators */

```

```

| Expression EXPOP_MULTIPLY      Expression { $$ = DtDoOperator ($1, EXPOP_MULTIPLY,    $3);}
| Expression EXPOP_DIVIDE        Expression { $$ = DtDoOperator ($1, EXPOP_DIVIDE,      $3);}
| Expression EXPOP_MODULO        Expression { $$ = DtDoOperator ($1, EXPOP_MODULO,      $3);}
| Expression EXPOP_ADD           Expression { $$ = DtDoOperator ($1, EXPOP_ADD,          $3);}
| Expression EXPOP_SUBTRACT      Expression { $$ = DtDoOperator ($1, EXPOP_SUBTRACT,    $3);}
| Expression EXPOP_SHIFT_RIGHT   Expression { $$ = DtDoOperator ($1, EXPOP_SHIFT_RIGHT, $3);}
| Expression EXPOP_SHIFT_LEFT    Expression { $$ = DtDoOperator ($1, EXPOP_SHIFT_LEFT,
$3);}
| Expression EXPOP_GREATER       Expression { $$ = DtDoOperator ($1, EXPOP_GREATER,     $3);}
| Expression EXPOP_LESS          Expression { $$ = DtDoOperator ($1, EXPOP_LESS,        $3);}
| Expression EXPOP_GREATER_EQUAL Expression { $$ = DtDoOperator ($1,
EXPOP_GREATER_EQUAL, $3);}
| Expression EXPOP_LESS_EQUAL    Expression { $$ = DtDoOperator ($1, EXPOP_LESS_EQUAL,
$3);}
| Expression EXPOP_EQUAL         Expression { $$ = DtDoOperator ($1, EXPOP_EQUAL,        $3);}
| Expression EXPOP_NOT_EQUAL     Expression { $$ = DtDoOperator ($1, EXPOP_NOT_EQUAL,
$3);}
| Expression EXPOP_AND           Expression { $$ = DtDoOperator ($1, EXPOP_AND,          $3);}
| Expression EXPOP_XOR           Expression { $$ = DtDoOperator ($1, EXPOP_XOR,          $3);}
| Expression EXPOP_OR            Expression { $$ = DtDoOperator ($1, EXPOP_OR,            $3);}
| Expression EXPOP_LOGICAL_AND
Expression { $$ = DtDoOperator ($1, EXPOP_LOGICAL_AND,  $3);}
| Expression EXPOP_LOGICAL_OR    Expression { $$ = DtDoOperator ($1, EXPOP_LOGICAL_OR,
$3);}

/* Parentheses: '(' Expression ')' */

| EXPOP_PAREN_OPEN      Expression
  EXPOP_PAREN_CLOSE      { $$ = $2;}

/* #if defined (ID) or #if defined ID */

| EXPOP_DEFINE EXPOP_PAREN_OPEN EXPOP_IDENTIFIER
  EXPOP_PAREN_CLOSE      { $$ = PrIsDefined (PrParserlval.str);}

| EXPOP_DEFINE EXPOP_IDENTIFIER      { $$ = PrIsDefined (PrParserlval.str);}

| EXPOP_IDENTIFIER      { $$ = PrResolveDefine (PrParserlval.str);}

/* Default base for a non-prefixed integer is 10 */

| EXPOP_NUMBER          { AcpiUtStrtoul64 (PrParsertext, &$$);}

/* Standard hex number (0x1234) */

| EXPOP_HEX_NUMBER     { AcpiUtStrtoul64 (PrParsertext, &$$);}

```

```

;
%%

/*
 * Local support functions, including parser entry point
 */
#define PR_FIRST_PARSE_OPCODE EXPOP_EOF
#define PR_YYTNAME_START      3

/*****
 *
 * FUNCTION: PrParsererror
 *
 * PARAMETERS: Message          - Parser-generated error message
 *
 * RETURN:    None
 *
 * DESCRIPTION: Handler for parser errors
 *
 *****/

void
PrParsererror (
    char const      *Message)
{
    sprintf (AslGbl_StringBuffer, "Preprocessor Parser : %s (near line %u)",
            Message, AslGbl_CurrentLineNumber);
    DtError (ASL_ERROR, ASL_MSG_SYNTAX,
            NULL, (char *) AslGbl_StringBuffer);
}

/*****
 *
 * FUNCTION: PrGetOpName
 *
 * PARAMETERS: ParseOpcode      - Parser token (EXPOP_*)
 *
 * RETURN:    Pointer to the opcode name
 *
 * DESCRIPTION: Get
the ascii name of the parse opcode for debug output
 *
 *****/

char *

```

```

PrGetOpName (
    UINT32          ParseOpcode)
{
#ifdef ASL_YYTNAME_START
    /*
     * First entries (PR_YYTNAME_START) in yytname are special reserved names.
     * Ignore first 6 characters of name (EXPOP_)
     */
    return ((char *) yytname
        [(ParseOpcode - PR_FIRST_PARSE_OPCODE) + PR_YYTNAME_START] + 6);
#else
    return ("[Unknown parser generator]");
#endif
}

/*****
 *
 * FUNCTION:  PrEvaluateExpression
 *
 * PARAMETERS:  ExprString      - Expression to be evaluated. Must be
 *                               terminated by either a newline or a NUL
 *                               string terminator
 *
 * RETURN:      64-bit value for the expression
 *
 * DESCRIPTION: Main entry point for the DT expression parser
 *
 *****/

UINT64
PrEvaluateExpression
(
    char          *ExprString)
{
    DbgPrint (ASL_DEBUG_OUTPUT,
        "**** Input expression: %s\n", ExprString);

    /* Point lexer to the input string */

    if (PrInitLexer (ExprString))
    {
        DtError (ASL_ERROR, ASL_MSG_COMPILER_INTERNAL,
            NULL, "Could not initialize lexer");
        return (0);
    }
}

```

```

/* Parse/Evaluate the input string (value returned in PrParserResult) */

PrParserparse ();
PrTerminateLexer ();

DbgPrint (ASL_DEBUG_OUTPUT,
  "**** Parser returned value: %u (%8.8X%8.8X)\n",
  (UINT32) PrParserResult, ACPI_FORMAT_UINT64 (PrParserResult));

return (PrParserResult);
}

Found in path(s):
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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*****/

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nseval.c

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```

```

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/include/platform/acdragonfly.h
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```

```

/*****
*
* Module Name: aslsupport.l - Flex/lex scanner C support routines.

```

* NOTE: Included into aslcompile.l, not compiled by itself.
*
*****/

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*****/

/* Configuration */

#define ASL_SPACES_PER_TAB 4

#define ASL_NORMAL_CHAR 0

#define ASL_ESCAPE_SEQUENCE 1

#define ASL_OCTAL_CONSTANT 2

#define ASL_HEX_CONSTANT 3

void

yyerror (char const *s)

{

AcpiOsPrintf ("YYERROR: %s\n", s);

}

*****/

*

* FUNCTION: AslParserCleanup

*

* Used to delete the current buffer

*

*****/

void

AslParserCleanup

(

void)

{

yy_delete_buffer (YY_CURRENT_BUFFER);

}

*****/

```

*
* FUNCTION:  AslDoLineDirective
*
* PARAMETERS:  None. Uses input() to access current source code line
*
* RETURN:    Updates global line number and filename
*
* DESCRIPTION: Handle #line directives emitted by the preprocessor.
*
* The #line directive is emitted by the preprocessor, and is used to
* pass through line numbers from the original source code file to the
* preprocessor output file (.i). This allows any compiler-generated
* error messages to be displayed with the correct line number.
*
*****/

```

```

static void
AslDoLineDirective (
    void)
{
    int          c;
    char         *Token;
    UINT32      LineNumber;
    char         *Filename;
    UINT32      i;

    AslGbl_HasIncludeFiles = TRUE;

    /* Eat the entire line that contains the #line directive */

    AslGbl_LineBufPtr = AslGbl_CurrentLineBuffer;

    while ((c = input()) != '\n' && c != EOF)
    {
        *AslGbl_LineBufPtr = (char) c;
        AslGbl_LineBufPtr++;
    }
    *AslGbl_LineBufPtr = 0;

    /* First argument is the actual line number */

    Token = strtok (AslGbl_CurrentLineBuffer, " ");
    if (!Token)
    {
        goto ResetAndExit;
    }

    /* First argument is the line number */

```

```

LineNumber = (UINT32) UtDoConstant (Token);

/* Emit the appropriate number of newlines */

AslGbl_CurrentColumn = 0;
if (LineNumber > AslGbl_CurrentLineNumber)
{
    for (i = 0; i < (LineNumber - AslGbl_CurrentLineNumber); i++)
    {
        FIWriteFile (ASL_FILE_SOURCE_OUTPUT, "\n", 1);
        AslGbl_CurrentColumn++;
    }
}

FISetLineNumber (LineNumber);

/* Second argument is the optional filename (in double quotes) */

Token
= strtok (NULL, "\\");
if (Token)
{
    Filename = UtLocalCacheCalloc (strlen (Token) + 1);
    strcpy (Filename, Token);
    FISetFilename (Filename);
}

/* Third argument is not supported at this time */

ResetAndExit:

/* Reset globals for a new line */

AslGbl_CurrentLineOffset += AslGbl_CurrentColumn;
AslGbl_CurrentColumn = 0;
AslGbl_LineBufPtr = AslGbl_CurrentLineBuffer;
}

/*****
*
* FUNCTION:  AslPopInputFileStack
*
* PARAMETERS:  None
*
* RETURN:    0 if a node was popped, -1 otherwise
*
*****/

```

* DESCRIPTION: Pop the top of the input file stack and point the parser to
 * the saved parse buffer contained in the fnode. Also, set the
 * global line counters to the saved values. This function is
 * called when an include file reaches EOF.

*

*****/

int

AslPopInputFileStack

(

void)

{

ASL_FILE_NODE *Fnode;

AslGbl_PreviousIncludeFilename = AslGbl_Files[ASL_FILE_INPUT].Filename;

Fnode = AslGbl_IncludeFileStack;

DbgPrint (ASL_PARSE_OUTPUT,
 "\nPop InputFile Stack, Fnode %p\n", Fnode);

DbgPrint (ASL_PARSE_OUTPUT,
 "Include: Closing \"%s\"\n\n", AslGbl_Files[ASL_FILE_INPUT].Filename);

if (!Fnode)

{

return (-1);

}

/* Close the current include file */

fclose (yyin);

/* Update the top-of-stack */

AslGbl_IncludeFileStack = Fnode->Next;

/* Reset global line counter and filename */

AslGbl_Files[ASL_FILE_INPUT].Filename = Fnode->Filename;

AslGbl_CurrentLineNumber = Fnode->CurrentLineNumber;

/* Point the parser to the popped file */

yy_delete_buffer (YY_CURRENT_BUFFER);

yy_switch_to_buffer (Fnode->State);

/* All done with this node */

```

ACPI_FREE (Fnode);
return (0);
}

```

```

/*****
*
* FUNCTION:  AslPushInputFileStack
*
* PARAMETERS: InputFile      - Open file pointer
*              Filename      - Name of the file
*
* RETURN:    None
*
* DESCRIPTION: Push the InputFile onto the file stack, and point the parser
*              to this file. Called when an include file is successfully
*              opened.
*
*****/

```

```

void
AslPushInputFileStack (
    FILE      *InputFile,
    char      *Filename)
{
    ASL_FILE_NODE    *Fnode;
    YY_BUFFER_STATE  State;

    /* Save the current state in an Fnode */

    Fnode = UtLocalCalloc (sizeof (ASL_FILE_NODE));

    Fnode->File = yyin;
    Fnode->Next = AslGbl_IncludeFileStack;
    Fnode->State = YY_CURRENT_BUFFER;
    Fnode->Filename = AslGbl_Files[ASL_FILE_INPUT].Filename;
    Fnode->CurrentLineNumber = AslGbl_CurrentLineNumber;

    /* Push
it on the stack */

    AslGbl_IncludeFileStack = Fnode;

    /* Point the parser to this file */

    State = yy_create_buffer (InputFile, YY_BUF_SIZE);
    yy_switch_to_buffer (State);

```

```

DbgPrint (ASL_PARSE_OUTPUT,
"\nPush InputFile Stack, returning %p\n\n", InputFile);

/* Reset the global line count and filename */

AslGbl_Files[ASL_FILE_INPUT].Filename =
    UtLocalCacheCalloc (strlen (Filename) + 1);

strcpy (AslGbl_Files[ASL_FILE_INPUT].Filename, Filename);

AslGbl_CurrentLineNumber = 1;
yyin = InputFile;

/* converter: reset the comment state to STANDARD_COMMENT */

AslGbl_CommentState.CommentType = STANDARD_COMMENT;
}

/*****
*
* FUNCTION:   AslResetCurrentLineBuffer
*
* PARAMETERS: None
*
* RETURN:    None
*
* DESCRIPTION: Reset the Line Buffer to zero, increment global line numbers.
*
*****/

void
AslResetCurrentLineBuffer
(
    void)
{

    if (AslGbl_Files[ASL_FILE_SOURCE_OUTPUT].Handle)
    {
        FIWriteFile (ASL_FILE_SOURCE_OUTPUT, AslGbl_CurrentLineBuffer,
            AslGbl_LineBufPtr - AslGbl_CurrentLineBuffer);
    }

    AslGbl_CurrentLineOffset += AslGbl_CurrentColumn;
    AslGbl_CurrentColumn = 0;

    AslGbl_CurrentLineNumber++;

```

```

    AslGbl_LogicalLineNumber++;
    AslGbl_LineBufPtr = AslGbl_CurrentLineBuffer;
}

/*****
*
* FUNCTION:  AslInsertLineBuffer
*
* PARAMETERS: SourceChar      - One char from the input ASL source file
*
* RETURN:    None
*
* DESCRIPTION: Put one character of the source file into the temp line buffer
*
*****/

void
AslInsertLineBuffer (
    int          SourceChar)
{
    UINT32      i;
    UINT32      Count = 1;

    if (SourceChar == EOF)
    {
        return;
    }

    AslGbl_InputByteCount++;

    /* Handle tabs. Convert to spaces */

    if (SourceChar == '\t')
    {
        SourceChar = ' ';
        Count = ASL_SPACES_PER_TAB -
            (AslGbl_CurrentColumn & (ASL_SPACES_PER_TAB-1));
    }

    for (i = 0; i < Count; i++)
    {
        AslGbl_CurrentColumn++;

        /* Insert the character into the line buffer */

        *AslGbl_LineBufPtr = (UINT8) SourceChar;

```

```

AslGbl_LineBufPtr++;

if (AslGbl_LineBufPtr >
    (AslGbl_CurrentLineBuffer + (AslGbl_LineBufferSize - 1)))
{
#if 0
    /*
     * Warning if we have split a long source line.
     * <Probably overkill>
     */
    sprintf (MsgBuffer, "Max %u", AslGbl_LineBufferSize);
    AslCommonError (ASL_WARNING, ASL_MSG_LONG_LINE,
        AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
        AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
        AslGbl_Files[ASL_FILE_INPUT].Filename, MsgBuffer);
#endif

    AslResetCurrentLineBuffer ();
}
else if (SourceChar == '\n')
{
    /* End of line */

    AslResetCurrentLineBuffer ();
}

if (AcpiGbl_CaptureComments)
{
    CvProcessCommentState ((char) SourceChar);
}
}

/*****
*
* FUNCTION:  count
*
* PARAMETERS:  yytext      - Contains the matched keyword.
*              Type        - Keyword/Character type:
*                          0 = anything except a keyword
*                          1 = pseudo-keywords
*                          2 = non-executable ASL keywords
*                          3 = executable ASL keywords
*
* RETURN:     None
*
* DESCRIPTION: Count keywords and put them into the line buffer

```



```

*
*****/

static
void
count (
    int      Type)
{
    char      *p;

    switch (Type)
    {
    case 2:

        ++AslGbl_TotalKeywords;
        ++AslGbl_TotalNamedObjects;
        ++AslGbl_FilesList->TotalKeywords;
        ++AslGbl_FilesList->TotalNamedObjects;
        break;

    case 3:

        ++AslGbl_TotalKeywords;
        ++AslGbl_TotalExecutableOpcodes;
        ++AslGbl_FilesList->TotalKeywords;
        ++AslGbl_FilesList->TotalExecutableOpcodes;
        break;

    default:

        break;
    }

    for (p = yytext; *p != '\0'; p++)
    {
        AslInsertLineBuffer (*p);
        *AslGbl_LineBufPtr = 0;
    }
}

/*****
*
* FUNCTION:  AslDoComment
*
* PARAMETERS:  none
*

```

```

* RETURN:   none
*
* DESCRIPTION: Process a standard comment.
*
*****/

static
BOOLEAN
AslDoComment (
    void)
{
    int         c;
    int         c1 = 0;
    char        *StringBuffer = AslGbl_MsgBuffer;
    char        *EndBuffer = AslGbl_MsgBuffer + ASL_MSG_BUFFER_SIZE;
    ASL_COMMENT_STATE    CurrentState = AslGbl_CommentState; /* to reference later on */

    AslInsertLineBuffer ('/');
    AslInsertLineBuffer ('*');
    if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
    {
        *StringBuffer = '/';
        ++StringBuffer;
        *StringBuffer = '*';
        ++StringBuffer;
    }

loop:

    /* Eat chars until end-of-comment */

    while (((c = input ()) != '*') && (c != EOF))
    {
        AslInsertLineBuffer (c);
        if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
        {
            *StringBuffer = (char) c;
            ++StringBuffer;
        }
        c1 = c;
    }

    if (c == EOF)
    {
        goto EarlyEOF;
    }
}

```

```

/*
 * Check for
nested comment -- can help catch cases where a previous
 * comment was accidentally left unterminated
 */
if ((c1 == '/') && (c == '*'))
{
    AslCommonError (ASL_WARNING, ASL_MSG_NESTED_COMMENT,
        AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
        AslGbl_InputByteCount, AslGbl_CurrentColumn,
        AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
}

/* Comment is closed only if the NEXT character is a slash */

AslInsertLineBuffer (c);
if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
{
    *StringBuffer = (char) c;
    ++StringBuffer;
}

if (((c1 = input ()) != '/') && (c1 != EOF))
{
    unput (c1);
    goto loop;
}

if (c1 == EOF)
{
    goto EarlyEOF;
}
if (StringBuffer > EndBuffer)
{
    goto BufferOverflow;
}

AslInsertLineBuffer (c1);
CvProcessComment (CurrentState, StringBuffer, c1);
return (TRUE);

EarlyEOF:
/*
 * Premature
End-Of-File
 */
AslCommonError (ASL_ERROR, ASL_MSG_EARLY_EOF,

```

```

    AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
    AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
    AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
return (FALSE);

```

BufferOverflow:

```

/* Comment was too long */

AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
    AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
    AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
    AslGbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
return (FALSE);

}

/*****
*
* FUNCTION:  AslDoCommentType2
*
* PARAMETERS:  none
*
* RETURN:    none
*
* DESCRIPTION: Process a new "/" comment. Inline comments will be converted
*              to "/" standard comments.
*
*****/

static BOOLEAN
AslDoCommentType2 (
    void)
{
    int            c;
    char           *StringBuffer = AslGbl_MsgBuffer;
    char           *EndBuffer = AslGbl_MsgBuffer + ASL_MSG_BUFFER_SIZE;
    ASL_COMMENT_STATE    CurrentState = AslGbl_CommentState;

    AslInsertLineBuffer ('/');

    if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
    {
        AslInsertLineBuffer ('*');
        *StringBuffer = '/';

```

```

    ++StringBuffer;
    *StringBuffer = '*';
    ++StringBuffer;
}
else
{
    AslInsertLineBuffer ('/');
}

while (((c = input ()) != '\n') && (c != EOF))
{
    AslInsertLineBuffer (c);
    if (AcpiGbl_CaptureComments && CurrentState.CaptureComments)
    {
        *StringBuffer = (char) c;
        ++StringBuffer;
    }
}

if (c == EOF)
{
    /* End of file is OK, change to newline. Let parser detect EOF later */

    c = '\n';
}

if (StringBuffer > EndBuffer)
{
    goto BufferOverflow;
}
AslInsertLineBuffer (c);

CvProcessCommentType2 (CurrentState, StringBuffer);
return (TRUE);

BufferOverflow:

/* Comment was too long */

AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
    AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
    AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
    AslGbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
return (FALSE);
}

```

```

/*****
*
* FUNCTION:  AslDoStringLiteral
*
* PARAMETERS:  none
*
* RETURN:    none
*
* DESCRIPTION: Process a string literal (surrounded by quotes)
*
*****/

```

```
static char
```

```
AslDoStringLiteral (
```

```
void)
```

```
{
```

```
char      *StringBuffer = AslGbl_MsgBuffer;
```

```
char      *EndBuffer = AslGbl_MsgBuffer + ASL_MSG_BUFFER_SIZE;
```

```
char      *CleanString;
```

```
int       StringChar;
```

```
UINT32    State = ASL_NORMAL_CHAR;
```

```
UINT32    i = 0;
```

```
UINT8     Digit;
```

```
char      ConvertBuffer[4];
```

```
/*
```

```
 * Eat chars until end-of-literal.
```

```
 * NOTE: Put back the original surrounding quotes into the
```

```
 * source line buffer.
```

```
*/
```

```
AslInsertLineBuffer ("");
```

```
while ((StringChar = input()) != EOF)
```

```
{
```

```
    AslInsertLineBuffer (StringChar);
```

```
DoCharacter:
```

```
switch (State)
```

```
{
```

```
case ASL_NORMAL_CHAR:
```

```
    switch (StringChar)
```

```
    {
```

```
case '\\':
```

```
    /*
```

```
     * Special handling for backslash-escape sequence. We will
```

```

        * toss the backslash and translate the escape char(s).
        */
        State = ASL_ESCAPE_SEQUENCE;
        continue;

    case '\":
        /* String terminator */

        goto CompletedString;

    default:

        break;
    }

break;

case ASL_ESCAPE_SEQUENCE:

    State = ASL_NORMAL_CHAR;
    switch (StringChar)
    {
    case 'a':

        StringChar = 0x07;    /* BELL */
        break;

    case 'b':

        StringChar = 0x08;    /* BACKSPACE */
        break;

    case 'f':

        StringChar = 0x0C;    /* FORMFEED */
        break;

    case 'n':

        StringChar = 0x0A;    /* LINEFEED */
        break;

    case 'r':

        StringChar = 0x0D;    /* CARRIAGE RETURN*/
        break;

```

```

case 't':

    StringChar = 0x09;    /* HORIZONTAL TAB */
    break;

case 'v':

    StringChar = 0x0B;    /* VERTICAL TAB */
    break;

case 'x':

    State = ASL_HEX_CONSTANT;
    i = 0;
    continue;

case '\':
/* Single Quote */
case '\":                /* Double Quote */
case '\\':                /* Backslash */

    break;

default:

    /* Check for an octal digit (0-7) */

    if (ACPI_IS_OCTAL_DIGIT (StringChar))
    {
        State = ASL_OCTAL_CONSTANT;
        ConvertBuffer[0] = (char) StringChar;
        i = 1;
        continue;
    }

    /* Unknown escape sequence issue warning, but use the character */

    AslCommonError (ASL_WARNING, ASL_MSG_INVALID_ESCAPE,
        AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
        AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
        AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
    break;
}
break;

case ASL_OCTAL_CONSTANT:

```



```

/* Up to three octal digits allowed */

if (!ACPI_IS_OCTAL_DIGIT (StringChar) ||
    (i > 2))
{
    /*
     * Reached end of the constant. Convert the assembled ASCII
     * string and resume processing of the next character
     */
    ConvertBuffer[i] = 0;
    Digit = (UINT8) strtoul (ConvertBuffer, NULL, 8);

    /* Check for NULL or non-ascii character (ignore if so) */

    if ((Digit == 0) || (Digit > ACPI_ASCII_MAX))
    {
        AslCommonError (ASL_WARNING, ASL_MSG_INVALID_STRING,
            AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
            AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
            AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
    }
    else
    {
        *StringBuffer = (char) Digit;
        StringBuffer++;
        if (StringBuffer
=> EndBuffer)
        {
            goto BufferOverflow;
        }
    }

    State = ASL_NORMAL_CHAR;
    goto DoCharacter;
    break;
}

/* Append another digit of the constant */

ConvertBuffer[i] = (char) StringChar;
i++;
continue;

case ASL_HEX_CONSTANT:

    /* Up to two hex digits allowed */

```

```

if (!isxdigit (StringChar) ||
    (i > 1))
{
    /*
     * Reached end of the constant. Convert the assembled ASCII
     * string and resume processing of the next character
     */
    ConvertBuffer[i] = 0;
    Digit = (UINT8) strtoul (ConvertBuffer, NULL, 16);

    /* Check for NULL or non-ascii character (ignore if so) */

    if ((Digit == 0) || (Digit > ACPI_ASCII_MAX))
    {
        AslCommonError (ASL_WARNING, ASL_MSG_INVALID_STRING,
            AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
            AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
            AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
    }
    else
    {
        *StringBuffer = (char) Digit;
        StringBuffer++;
        if (StringBuffer >= EndBuffer)
        {
            goto BufferOverflow;
        }
    }

    State = ASL_NORMAL_CHAR;
    goto DoCharacter;
    break;
}

/* Append another digit of the constant */

ConvertBuffer[i] = (char) StringChar;
i++;
continue;

default:

    break;
}

/* Save the finished character */

*StringBuffer = (char) StringChar;

```

```

StringBuffer++;
if (StringBuffer >= EndBuffer)
{
    goto BufferOverflow;
}
}

/*
 * Premature End-Of-File
 */
AslCommonError (ASL_ERROR, ASL_MSG_EARLY_EOF,
    AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
    AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
    AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
return (FALSE);

CompletedString:
/*
 * Null terminate the input string and copy string to a new buffer
 */
*StringBuffer = 0;

CleanString = UtLocalCacheCalloc (strlen (AslGbl_MsgBuffer) + 1);
strcpy (CleanString, AslGbl_MsgBuffer);
AslCompilerIval.s = CleanString;
return (TRUE);

```

BufferOverflow:

```

/* Literal was too long */

AslCommonError (ASL_ERROR, ASL_MSG_STRING_LENGTH,
    AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
    AslGbl_CurrentLineOffset, AslGbl_CurrentColumn,
    AslGbl_Files[ASL_FILE_INPUT].Filename, "Max length 4096");
return (FALSE);
}

```

Found

in path(s):

```

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/compiler/aslsupport.l

```

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsdump.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsdumpdv.c

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- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbconvert.c
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- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/os_specific/service_layers/osbsdtbl.c
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- /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nspredef.c
- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acapps.h
- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbcmds.c
- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asllistsup.c
- * /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisrc/astable.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utglobal.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmresrc.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmnames.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exresolv.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslopt.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/prutils.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslprintf.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslcompile.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exresnte.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslxrefout.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpinames/acpinames.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acintel.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acdisasm.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evxfregn.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahaslkey.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utownerid.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/adwalk.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpixtract/acpixtract.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/cmfsz.c

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20200110/source/compiler/dttable2.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsdump.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahasl.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslbtypes.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsaddr.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpidump/apmain.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype2w.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisrc/acpisrc.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utdebug.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpinames/antables.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmswitch.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmbuffer.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmwalk.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsxfobj.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/os_specific/service_layers/osunixxf.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utxfmutex.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslmethod.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbxface.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/pswalk.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exoparg1.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acutils.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utxfinit.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dttable1.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/uthex.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpibin/abmain.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/aclinuxex.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahaslops.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpidump/apdump.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsxface.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype2d.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acexcep.h

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslstubs.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisc/asremove.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/prmacros.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aeexec.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dsobject.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acuuid.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exsystem.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utpredef.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aeregion.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evxfgpe.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dswexec.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbmethod.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exmutex.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/os_specific/service_layers/oswintbl.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asltransform.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmrestag.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmresrcs.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asltypes.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmtbdump.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpextract/acpextract.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype2e.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmtbdump3.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utclib.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utaddress.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aeexception.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utstrsuppt.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahamlops.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslwalks.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/getopt.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/hardware/hwsleep.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acgcc.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpinames/anstubs.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/cvparser.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisrc/asmain.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype li.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmtbinfo.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslallocate.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utstate.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/tables/tbutils.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslcompiler.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dttemplate.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/psopcode.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/actbl2.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utosi.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/dmtable.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executor/exdebug.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/os_specific/service_layers/osunixmap.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslcodegen.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/actbl1.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aecommon.h

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/ahuuids.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utbuffer.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acconfig.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsutils.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rslist.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

20200110/source/os_specific/service_layers/oswinxf.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utinit.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsxfeval.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acefiex.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exregion.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpextract/axmain.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpinames/anmain.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acdebug.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acmsvc.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aemain.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dsinit.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/adisasm.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/aconvert.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evrgnini.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asloptions.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/uttrack.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/aclocal.h

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acfreebsd.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utnonansi.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpibin/acpibin.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evgpeblk.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evregion.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbobject.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/compiler/aslnamesp.c
*
/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/compiler/aslmessages.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/components/debugger/dbstats.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/components/utilities/utexcept.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

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20200110/source/components/dispatcher/dswload2.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evxface.c
*
/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslfold.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asltree.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/psopinfo.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/examples/examples.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evevent.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/tables/tbfadt.c
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exstorob.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acclib.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtfield.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahmain.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acdragonflyex.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exprep.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acmsvcex.h
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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/aclinux.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exconvrt.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acparser.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evhandler.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exstoren.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslmapoutput.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahdecode.c

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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslmaputils.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/hardware/hwpci.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/os_specific/service_layers/oswindir.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evxfevnt.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslstartup.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/prscan.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utobject.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtcompiler.h

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utids.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utmutex.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslparseop.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahgrammar.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/cvdisasm.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aeinitfile.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/tables/tbinstal.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asllisting.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exoparg2.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

20200110/source/include/actables.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exserial.c
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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslpld.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/achware.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslopcores.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/actypes.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rscreate.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dswscope.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsparse.c
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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslprepkg.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/pstree.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbexec.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acstruct.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aetables.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asldebug.c
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/hardware/hwregs.c
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/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisrc/asfile.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsarguments.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/asloperands.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utdelete.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acevents.h
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmcstyle.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpidump/acpidump.h

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evgpe.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utstring.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/examples/extables.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype2q.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utuuid.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpihelp/ahaml.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acmacosx.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acgccex.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acpixf.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsaccess.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acpredef.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/acfileio.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dscontrol.c

*

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpixtract/axutils.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acqnx.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtcompile.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpisrc/asconvrt.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/psargs.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmresrcl.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dttemplate.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbfileio.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/psxface.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsconvert.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslhhelp.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslhex.c

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/cvcompiler.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utmisc.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acdispat.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrestype2s.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/common/adfile.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/dispatcher/dswstate.c

*

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsserial.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/examples/exstubs.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/uteval.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslmap.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/acpi.h


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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
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20200110/source/os_specific/service_layers/osunixdir.c
*
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbnames.c
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslexternal.c
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpibin/abcompare.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/parser/psutils.c
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/examples/examples.h

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/disassembler/dmopcode.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslglobal.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utascii.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/accommon.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/dtutils.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utmth.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acenvex.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aehandlers.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rscale.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsrepair2.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/hardware/hwtimer.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/debugger/dbtest.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/namespace/nsutils.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/platform/acos2.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/actbl3.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslanalyze.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsmisc.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/include/actbl.h

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/tools/acpiexec/aetables.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

20200110/source/components/executer/exutils.c

*

/opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/resources/rsinfo.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exdump.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/uterror.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/utilities/utresrc.c

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslcache.c

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*

* Module Name: aslkeywords.y - Rules for resource descriptor keywords

*

*****/

/*****

*

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)

/*****

*

* ASL Parameter Keyword Terms

*

*****/

AccessAttribKeyword

```

: PARSEOP_ACCESSATTRIB_BLOCK      {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK);}
| PARSEOP_ACCESSATTRIB_BLOCK_CALL  {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK_CALL);}
| PARSEOP_ACCESSATTRIB_BYTE        {$$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_BYTE);}
| PARSEOP_ACCESSATTRIB_QUICK       {$$
= TrCreateLeafOp (PARSEOP_ACCESSATTRIB_QUICK );}
| PARSEOP_ACCESSATTRIB_SND_RCV     {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_SND_RCV);}
| PARSEOP_ACCESSATTRIB_WORD        {$$ = TrCreateLeafOp

```

```

(PARSEOP_ACCESSATTRIB_WORD);}
| PARSEOP_ACCESSATTRIB_WORD_CALL    {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_WORD_CALL);}
| PARSEOP_ACCESSATTRIB_BYTES
  PARSEOP_OPEN_PAREN                {$<n>$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_BYTES);}
  ByteConst
  PARSEOP_CLOSE_PAREN                {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_ACCESSATTRIB_RAW_BYTES
  PARSEOP_OPEN_PAREN                {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_BYTES);}
  ByteConst
  PARSEOP_CLOSE_PAREN                {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_ACCESSATTRIB_RAW_PROCESS
  PARSEOP_OPEN_PAREN                {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_PROCESS);}
  ByteConst
  PARSEOP_CLOSE_PAREN
    {$$ = TrLinkOpChildren ($<n>3,1,$4);}
;

```

AccessTypeKeyword

```

: PARSEOP_ACCESSTYPE_ANY            {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_ANY);}
| PARSEOP_ACCESSTYPE_BYTE           {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BYTE);}
| PARSEOP_ACCESSTYPE_WORD           {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_WORD);}
| PARSEOP_ACCESSTYPE_DWORD          {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_DWORD);}
| PARSEOP_ACCESSTYPE_QWORD          {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_QWORD);}
| PARSEOP_ACCESSTYPE_BUF            {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BUF);}
;

```

AddressingModeKeyword

```

: PARSEOP_ADDRESSINGMODE_7BIT       {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_7BIT);}
| PARSEOP_ADDRESSINGMODE_10BIT      {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_10BIT);}
;

```

AddressKeyword

```

: PARSEOP_ADDRESSTYPE_MEMORY        {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSTYPE_MEMORY);}
| PARSEOP_ADDRESSTYPE_RESERVED
  {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_RESERVED);}
| PARSEOP_ADDRESSTYPE_NVS           {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_NVS);}
| PARSEOP_ADDRESSTYPE ACPI          {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE ACPI);}
;

```

AddressSpaceKeyword

```

: ByteConst                          {$$ = UtCheckIntegerRange ($1, ACPI_NUM_PREDEFINED_REGIONS, 0xFF);}
| RegionSpaceKeyword                  {}

```



```

;

BitsPerByteKeyword
: PARSEOP_BITSPERBYTE_FIVE      {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_FIVE);}
| PARSEOP_BITSPERBYTE_SIX      {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SIX);}
| PARSEOP_BITSPERBYTE_SEVEN    {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SEVEN);}
| PARSEOP_BITSPERBYTE_EIGHT    {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_EIGHT);}
| PARSEOP_BITSPERBYTE_NINE     {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_NINE);}
;

ClockPhaseKeyword
: PARSEOP_CLOCKPHASE_FIRST
    {$$ = TrCreateLeafOp (PARSEOP_CLOCKPHASE_FIRST);}
| PARSEOP_CLOCKPHASE_SECOND    {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPHASE_SECOND);}
;

ClockPolarityKeyword
: PARSEOP_CLOCKPOLARITY_LOW    {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPOLARITY_LOW);}
| PARSEOP_CLOCKPOLARITY_HIGH   {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPOLARITY_HIGH);}
;

DecodeKeyword
: PARSEOP_DECODETYPE_POS       {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_POS);}
| PARSEOP_DECODETYPE_SUB       {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_SUB);}
;

DevicePolarityKeyword
: PARSEOP_DEVICEPOLARITY_LOW   {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_LOW);}
| PARSEOP_DEVICEPOLARITY_HIGH  {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_HIGH);}
;

DMATypeKeyword
: PARSEOP_DMATYPE_A            {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_A);}
| PARSEOP_DMATYPE_COMPATIBILITY {$$ = TrCreateLeafOp
(PARSEOP_DMATYPE_COMPATIBILITY);}
| PARSEOP_DMATYPE_B            {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_B);}
| PARSEOP_DMATYPE_F            {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_F);}
;

EndianKeyword
: PARSEOP_ENDIAN_LITTLE        {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_LITTLE);}
| PARSEOP_ENDIAN_BIG           {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_BIG);}
;

```

```

FlowControlKeyword
: PARSEOP_FLOWCONTROL_HW          {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_HW);}
| PARSEOP_FLOWCONTROL_NONE        {$$ = TrCreateLeafOp
(PARSEOP_FLOWCONTROL_NONE);}
| PARSEOP_FLOWCONTROL_SW          {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_SW);}
;

```

```

InterruptLevel
: PARSEOP_INTLEVEL_ACTIVEBOTH     {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEBOTH);}
| PARSEOP_INTLEVEL_ACTIVEHIGH     {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEHIGH);}
| PARSEOP_INTLEVEL_ACTIVELOW      {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVELOW);}
;

```

```

InterruptTypeKeyword
: PARSEOP_INTTYPE_EDGE            {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_EDGE);}
| PARSEOP_INTTYPE_LEVEL           {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_LEVEL);}
;

```

```

IODecodeKeyword
: PARSEOP_IODECODETYPE_16        {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_16);}
| PARSEOP_IODECODETYPE_10        {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_10);}
;

```

```

IoRestrictionKeyword
: PARSEOP_IORESTRICT_IN          {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_IN);}
| PARSEOP_IORESTRICT_OUT         {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_OUT);}
| PARSEOP_IORESTRICT_NONE        {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_NONE);}
| PARSEOP_IORESTRICT_PRESERVE    {$$ = TrCreateLeafOp
(PARSEOP_IORESTRICT_PRESERVE);}
;

```

```

LockRuleKeyword
: PARSEOP_LOCKRULE_LOCK          {$$ = TrCreateLeafOp (PARSEOP_LOCKRULE_LOCK);}
| PARSEOP_LOCKRULE_NOLOCK        {$$ = TrCreateLeafOp
(PARSEOP_LOCKRULE_NOLOCK);}
;

```

```

MatchOpKeyword
: PARSEOP_MATCHTYPE_MTR          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MTR);}
| PARSEOP_MATCHTYPE_MEQ          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MEQ);}
| PARSEOP_MATCHTYPE_MLE          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLE);}
| PARSEOP_MATCHTYPE_MLT          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLT);}
| PARSEOP_MATCHTYPE_MGE          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGE);}
| PARSEOP_MATCHTYPE_MGT          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGT);}

```

```

;

MaxKeyword
: PARSEOP_MAXTYPE_FIXED          {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_FIXED);}
| PARSEOP_MAXTYPE_NOTFIXED      {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_NOTFIXED);}
;

MemTypeKeyword
: PARSEOP_MEMTYPE_CACHEABLE     {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_CACHEABLE);}
| PARSEOP_MEMTYPE_WRITECOMBINING {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_WRITECOMBINING);}
| PARSEOP_MEMTYPE_PREFETCHABLE  {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_PREFETCHABLE);}
| PARSEOP_MEMTYPE_NONCACHEABLE  {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_NONCACHEABLE);}
;

MinKeyword
: PARSEOP_MINTYPE_FIXED         {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_FIXED);}
| PARSEOP_MINTYPE_NOTFIXED     {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_NOTFIXED);}
;

ObjectTypeKeyword
: PARSEOP_OBJECTTYPE_UNK       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_UNK);}
| PARSEOP_OBJECTTYPE_INT       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_INT);}
| PARSEOP_OBJECTTYPE_STR       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_STR);}
| PARSEOP_OBJECTTYPE_BUF       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BUF);}
| PARSEOP_OBJECTTYPE_PKG       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PKG);}
| PARSEOP_OBJECTTYPE_FLD       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_FLD);}
| PARSEOP_OBJECTTYPE_DEV       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DEV);}
| PARSEOP_OBJECTTYPE_EVT       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_EVT);}
| PARSEOP_OBJECTTYPE_MTH       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTH);}
| PARSEOP_OBJECTTYPE_MTX       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTX);}
| PARSEOP_OBJECTTYPE_OPR       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_OPR);}
| PARSEOP_OBJECTTYPE_POW       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_POW);}
| PARSEOP_OBJECTTYPE_PRO       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PRO);}
| PARSEOP_OBJECTTYPE_THZ       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_THZ);}
| PARSEOP_OBJECTTYPE_BFF       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BFF);}
| PARSEOP_OBJECTTYPE_DDB       {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DDB);}
;

ParityTypeKeyword
: PARSEOP_PARITYTYPE_SPACE     {$$ = TrCreateLeafOp
(PARSEOP_PARITYTYPE_SPACE);}
| PARSEOP_PARITYTYPE_MARK      {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_MARK);}
| PARSEOP_PARITYTYPE_ODD       {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_ODD);}
| PARSEOP_PARITYTYPE_EVEN      {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_EVEN);}

```

```

| PARSEOP_PARITYTYPE_NONE          {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_NONE);}
;

PinConfigByte
: PinConfigKeyword                 {$$ = $1;}
| ByteConstExpr                    {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
;

PinConfigKeyword
: PARSEOP_PIN_NOPULL               {$$ = TrCreateLeafOp (PARSEOP_PIN_NOPULL);}
| PARSEOP_PIN_PULLDOWN             {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDOWN);}
| PARSEOP_PIN_PULLUP               {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLUP);}
| PARSEOP_PIN_PULLDEFAULT          {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDEFAULT);}
;

PldKeyword
: PARSEOP_PLD_REVISION
    {$$ = TrCreateLeafOp (PARSEOP_PLD_REVISION);}
| PARSEOP_PLD_IGNORECOLOR          {$$ = TrCreateLeafOp (PARSEOP_PLD_IGNORECOLOR);}
| PARSEOP_PLD_RED                  {$$ = TrCreateLeafOp (PARSEOP_PLD_RED);}
| PARSEOP_PLD_GREEN                {$$ = TrCreateLeafOp (PARSEOP_PLD_GREEN);}
| PARSEOP_PLD_BLUE                 {$$ = TrCreateLeafOp (PARSEOP_PLD_BLUE);}
| PARSEOP_PLD_WIDTH                {$$ = TrCreateLeafOp (PARSEOP_PLD_WIDTH);}
| PARSEOP_PLD_HEIGHT               {$$ = TrCreateLeafOp (PARSEOP_PLD_HEIGHT);}
| PARSEOP_PLD_USERVISIBLE          {$$ = TrCreateLeafOp (PARSEOP_PLD_USERVISIBLE);}
| PARSEOP_PLD_DOCK                 {$$ = TrCreateLeafOp (PARSEOP_PLD_DOCK);}
| PARSEOP_PLD_LID                  {$$ = TrCreateLeafOp (PARSEOP_PLD_LID);}
| PARSEOP_PLD_PANEL                {$$ = TrCreateLeafOp (PARSEOP_PLD_PANEL);}
| PARSEOP_PLD_VERTICALPOSITION     {$$ = TrCreateLeafOp
(PARSEOP_PLD_VERTICALPOSITION);}
| PARSEOP_PLD_HORIZONTALPOSITION   {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALPOSITION);}
| PARSEOP_PLD_SHAPE                {$$ = TrCreateLeafOp (PARSEOP_PLD_SHAPE);}
| PARSEOP_PLD_GROUPORIENTATION     {$$ = TrCreateLeafOp
(PARSEOP_PLD_GROUPORIENTATION);}
| PARSEOP_PLD_GROUPTOKEN           {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPTOKEN);}
| PARSEOP_PLD_GROUPPOSITION        {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPPOSITION);}
| PARSEOP_PLD_BAY                  {$$ = TrCreateLeafOp (PARSEOP_PLD_BAY);}
| PARSEOP_PLD_EJECTABLE            {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTABLE);}
| PARSEOP_PLD_EJECTREQUIRED        {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTREQUIRED);}
| PARSEOP_PLD_CABINETNUMBER        {$$ = TrCreateLeafOp
(PARSEOP_PLD_CABINETNUMBER);}
| PARSEOP_PLD_CARDCAGENUMBER       {$$ = TrCreateLeafOp
(PARSEOP_PLD_CARDCAGENUMBER);}
| PARSEOP_PLD_REFERENCE
    {$$ = TrCreateLeafOp (PARSEOP_PLD_REFERENCE);}
| PARSEOP_PLD_ROTATION              {$$ = TrCreateLeafOp (PARSEOP_PLD_ROTATION);}
| PARSEOP_PLD_ORDER                {$$ = TrCreateLeafOp (PARSEOP_PLD_ORDER);}

```

```

| PARSEOP_PLD_RESERVED          {$$ = TrCreateLeafOp (PARSEOP_PLD_RESERVED);}
| PARSEOP_PLD_VERTICALOFFSET    {$$ = TrCreateLeafOp (PARSEOP_PLD_VERTICALOFFSET);}
| PARSEOP_PLD_HORIZONTALOFFSET  {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALOFFSET);}
;

```

RangeTypeKeyword

```

: PARSEOP_RANGETYPE_ISAONLY      {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ISAONLY);}
| PARSEOP_RANGETYPE_NONISAONLY   {$$ = TrCreateLeafOp
(PARSEOP_RANGETYPE_NONISAONLY);}
| PARSEOP_RANGETYPE_ENTIRE       {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ENTIRE);}
;

```

RegionSpaceKeyword

```

: PARSEOP_REGIONSPACE_IO        {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IO);}
| PARSEOP_REGIONSPACE_MEM       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_MEM);}
| PARSEOP_REGIONSPACE_PCI       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCI);}
| PARSEOP_REGIONSPACE_EC        {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_EC);}
| PARSEOP_REGIONSPACE_SMBUS     {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_SMBUS);}
| PARSEOP_REGIONSPACE_CMOS      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_CMOS);}
| PARSEOP_REGIONSPACE_PCIBAR    {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_PCIBAR);}
| PARSEOP_REGIONSPACE_IPMI      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IPMI);}
| PARSEOP_REGIONSPACE_GPIO      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GPIO);}
| PARSEOP_REGIONSPACE_GSBUS     {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GSBUS);}
| PARSEOP_REGIONSPACE_PCC       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCC);}
| PARSEOP_REGIONSPACE_FFIXEDHW  {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_FFIXEDHW);}
;

```

ResourceTypeKeyword

```

: PARSEOP_RESOURCECETYPE_CONSUMER {$$ = TrCreateLeafOp
(PARSEOP_RESOURCECETYPE_CONSUMER);}
| PARSEOP_RESOURCECETYPE_PRODUCER {$$ = TrCreateLeafOp
(PARSEOP_RESOURCECETYPE_PRODUCER);}
;

```

SerializeRuleKeyword

```

: PARSEOP_SERIALIZERULE_SERIAL   {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_SERIAL);}
| PARSEOP_SERIALIZERULE_NOTSERIAL {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_NOTSERIAL);}
;

```

ShareTypeKeyword

```

: PARSEOP_SHARETYPE_SHARED       {$$ = TrCreateLeafOp (PARSEOP_SHARETYPE_SHARED);}
| PARSEOP_SHARETYPE_EXCLUSIVE    {$$ = TrCreateLeafOp

```

```

(PARSEOP_SHARETYPE_EXCLUSIVE);}
| PARSEOP_SHARETYPE_SHAREDWAKE    {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_SHAREDWAKE);}
| PARSEOP_SHARETYPE_EXCLUSIVWAKE    {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_EXCLUSIVWAKE);}
;

SlaveModeKeyword
: PARSEOP_SLAVEMODE_CONTROLLERINIT    {$$ = TrCreateLeafOp
(PARSEOP_SLAVEMODE_CONTROLLERINIT);}
| PARSEOP_SLAVEMODE_DEVICEINIT
    {$$ = TrCreateLeafOp (PARSEOP_SLAVEMODE_DEVICEINIT);}
;

StopBitsKeyword
: PARSEOP_STOPBITS_TWO                {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_TWO);}
| PARSEOP_STOPBITS_ONEPLUSHALF        {$$ = TrCreateLeafOp
(PARSEOP_STOPBITS_ONEPLUSHALF);}
| PARSEOP_STOPBITS_ONE                {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ONE);}
| PARSEOP_STOPBITS_ZERO                {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ZERO);}
;

TranslationKeyword
: PARSEOP_TRANSLATIONTYPE_SPARSE      {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_SPARSE);}
| PARSEOP_TRANSLATIONTYPE_DENSE      {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_DENSE);}
;

TypeKeyword
: PARSEOP_TYPE_TRANSLATION            {$$ = TrCreateLeafOp (PARSEOP_TYPE_TRANSLATION);}
| PARSEOP_TYPE_STATIC                 {$$ = TrCreateLeafOp (PARSEOP_TYPE_STATIC);}
;

UpdateRuleKeyword
: PARSEOP_UPDATERULE_PRESERVE         {$$ = TrCreateLeafOp
(PARSEOP_UPDATERULE_PRESERVE);}
| PARSEOP_UPDATERULE_ONES             {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ONES);}
| PARSEOP_UPDATERULE_ZEROS           {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ZEROS);}
;

WireModeKeyword
: PARSEOP_WIREMODE_FOUR               {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_FOUR);}
| PARSEOP_WIREMODE_THREE             {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_THREE);}
;

XferSizeKeyword
: PARSEOP_XFERSIZE_8                  {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_8, 0);}

```

```

| PARSEOP_XFERSIZE_16      {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_16, 1);}
| PARSEOP_XFERSIZE_32      {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_32, 2);}
| PARSEOP_XFERSIZE_64      {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_64, 3);}
| PARSEOP_XFERSIZE_128     {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_128, 4);}
| PARSEOP_XFERSIZE_256     {$$ = TrCreateValuedLeafOp
(PARSEOP_XFERSIZE_256, 5);}
;

```

XferTypeKeyword

```

: PARSEOP_XFERTYPE_8      {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_8);}
| PARSEOP_XFERTYPE_8_16   {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_8_16);}
| PARSEOP_XFERTYPE_16     {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_16);}
;

```

Found in path(s):

```

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/compiler/aslkeywords.y

```

No license file was found, but licenses were detected in source scan.

```

/*

```

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```

*/

//
//
// Grammar.asl - Minimally exercises most ASL constructs
//
// NOTE -- use: iasl -f -of grammar.asl to compile
//
//     This 1) Ignores errors (checks compiler error handling)
//           2) Disables constant folding
//
//

/*****
Compilation should look like
this:

C:\acpica\tests\misc>iasl -f -of grammar.asl

Intel ACPI Component Architecture
ASL Optimizing Compiler version 20090422 [Apr 22 2009]
Copyright (C) 2000 - 2009 Intel Corporation
Supports ACPI Specification Revision 3.0a

grammar.asl 187:  Name (_NPK, Package (8)
Warning 1098 -      ^ Unknown reserved name (_NPK)

grammar.asl 510:  NAME (ESC1, "abcdefg\x00hijklmn")
Warning 1042 -      ^ Invalid Hex/Octal Escape - Non-ASCII or NULL

grammar.asl 511:  NAME (ESC2, "abcdefg\000hijklmn")
Warning 1042 -      ^ Invalid Hex/Octal Escape - Non-ASCII or NULL

grammar.asl 601:  Method (RCIV, 1)
Warning 1087 -      ^ Not all control paths return a value (RCIV)

grammar.asl 608:  RCIV (Subtract (Arg0, 1))
Remark 5073 -      ^ Recursive method call (RCIV)

grammar.asl 937:  Method (_ERR, 2)
Warning 1077 -      ^ Reserved method has too few arguments (_ERR
requires 3)

grammar.asl 1377:  Store (0x1234567887654321, QWD2)
Warning 1032 -      ^ 64-bit integer in 32-bit table, truncating

grammar.asl 1379:  if (LNotEqual (Local0, 0x1234567887654321))
Warning 1032 -      64-bit integer in 32-bit table, truncating ^

```



```

grammar.asl 1459:      SizeOf (BUFO)
Warning 1105 -          ^ Result is not used, operator has no effect

grammar.asl 1485:      Acquire (MTX2, 1)
Warning 1104 -          ^ Possible operator timeout is ignored

grammar.asl 1633:      Add (Local0, Local1)
Warning 1105 -          ^ Result is not used, operator has no effect

grammar.asl 1804:      Method (COND)
Warning 1087 -          ^ Not all control paths return a value (COND)

grammar.asl 6010:      Name (_HID, "*PNP0A06")
Error 4001 -            ^ String must be entirely alphanumeric (*PNP0A06)

grammar.asl 6461:
  Name (_CRS, Buffer(26) {"\_SB_.PCI2._CRS....."})
Warning 1038 -      Invalid or unknown escape sequence ^

grammar.asl 6800:      And (Local0, 1, Local0) // Local0 &= 1
Error 4050 -          ^ Method local variable is not initialized (Local0)

grammar.asl 6886:      Name (_HID, "*PNP0C0A") // Control Method Battey ID
Error 4001 -          ^ String must be entirely alphanumeric (*PNP0C0A)

```

ASL Input: grammar.asl - 10254 lines, 322162 bytes, 4810 keywords

AML Output: grammar.aml - 43392 bytes, 669 named objects, 4141 executable opcodes

Compilation complete. 3 Errors, 12 Warnings, 1 Remarks, 1101 Optimizations

```

*****
*****/

```

```

DefinitionBlock (
  "grammar.aml", //Output filename
  "DSDT", //Signature
  0x01, //DSDT Revision ---> 32-bit table
  "Intel", //OEMID

  "GRMTEST", //TABLE ID
  0x20090511 //OEM Revision
)
{

  External (\ABCD, UnknownObj)

```

```
/* Device with _STA and _INI */
```

```
Device (A1)
```

```
{  
  Method (_STA)  
  {  
    Return (0x0F)  
  }  
  
  Method (_INI)  
  {  
    Return  
  }  
}
```

```
/* Device with no _STA, has _INI */
```

```
Device (A2)
```

```
{  
  Method (_INI)  
  {  
    Return  
  }  
}
```

```
/* Device with _STA, no _INI */
```

```
Device (A3)
```

```
{  
  Method (_STA)  
  {  
    Return (0x0F)  
  }  
}
```

```
/* Device with _STA and _INI, but not present */
```

```
Device (A4)
```

```
{  
  Method (_STA)  
  {  
    Return (Zero)  
  }  
  
  Method (_INI)  
  {  
    Return  
  }  
}
```

```

}

/* Resource descriptors */

Device (IRES)
{
  Name (PRT0, ResourceTemplate ()
  {
    IRQ (Edge, ActiveHigh, Exclusive) {3,4,5,6,7,9,10,11,14,15}

    StartDependentFn (1,1)
    {
      IRQNoFlags () {0,1,2}
    }
    EndDependentFn ()
  })

  Method (_CRS, 0, NotSerialized)
  {
    Store ("_CRS:", Debug)
    Store (PRT0, Debug)
    Return (PRT0)
  }

  Method (_SRS, 1, Serialized)
  {
    Store ("_SRS:", Debug)
    Store (Arg0, Debug)
    Return (Zero)
  }
}

Name (_NPK, Package ()
{
  0x1111,
  0x2222,
  0x3333,
  0x4444
})

Device (RES)
{
  Name (_PRT, Package (0x04)
  {
    Package (0x04)
    {

```

```
    0x0002FFFF,  
    Zero,  
    Zero,  
    Zero  
},
```

```
Package (0x04)  
{  
    0x0002FFFF,  
    One,  
    Zero,  
    Zero  
},
```

```
Package (0x04)  
{  
    0x000AFFFF,  
    Zero,
```

```
Zero,  
    Zero  
},
```

```
Package (0x04)  
{  
    0x000BFFFF,  
    Zero,  
    Zero,  
    Zero  
}  
})
```

```
Method (_CRS, 0, Serialized)  
{  
    Name (PRT0, ResourceTemplate ())  
    {  
        WordBusNumber (ResourceConsumer, MinFixed, MaxFixed, SubDecode,  
            0x0000, // Address Space Granularity  
            0xFFFF2, // Address Range Minimum  
            0xFFFF3, // Address Range Maximum  
            0x0032, // Address Translation Offset  
            0x0002,,,) )  
        WordBusNumber (ResourceProducer, MinFixed, MaxFixed, PosDecode,  
            0x0000, // Address Space Granularity  
            0x0000, // Address Range Minimum  
            0x00FF, // Address Range Maximum  
            0x0000, // Address Translation Offset  
            0x0100,,,) )  
    }  
}
```

WordSpace (0xC3,
 ResourceConsumer, PosDecode, MinFixed, MaxFixed, 0xA5,
 0x0000, // Address Space Granularity
 0xA000, // Address Range Minimum
 0xBFFF, // Address Range Maximum
 0x0000, // Address Translation Offset
 0x2000,,,)

IO (Decode16, 0x0CF8, 0x0CFF, 0x01, 0x08)

WordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
 0x0000, // Address Space Granularity
 0x0000, // Address Range Minimum
 0x0CF7, // Address Range Maximum
 0x0000, // Address Translation Offset
 0x0CF8,,,
 , TypeStatic)

WordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
 0x0000, // Address Space Granularity
 0x0D00, // Address Range Minimum
 0xFFFF, // Address Range Maximum

 0x0000, // Address Translation Offset
 0xF300,,,
 , TypeStatic)

DWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
 0x00000000, // Address Space Granularity
 0x00000000, // Address Range Minimum
 0x00000CF7, // Address Range Maximum
 0x00000000, // Address Translation Offset
 0x00000CF8,,,
 , TypeStatic)

DWordMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
 0x00000000, // Address Space Granularity
 0x000C8000, // Address Range Minimum
 0x000EFFFF, // Address Range Maximum
 0x00000000, // Address Translation Offset
 0x00028000,,,
 , AddressRangeMemory, TypeStatic)

DWordSpace (0xC3, ResourceConsumer, PosDecode, MinFixed,
 MaxFixed, 0xA5,
 0x00000000, // Address Space Granularity
 0x000C8000, // Address Range Minimum
 0x000EFFFF, // Address Range Maximum
 0x00000000, // Address Translation Offset
 0x00028000,,,)

QWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
 0x0000000000000000, // Address Space Granularity
 0x0000000000000000, // Address Range Minimum
 0x000000000000CF7, // Address Range Maximum

```

0x0000000000000000, // Address Translation Offset
0x000000000000CF8, 0x44, "This is a ResourceSource string",
, TypeStatic)
QWordIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
0x0000000000000000, // Address Space Granularity
0x0000000000000000, // Address Range Minimum

0x000000000000CF7, // Address Range Maximum
0x0000000000000000, // Address Translation Offset
0x000000000000CF8,,
, TypeStatic)
QWordMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
0x0000000000000000, // Address Space Granularity
0x0000000000100000, // Address Range Minimum
0x00000000FFDFFFFFFF, // Address Range Maximum
0x0000000000000000, // Address Translation Offset
0x00000000FFD00000,,
, AddressRangeMemory, TypeStatic)
QWordSpace (0xC3, ResourceConsumer, PosDecode, MinFixed, MaxFixed, 0xA5,
0x0000000000000000, // Address Space Granularity
0x0000000000000000, // Address Range Minimum
0x000000000000CF7, // Address Range Maximum
0x0000000000000000, // Address Translation

Offset
0x000000000000CF8,,)
ExtendedIO (ResourceProducer, MinFixed, MaxFixed, PosDecode, EntireRange,
0x0000000000000000, // Address Space Granularity
0x0000000000000000, // Address Range Minimum
0x000000000000CF7, // Address Range Maximum
0x0000000000000000, // Address Translation Offset
0x000000000000CF8, // Address Length
0x0000000000000000, // Type Specific Attributes
, TypeStatic)
ExtendedMemory (ResourceProducer, PosDecode, MinFixed, MaxFixed, Cacheable, ReadWrite,
0x0000000000000000, // Address Space Granularity
0x0000000000100000, // Address Range Minimum
0x00000000FFDFFFFFFF, // Address Range Maximum
0x0000000000000000, // Address Translation Offset
0x00000000FFD00000, // Address

Length
0x0000000000000000, // Type Specific Attributes
, AddressRangeMemory, TypeStatic)
ExtendedSpace (0xC3, ResourceProducer, PosDecode, MinFixed, MaxFixed, 0xA3,
0x0000000000000000, // Address Space Granularity
0x0000000000100000, // Address Range Minimum
0x00000000FFDFFFFFFF, // Address Range Maximum
0x0000000000000000, // Address Translation Offset
0x00000000FFD00000, // Address Length

```

```

    0x0000000000000000) // Type Specific Attributes
IO (Decode16, 0x0010, 0x0020, 0x01, 0x10)
IO (Decode16, 0x0090, 0x00A0, 0x01, 0x10)
FixedIO (0x0061, 0x01)
IRQNoFlags () {2}
DMA (Compatibility, BusMaster, Transfer8_16) {4}
DMA (Compatibility, BusMaster, Transfer8) {2,5,7}
Memory32Fixed (ReadWrite, 0x00100000, 0x00000000)
    Memory32Fixed (ReadOnly, 0xFFFFE000, 0x00020000)
Memory32 (ReadOnly, 0x00020000, 0xFFFFE000, 0x00000004, 0x00000200)
Memory24 (ReadOnly, 0x1111, 0x2222, 0x0004, 0x0200)
Interrupt (ResourceConsumer, Level, ActiveLow, Exclusive, 0xE, "\\_SB_.TEST")
{
    0x00000E01,
}
Interrupt (ResourceConsumer, Edge, ActiveHigh, Exclusive, 0x6, "xxxx")
{
    0x00000601,
    0x00000003,
    0x00000002,
    0x00000001,
}
Interrupt (ResourceProducer, Edge, ActiveHigh, Exclusive)
{
    0xFFFF0000,
    0x00000003,
    0x00000002,
    0x00000001,
    0x00000005,
    0x00000007,
    0x00000009,
}
VendorShort () {0x01,
0x02, 0x03}
VendorLong ()
{
    0x01, 0x02, 0x03, 0x04, 0x05, 0x06, 0x07, 0x08,
    0x09
}
Register (SystemIO, 0x08, 0x00, 0x00000000000000B2, , R000)
Register (SystemMemory, 0x08, 0x00, 0x00000000000000B2)
StartDependentFnNoPri ()
{
    IRQNoFlags () {0,1,2}
    IRQ (Level, ActiveLow, Shared) {3,4,5,6,7,9,10,11,14,15}
}
EndDependentFn ()
})

```

```

CreateWordField (PRT0, 0x08, BMIN)
CreateByteField (PRT0, R000._ASZ, RSIZ)
Store (0x03, BMIN)
Return (PRT0)
}

Method (_PRS, 0, Serialized)
{
    Name (BUF0, ResourceTemplate ()
    {
        StartDependentFn (0x01, 0x02)
        {
            IO (Decode16, 0x03D8, 0x03F8, 0x01, 0x08)
            IRQNoFlags ()
{4}
        }
        StartDependentFn (0x02, 0x01)
        {
            IO (Decode16, 0x03D8, 0x03E8, 0x01, 0x08)
            IRQNoFlags () {4}
        }
        StartDependentFn (0x00, 0x02)
        {
            IO (Decode16, 0x02E8, 0x02F8, 0x01, 0x08)
            IRQNoFlags () {3}
        }
        StartDependentFn (0x00, 0x02)
        {
            IO (Decode16, 0x02D8, 0x02E8, 0x01, 0x08)
            IRQNoFlags () {3}
        }
        StartDependentFn (0x02, 0x00)
        {
            IO (Decode16, 0x0100, 0x03F8, 0x08, 0x08)
            IRQNoFlags () {1,3,4,5,6,7,8,10,11,12,13,14,15}
        }
        EndDependentFn ()
    })
    Return (BUF0)
}

Method (_SRS, 1, Serialized)
{
    Return (Zero)
}
}

```



```

Name(\_S0,Package(0x04){
    0x00,
    0x00,
    0x00,
    0x00
})
Name(\_S3,Package(0x04){
    0x05,
    0x05,
    0x00,
    0x00
})
Name(\_S4,Package(0x04){
    0x06,
    0x06,
    0x00,
    0x00
})
Name(\_S5,Package(0x04){
    0x07,
    0x07,
    0x00,
    0x00
})

```

/* Examine this table header (DSDT) */

/*

```

DataTableRegion (HDR, "DSDT", "", "")
Field (HDR, AnyAcc, NoLock, Preserve)
{
    SIG, 32,
    LENG, 32,
    REV, 8,
    SUM, 8,
    OID, 48,
    OTID, 64,
    OREV, 32,
    CID, 32,
    CREV, 32
}

```

Method (SIZE)

```

{
    If (LLess (REV, 2))
    {
        Store ("32-bit table", Debug)
    }
}

```

```

else
{
    Store ("64-bit table", Debug)
}
Return (0)
}

*/
Name (SIZE, 0)

/* Custom operation region */

OperationRegion(MYOP,0x80,0xFD60,0x6)
Field(MYOP,ByteAcc,NoLock,Preserve)
{
    MFLD,8

}

Method (TCOP,, Serialized)
{
    Name (_STR, Unicode ("test"))
    Store (4, MFLD)
    Store (MFLD, Local0)
}

Name (ERRS, 0x0)

/* Warning should be issued for premature string termination */

NAME (ESC1, "abcdefg\x00hijklmn")
NAME (ESC2, "abcdefg\000hijklmn")
Name (ESC3, "abc\a\bdef\f\n\r\t\v\x03ffff\432")

Name(CRSA,ResourceTemplate()
{
WORDBusNumber(ResourceProducer,MinFixed,MaxFixed,PosDecode,0x0000,0x0019,0x001D,0x0000,0x0005)
WORDIO(ResourceProducer,MinFixed,MaxFixed,PosDecode,NonISAOnlyRanges,0x0000,0xC000,0xCFFF,0x000
0,0x1000)
DWORDMemory(ResourceProducer,PosDecode,MinFixed,MaxFixed,NonCacheable,ReadWrite,0x00000000,0xD8
000000,0xDBFFFFFF,0x00000000,0x04000000)

})
Name(CRSB,ResourceTemplate()
{
DWORDMemory(ResourceProducer,PosDecode,MinFixed,MaxFixed,NonCacheable,ReadWrite,0x00000000,0xD8
000000,0xDBFFFFFF,0x00000000,0x04000000)

```

```

    })

    Name(CRSC,ResourceTemplate()
    {
        VendorShort () {0x1, 0x2, 0x3}
    })
    Name(CRSD,ResourceTemplate()
    {
        VendorLong (VNDL) {0x1, 0x2, 0x3, 0x4, 0x5, 0x6, 0x7, 0x8, 0x9}
    })

    Name(CRSE,ResourceTemplate()
    {
        IRQNoFlags(){3,4,10,11}
        IRQNoFlags(xxxt){3,4,10,11}
    })
    Name(CRSR, Buffer (Add (SizeOf(CRSA),SizeOf(CRSB)))){ })
    Method(_CRS,0,NotSerialized)
    {
        Return(CRSR)
    }

    //
    // Unnamed scope
    //
    Scope (\)
    {
        Name(Bxxx,0xFFFFFFFF)
    }

    Name (LANS, 0x0)

    PowerResource(LANP,1,0)
    {
        Method(_STA){
            If(LEqual(And(LANS,0x30),0x30)){
                Return(One)
            } Else {
                Return(Zero)
            }
        }
        Method(_ON){
            If(LNot(_STA())){
                Store (0x30, LANS)
            }
        }
    }

```

```

Method(_OFF){
  If(_STA()){
    Store (0, LANS)
  }
}

/* Can a method define another method? */

/*****
Method (TASK, 2, SERIALIZED)
{
  Sleep (100)

  Method (TAS2)
  {
    Sleep (100)
  }

  TAS2()
  Return

}
*****/

/* A recursive method */

Method (RCIV, 1)
{
  Store (Arg0, Debug)
  If (Lequal (Arg0, 0))
  {
    Return ()
  }
  RCIV (Subtract (Arg0, 1))
}

Method (RTOP)
{
  RCIV (100)
}

Scope(\_PR)
{
  Processor(CPU0,0x0,0xFFFFFFFF,0x0) { }
}

```

Name(B1TP,0xFFFFFFFF)

Name(B2TP,0xFFFFFFFF)

Name(ADPS,0xFFFFFFFF)

Name(B1PS,0xFFFFFFFF)

Name(B1RS,0xFFFFFFFF)

Name(B1CS,0xFFFFFFFF)

Name(B2PS,0xFFFFFFFF)

Name(B2RS,0xFFFFFFFF)

Name(B2CS,0xFFFFFFFF)

Name(B1DC,3000)

Name(B2DC,2600)

Name(B1LF,3000)

Name(B2LF,2600)

Name(BPIF,0)

Name(PBLL,0)

Name(RBIF,Package())

{

0x1,

2200,

2200,

0x1,

10800,

0,

0,

1,

1,

"CA54200-5003/5",

"1",

"LION",

"Fujitsu"

})

Method(SMWE, 4)

{

return(ONES)

}

Method(SMRE, 4)

{

return(ONES)

}

/*

Method(RDBT,0,Serialized){

```

    If(LNot(SMWE(0x09,0x15,1,1))){
        Store(0x18,Local2)
    }
}
*/
Scope(_SB)
{
    Name (SBUF, Buffer (128) {})

    CreateBitField (SBUF, 3, BITY)
    CreateByteField (SBUF, 1, BYTY)
    CreateWordField (SBUF, 2, WRDZ)
    CreateDwordField (SBUF, 4, DWDZ)
    CreateQwordField (SBUF, 8, QWDZ)
    CreateField (SBUF, 128, 12, FLDZ)
    CreateField (SBUF, 148, 96, FLDY)
    CreateField (SBUF, 148, 96, \_SB_.FLDW)

    Method (_INI)
    {
        CreateField (\_SB_.SBUF, 148, 96, FLDV)
    }

    Device(PCI0)
    {
        Name(_HID,EISAID("PNP0A03"))
        Name(_ADR,0x0)

        Method(_CRS,, Serialized)
        {
            Name(PRT0, ResourceTemplate() {
                WORDBusNumber(           // Bus number resource(0)
                    ResourceConsumer,    // bit 0 of general flags is 1
                    MinFixed,             // Range is notfixed
                    MaxFixed,            // Range is not fixed
                    SubDecode,           // SubDecode
                    0x0000,               // Granularity
                    0xffff1,              // Min
                    0xffff2,              // Max
                    0x0032,               // Translation
                    0x0002,,              // Range Length
                    BUS0
                ) } // PRT0

            CreateWordField(PRT0, BUS0._MIN, BMIN) //Minimum bus number

```

supported under this bridge.

```
    Store(3, BMIN)
    Return(PRT0)

} // _CRS

Method(_SRS)
{
    Return ()
}

Device(EIO)
{
    OperationRegion(FJIO,SystemIO,0xFD60,0x6)
        Field(FJIO,ByteAcc,NoLock,Preserve)
        {
            GIDX,8,

            GDTA,8,

            PIDX,8,

            PDTA,8,

            SIDX,8,

            SDTA,8
        }
    IndexField(GIDX,GDTA,ByteAcc,NoLock,Preserve)
    {
        Offset(0x2),
        ,5,
        VGAS,2,
        Offset(0x4),
        ,4,
        DCKE,1,
        Offset(0x5),
        ,6,
        ACPW,1,

        Offset(0xA),
        B1P,1,

        B2P,1,

        B1C,1,
```

```

    B2C,1,
    B1ER,1,
    B2ER,1,
    Offset(0xB),
    B1CP,8,
    B2CP,8,
    BCP,8,
    B1VH,8,
    B1VL,8,
    B2VH,8,
    B2VL,8,
    B1TM,8,
    B2TM,8,
    B1CH,8,
    B1CL,8,
    B2CH,8,
    B2CL,8
  }
}
}
}

```

```

Method(RDBT,3,Serialized){
  Store(0x1FFF,Local1)
  If( Arg0 ){
    Store(0x2FFF,Local1)
  }
  Store(0x18,Local2)
  If( Arg1 ){
    Store(0x10,Local2)
  }
  If(LNot(SMRE(0x09,0x15,1,RefOf(Local0)))){

```



```

    If(LNot(SMWE(0x08,0x14,1,Local1))){
        If(LNot(SMRE(0x09,0x17,Local2,RefOf(Local3)))){
            Store(Local1,Arg2)
        }
    }
    Or(Local0,0xFFF,Local0)
    SMWE(0x08,0x14,1,Local0)
}
}
Method(MKWD,2)
{
    If(And(Arg1,0x80)) {
        Or(0xFFFF0000,Arg0,Local0)
        Or(Local0,ShiftLeft(Arg1,8),Local0)
        Subtract(Zero,Local0,Local0)
    } else {
        Store(Arg0,Local0)
        Or(Local0,ShiftLeft(Arg1,8),Local0)
    }
    Return(Local0)
}

```

```

Device(CMB1)
{
    Name(_HID,EISAID("PNPOC0A"))
    Name(_UID,0x1)
    Alias(\_SB.PCI0.EIO.B1P,\_SB_.PCI0.XXXX)
    Alias(\_SB.PCI0.EIO.B1P,B1P)
    Alias(\_SB.PCI0.EIO.B1C,B1C)
    Alias(\_SB.PCI0.EIO.B1CH,B1CH)
    Alias(\_SB.PCI0.EIO.B1CL,B1CL)
    Alias(\_SB.PCI0.EIO.B1VH,B1VH)
    Alias(\_SB.PCI0.EIO.B1VL,B1VL)
    Alias(\_SB.PCI0.EIO.B1CP,B1CP)
}

```

```

Method(_INI)
{
    Store(B1P, B1PS)
    Store(B1CP,B1RS)
    Store(B1C, B1CS)
}

```

```

Method(_BIF){
    RDBT(Zero,Zero,RefOf(B1DC))
    RDBT(Zero,One,RefOf(B1LF))
    Store(B1DC,Index(RBIF,1))
    Store(B1LF,Index(RBIF,2))
    Store("CA54200-5003/5",Index(RBIF,9))
}

```

```

    Store("1",Index(RBIF,10))
    Return(RBIF)
}

Method(_BST,, Serialized) {

    _INI()

    Store(Zero,Local0)

    if (LAnd(B1P,LNot(B1C))){
        Or(Local0,1,Local0)
    }

    if (LAnd(B1P,B1C)) {
        Or(Local0,2,Local0)
    }

    if (LLessEqual(B1CP,1)) {

        Or(Local0,4,Local0)
    }

    Store(MKWD(B1CL,B1CH),Local1)

    Store(Divide(Add(Multiply(B1CP,B1LF),99),100),Local2)

    Store(MKWD(B1VL,B1VH),Local3)

    Name(STAT,Package(4){})
    Store(Local0,Index(STAT,0))
    Store(Local1,Index(STAT,1))
    Store(Local2,Index(STAT,2))
    Store(Local3,Index(STAT,3))

    If(LNot(BPIF)){
//        \_SB.PCI0.EIO.EC0.IECT()
//        \_SB.PCI0.EIO.EC0.SECT()
        Store(One,BPIF)
    }
    return(STAT)
}

}

Device (DEV1)
{
}

```

```

Scope(\_TZ)
{
    ThermalZone(TZ1)
    {
        Name(_PSL,Package()
        {
            \_PR.CPU0
        })
    }
}

Method (TZ2, 0, SERIALIZED)
{
    Name(_PSL,Package()
    {
        \_PR.CPU0
    })

    Return (_PSL)
}

ThermalZone (THM1)
{
}

Method (NOTI)
{
    Notify (\DEV1, 0)
    Notify (\THM1, 0)
    Notify (\_PR.CPU0, 0)
}

Method (_ERR, 3)
{
    Increment (ERRS)
    Store ("Run-time exception:", Debug)
    Store (Arg0, Debug)
    Store (Arg1, Debug)

    Return (0)    // Map error to AE_OK
}

Method (DIV0)
{
    Store (1, Local0)
    Store (0, Local1)
}

```

```

Divide (Local0, Local1, Local3)

Store ("DIV0 - noabort", Debug)
}

Method (ERR_, 2)
{
    Local0 = ToDecimalString (Arg1)
    if (LEqual (Arg0, 0))
    {
        Printf ("++++ MTHD_ERROR at line %o: Results not equal!", Local0)
    }
    if (LEqual (Arg0, 1))
    {
        Printf ("++++ MTHD_ERROR at line %o: Numeric result is incorrect!", Local0)
    }
    if (LEqual (Arg0, 2))
    {
        Printf ("++++ MTHD_ERROR at line %o: Operand was clobbered!", Local0)
    }
}

Notify (DEV1, Arg0)
Increment (ERRS)
}

Method (R226, 2)
{
}
Method (R225, 2)
{
    R226 (Arg0, Arg1)
}
Method (R224, 2)
{
    R225 (Arg1, Arg0)
}
Method (R223, 2)
{
    R224 (Arg0, Arg1)
}
Method (R222, 2)
{
    R223 (Arg1, Arg0)
}
Method (R111)
{
    Store (0x01010101, Local0)
}

```

```

R222 (0xABAB, Local0)
Store (Local0, Local1)
}

Method (MAIN)
{

// SIZE()
Store (NUM1(), Local0)
\CMB1._BST()
RDBT(1,2,3)
OBJ1(1)
OBJ2(2)
CHEK()
RETZ()
BITZ()
LOGS()
REFS()
COND()
TZ2()

//
// iPCO tests added
//
Store (\IFEL.TEST(), Local0)
if (LGreater (Local0, 0))
{
ERR_ (1, __LINE__)
Return(Local0)
}

Store (\NOSV.TEST(), Local0)
if (LGreater (Local0, 0))
{

ERR_ (1, __LINE__)
Return(Local0)
}

Store (\IDXF.TEST(), Local0)
if (LGreater (Local0, 0))
{
ERR_ (1, __LINE__)
Return(Local0)
}

Store (\_SB\_NSTL.TEST(), Local0)
if (LGreater (Local0, 0))

```

```

{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\RTBF.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\_SB_.RTL.V.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\_SB_.RETP.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\WHLR.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\AND0.TEST(),
Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\BRKP.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

```

```
Store (\ADSU.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\INDC.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\LOPS.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\FDSO.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\MLDV.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\NBIT.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\SHFT.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\XORD.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\CRBF.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\IDX4.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\EVNT.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\SZLV.TEST(), Local0)
if (LGreater (Local0, 0))

{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\_SB_.BYTF.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}
```

```
Store (\DWDF.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
}
```



```

    Return(Local0)
}

Store (\DVAX.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\IDX6.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\IDX5.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\_SB_.IDX0.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\_SB_.IDX3.TEST(),
Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\IDX7.TEST(), Local0)
if (LGreater (Local0, 0))
{
    ERR_ (1, __LINE__)
    Return(Local0)
}

Store (\MTCH.TEST(), Local0)
if (LGreater (Local0, 0))

```

```

{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\WHLB.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\_SB_.IDX2.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\SIZO.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1, __LINE__)
  Return(Local0)
}

Store (\_SB_.SMIS.TEST(), Local0)
if (LGreater (Local0, 0))
{
  ERR_ (1,
__LINE__)
  Return(Local0)
}

if (LGreater (ERRS, 0))
{
  Store ("***** There were errors during the execution of the test *****", Debug)
}

// Flush all notifies

Sleep (250)

//
// Last Test
//

Return(0) // Success

```

```
}
```

```
Method (OBJ1, 1, SERIALIZED)
```

```
{
```

```
    Store (3, Local0)
```

```
    Name(BUFR, Buffer (Local0) {})
```

```
    Name(BUF1, Buffer (4) { 1,2,3,4})
```

```
    Name(BUF2, Buffer (4) {})
```

```
    Store (BUF1, BUF2)
```

```
    Mutex (MTX1, 4)
```

```
    Alias (MTX1, MTX2)
```

```
}
```

```
Mutex (MTXT, 0)
```

```
Mutex (MTXX, 0)
```

```
/*
```

```
 * Field Creation
```

```
*/
```

```
Method (FLDS,, Serialized)
```

```
{
```

```
    Store ("+++++++ Creating BufferFields", Debug)
```

```
    Name (BUF2, Buffer (128) {})
```

```
    CreateBitField (BUF2, 3, BIT2)
```

```
    CreateByteField (BUF2, 1, BYT2)
```

```
    CreateWordField (BUF2, 2, WRD2)
```

```
    CreateDwordField (BUF2, 4, DWD2)
```

```
    CreateQwordField (BUF2,
```

```
8, QWD2)
```

```
    CreateField (BUF2, 128, 12, FLD2)
```

```
    CreateField (BUF2, 148, 96, FLD3)
```

```
    Store (0x1, BIT2)
```

```
    Store (BIT2, Local0)
```

```
    if (LNotEqual (Local0, 0x1))
```

```
    {
```

```
        ERR_ (1, __LINE__)
```

```
    }
```

```
    else
```

```
    {
```

```
        Store (DerefOf (Index (BUF2, 0)), Local0)
```

```

if (LNotEqual (Local0, 0x08))
{
    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ Bit BufferField I/O PASS", Debug)
}
}

Store (0x1A, BYT2)
Store (BYT2, Local0)
if (LNotEqual (Local0, 0x1A))
{
    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ Byte BufferField I/O PASS", Debug)
}

Store (0x1234, WRD2)
Store (WRD2, Local0)
if (LNotEqual (Local0, 0x1234))
{
    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ Word BufferField
I/O PASS", Debug)
}

Store (0x123, FLD2)
Store (FLD2, Local0)
if (LNotEqual (Local0, 0x123))
{
    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ 12-bit BufferField I/O PASS", Debug)
}

Store (0x12345678, DWD2)
Store (DWD2, Local0)
if (LNotEqual (Local0, 0x12345678))
{

```

```

    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ Dword BufferField I/O PASS", Debug)
}

Store (0x1234567887654321, QWD2)
Store (QWD2, Local0)
if (LNotEqual (Local0, 0x1234567887654321))
{
    ERR_ (1, __LINE__)
}
else
{
    Store ("+++++++ Qword BufferField I/O PASS", Debug)
}
}

/* Field execution */

Method (FLDX,, Serialized)
{
    Field (\_SB\_MEM.SMEM, AnyAcc, NoLock, Preserve)
    { // Field: SMEM overlay using 32-bit field elements
        SMD0, 32, // 32-bits
        SMD1, 32, // 32-bits
        SMD2, 32, // 32-bits
        SMD3, 32 // 32-bits
    } // Field: SMEM overlay using 32-bit field elements
    Field (\_SB\_MEM.SMEM, AnyAcc, NoLock, Preserve)
    { // Field: SMEM overlay using greater than 32-bit field elements
        SME0, 69, // larger than an integer (32 or 64)
        SME1, 97 // larger than an integer
    } // Field: SMEM overlay using greater than 32-bit field elements
}

Method (MTX_, )
{
    /* Test "Force release" of mutex on method exit */

    Acquire (MTXT, 0xFFFF)
    Acquire (MTXX, 0xFFFF)

    Store ("+++++++ Acquiring Mutex MTX2", Debug)
    Acquire (_GL_, 0xFFFF)
}

```

```

Store ("+++++++ Releasing Mutex MTX2", Debug)
Release (_GL_)
}

Method (OBJ2, 1, Serialized)
{
Store ("+++++++ Creating Buffer BUFO", Debug)
Name (BUFO, Buffer (32)
{ })

Store ("+++++++ Creating OpRegion OPR2", Debug)
OperationRegion (OPR2, SystemMemory, Arg0, 256)

Store ("+++++++ Creating Field(s) in OpRegion OPR2", Debug)
Field (OPR2, ByteAcc, NoLock, Preserve)
{
    IDX2, 8,
    DAT2, 8,
    BNK2, 4
}

Store ("+++++++ Creating BankField BNK2 in OpRegion OPR2", Debug)
//
// mcw 3/20/00 - changed FET0, 4, FET1, 3 to FET0, 1, FET1, 1
//
BankField (OPR2, BNK2, 0, ByteAcc, NoLock, Preserve)
{
    FET0, 4,
    FET1, 3
}

Store ("+++++++ Creating IndexField", Debug)
IndexField (IDX2, DAT2, ByteAcc, NoLock, Preserve)
{
    FET2, 4,
    FET3, 3
}

Store ("+++++++ SizeOf (BUFO)", Debug)
SizeOf (BUFO)

Store ("+++++++ Store (SizeOf (BUFO), Local0)", Debug)
Store (SizeOf (BUFO), Local0)

Store ("+++++++ Concatenate (\"abd\",

```

```

\def\, Local0)", Debug)
Concatenate ("abd", "def", Local0)
Store (Local0, Debug)

Store ("+++++++ Concatenate (\abd\", 0x7B, Local0)", Debug)
Concatenate ("abd", 0x7B, Local0)
Store (Local0, Debug)

Store ("+++++++ Creating Event EVT2", Debug)
Event (EVT2)

Store ("+++++++ Creating Mutex MTX2", Debug)
Mutex (MTX2, 0)

Store ("+++++++ Creating Alias MTXA to MTX2", Debug)
Alias (MTX2, MTXA)

Store ("+++++++ Acquiring Mutex MTX2", Debug)
Acquire (MTX2, 0xFFFF)

Store ("+++++++ Acquiring Mutex MTX2 (2nd acquire)", Debug)
Acquire (MTX2, 1)

Store ("+++++++ Releasing Mutex MTX2", Debug)
Release (MTX2)

// Type 1 opcodes

Store ("+++++++ Signalling Event EVT2", Debug)
Signal (EVT2)

Store ("+++++++ Resetting Event EVT2", Debug)
Reset (EVT2)

Store ("+++++++ Signalling Event EVT2", Debug)

Signal (EVT2)

Store ("+++++++ Waiting Event EVT2", Debug)
Wait (EVT2, 0xFFFF)

Store ("+++++++ Sleep", Debug)
Sleep (100)

Store ("+++++++ Stall", Debug)
Stall (254)

Store ("+++++++ NoOperation", Debug)

```

```

Noop

// Type 2 Opcodes

Store ("+++++++ Return from Method OBJ2", Debug)
return (4)
}

Method (NUM1, 0)
{
    /* ADD */

    Store ("+++++++ Add (0x12345678, 0x11111111, Local0)", Debug)
    Add (0x12345678, 0x11111111, Local0)

    Store ("+++++++ Store (Add (0x12345678, 0x11111111), Local1)", Debug)
    Store (Add (0x12345678, 0x11111111), Local1)

    Store ("+++++++ Checking result from ADD", Debug)
    if (LNotEqual (Local0, Local1))
    {
        ERR_ (0, __LINE__)
    }

    /* SUBTRACT */

    Store ("+++++++ Subtract (0x87654321, 0x11111111, Local4)", Debug)
    Subtract (0x87654321, 0x11111111, Local4)

    Store ("+++++++ Store (Subtract (0x87654321, 0x11111111), Local5)", Debug)
    Store (Subtract (0x87654321, 0x11111111), Local5)

    Store ("+++++++ Checking result from SUBTRACT", Debug)
    if (LNotEqual (Local4, Local5))
    {
        ERR_ (0, __LINE__)
    }

    /* MULTIPLY */

    Store ("+++++++ Multiply (33, 10, Local6)", Debug)
    Multiply (33, 10, Local6)

    Store ("+++++++ Store (Multiply (33, 10), Local7)", Debug)

```


Store (Multiply (33, 10), Local7)

```
Store ("+++++++ Checking result from MULTIPLY", Debug)
if (LNotEqual (Local6, Local7))
{
  ERR_ (0, __LINE__)
}
```

/* DIVIDE */

```
Store ("+++++++ Divide (100, 9, Local1, Local2)", Debug)
Divide (100, 9, Local1, Local2)
```

```
Store ("+++++++ Store (Divide (100, 9), Local3)", Debug)
Store (Divide (100, 9), Local3)
```

```
Store ("+++++++ Checking (quotient) result from DIVIDE", Debug)
if
(LNotEqual (Local2, Local3))
{
  ERR_ (0, __LINE__)
}
```

/* INCREMENT */

```
Store ("+++++++ Increment (Local0)", Debug)
Store (1, Local0)
Store (2, Local1)
Increment (Local0)
```

```
Store ("+++++++ Checking result from INCREMENT", Debug)
if (LNotEqual (Local0, Local1))
{
  ERR_ (0, __LINE__)
}
```

/* DECREMENT */

```
Store ("+++++++ Decrement (Local0)", Debug)
Store (2, Local0)
Store (1, Local1)
Decrement (Local0)
```

```
Store ("+++++++ Checking result from DECREMENT", Debug)
```

```

if (LNotEqual (Local0, Local1))
{
    ERR_ (0, __LINE__)
}

/* TOBCD */
/* FROMBCD */

Store ("+++++++ ToBCD (0x1234, Local5)", Debug)
ToBCD (0x1234, Local5)

Store ("+++++++ FromBCD (Local5, Local6)", Debug)
FromBCD (Local5, Local6)

Store ("+++++++ Return (Local6)", Debug)
Return
(Local6)
}

```

Method (CHEK)

```

{

    Store (3, Local0)
    Store (3, Debug)
    Store (Local0, Debug)
    Store (7, Local1)

    Add (Local0, Local1)
    if (LNotEqual (Local0, 3))
    {
        ERR_ (2, __LINE__)
    }
    if (LNotEqual (Local1, 7))
    {
        ERR_ (2, __LINE__)
    }

    Add (Local0, Local1, Local2)
    if (LNotEqual (Local0, 3))
    {
        ERR_ (2, __LINE__)
    }
    if (LNotEqual (Local1, 7))
    {
        ERR_ (2, __LINE__)
    }
}

```

```
}  
}
```

Method (RET1)

```
{  
  Store (3, Local0)  
  Return (Local0)  
}
```

Method (RET2)

```
{  
  Return (RET1())  
}
```

Method (RETZ)

```
{  
  RET2 ()  
}
```

Method (BITZ)

```
{  
  Store ("+++++++ FindSetLeftBit (0x00100100, Local0)", Debug)  
  FindSetLeftBit (0x00100100, Local0)  
  if (LNotEqual (Local0, 21))  
  {  
    ERR_ (1, __LINE__)  
  }  
}
```

```
  Store ("+++++++  
FindSetRightBit (0x00100100, Local1)", Debug)  
  FindSetRightBit (0x00100100, Local1)  
  if (LNotEqual (Local1, 9))  
  {  
    ERR_ (1, __LINE__)  
  }  
}
```

```
  Store ("+++++++ And (0xF0F0F0F0, 0x11111111, Local2)", Debug)  
  And (0xF0F0F0F0, 0x11111111, Local2)  
  if (LNotEqual (Local2, 0x10101010))  
  {  
    ERR_ (1, __LINE__)  
  }  
}
```

```
  Store ("+++++++ NAnd (0xF0F0F0F0, 0x11111111, Local3)", Debug)  
  NAnd (0xF0F0F0F0, 0x11111111, Local3)  
  if (LNotEqual (Local3, 0xEF0F0F0F))
```

```

{
  ERR_ (1, __LINE__)
}

Store ("+++++++ Or (0x11111111, 0x22222222, Local4)", Debug)
Or (0x11111111, 0x22222222, Local4)
if (LNotEqual (Local4, 0x33333333))
{
  ERR_ (1, __LINE__)
}

Store ("+++++++ NOR (0x11111111, 0x22222222, Local5)", Debug)
NOR (0x11111111, 0x22222222, Local5)
if (LNotEqual (Local5, 0xCCCCCCCC))
{

ERR_ (1, __LINE__)
}

Store ("+++++++ XOr (0x11113333, 0x22222222, Local6)", Debug)
XOr (0x11113333, 0x22222222, Local6)
if (LNotEqual (Local6, 0x33331111))
{
  ERR_ (1, __LINE__)
}

Store ("+++++++ ShiftLeft (0x11112222, 2, Local7)", Debug)
ShiftLeft (0x11112222, 2, Local7)
if (LNotEqual (Local7, 0x44448888))
{
  ERR_ (1, __LINE__)
}

Store ("+++++++ ShiftRight (Local7, 2, Local7)", Debug)
ShiftRight (Local7, 2, Local7)
if (LNotEqual (Local7, 0x11112222))
{
  ERR_ (1, __LINE__)
}

Store ("+++++++ Not (Local0, Local1)", Debug)
Store (0x22224444, Local0)
Not (Local0, Local1)
if (LNotEqual (Local0, 0x22224444))
{
  ERR_ (2, __LINE__)
}

```

```

if (LNotEqual (Local1, 0xDDDDBBBB))
{
    ERR_ (1, __LINE__)
}

Return (Local7)
}

```

Method (LOGS)

```

{

    Store ("+++++++ Store (LAnd (0xFFFFFFFF, 0x11111111), Local0)", Debug)
    Store (LAnd (0xFFFFFFFF, 0x11111111), Local0)

    Store ("+++++++ Store (LEqual (0xFFFFFFFF, 0x11111111), Local)", Debug)
    Store (LEqual (0xFFFFFFFF, 0x11111111), Local1)

    Store ("+++++++ Store (LGreater (0xFFFFFFFF, 0x11111111), Local2)", Debug)
    Store (LGreater (0xFFFFFFFF, 0x11111111), Local2)

    Store ("+++++++ Store (LGreaterEqual (0xFFFFFFFF, 0x11111111), Local3)", Debug)
    Store (LGreaterEqual (0xFFFFFFFF, 0x11111111), Local3)

    Store ("+++++++ Store (LLess (0xFFFFFFFF, 0x11111111), Local4)", Debug)
    Store (LLess (0xFFFFFFFF, 0x11111111), Local4)

    Store ("+++++++ Store (LLessEqual (0xFFFFFFFF, 0x11111111), Local5)", Debug)
    Store (LLessEqual (0xFFFFFFFF, 0x11111111), Local5)

    Store ("+++++++ Store (LNot (0x31313131), Local6)", Debug)
    Store (0x00001111, Local6)
    Store (LNot (Local6),
Local7)
    if (LNotEqual (Local6, 0x00001111))
    {
        ERR_ (2, __LINE__)
    }

    if (LNotEqual (Local7, 0x0))
    {
        ERR_ (1, __LINE__)
    }

    Store ("+++++++ Store (LNotEqual (0xFFFFFFFF, 0x11111111), Local7)", Debug)

```

Store (LNotEqual (0xFFFFFFFF, 0x11111111), Local7)

Store ("+++++++ Lor (0x0, 0x1)", Debug)

if (Lor (0x0, 0x1))

{

 Store ("+_+_+_+_ Lor (0x0, 0x1) returned TRUE", Debug)

}

return (Local7)

}

Method (COND)

{

 Store ("+++++++ Store (0x4, Local0)", Debug)

 Store (0x4, Local0)

 Store ("+++++++ While (Local0)", Debug)

 While (Local0)

 {

 Store ("+++++++ Decrement (Local0)", Debug)

 Decrement (Local0)

 }

 Store ("+++++++ Store (0x3, Local6)", Debug)

 Store (0x3, Local6)

 Store ("+++++++ While (Subtract (Local6, 1))", Debug)

 While (Subtract

(Local6, 1))

 {

 Store ("+++++++ Decrement (Local6)", Debug)

 Decrement (Local6)

 }

 Store ("+++++++ [LVL1] If (LGreater (0x2, 0x1))", Debug)

 If (LGreater (0x2, 0x1))

 {

 Store ("+++++++ [LVL2] If (LEqual (0x11111111, 0x22222222))", Debug)

 If (LEqual (0x11111111, 0x22222222))

 {

 Store ("+++++++ ERROR: If (LEqual (0x11111111, 0x22222222)) returned TRUE", Debug)

 }

 else

 {

```

Store ("+++++++ [LVL3] If (LNot (0x0))", Debug)
If (LNot (0x0))
{
    Store ("+++++++ [LVL4] If (LAnd (0xEEEEEEEE, 0x2))", Debug)
    If (LAnd (0xEEEEEEEE, 0x2))
    {
        Store ("+++++++ [LVL5] If (LLess (0x44444444, 0x3))", Debug)
        If (LLess (0x44444444, 0x3))
        {
            Store ("+++++++
ERROR: If (LLess (0x44444444, 0x3)) returned TRUE", Debug)
        }

        else
        {
            Store ("+++++++ Exiting from nested IF/ELSE statements", Debug)
        }
    }
}
}
}
}

```

```

Store ("+++++++ [LVL1] If (LGreater (0x2, 0x1))", Debug)
If (LGreater (0x2, 0x1))
{
    Store ("+++++++ [LVL2] If (LEqual (0x11111111, 0x22222222))", Debug)
    If (LEqual (0x11111111, 0x22222222))
    {
        Store ("+++++++ ERROR: If (LEqual (0x11111111, 0x22222222)) returned TRUE", Debug)
    }

    else
    {
        Store ("+++++++ [LVL3] If (LNot (0x0))", Debug)
        If (LNot (0x0))
        {
            Store ("+++++++ [LVL4] If (LAnd (0xEEEEEEEE, 0x2))", Debug)
            If (LAnd (0xEEEEEEEE, 0x2))
            {

                Store ("+++++++ [LVL5] If (LLess (0x44444444, 0x3))", Debug)
                If (LLess (0x44444444, 0x3))
                {
                    Store ("+++++++ ERROR: If (LLess (0x44444444, 0x3)) returned TRUE", Debug)
                }

                else

```

```
    {  
        Store ("+++++++ Returning from nested IF/ELSE statements", Debug)  
        Return (Local6)  
    }  
}  
}  
}  
}
```

Method (REFS,, Serialized)

```
{  
    Name (BBUF, Buffer() {0xB0, 0xB1, 0xB2, 0xB3, 0xB4, 0xB5, 0xB6, 0xB7})
```

```
    Name (NEST, Package ()
```

```
    {  
        Package ()  
        {  
            0x01, 0x02, 0x03, 0x04, 0x05, 0x06  
        },  
        Package ()  
        {  
            0x11, 0x12, 0x12, 0x14, 0x15, 0x16  
        }  
    })
```

```
    Store (RefOf (MAIN), Local5)
```

```
// For this to work, ABCD must NOT exist.
```

```
Store (CondRefOf (ABCD, Local0), Local1)
```

```
if (LNotEqual (Local1, 0))
```

```
{  
    ERR_ (2, __LINE__)  
}
```

```
Store (CondRefOf (BBUF, Local0), Local1)
```

```
if (LNotEqual (Local1, Ones))
```

```
{  
    ERR_ (2, __LINE__)  
}
```

```
Store (DeRefOf (Index (BBUF, 3)), Local6)
```

```
if (LNotEqual (Local6, 0xB3))
```

```
{
```



```

    ERR_ (2, __LINE__)
}

Store (DeRefOf (Index (DeRefOf (Index (NEST, 1)), 3)), Local0)
if (LNotEqual (Local0, 0x14))
{
    ERR_ (2, __LINE__)
}

Store (0x11223344, Local0)
Store (RefOf (Local0), Local1)

Store (DerefOf (Local1), Local2)
If (LNotEqual (Local2, 0x11223344))
{
    ERR_ (2, __LINE__)
}

/* Parser thinks this is a method invocation!! */

// RefOf (MAIN)

// RefOf (R___)
// RefOf (BBUF)

// Store (RefOf (Local0), Local1)

// CondRefOf (BBUF, Local2)
// CondRefOf (R___, Local3)

// Store (DerefOf (Local1), Local4)

// Return (Local4)
}

Method (INDX, 0, Serialized)
{
    Name(STAT,Package(4){})
    Store(0x44443333,Index(STAT,0))
}

//=====
//=====
//===== iPCO TESTS =====

```

```

//=====
//=====
//
//
// test IfElseOp.asl
//
// test for IfOp and ElseOp, including validation of object stack cleanup
//
Device (IFEL)
{
    Name (DWRD, 1)
    Name (RSLT, 0)

    // IFNR control method executes IfOp branch with NO nested Return
    // and no Else branch
    Method (IFNR)
    {
        Store (DWRD, RSLT)
        If (LEqual (DWRD, 1))
        {

            Store (0, RSLT)
        }
    } // IFNR

    // NINR control method does not execute If branch and has no Else branch
    Method (NINR)
    {
        Store (0, RSLT)
        If (LNotEqual (DWRD, 1))
        {
            Store (DWRD, RSLT)
        }
    } // NINR

    // IENR control method executes IfOp branch with NO nested Return
    Method (IENR)
    {
        If (LEqual (DWRD, 1))
        {
            Store (0, RSLT)
        }
        Else
        {
            Store (DWRD, RSLT)
        }
    } // IENR

```

```

// ELNR control method executes ElseOp branch with NO nested Return
Method (ELNR)
{
  If (LNotEqual (DWRD, 1))
  {
    Store (DWRD, RSLT)
  }
  Else
  {
    Store (0, RSLT)
  }
} // ELNR

```

```

// IFRT control method executes IfOp branch with nested
Return with
// no Else branch
Method (IFRT)

```

```

{
  If (LEqual (DWRD, 1))
  {
    Return (0)
  }
  Return (DWRD)
} // IFRT

```

```

// IERT control method executes IfOp branch with nested Return with
// Else branch
Method (IERT)

```

```

{
  If (LEqual (DWRD, 1))
  {
    Return (0)
  }
  Else
  {
    Return (DWRD)
  }
} // IERT

```

```

// ELRT control method executes ElseOp branch with nested Return
Method (ELRT)

```

```

{
  If (LNotEqual (DWRD, 1))
  {
    Return (DWRD)
  }
  Else

```

```

    {
        Return (0)
    }
} // ELRT

Method (TEST)
{
    Store ("+++++++ IfElseOp Test", Debug)

    // IfOp with NO return value
    IFNR()
    If (LNotEqual (RSLT,
0))
    {
        Return (RSLT)
    }

    // IfOp with NO return value
    NINR()
    If (LNotEqual (RSLT, 0))
    {
        Return (RSLT)
    }

    // IfOp with NO return value
    IENR()
    If (LNotEqual (RSLT, 0))
    {
        Return (RSLT)
    }

    // ElseOp with NO return value
    ELNR()
    If (LNotEqual (RSLT, 0))
    {
        Return (RSLT)
    }

    // IfOp with return value
    Store (IFRT, RSLT)
    If (LNotEqual (RSLT, 0))
    {
        Return (RSLT)
    }

    // IfOp with return value
    Store (IERT, RSLT)
    If (LNotEqual (RSLT, 0))

```

```

    {
        Return (RSLT)
    }

    // ElseOp with return value
    Store (ELRT, RSLT)
    If (LNotEqual (RSLT, 0))
    {

        Return (RSLT)
    }

    Return (0)
} // TEST
} // IFEL

//
// test NoSave.asl
//
//
// Internal test cases to validate IfOp (Operator (,)) where Operator
// target is ZeroOp to throw away the results.
// Includes internal test cases for logical operators with no destination
// operands.
//
Device (NOSV)
{
    Method (TEST,, Serialized)
    {
        Store ("+++++++ NoSave Test", Debug)

        Name (WRD, 0x1234)

        //
        // Begin test of nested operators without saving results
        //

        // Test If (And ()) with no save of And result
        If (And (3, 1, ))
        {
            Store (1, WRD) // pass -- just do something
        }
        else
        {
            Return (1) // fail
        }

        // Test If (And ()) with no save of And result

```

```

If (And (4, 1, ))
{
    Return (2)    //
fail
}
else
{
    Store (2, WRD) // pass -- just do something
}

// Test If (NAnd ()) with no save of NAnd result
If (NAnd (3, 1, ))
{
    Store (3, WRD) // pass -- just do something
}
else
{
    Return (3)    // fail
}

// Test If (NAnd ()) with no save of NAnd result
If (NAnd (0xFFFFFFFF, 0xFFFFFFFF, ))
{
    Return (4)    // fail
}
else
{
    Store (4, WRD) // pass -- just do something
}

// Test If (NOr ()) with no save of NOr result
If (NOr (0, 1, ))
{
    Store (5, WRD) // pass -- just do something
}
else
{
    Return (5)    // fail
}

// Test If (NOr ()) with no save
of NOr result
If (NOr (0xFFFFFFFFE, 1, ))
{
    Return (6)    // fail
}

```

```

else
{
    Store (6, WRD) // pass -- just do something
}

// Test If (Not ()) with no save of Not result
If (Not (1, ))
{
    Store (7, WRD) // pass -- just do something
}
else
{
    Return (7) // fail
}

// Test If (Not ()) with no save of Not result
If (Not (0xFFFFFFFF, ))
{
    Return (8) // fail
}
else
{
    Store (8, WRD) // pass -- just do something
}

// Test If (Or ()) with no save of Or result
If (Or (3, 1, ))
{
    Store (9, WRD) // pass -- just do something
}
else
{
    Return (9)
// fail
}

// Test If (Or ()) with no save of Or result
If (Or (0, 0, ))
{
    Return (10) // fail
}
else
{
    Store (10, WRD) // pass -- just do something
}

```

```

// Test If (XOr ()) with no save of XOr result
If (XOr (3, 1, ))
{
    Store (11, WRD) // pass -- just do something
}
else
{
    Return (11) // fail
}

// Test If (XOr ()) with no save of XOr result
If (XOr (3, 3, ))
{
    Return (12) // fail
}
else
{
    Store (12, WRD) // pass -- just do something
}

//
// Begin test of logical operators with no destination operands
//

// Test If (LAnd ()) with no save of LAnd result
If (LAnd (3, 3))
{
    Store (21, WRD) // pass -- just do something
}
else
{
    Return (21) // fail
}

// Test If (LAnd ()) with no save of LAnd result
If (LAnd (3, 0))
{
    Return (22) // fail
}
else
{
    Store (22, WRD) // pass -- just do something
}

// Test If (LAnd ()) with no save of LAnd result
If (LAnd (0, 3))

```



```

{
    Return (23) // fail
}
else
{
    Store (23, WRD) // pass -- just do something
}

// Test If (LAnd ()) with no save of LAnd result
If (LAnd (0, 0))
{
    Return (24) // fail
}
else
{
    Store (24, WRD) // pass -- just do something
}
}

```

```

// Test If (LEqual ()) with no save of LEqual result
If (LEqual (3, 3))
{
    Store (31, WRD) // pass -- just do something
}
else
{
    Return (31) // fail
}

```

```

// Test If (LEqual ()) with no save of LEqual result
If (LEqual (1, 3))
{
    Return (32) // fail
}
else
{
    Store (32, WRD) // pass -- just do something
}

```

```

// Test If (LGreater ()) with no save of LGreater result
If (LGreater (3, 1))
{
    Store (41, WRD) // pass -- just do something
}
else
{

```

```

    Return (41) // fail
}

// Test If (LGreater ()) with no save of LGreater result
If (LGreater (4, 4))
{
    Return (42) // fail
}
else
{
    Store (42, WRD) // pass -- just do something
}

// Test If (LGreater ()) with no save of LGreater result
If (LGreater (1, 4))
{
    Return (43) // fail
}
else
{
    Store (43, WRD) // pass -- just do something
}

// Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 1))
{
    Store (44, WRD) // pass -- just do something
}
else
{
    Return (44) // fail
}

// Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 3))
{
    Store (45, WRD) // pass -- just do something
}
else
{
    Return (45) // fail
}

// Test If (LGreaterEqual ()) with no save of LGreaterEqual result
If (LGreaterEqual (3, 4))
{

```

```

    Return (46) // fail
}
else
{
    Store (46, WRD) // pass -- just do something
}

// Test If (LLess ()) with no save of LLess result
If (LLess (1, 3))
{
    Store (51, WRD) // pass -- just do something
}
else
{
    Return (51) // fail
}

// Test If (LLess ()) with no save of LLess result
If (LLess (2, 2))
{
    Return (52) // fail
}
else
{
    Store (52, WRD) // pass -- just do something
}

// Test If (LLess ()) with no save of LLess result
If (LLess (4, 2))
{
    Return (53) // fail
}

else
{
    Store (53, WRD) // pass -- just do something
}

// Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (1, 3))
{
    Store (54, WRD) // pass -- just do something
}
else
{
    Return (54) // fail
}

```

```

}

// Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (2, 2))
{
    Store (55, WRD) // pass -- just do something
}
else
{
    Return (55) // fail
}

// Test If (LLessEqual ()) with no save of LLessEqual result
If (LLessEqual (4, 2))
{
    Return (56) // fail
}
else
{
    Store (56, WRD) // pass -- just do something
}

// Test If (LNot ()) with no save
of LNot result
If (LNot (0))
{
    Store (61, WRD) // pass -- just do something
}
else
{
    Return (61) // fail
}

// Test If (LNot ()) with no save of LNot result
If (LNot (1))
{
    Return (62) // fail
}
else
{
    Store (62, WRD) // pass -- just do something
}

// Test If (LNotEqual ()) with no save of LNotEqual result
If (LNotEqual (3, 3))
{

```

```

    Return (63) // fail
}
else
{
    Store (63, WRD) // pass -- just do something
}

// Test If (LNotEqual ()) with no save of LNotEqual result
If (LNotEqual (1, 3))
{
    Store (64, WRD) // pass -- just do something
}
else
{

    Return (64) // fail
}

// Test If (LOr ()) with no save of LOr result
If (LOr (3, 1))
{
    Store (71, WRD) // pass -- just do something
}
else
{
    Return (71) // fail
}

// Test If (LOr ()) with no save of LOr result
If (LOr (0, 1))
{
    Store (72, WRD) // pass -- just do something
}
else
{
    Return (72) // fail
}

// Test If (LOr ()) with no save of LOr result
If (LOr (3, 0))
{
    Store (73, WRD) // pass -- just do something
}
else
{
    Return (73) // fail
}

```

```

// Test If (LOr ()) with no save of LOr result
If (LOr (0, 0))
{
    Return (74) // fail
}
else
{
    Store (74, WRD) // pass -- just do something
}

Return (0)
} // TEST
} // NOSV

//
// test IndxFld.asl
//
// IndexFld test
// This is just a subset of the many RegionOp/Index Field test cases.
// Tests index field element AccessAs macro.
//
Device (IDXF)
{ // Test device name

    OperationRegion (SIO, SystemIO, 0x100, 2)
    Field (SIO, ByteAcc, NoLock, Preserve)
    {
        INDX, 8,
        DATA, 8
    }
    IndexField (INDX, DATA, AnyAcc, NoLock, WriteAsOnes)
    {
        AccessAs (ByteAcc, 0),
        IFE0, 8,
        IFE1, 8,
        IFE2, 8,
        IFE3, 8,
        IFE4, 8,
        IFE5, 8,
        IFE6, 8,
        IFE7, 8,
        IFE8, 8,
        IFE9, 8,
    }
}

```

```

Method (TEST)
{
    Store ("+++++++ IndxFld Test", Debug)

Store (IFE0, Local0)
    Store (IFE1, Local1)
    Store (IFE2, Local2)

    Return (0)
} // TEST
} // IDXF

//
// test NestdLor.asl
//
Scope (\_SB) // System Bus
{ // _SB system bus

    Name (ZER0, 0)
    Name (ZER1, 0)
    Name (ZER2, 0)
    Name (ONE0, 1)

Device (NSTL)
{
    Method (TEST)
    {
        Store ("+++++++ NestdLor Test", Debug)

        If (Lor (ZER0, Lor (ZER1, Lor (ZER2, ONE0))))
        { // Indicate Pass
            Store (0x00, Local0)
        }

        Else
        { // Indicate Fail
            Store (0x01, Local0)
        }

        Return (Local0)
    } // End Method TEST
} // Device NSTL
} // _SB system bus

//
// test RetBuf.asl
//

```

```

// Test ReturnOp(Buffer)
// This is required to support Control Method Batteries on
// Dell
Latitude Laptops (e.g., CP1-A)
//
Device (RTBF)
{
  Method (SUBR, 1)
  {
    Return (Arg0)
  }

  Method (RBUF,, Serialized)
  { // RBUF: Return Buffer from local variable
    Name (ABUF, Buffer() {"ARBITRARY_BUFFER"})

    // store local buffer ABUF into Local0
    Store (ABUF, Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Buffer
    If (LNotEqual (Local1, 3)) // Buffer type is 3
    {
      Return (1) // failure
    }

    // store value returned by control method SUBR into Local0
    Store (SUBR (ABUF), Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Buffer
    If (LNotEqual (Local1, 3)) // Buffer type is 3
    {

Return (2) // failure
    }

    // allocate buffer using Local1 as buffer size (run-time evaluation)
    Store (5, Local1)
    Name (BUFR, Buffer(Local1) {})

    // store value returned by control method SUBR into Local0
    Store (SUBR (BUFR), Local0)

```



```

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Buffer
If (LNotEqual (Local1, 3)) // Buffer type is 3
{
    Return (3) // failure
}

// store BUFR Buffer into Local0
Store (BUFR, Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Buffer
If (LNotEqual (Local1, 3)) // Buffer type is 3
{
    Return (4) // failure
}

// return Local0 Buffer
Return (Local0)
} // RBUF

Method (TEST)
{
    Store ("+++++++ RetBuf Test", Debug)

// store RBUF Buffer return value into Local0
Store (RBUF, Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Buffer
If (LNotEqual (Local1, 3)) // Buffer type is 3
{
    Return (10) // failure
}
Else
{
    Return (0) // success
}
} // TEST
} // RTBF

```

```
//  
// test RetLVal.asl  
//  
// Test ReturnOp(Lvalue)  
// This is required to support _PSR on IBM ThinkPad 560D and  
// _DCK on Toshiba Tecra 8000.  
//
```

```
Device (GPE2)  
{  
  Method (_L03)  
  {  
    Store ("Method GPE2._L03 invoked", Debug)  
    Return ()  
  }  
}
```

```
Method (_E05)  
{  
  Store ("Method  
GPE2._E05 invoked", Debug)  
  Return ()  
}  
}
```

```
Device (PRW2)  
{  
  Name (_PRW, Package(2) {Package(2){\GPE2, 0x05}, 3})  
}
```

```
Scope (\_GPE)  
{  
  Name (ACST, 0xFF)  
  
  Method (_L08)  
  {  
    Store ("Method _GPE._L08 invoked", Debug)  
    Return ()  
  }  
}
```

```
Method (_E09)  
{  
  Store ("Method _GPE._E09 invoked", Debug)  
  Return ()  
}
```

```
Method (_E11)  
{
```

```

    Store ("Method _GPE._E11 invoked", Debug)
    Notify (\PRW1, 2)
}

Method (_L22)
{
    Store ("Method _GPE._L22 invoked", Debug)
    Return ()
}

Method (_L33)
{
    Store ("Method _GPE._L33 invoked", Debug)
    Return ()
}

Method (_E64)
{
    Store ("Method _GPE._E64 invoked", Debug)
    Return ()
}

} // _GPE

Device (PRW1)
{
    Name (_PRW, Package(2)
{0x11, 3})
}

Device (PWRB)
{
    Name (_HID, EISAID("PNP0C0C"))
    Name (_PRW, Package(2) {0x33, 3})
}

Scope (\_SB) // System Bus
{ // _SB system bus

    Device (ACAD)
    { // ACAD: AC adapter device
        Name (_HID, "ACPI0003") // AC adapter device

        Name (_PCL, Package () {\_SB})

        OperationRegion (AREG, SystemIO, 0x0372, 2)
        Field (AREG, ByteAcc, NoLock, Preserve)

```

```

{
    AIDX, 8,
    ADAT, 8
}
IndexField (AIDX, ADAT, ByteAcc, NoLock, Preserve)
{
    , 1, // skips
    ACIN, 1,
    , 2, // skips
    CHAG, 1,
    , 3, // skips
    , 7, // skips
    ABAT, 1,
} // IndexField

Method (_PSR)
{
    Store (\_GPE.ACST, Local0)
    Store
(ACIN, Local1)
    If (LNotEqual (\_GPE.ACST, Local1))
    {
        Store (Local1, \_GPE.ACST)
        // This Notify is commented because it causes a
        // method error when running on a system without the
        // specific device.
        // Notify (\_SB_.ACAD, 0)
    }
    Return (Local0)
} // _PSR

Method (_STA)
{
    Return (0x0F)
}

Method (_INI)
{
    Store (ACIN, \_GPE.ACST)
}
} // ACAD: AC adapter device

// test implicit return from control method
Method (DIS_, 1)
{
    Store (Arg0, Local0)
}

```

```

Device (RTLVL)
{
    // test implicit return inside nested if with explicit return of Lvalue
    Method (_DCK, 1)
    // Arg0: 1 == dock, 0 == undock

{
    If (Arg0)
    { // dock
        Store (0x87, Local0)

        If (Local0)
        {
            DIS_ (0x23)
            Return (1)
        }

        Return (0)
    } // dock
    Else
    { // undock
        Store (Arg0, Local0)

        If (Local0)
        {
            DIS_ (0x23)
            Return (1)
        }

        Return (0)
    } // undock
} // _DCK control method

Method (TEST)
{
    Store ("+++++++ RetLVal Test", Debug)

    // store _PSR return value into Local0
    Store (\_SB_.ACAD._PSR, Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0
    is a Number
    If (LNotEqual (Local1, 1)) // Number/Integer type is 1
    {
        Return (1) // failure
    }
}

```

```

    }

    // test implicit return inside nested if with explicit return of Lvalue
    Store (_DCK (1), Local2)

    // save Local2 object type value into Local3
    Store (ObjectType (Local2), Local3)

    // validate Local2 is a Number
    If (LNotEqual (Local3, 1)) // Number/Integer type is 1
    {
        Return (2) // failure
    }

    If (LNotEqual (Local2, 1))
    {
        Return (3) // failure
    }

    Return (0) // success
} // TEST
} // RTLVL
} // _SB system bus

//
// test RetPkg.asl
//
// Test ReturnOp(Package)
// This is required to support _PRT on Dell Optiplex Workstations (e.g. GX1)
//

Scope (\_SB) // System Bus
{ // _SB system bus
    Device(LNKA)
    {
        Name (_HID, EISAID("PNP0C0F")) // PCI interrupt link
        Name (_UID, 1)
    }
    Device(LNKB)
    {
        Name (_HID, EISAID("PNP0C0F")) // PCI interrupt link
        Name (_UID, 2)
    }
    Device(LNKC)
    {
        Name (_HID, EISAID("PNP0C0F")) // PCI interrupt link
        Name (_UID, 3)
    }
}

```

```

Device(LNKD)
{
    Name (_HID, EISAID("PNP0C0F")) // PCI interrupt link
    Name (_UID, 4)
}

Device (PCI1)
{ // PCI1: Root PCI Bus
    Name (_HID, "PNP0A03") // Need _HID for root device (String format)
    Name (_ADR,0x00000000)
    Name (_CRS,0)

    Name (_PRT, Package ()
    {
        Package () {0x0004ffff, 0, LNKA, 0}, // Slot 1, INTA
        Package () {0x0004ffff, 1, LNKB, 0},
// Slot 1, INTB
        Package () {0x0004ffff, 2, LNKC, 0}, // Slot 1, INTC
        Package () {0x0004ffff, 3, LNKD, 0}, // Slot 1, INTD
        Package () {0x0005ffff, 0, \_SB\_LNKB, 0}, // Slot 2, INTA
        Package () {0x0005ffff, 1, \_SB\_LNKC, 0}, // Slot 2, INTB
        Package () {0x0005ffff, 2, \_SB\_LNKD, 0}, // Slot 2, INTC
        Package () {0x0006ffff, 3, \_SB\_LNKA, 0}, // Slot 2, INTD
        Package () {0x0006ffff, 0, LNKC, 0}, // Slot 3, INTA
        Package () {0x0006ffff, 1, LNKD, 0}, // Slot 3, INTB
        Package () {0x0006ffff, 2, LNKA, 0}, // Slot 3, INTC
        Package () {0x0006ffff, 3, LNKB, 0}, // Slot 3, INTD
    })

    Device (PX40)
    { // Map f0 space, Start PX40
        Name (_ADR,0x00070000) // Address+function.
    }
} // PCI0:
Root PCI Bus

```

```

Device (RETP)
{
    Method (RPKG)
    { // RPKG: Return Package from local variable

        // store _PRT package into Local0
        Store (\_SB\_PCI1\_PRT, Local0)

        // return Local0 Package
        Return (Local0)
    } // RPKG

```

```

Method (TEST)
{
    Store ("+++++++ RetPkg Test", Debug)

    // store RPKG package return value into Local0
    Store (RPKG, Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Package
    If (LNotEqual (Local1, 4)) // Package type is 4
        { Return (1) } // failure
    Else
        { Return (0) } // success
    } // TEST
} // RETP
} // _SB_

//
// test WhileRet.asl
//
// WhileRet.asl tests
// a ReturnOp nested in a IfOp nested in a WhileOp.
//
Device (WHLR)
{
    Name (LCNT, 0)
    Method (WIR)
    { // WIR: control method that returns inside of IfOp inside of WhileOp
        While (LLess (LCNT, 4))
        {
            If (LEqual (LCNT, 2))
            {
                Return (0)
            }

            Increment (LCNT)
        }

        Return (LCNT)
    } // WIR: control method that returns inside of IfOp inside of WhileOp

    Method (TEST)
    {
        Store ("+++++++ WhileRet Test", Debug)

        Store (WIR, Local0)
    }
}

```



```

        Return (Local0)
    } // TEST
} // WHLR

//
// test AndOrOp.asl
//
//This code tests the bitwise AndOp and OrOp Operator terms
//
//Syntax of Andop term
//And - Bitwise And
//AndTerm := And(
// Source1, //TermArg=>Integer
// Source2, //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source1
and Source2 are evaluated as integer data types,
// a bit-wise AND is performed, and the result is optionally
//stored into Result.
//
//
//Syntax of OrOp
//Or - Bit-wise Or
//OrTerm := Or(
// Source1, //TermArg=>Integer
// Source2 //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types,
// a bit-wide OR is performed, and the result is optionally
//stored in Result
//
Device (AND0)
{
    OperationRegion (TMEM, SystemMemory, 0xC4, 0x02)
    Field (TMEM, ByteAcc, NoLock, Preserve)
    {
        , 3,
        TOUD, 13
    }

    //Create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
        SMDW, 32, // 32-bit DWORD

```

```
SMWD, 16, // 16-bit WORD
SMBY, 8, // 8-bit BYTE
} // Field(RAM)
```

```
//And with Byte
```

```
Data
```

```
Name (BYT1, 0xff)
```

```
Name (BYT2, 0xff)
```

```
Name (BRSL, 0x00)
```

```
//And with Word Data
```

```
Name (WRD1, 0xffff)
```

```
Name (WRD2, 0xffff)
```

```
Name (WRSL, 0x0000)
```

```
//And with DWord Data
```

```
Name (DWD1, 0xffffffff)
```

```
Name (DWD2, 0xffffffff)
```

```
Name (DRSL, 0x00000000)
```

```
Method (ANDP)
```

```
{
```

```
    //Check with 1 And 1 on byte data
```

```
    And(BYT1, BYT2, BRSL)
```

```
    if(LNotEqual(BRSL,0xff))
```

```
    {Return(1)}
```

```
    //Check with 1 And 1 on Word data
```

```
    And(WRD1, WRD2, WRSL)
```

```
    if(LNotEqual(WRSL,0xffff))
```

```
    {
```

```
        Return (1)    // failure
```

```
    }
```

```
    //Check with 1 And 1 Dword
```

```
    And(DWD1, DWD2, DRSL)
```

```
    if(LNotEqual(DRSL,0xffffffff))
```

```
    {
```

```
        Return (1)    // failure
```

```
    }
```

```
    //Check with 0 And 0 on byte data
```

```
    Store(0x00,BYT1)
```

```
    Store(0x00,BYT2)
```

```
    Store(0x00,BRSL)
```

```
    And(BYT1, BYT2, BRSL)
```

```
    if(LNotEqual(BRSL,0x00))
```

```

{
    Return (1)    // failure
}

//Check with 0 And 0 on Word data
Store (0x0000,WRD1)
Store (0x0000,WRD2)
Store (0x0000,WRSL)
And(WRD1, WRD2, WRSL)
if(LNotEqual(WRSL,0x0000))
{
    Return (1)    // failure
}

//Check with 0 And 0 Dword
Store (0x00000000,DWD1)
Store (0x00000000,DWD2)
Store (0x00000000,DRSL)
And(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
    Return (1)    // failure
}

//Check with 1 And 0 on byte data
Store(0x55,BYT1)
Store(0xAA,BYT2)
Store(0x00,BRSL)
And(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0x00))
{
    Return (1)    // failure
}

//Check with 1 And 0 on Word data
Store (0x5555,WRD1)
Store (0xAAAA,WRD2)
Store (0x0000,WRSL)
And(WRD1, WRD2, WRSL)
if(LNotEqual(WRSL,0x0000))
{
    Return (1)    // failure
}

//Check with 1 And 0 on Dword
Store (0x55555555,DWD1)
Store (0xAAAAAAAAA,DWD2)

```

```
Store (0x00000000,DRSL)
And(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
    Return (1)    // failure
}
}
```

```
Store (0x1FFF, TOUD)
Store (TOUD, Local0)
if(LNotEqual(Local0,0x1FFF))
{
    Return (1)    // failure
}
}
```

//TBD- Do We need to check for system memory data also for each test case ??

```
Return(0)
```

```
}//ANDP
```

```
Method (OROP)
```

```
{
```

```
    //Check with 1 Ored with 1 on byte data
```

```
    Store(0xff,BYT1)
```

```
    Store(0xff,BYT2)
```

```
    Store(0x00,BRSL)
```

```
    Or(BYT1, BYT2, BRSL)
```

```
    if(LNotEqual(BRSL,0xff))
```

```
    {
```

```
        Return (1)    // failure
```

```
    }
```

```
    //Check with 1 Ored with 1 on Word data
```

```
    Store(0xffff,WRD1)
```

```
    Store(0xffff,WRD2)
```

```
    Store(0x0000,WRSL)
```

```
    Or(WRD1, WRD2, WRSL)
```

```
    if(LNotEqual(WRSL,0xffff))
```

```
    {
```

```
        Return (1)    // failure
```

```
    }
```

```
    //Check with 1 Ored with 1 on Dword data
```

```
    Store(0xffffffff,DWD1)
```

```
    Store(0xffffffff,DWD2)
```

```
    Store(0x00000000,DRSL)
```

```

Or(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0xffffffff))
{
    Return (1)    // failure
}

//Check with 0 Ored with 0 on byte data
Store(0x00,BYT1)
Store(0x00,BYT2)
Store(0x00,BRSL)
Or(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0x00))
{
    Return (1)    // failure
}

//Check with 0 Ored with 0 on Word data
Store (0x0000,WRD1)
Store (0x0000,WRD2)
Store (0x0000,WRS�)
Or(WRD1, WRD2, WRS�)
if(LNotEqual(WRS�,0x0000))
{
    Return (1)    // failure
}

//Check with 0 Ored with 0 Dword data
Store (0x00000000,DWD1)
Store (0x00000000,DWD2)
Store (0x00000000,DRSL)
Or(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0x00000000))
{
    Return (1)    // failure
}

//Check with 1 Ored with 0 on byte data
Store(0x55,BYT1)
Store(0xAA,BYT2)
Store(0x00,BRSL)
Or(BYT1, BYT2, BRSL)
if(LNotEqual(BRSL,0xff))
{
    Return (1)    // failure
}

```

```

//Check with 1 Ored with 0 on Word data
Store (0x5555,WRD1)
Store (0xAAAA,WRD2)
Store (0x0000,WRS�)
Or(WRD1, WRD2, WRS�)
if(LNotEqual(WRS�,0xffff))
{
    Return (1)    // failure
}

//Check with 1 Ored with 0 on Dword data
Store (0x55555555,DWD1)
Store (0xAAAAAAAA,DWD2)
Store (0x00000000,DRSL)
Or(DWD1, DWD2, DRSL)
if(LNotEqual(DRSL,0xffffffff))
{
    Return (1)    // failure
}

//TBD - Do We need to check for system memory data also for each test case ??

Return(0)

} //OROP

Method(TEST,, Serialized)
{
    Store ("+++++++ AndOrOp Test", Debug)

    Name(RSLT,1)
    //Call Andop method
    Store(ANDP,RSLT)
    if(LEqual(RSLT,1))
    {
        Return (RSLT)
    }

    //Call OrOp Method
    Store(OROP,RSLT)
    if(LEqual(RSLT,1))
    {
        Return(RSLT)
    }

    //
    // Return original conditions to allow iterative execution

```

```

//
Store(0xff,BYT1)
Store(0xff,BYT2)
Store(0x00,BRSL)
Store (0xffff,WRD1)
Store (0xffff,WRD2)
Store (0x0000,WRSL)
Store (0xffffffff,DWD1)
Store (0xffffffff,DWD2)
Store (0x00000000,DRSL)

Return(0)
} //TEST
} //AND0

//
// test BreakPnt.asl
//
// This code tests the BreakPoint opcode term. The syntax of BreakPoint Term is
// BreakPointTerm := BreakPoint
// Used for debugging, the Breakpoint opcode stops the execution and enters the AML debugger.
// In the non-debug version of the interpreter, BreakPoint is equivalent to Noop.
//
Device (BRKP)
{
    Name(CNT0,0)

    Method (BK1)
    {
        BreakPoint
        Return(0)
    }

    Method (TEST)
    {
        Store ("+++++++ BreakPnt Test", Debug)

        Store(0,CNT0)

        //Check BreakPoint statement
        While(LLess(CNT0,10))
        {
            Increment(CNT0)
        }

        //Check the BreakPoint statement
        If(LEqual(CNT0,10))
        {

```

```

//      BreakPoint
      Return(0)
    }

    //failed
    Return(1)
  }
}

//
// test AddSubOp.asl
//
Device (ADSU)
{
  // create System Memory Operation Region and field overlays
  OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
  Field (RAM, AnyAcc, NoLock, Preserve)
  {
    SMDW, 32, // 32-bit DWORD
    SMWD, 16, // 16-bit WORD
    SMBY, 8, // 8-bit BYTE
  } // Field(RAM)

  Method (TEST,, Serialized)
  {
    Store ("+++++++ AddSubOp Test",
Debug)

    Name (DWRD, 0x12345678)
    Name (WRD, 0x1234)
    Name (BYT, 0x12)

    // Test AddOp with DWORD data
    Store (0x12345678, DWRD)
    Add (DWRD, 7, DWRD)
    If (LNotEqual (DWRD, 0x1234567F))
      { Return (DWRD) }

    // Test AddOp with WORD data
    Add (WRD, 5, WRD)
    If (LNotEqual (WRD, 0x1239))
      { Return (WRD) }

    // Test AddOp with BYTE data
    Add (BYT, 3, BYT)
    If (LNotEqual (BYT, 0x15))
      { Return (BYT) }
  }
}

```



```

// Test SubtractOp with DWORD data
Subtract (DWRD, 7, DWRD)
If (LNotEqual (DWRD, 0x12345678))
    { Return (DWRD) }

// Test SubtractOp with WORD data
Subtract (WRD, 3, WRD)
If (LNotEqual (WRD, 0x1236))
    { Return (WRD) }

// Test SubtractOp with BYTE data
Subtract
(BYT, 3, BYT)
If (LNotEqual (BYT, 0x12))
    { Return (BYT) }

// test AddOp with DWORD SystemMemory OpRegion
Store (0x01234567, SMDW)
Add (SMDW, 8, SMDW)
If (LNotEqual (SMDW, 0x0123456F))
    { Return (SMDW) }

// test SubtractOp with DWORD SystemMemory OpRegion
Subtract (SMDW, 7, SMDW)
If (LNotEqual (SMDW, 0x01234568))
    { Return (SMDW) }

// test AddOp with WORD SystemMemory OpRegion
Store (0x0123, SMWD)
Add (SMWD, 6, SMWD)
If (LNotEqual (SMWD, 0x0129))
    { Return (SMWD) }

// test SubtractOp with WORD SystemMemory OpRegion
Subtract (SMWD, 5, SMWD)
If (LNotEqual (SMWD, 0x0124))
    { Return (SMWD) }

// test AddOp with BYTE SystemMemory OpRegion
Store (0x01, SMBY)
Add (SMBY,
4, SMBY)
If (LNotEqual (SMBY, 0x05))
    { Return (SMBY) }

```

```

// test SubtractOp with BYTE SystemMemory OpRegion
Subtract (SMBY, 3, SMBY)
If (LNotEqual (SMBY, 0x02))
    { Return (SMBY) }

Return (0)
} // TEST
} // ADSU

//
// test IncDecOp.asl
//
Device (INDC)
{
    // create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
        SMDW, 32, // 32-bit DWORD
        SMWD, 16, // 16-bit WORD
        SMBY, 8, // 8-bit BYTE
    } // Field(RAM)

Method (TEST,, Serialized)
{
    Store ("+++++++ IncDecOp Test", Debug)

    Name (DWRD, 0x12345678)
    Name (WRD, 0x1234)
    Name (BYT, 0x12)

    // Test IncrementOp with DWORD data
    Store (0x12345678, DWRD)

    Increment (DWRD)
    If (LNotEqual (DWRD, 0x12345679))
        { Return (DWRD) }

    // Test IncrementOp with WORD data
    Increment (WRD)
    If (LNotEqual (WRD, 0x1235))
        { Return (WRD) }

    // Test IncrementOp with BYTE data
    Increment (BYT)
    If (LNotEqual (BYT, 0x13))
        { Return (BYT) }
}

```

```

// Test DecrementOp with DWORD data
Decrement (DWRD)
If (LNotEqual (DWRD, 0x12345678))
    { Return (DWRD) }

// Test DecrementOp with WORD data
Decrement (WRD)
If (LNotEqual (WRD, 0x1234))
    { Return (WRD) }

// Test DecrementOp with BYTE data
Decrement (BYT)
If (LNotEqual (BYT, 0x12))
    { Return (BYT) }

// test IncrementOp with DWORD SystemMemory OpRegion
Store (0x01234567, SMDW)

Increment (SMDW)
If (LNotEqual (SMDW, 0x01234568))
    { Return (SMDW) }

// test DecrementOp with DWORD SystemMemory OpRegion
Decrement (SMDW)
If (LNotEqual (SMDW, 0x01234567))
    { Return (SMDW) }

// test IncrementOp with WORD SystemMemory OpRegion
Store (0x0123, SMWD)
Increment (SMWD)
If (LNotEqual (SMWD, 0x0124))
    { Return (SMWD) }

// test DecrementOp with WORD SystemMemory OpRegion
Decrement (SMWD)
If (LNotEqual (SMWD, 0x0123))
    { Return (SMWD) }

// test IncrementOp with BYTE SystemMemory OpRegion
Store (0x01, SMBY)
Increment (SMBY)
If (LNotEqual (SMBY, 0x02))
    { Return (SMBY) }

// test DecrementOp with BYTE SystemMemory OpRegion

```

```

    Decrement (SMBY)
    If (LNotEqual
(SMBY, 0x01))
        { Return (SMBY) }

    Return (0)
} // TEST
} // INDC

//
// test LOps.asl
//
//This source tests all the logical operators. Logical operators in ASL are as follows.
//LAnd, LEqual, LGreater, LLess, LNot, LNotEqual, LOr.
// Success will return 0 and failure will return a non zero number. Check the source code for
// non zero number to find where the test failed

Device (LOPS)
{
    //Create System Memory Operation Region and field overlays
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
        SMDW, 32, // 32-bit DWORD
        SMWD, 16, // 16-bit WORD
        SMBY, 8, // 8-bit BYTE
    } // Field(RAM)

    //And with Byte Data
    Name (BYT1, 0xff)
    Name (BYT2, 0xff)
    Name (BRSL, 0x00)

    //And with Word Data
    Name (WRD1, 0xffff)
    Name (WRD2, 0xffff)
    Name (WRSL, 0x0000)

    //And with DWord Data
    Name (DWD1, 0xffffffff)
    Name (DWD2, 0xffffffff)
    Name (DRSL, 0x00000000)

    Name(RSLT,1)

    Method (ANDL,2) // Test Logical And
    {
        //test with the arguments passed

```

```

if(LEqual(Arg0,Arg1))
{ Store(LAnd(Arg0,Arg1),RSLT)
  if(LNotEqual(Ones,RSLT))
  {Return(11)}
}

//test with he locals
Store(Arg0,Local0)
Store(Arg1,Local1)

if(LEqual(Local0,Local1))
{
  Store(LAnd(Local0,Local1),RSLT)
  if(LNotEqual(Ones,RSLT))
  {Return(12)}
}

//test with BYTE data
if(LEqual(BYT1,BYT2))
{ Store(LAnd(BYT1,BYT2),BRSL)
  if(LNotEqual(Ones,BRSL))
  {Return(13)}
}

//test with WORD data
if(LEqual(WRD1,WRD2))
{ Store(LAnd(WRD1,WRD2),WRSL)
  if(LNotEqual(Ones,WRSL))
  {Return(14)}
}

//test with DWORD data
if(LEqual(DWD1,DWD2))
{ Store(LAnd(DWD1,DWD2),DRSL)
  if(LNotEqual(Ones,DRSL))
  {Return(15)}
}

//Test for system memory data for each test case.

Store(0xff,BYT1)
Store(0xff,SMBY)
Store(0x00,BRSL)

//test with BYTE system memory data
if(LEqual(BYT1,SMBY))
{ Store(LAnd(BYT1,SMBY),BRSL)
  if(LNotEqual(Ones,BRSL))

```

```

    {Return(16)}
}

Store (0xffff,WRD1)
Store(0xffff,SMWD)
Store(0x0000,WRSL)
//test with WORD system memory data
if(LEqual(WRD1,SMWD))
{ Store(LAnd(WRD1,SMWD),WRSL)
  if(LNotEqual(Ones,WRSL))
  {Return(17)}
}

Store(0x000000,DRSL)

Store (0xfffff,DWD1)
Store(0xfffff,SMDW)

//test with DWORD system memory data
if(LEqual(DWD1,SMDW))
{ Store(LAnd(DWD1,SMDW),DRSL)
  if(LNotEqual(Ones,DRSL))
  {Return(18)}
}

Return(0)

} //ANDL

//Test the LOr Operator

Method (ORL_,2)
{ //ORL_

//test with the arguments passed
if(LEqual(Arg0,Arg1))
{
  Store(LOr(Arg0,Arg1),RSLT)
  if(LNotEqual(Ones,RSLT))
  {
    Return(21)
  }
}

//test with he locals
Store(Arg0,Local0)
Store(Arg1,Local1)

```

```

if(LEqual(Local0,Local1))
{
    Store(LOr(Local0,Local1),RSLT)
    if(LNotEqual(Ones,RSLT))
        {Return(22)}
}

//Check with 1 LOred with 0 on byte data
Store(0xff,BYT1)
Store(0x00,BYT2)
Store(0x00,BRSL)

if(LNotEqual(BYT1, BYT2))
{
    Store(LOr(BYT1, BYT2), BRSL)
    if(LNotEqual(Ones,BRSL))
        {Return(23)}
}

//Check with 1 LOred with 0 on WORD data
Store(0xffff,WRD1)
Store(0x0000,WRD2)
Store(0x0000,WDSL)

if(LNotEqual(WRD1, WRD2))
{
    Store(LOr(WRD1, WRD2), WDSL)
    if(LNotEqual(Ones,WDSL))
        {Return(24)}
}

//Check with 1 LOred with 0 on DWORD data
Store(0xffffffff,DWD1)
Store(0x00000000,DWD2)
Store(0x00000000,DRSL)

if(LNotEqual(DWD1, DWD2))
{
    Store(LOr(DWD1, DWD2), DRSL)
    if(LNotEqual(Ones,DRSL))
        {Return(25)}
}

Store(0x00,BYT1)
Store(0xff,SMBY)
Store(0x00,BRSL)

```

```

//test with BYTE system memory data
if(LEqual(BYT1,SMBY))
{ Store(LOr(BYT1,SMBY),BRSL)
  if(LNotEqual(Ones,BRSL))
  {Return(26)}
}

Store(0x0000,WRD1)
Store(0xffff,SMWD)
Store(0x0000,WRSL)

//test with WORD system memory data
if(LEqual(WRD1,SMWD))
{ Store(LOr(WRD1,SMWD),WRSL)
  if(LNotEqual(Ones,WRSL))
  {Return(27)}
}

Store(0x00000000,DWD1)
Store(0xffffffff,SMDW)
Store(0x00000000,DRSL)

//test with DWORD system memory data
if(LEqual(DWD1,SMDW))
{ Store(LAnd(DWD1,SMDW),DRSL)
  if(LNotEqual(Ones,DRSL))
  {Return(28)}
}
Return(0)

} //ORL_

//This method tests LGreater and LNot operator
Method(LSGR,2)
{ //LSGR

//Test on arguments
passed

//in test data, Arg1 > Arg0
if(LEqual(Ones,LNot(LGreater(Arg1,Arg0))))
{Return(31)}

//test LLessEqual
if(LEqual(Ones,LNot(LGreaterEqual(Arg1,Arg0))))
{Return(32)}

```



```

if(LEqual(Ones,LLess(Arg1,Arg0)))
{Return(33)}

//test LLessEqual
if(LEqual(Ones,LLessEqual(Arg1,Arg0)))
{Return(34)}

Store(Arg0,Local0)
Store(Arg1,Local1)

//test with the locals
if(LNot(LGreater(Local1,Local0)))
    {Return(35)}

//test on Byte data
Store(0x12,BYT1)
Store(0x21,BYT2)

if(LNot(LGreater(BYT2,BYT1)))
    {Return(36)}

if(LNot(LLess(BYT1,BYT2)))
    {Return(37)}

//test LGreaterEqual with byte data
if(LNot(LGreaterEqual(BYT2,BYT1)))
    {Return(38)}

//test LLessEqual byte data

if(LNot(LLessEqual(BYT1,BYT2)))
    {Return(39)}

//test on Word data
Store(0x1212,WRD1)
Store(0x2121,WRD2)

if(LNot(LGreater(WRD2,WRD1)))
    {Return(310)}

if(LNot(LLess(WRD1,WRD2)))
    {Return(311)}

//Test LGreaterEqual with Word Data
if(LNot(LGreaterEqual(WRD2,WRD1)))
    {Return(312)}

```

```

//Test LLessEqual with Word Data
if(LNot(LLessEqual(WRD1,WRD2)))
    {Return(313)}

//test on DWord data
Store(0x12121212,DWD1)
Store(0x21212121,DWD2)

if(LNot(LGreater(DWD2,DWD1)))
    {Return(314)}

if(LNot(LLess(DWD1,DWD2)))
    {Return(315)}

//Test LGreaterEqual with Dword
if(LNot(LGreaterEqual(DWD2,DWD1)))
    {Return(316)}

//Test LLessEqual DWord
if(LNot(LLessEqual(DWD1,DWD2)))
    {Return(317)}

Return(0)
} //LSGR

//The test method
Method(TEST)
{
    Store ("+++++++ LOps Test", Debug)

    Store(0,RSLT)
    //Call LAndOp method
    Store(ANDL(2,2),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}

    //Call LOrOp Method
    Store(ORL_(5,5),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}

    //Call LSGR Method
    Store(LSGR(5,7),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}
}

```

```

    Return(0)
  }//TEST
} //LOPS

//
// test FdSetOps.asl
//
// FindSetLeftBit - Find Set Left Bit
// FindSetLeftBitTerm := FindSetLeftBit
// ( Source, //TermArg=>Integer
//   Result //Nothing | SuperName
// ) => Integer
// Source is evaluated as integer data type, and the one-based bit location of
// the first MSb (most significant set bit) is optionally stored into Result.
//
// The result of 0 means no bit was set, 1 means the left-most bit set is the
// first bit, 2 means the left-most bit set is the second bit, and so on.
// FindSetRightBit - Find Set Right Bit

// FindSetRightBitTerm := FindSetRightBit
// ( Source, //TermArg=>Integer
//   Result //Nothing | SuperName
// ) => Integer
// Source is evaluated as integer data type, and the one-based bit location of
// the most LSb (least significant set bit) is optionally stored in Result.
// The result of 0 means no bit was set, 32 means the first bit set is the
// 32nd bit, 31 means the first bit set is the 31st bit, and so on.

// If the Control method is success Zero is returned. Otherwise a non-zero
// number is returned.
//
Device (FDSO)
{ // FDSO

  // Create System Memory Operation Region and field overlays
  OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
  Field (RAM, AnyAcc, NoLock, Preserve)
  {
    SMDW, 32, // 32-bit DWORD
    SMWD, 16, // 16-bit WORD
    SMBY, 8, // 8-bit BYTE
  } // Field(RAM)

  // Byte Data
  Name (BYT1, 1)
  Name (BRSL, 0x00)

  // Word Data

```

```

Name (WRD1, 0x100)
Name (WRSL, 0x0000)

// DWord Data
Name (DWD1, 0x10000)
Name (DRSL, 0x00000000)
Name (RSLT, 1)
Name (CNTR, 1)

Method (SHFT,2)
// Arg0 is the actual data and Arg1 is the bit position
{ // SHFT
    Store (Arg0, Local0)
    Store (Arg1, Local1)

    FindSetLeftBit (Arg0, BRSL)
    If (LNotEqual (BRSL, Arg1))
        { Return (0x11) }
    If (LNotEqual (Arg0, Local0))
        { Return (0x12) }

    FindSetLeftBit (Local0, BRSL)
    If (LNotEqual (BRSL, Local1))
        { Return (0x13) }
    If (LNotEqual (Arg0, Local0))
        { Return (0x14) }

    // test the byte
value for SetLeftBit
    Store (7, BYT1)
    FindSetLeftBit (BYT1, BRSL)
    If (LNotEqual (BRSL, 3))
        { Return (0x15) }
    If (LNotEqual (BYT1, 7))
        { Return (0x16) }

    Store (1, BYT1)
    Store (1, CNTR)
    While (LLessEqual (CNTR, 8))
    { // FindSetLeftBit check loop for byte data
        FindSetLeftBit (BYT1, BRSL)
        If (LNotEqual (BRSL, CNTR))
            { Return (0x17) }

        // Shift the bits to check the same
        ShiftLeft (BYT1, 1, BYT1)
        Increment (CNTR)
    } // FindSetLeftBit check loop for byte data

```

```

// Check BYTE value for SetRightBit
Store (7, BYT1)
FindSetRightBit (BYT1, BRSL)
If (LNotEqual (BRSL, 1))
    { Return (0x21) }
If (LNotEqual (BYT1, 7))
    { Return (0x22) }

Store
(1, CNTR)
Store (0xFF, BYT1)
While (LLessEqual (CNTR, 8))
{ // FindSetRightBit check loop for byte data
    FindSetRightBit (BYT1, BRSL)
    If (LNotEqual (BRSL, CNTR))
        { Return (0x23) }

    ShiftLeft (BYT1, 1, BYT1)
    Increment (CNTR)
} // FindSetRightBit check loop for byte data

// Test Word value for SetLeftBit
Store (9, CNTR)
Store (0x100, WRD1)
While (LLessEqual (CNTR, 16))
{
    // FindSetLeftBit check loop for Word data
    FindSetLeftBit (WRD1, WRSL)
    If (LNotEqual (WRSL, CNTR))
        { Return (0x31) }

    // Shift the bits to check the same
    ShiftLeft (WRD1, 1, WRD1)
    Increment (CNTR)
} // FindSetLeftBit check loop for Word data

// Check Word value for SetRightBit
Store (9, CNTR)
Store (0xFF00, WRD1)
While (LLessEqual (CNTR, 16))
{
    // FindSetRightBit check loop for Word data
    FindSetRightBit (WRD1, WRSL)
    If (LNotEqual (WRSL, CNTR))
        { Return (0x32) }
}

```

```

    ShiftLeft (WRD1, 1, WRD1)
    Increment (CNTR)
} // FindSetRightBit check loop for Word data

// Test the DWord value for SetLeftBit
Store (17, CNTR)
Store (0x10000, DWD1)
While (LLessEqual (CNTR, 32))
{
    // FindSetLeftBit check loop for Dword
    FindSetLeftBit (DWD1, DRSL)
    If (LNotEqual (DRSL, CNTR))
        { Return (0x41) }

    // Shift the bits to check the same
    ShiftLeft (DWD1, 1, DWD1)
    Increment (CNTR)
} // FindSetLeftBit check loop for Dword

// Check DWord value for SetRightBit
Store (17, CNTR)
Store (0xFFFF0000, DWD1)
While (LLessEqual (CNTR, 32))
{ // FindSetRightBit Check loop for DWORD
    FindSetRightBit (DWD1, DRSL)
    If (LNotEqual (DRSL, CNTR))
        { Return (0x42) }

    ShiftLeft (DWD1, 1, DWD1)
    Increment (CNTR)
} // FindSetRightBit Check loop for DWORD

Return (0)
} // SHFT

// Test method called from amlexec
Method (TEST)
{ // TEST

    Store ("+++++++ FdSetOps Test", Debug)

    Store (SHFT (0x80, 8), RSLT)
    If (LNotEqual (RSLT, 0))
        { Return (RSLT) }

    Return (0) // pass
} // TEST

```

```

} // Device FDSO

//
// test MulDivOp.asl
//
Device (MLDV)
{
    // create System Memory Operation Region and field overlays
    OperationRegion
(RAM, SystemMemory, 0x400000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    {
        SMDW, 32, // 32-bit DWORD
        SMWD, 16, // 16-bit WORD
        SMBY, 8, // 8-bit BYTE
    } // Field(RAM)

    Method (TEST,, Serialized)
    {
        Store ("+++++++ MulDivOp Test", Debug)

        Name (RMDR, 0)
        Name (DWRD, 0x12345678)
        Name (WRD, 0x1234)
        Name (BYT, 0x12)

        // Test MultiplyOp with DWORD data
        Store (0x12345678, DWRD)
        Multiply (DWRD, 3, DWRD)
        If (LNotEqual (DWRD, 0x369D0368))
            { Return (DWRD) }

        // Test MultiplyOp with WORD data
        Multiply (WRD, 4, WRD)
        If (LNotEqual (WRD, 0x48D0))
            { Return (WRD) }

        // Test MultiplyOp with BYTE data
        Multiply (BYT, 5, BYT)
        If (LNotEqual (BYT, 0x5A))
            { Return (BYT) }

        // Test DivideOp with DWORD data
        Divide (DWRD, 3, DWRD, RMDR)
        If (LNotEqual (DWRD, 0x12345678))
            { Return (DWRD) }
        If (LNotEqual (RMDR, 0))

```

```

    { Return (RMDR) }

// Test DivideOp with WORD data
Divide (WRD, 4, WRD, RMDR)
If (LNotEqual (WRD, 0x1234))
    { Return (WRD) }
If (LNotEqual (RMDR, 0))
    { Return (RMDR) }

// Test DivideOp with BYTE data
Divide (BYT, 5, BYT, RMDR)
If (LNotEqual (BYT, 0x12))
    { Return (BYT) }
If (LNotEqual (RMDR, 0))
    { Return (RMDR) }

// test MultiplyOp with DWORD SystemMemory OpRegion
Store (0x01234567, SMDW)
Multiply (SMDW, 2, SMDW)
If (LNotEqual (SMDW, 0x02468ACE))
    { Return (SMDW) }

// test DivideOp with DWORD SystemMemory
OpRegion
Divide (SMDW, 3, SMDW, RMDR)
If (LNotEqual (SMDW, 0x00C22E44))
    { Return (SMDW) }
If (LNotEqual (RMDR, 2))
    { Return (RMDR) }

// test MultiplyOp with WORD SystemMemory OpRegion
Store (0x0123, SMWD)
Multiply (SMWD, 3, SMWD)
If (LNotEqual (SMWD, 0x369))
    { Return (SMWD) }

// test DivideOp with WORD SystemMemory OpRegion
Divide (SMWD, 2, SMWD, RMDR)
If (LNotEqual (SMWD, 0x01B4))
    { Return (SMWD) }
If (LNotEqual (RMDR, 1))
    { Return (RMDR) }

// test MultiplyOp with BYTE SystemMemory OpRegion
Store (0x01, SMBY)

```



```

Multiply (SMBY, 7, SMBY)
If (LNotEqual (SMBY, 0x07))
    { Return (SMBY) }

// test DivideOp with BYTE SystemMemory OpRegion
Divide (SMBY, 4, SMBY, RMDR)
If (LNotEqual (SMBY, 0x01))
    { Return (SMBY) }
If (LNotEqual (RMDR, 3))
    { Return (RMDR) }

Return (0)
} // TEST
} // MLDV

//
// test NBitOps.asl
//
//NAnd - Bit-wise NAnd
//NAndTerm := NAnd(
// Source1, //TermArg=>Integer
// Source2 //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types, a bit-wise NAND is performed, and the result is
optionally
//stored in Result.

//NOr - Bitwise NOR
//NOrTerm := NOR(
// Source1, //TermArg=>Integer
// Source2 //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source1 and Source2 are evaluated as integer data types, a bit-wise NOR is performed, and the result is optionally
//stored in Result.

// Not - Not
//NotTerm := Not(
// Source, //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source1 is evaluated as an integer data type, a bit-wise
NOT is performed, and the result is optionally stored in
//Result.

//If the Control method is success Zero is returned else a non-zero number is returned

Device (NBIT)

```

```

{//NBIT

//Create System Memory Operation Region and field overlays
OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
Field (RAM, AnyAcc, NoLock, Preserve)
{
    SMDW, 32, // 32-bit DWORD
    SMWD, 16, // 16-bit WORD
    SMBY, 8, // 8-bit BYTE
} // Field(RAM)

//And with Byte Data
Name (BYT1, 0xff)
Name (BYT2, 0xff)
Name (BRSL, 0x00)

//And with Word Data
Name (WRD1, 0xffff)
Name (WRD2, 0xffff)
Name (WRSL, 0x0000)

//And with DWord Data
Name (DWD1, 0xffffffff)
Name (DWD2, 0xffffffff)
Name (DRSL, 0x00000000)
Name(RSLT,1)

Name(ARSL,0x00)
Name(LRSL,0x00)

Method(NNDB,2)
{//NNDB

    Store(0xffffffff,SMDW)
    Store(0xffff,SMWD)
    Store(0xff,SMBY)

    NAnd(Arg0,Arg1,ARSL)
    if(LNotEqual(ARSL,0xffffffffd))
    {Return(11)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

    NAnd(Local0,Local1,LRSL)

```

```

    if(LNotEqual(LRSL,0xffffffff))
    {Return(12)}

//Byte data
NAnd(BYT1,BYT2,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
    {Return(13)}

//Word Data
NAnd(WRD1,WRD2,WRSL)
if(LNotEqual(WRSL,0xffff0000))
    {Return(14)}

//DWord Data
NAnd(DWD1,DWD2,DRSL)
if(LNotEqual(DRSL,0x00000000))
    {Return(15)}

//Byte data
NAnd(SMBY,0xff,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
    {Return(16)}

//Word Data
NAnd(SMWD,0xffff,WRSL)
if(LNotEqual(WRSL,0xffff0000))
    {Return(17)}

//DWord Data
NAnd(SMDW,0xffffffff,DRSL)
if(LNotEqual(DRSL,0x00000000))
    {Return(18)}

Return(0)

} //NNDB

Method(NNOR,2)
{ //NNOR

    NOr(Arg0,Arg1,ARSL)
    if(LNotEqual(ARSL,0xffffffff))
        {Return(21)}

    Store(Arg0,local0)
    Store(Arg1,Local1)

```

```

NOr(Local0,Local1,LRSL)
if(LNotEqual(LRSL,0xffffffffd))
{Return(22)}

//Byte data
NOr(BYT1,BYT2,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
{Return(23)}

//Word Data
NOr(WRD1,WRD2,WRSL)
if(LNotEqual(WRSL,0xffff0000))
{Return(24)}

//DWord Data
NOr(DWD1,DWD2,DRSL)
if(LNotEqual(DRSL,0x00000000))
{Return(25)}

//System Memory Byte data
NOr(SMBY,0xff,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
{Return(26)}

//System Memory Word Data
NOr(SMWD,0xffff,WRSL)
if(LNotEqual(WRSL,0xffff0000))
{Return(27)}

//System Memory DWord Data
NOr(SMDW,0xffffffff,DRSL)
if(LNotEqual(DRSL,0x00000000))
{Return(28)}

Return(0)

} //NNOR

Method(NNOT,2)
{ //NNOT

Or(Arg0,Arg1,ARSL)
Not(ARSL,ARSL)
if(LNotEqual(ARSL,0xffffffffd))
{Return(31)}

Store(Arg0,local0)

```

```

Store(Arg1,Local1)

Or(Local0,Local1,LRSL)
Not(LRSL,LRSL)
if(LNotEqual(LRSL,0xffffffffd))
{Return(32)}

//Byte data
Or(BYT1,BYT2,BRSL)
Not(BRSL,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
{Return(33)}

//Word Data
Or(WRD1,WRD2,WDSL)
Not(WDSL,WDSL)
if(LNotEqual(WDSL,0xffff0000))
{Return(34)}

//DWord Data
Or(DWD1,DWD2,DRSL)
Not(DRSL,DRSL)
if(LNotEqual(DRSL,0x00000000))
{Return(35)}

//System Memory Byte data
Or(SMBY,0xff,BRSL)
Not(BRSL,BRSL)
if(LNotEqual(BRSL,0xffffffff00))
{Return(36)}

//System Memory Word Data
Or(SMWD,0xffff,WDSL)
Not(WDSL,WDSL)
if(LNotEqual(WDSL,0xffff0000))
{Return(37)}

//System Memory DWord Data
Or(SMDW,0xffffffff,DRSL)
Not(DRSL,DRSL)
if(LNotEqual(DRSL,0x00000000))
{Return(38)}

Return(0)
} //NNOT

```

```

Method(TEST)
{

    Store ("+++++++ NBitOps Test", Debug)

    Store(NNDB(2,2),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}

    Store(NNOR(2,2),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}

    Store(NNOT(2,2),RSLT)
    if(LNotEqual(RSLT,0))
        {Return(RSLT)}

    Return(0)
}

} //Device NBIT

//
// test ShftOp.asl
//
//ShiftRightTerm := ShiftRight(
// Source, //TermArg=>Integer
// ShiftCount //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source and ShiftCount are evaluated as integer data types. Source is shifted right with the most significant bit
//zeroed ShiftCount times. The result is optionally stored into Result.

//ShiftLeft(
// Source, //TermArg=>Integer
// ShiftCount //TermArg=>Integer
// Result //Nothing | SuperName
//) => Integer
//Source and ShiftCount are evaluated as integer data types. Source is shifted left with the least significant
//bit zeroed ShiftCount times. The result is optionally stored into Result.

//If the Control method is success Zero is returned else a non-zero number is returned
Device (SHFT)
{ //SHFT

    //Create System Memory Operation Region and field overlays

```

```
OperationRegion (RAM, SystemMemory, 0x400000, 0x100)
Field (RAM, AnyAcc, NoLock, Preserve)
{
    SMDW, 32, // 32-bit DWORD
    SMWD, 16, // 16-bit WORD
    SMBY, 8, // 8-bit BYTE
} // Field(RAM)
```

```
Name(SHFC,0x00)
```

```
//And with Byte Data
```

```
Name (BYT1, 0xff)
```

```
Name (BRSL, 0x00)
```

```
//And with Word Data
```

```
Name (WRD1, 0xffff)
```

```
Name (WRSL, 0x0000)
```

```
//And with DWord Data
```

```
Name (DWD1, 0xffffffff)
```

```
Name (DRSL, 0x00000000)
```

```
Name(RSLT,1)
```

```
Name(ARSL,0x00)
```

```
Name(LRSL,0x00)
```

```
Method(SLFT,2)
```

```
{ //SLFT
```

```
    Store(0xffffffff,SMDW)
```

```
    Store(0xffff,SMWD)
```

```
    Store(0xff,SMBY)
```

```
    //Arg0-> 2 & Arg1->2
```

```
    ShiftLeft(Arg0,Arg1,ARSL)
```

```
    if(LNotEqual(ARSL,8))
```

```
    {Return(11)}
```

```
    Store(Arg0,local0)
```

```
    Store(Arg1,Local1)
```

```
    //Local0->8 and Local1->2
```

```
    ShiftLeft(Local0,Local1,LRSL)
```

```
    if(LNotEqual(LRSL,8))
```

```
    {Return(12)}
```

```

Store(2,SHFC)
//Byte data
ShiftLeft(BYT1,SHFC,BRSL)
if(LNotEqual(BRSL,0x3FC))
{Return(13)}

Store(4,SHFC)
//Word Data
ShiftLeft(WRD1,SHFC,WRSL)
if(LNotEqual(WRSL,0xFFFF0))
{Return(14)}

Store(8,SHFC)
//DWord Data
ShiftLeft(DWD1,SHFC,DRSL)
if(LNotEqual(DRSL,0xFFFFFFFF0))
{Return(15)}

//System Memory Byte data
Store(4,SHFC)
ShiftLeft(SMBY,SHFC,BRSL)
if(LNotEqual(BRSL,0xFF0))
{Return(16)}

//Word Data
Store(4,SHFC)
ShiftLeft(SMWD,SHFC,WRSL)
if(LNotEqual(WRSL,0xffff0))
{Return(17)}

//DWord Data
Store(8,SHFC)
ShiftLeft(SMDW,SHFC,DRSL)

if(LNotEqual(DRSL,0xFFFFFFFF0))
{Return(18)}

Return(0)

} //SLFT

Method(SRGT,2)
{ //SRGT
//And with Byte Data
Store (0xff,BYT1)
Store (0x00,BRSL)

```



```

//And with Word Data
Store (0xffff,WRD1)
Store (0x0000,WRSL)

//And with DWord Data
Store(0xffffffff,DWD1)
Store (0x00000000,DRSL)

//Reinitialize the result objects
Store(0x00,ARSL)
Store(0x00,LRSL)

Store(0xffffffff,SMDW)
Store(0xffff,SMWD)
Store(0xff,SMBY)

//Arg0-> 2 & Arg1->2
ShiftRight(Arg0,Arg1,ARSL)
if(LNotEqual(ARSL,0))
{Return(21)}

Store(Arg0,local0)
Store(Arg1,Local1)

//Local0->8 and Local1->2
ShiftRight(Local0,Local1,LRSL)
  if(LNotEqual(LRSL,0))
  {Return(22)}

Store(2,SHFC)
//Byte data
ShiftRight(BYT1,SHFC,BRSL)
if(LNotEqual(BRSL,0x3F))
  {Return(23)}

Store(4,SHFC)
//Word Data
ShiftRight(WRD1,SHFC,WRSL)
if(LNotEqual(WRSL,0xFFF))
  {Return(24)}

Store(8,SHFC)
//DWord Data
ShiftRight(DWD1,SHFC,DRSL)
if(LNotEqual(DRSL,0xFFFFFFFF))
  {Return(25)}

```

```

//System Memory Byte data
Store(4,SHFC)
ShiftRight(SMBY,SHFC,BRSL)
if(LNotEqual(BRSL,0xF))
{Return(26)}

//Word Data
Store(4,SHFC)
ShiftRight(SMWD,SHFC,WRSL)
if(LNotEqual(WRSL,0xFFF))
{Return(27)}

//DWord Data
Store(8,SHFC)
ShiftRight(SMDW,SHFC,DRSL)
if(LNotEqual(DRSL,0xFFFFFFFF))
{Return(28)}

Return(0)
} //SRGT

//Test method called from
amlexec
Method(TEST)
{
Store ("+++++++ ShftOp Test", Debug)

Store(SLFT(2,2),RSLT)
if(LNotEqual(RSLT,0))
{Return(RSLT)}
Store(SRGT(2,2),RSLT)
if(LNotEqual(RSLT,0))
{Return(RSLT)}
Return(0)
}

} //Device SHFT

//
// test Xor.asl and slightly modified
//
//This code tests the XOR opcode term
//Syntax of XOR term
// XOR(
//     Source1 //TermArg=>BufferTerm
//     Source2 //TermArg=>Integer
//     Result //NameString
// )

```

```

// "Source1" and "Source2" are evaluated as integers, a bit-wise XOR is performed, and the result is optionally stored
in
// Result
Device (XORD)
{
  // This Method tests XOR operator for all the data types i.e. BYTE, WORD and DWORD
  Method (TEST,, Serialized)
  {
    Store ("+++++++ Xor Test", Debug)

    // Overlay in system memory

    OperationRegion (RAM, SystemMemory, 0x800000, 256)
    Field (RAM, ByteAcc, NoLock, Preserve)
    {
      RES1, 1, //Offset
      BYT1, 8, //First BYTE
      BYT2, 8, //Second BYTE
      RBYT, 8, //Result Byte
      RES2, 1, //Offset
      WRD1, 16, //First WORD field
      WRD2, 16, //Second WORD field
      RWRD, 16, //RSLT WORD field
      RES3, 1, //Offset
      DWD1, 32, //First Dword
      DWD2, 32, //Second Dword
      RDWD, 32, //Result Dword
      RES4, 1, //Offset
    }

    // Store bits in the single bit fields for checking
    // at the end
    Store(1, RES1)
    Store(1, RES2)
    Store(1, RES3)
    Store(1, RES4)

    // Check the stored single bits
    if(LNotEqual(RES1, 1))
    {
      Return(1)
    }

    if(LNotEqual(RES2, 1))
    {
      Return(1)
    }
  }
}

```

```

if(LNotEqual(RES3, 1))
{
    Return(1)
}

if(LNotEqual(RES4, 1))
{
    Return(1)
}

//*****
// (BYT1) Bit1 ->0 and (BYT2)Bit2 -> 0 condition
Store(0x00,BYT1)
Store(0x00,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0))
{ Return(1)}

// (BYT1) Bit1 ->1 and (BYT2)Bit2 -> 1 condition
Store(0xff,BYT1)
Store(0xff,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0))
{ Return(1)}

// (BYT1) Bit1 ->1 and (BYT)Bit2 -> 0 condition
Store(0x55,BYT1)
Store(0xAA,BYT2)
XOr(BYT1,BYT2,Local0)

Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{ Return(1)}

//(BYT1) Bit1 ->0 and (BYT2)Bit2 -> 1 condition
Store(0xAA,BYT1)
Store(0x55,BYT2)
XOr(BYT1,BYT2,Local0)
Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{ Return(1)}

Store(0x12,BYT1)
Store(0xED,BYT2)

XOr(BYT1,BYT2,Local0)

```

```

Store (Local0, RBYT)
if(LNotEqual(RBYT,0xFF))
{
    Return(1)
}

// Store known values for checking later
Store(0x12, BYT1)
if(LNotEqual(BYT1, 0x12))
{
    Return(1)
}

Store(0xFE, BYT2)
if(LNotEqual(BYT2, 0xFE))
{
    Return(1)
}

Store(0xAB, RBYT)
if(LNotEqual(RBYT, 0xAB))
{
    Return(1)
}

//*****
// (WRD1) Bit1 ->0 and (WRD2)Bit2 -> 0 condition
Store(0x0000,WRD1)
Store(0x0000,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0))
{ Return(1)}

// (WRD1) Bit1 ->1 and (WRD2)Bit2 -> 1 condition
Store(0xffff,WRD1)
Store(0xffff,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0))
{ Return(1)}

// (WRD1) Bit1 ->1 and (WRD2)Bit2 -> 0 condition
Store(0x5555,WRD1)
Store(0xAAAA,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{ Return(1)}

//(WRD1) Bit1 ->0 and (WRD2)Bit2 -> 1 condition

```

```

Store(0xAAAA,WRD1)
Store(0x5555,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{ Return(1)}

Store(0x1234,WRD1)
Store(0xEDCB,WRD2)
XOr(WRD1,WRD2,RWRD)
if(LNotEqual(RWRD,0xFFFF))
{ Return(1)}

// Store known values for checking later
Store(0x1234, WRD1)
if(LNotEqual(WRD1, 0x1234))
{
    Return(1)
}

Store(0xFEDC, WRD2)
if(LNotEqual(WRD2, 0xFEDC))
{
    Return(1)
}

Store(0x87AB, RWRD)
if(LNotEqual(RWRD, 0x87AB))
{
    Return(1)
}

//*****
// (DWD1) Bit1 ->0 and (DWD2)Bit2 -> 0 condition
Store(0x00000000,DWD1)
Store(0x00000000,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0))
{ Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 1 condition
Store(0xffffffff,DWD1)
Store(0xffffffff,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0))
{ Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 0 condition

```

```

Store(0x55555555,DWD1)
Store(0xAAAAAAAA,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{ Return(1)}

//(DWD1) Bit1 ->0 and (DWD2)Bit2 -> 1 condition
Store(0xAAAAAAAA,DWD1)
Store(0x55555555,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{ Return(1)}

// (DWD1) Bit1 ->1 and (DWD2)Bit2 -> 0 condition
Store(0x12345678,DWD1)
Store(0xEDCBA987,DWD2)
XOr(DWD1,DWD2,RDWD)
if(LNotEqual(RDWD,0xFFFFFFFF))
{ Return(1)}

Store(0x12345678,DWD1)
if(LNotEqual(DWD1,0x12345678))
{
    Return(1)
}

Store(0xFEDCBA98,DWD2)
if(LNotEqual(DWD2,0xFEDCBA98))
{
    Return(1)
}

Store(0x91827364,RDWD)
if(LNotEqual(RDWD,0x91827364))
{
    Return(1)
}

//*****
// Check the stored single bits
if(LNotEqual(RES1, 1))
{
    Return(1)
}

if(LNotEqual(RES2, 1))
{
    Return(1)
}

```

```

}

if(LNotEqual(RES3, 1))
{
    Return(1)
}

if(LNotEqual(RES4, 1))
{
    Return(1)
}

// Change all of the single bit fields to zero
Store(0, RES1)
Store(0, RES2)
Store(0, RES3)
Store(0, RES4)

// Now, check all of the fields

// Byte
if(LNotEqual(BYT1, 0x12))
{
    Return(1)
}

if(LNotEqual(BYT2, 0xFE))
{

Return(1)
}

if(LNotEqual(RBYT, 0xAB))
{
    Return(1)
}

// Word
if(LNotEqual(WRD1, 0x1234))
{
    Return(1)
}

if(LNotEqual(WRD2, 0xFEDC))
{
    Return(1)
}

```



```

if(LNotEqual(RWRD, 0x87AB))
{
    Return(1)
}

// Dword
if(LNotEqual(DWD1, 0x12345678))
{
    Return(1)
}

if(LNotEqual(DWD2, 0xFEDCBA98))
{
    Return(1)
}

if(LNotEqual(RDWD, 0x91827364))
{
    Return(1)
}

// Bits
if(LNotEqual(RES1, 0))
{
    Return(1)
}

if(LNotEqual(RES2, 0))
{
    Return(1)
}

if(LNotEqual(RES3, 0))
{

Return(1)
}

if(LNotEqual(RES4, 0))
{
    Return(1)
}

Return(0)
} // TEST
} // XORD

```

```

//
// test CrBytFld.asl
//
// CrBytFld test
//   Test for CreateByteField.
//   Tests creating byte field overlay of buffer stored in Local0.
//   Tests need to be added for Arg0 and Name buffers.
//
Device (CRBF)
{ // Test device name
  Method (TEST)
  {
    Store ("+++++++ CrBytFld Test", Debug)

    // Local0 is uninitialized buffer with 4 elements
    Store (Buffer (4) {}, Local0)

    // create Byte Field named BF0 based on Local0 element 0
    CreateByteField (Local0, 0, BF0)

    // validate CreateByteField did not alter Local0
    Store (ObjectType (Local0), Local1) // Local1 = Local0 object type
    If (LNotEqual (Local1, 3)) // Buffer object type value is 3
      { Return (2) }

    // store something into BF0
    Store (1, BF0)

    // validate Store did not alter Local0 object type
    Store (ObjectType (Local0), Local1) // Local1 = Local0 object type
    If (LNotEqual (Local1, 3)) // Buffer object type value is 3
      { Return (3) }

    // verify that the Store into BF0 was successful
    If (LNotEqual (BF0, 1))
      { Return (4) }

    // create Byte Field named BF1 based on Local0 element 1
    CreateByteField (Local0, 1, BF1)

    // validate CreateByteField did not alter Local0
    Store (ObjectType (Local0), Local1) // Local1 = Local0 object type
    If (LNotEqual (Local1, 3)) // Buffer object type value is 3
      { Return (10) }

    // store something into BF1

```

```

Store (5, BF1)

// validate Store did not alter Local0 object type
Store (ObjectType (Local0), Local1)
// Local1 = Local0 object type
If (LNotEqual (Local1, 3)) // Buffer object type value is 3
    { Return (11) }

// verify that the Store into BF1 was successful
If (LNotEqual (BF1, 5))
    { Return (12) }

// verify that the Store into BF1 did not alter BF0
If (LNotEqual (BF0, 1))
    { Return (13) }

// store something into BF0
Store (0xFFFF, BF0)

// verify that the Store into BF0 was successful
If (LNotEqual (BF0, 0xFF))
    { Return (20) }

// verify that the Store into BF0 did not alter BF1
If (LNotEqual (BF1, 5))
    { Return (21) }

Return (0)
} // TEST
} // CRBF

//
// test IndexOp4.asl
//
// IndexOp4 test
// This is just a subset of the many RegionOp/Index Field test cases.
// Tests access of index fields smaller than 8 bits.
//
Device (IDX4)
{ // Test device name

// MADM: Misaligned Dynamic RAM SystemMemory OperationRegion
// Tests OperationRegion memory access using misaligned BYTE,
// WORD, and DWORD field element accesses. Validation is performed
// using both misaligned field entries and aligned field entries.
//

```

```

//      MADM returns 0 if all test cases pass or non-zero identifying
//      the failing test case for debug purposes. This non-zero numbers
//      are not guaranteed to be in perfect sequence (i.e., test case
//      index), but are guaranteed to be unique so the failing test
//      case can be uniquely identified.
//
Method (MADM, 1, Serialized) // Misaligned Dynamic RAM SystemMemory OperationRegion
// Arg0 -- SystemMemory OperationRegion base address
{ // MADM: Misaligned Dynamic RAM SystemMemory OperationRegion
  OperationRegion (RAM, SystemMemory, Arg0, 0x100)
  Field (RAM, DwordAcc, NoLock, Preserve)
  { // aligned field definition (for verification)
    DWD0, 32, // aligned DWORD field
    DWD1, 32 // aligned DWORD field
  }
  Field (RAM, ByteAcc, NoLock, Preserve)
  { // bit access field definition
    BIT0, 1, // single bit field entry
    BIT1, 1, // single bit field entry
    BIT2, 1, // single bit field entry
    BIT3, 1, // single bit field entry
    BIT4, 1, // single bit field entry
    BIT5, 1, // single bit field entry
    BIT6, 1, // single bit field entry
    BIT7, 1, // single bit field entry
    BIT8, 1, // single bit field entry
    BIT9, 1, // single bit field entry

    BITA, 1, // single bit field entry
    BITB, 1, // single bit field entry
    BITC, 1, // single bit field entry
    BITD, 1, // single bit field entry
    BITE, 1, // single bit field entry
    BITF, 1, // single bit field entry
    BI10, 1, // single bit field entry
    BI11, 1, // single bit field entry
    BI12, 1, // single bit field entry
    BI13, 1, // single bit field entry
    BI14, 1, // single bit field entry
    BI15, 1, // single bit field entry
    BI16, 1, // single bit field entry
    BI17, 1, // single bit field entry
    BI18, 1, // single bit field entry
    BI19, 1, // single bit field entry
    BI1A, 1, // single bit field entry
    BI1B, 1, // single bit field entry
    BI1C, 1, // single bit field entry
    BI1D, 1, // single bit field entry
  }
}

```

```

    BI1E, 1, // single bit field entry
    BI1F, 1 // single bit field entry
} // bit access field definition

```

Field (RAM, ByteAcc, NoLock, Preserve)

```

{ // two-bit access field definition
    B2_0, 2, // single bit field entry
    B2_1, 2, // single bit field entry
    B2_2, 2, // single bit field entry
    B2_3, 2, // single bit field entry
    B2_4, 2, // single bit field entry
    B2_5, 2, // single bit field entry
    B2_6, 2, // single bit field entry
    B2_7, 2, // single bit field entry
    B2_8, 2, // single bit field entry
    B2_9,

```

```

2, // single bit field entry
    B2_A, 2, // single bit field entry
    B2_B, 2, // single bit field entry
    B2_C, 2, // single bit field entry
    B2_D, 2, // single bit field entry
    B2_E, 2, // single bit field entry
    B2_F, 2 // single bit field entry
} // bit access field definition

```

// initialize memory contents using aligned field entries

Store (0x5AA55AA5, DWD0)

Store (0x5AA55AA5, DWD1)

// set memory contents to known values using misaligned field entries

Store (0, BIT0)

// verify memory contents using misaligned field entries

If (LNotEqual (BIT0, 0))

{ Return (1) }

// verify memory contents using aligned field entries

If (LNotEqual (DWD0, 0x5AA55AA4))

{ Return

(2) }

// set memory contents to known values using misaligned field entries

Store (1, BIT1)

// verify memory contents using misaligned field entries

If (LNotEqual (BIT1, 1))

{ Return (3) }

// verify memory contents using aligned field entries

If (LNotEqual (DWD0, 0x5AA55AA6))

{ Return (4) }

```

// set memory contents to known values using misaligned field entries
Store (0, BIT2)
// verify memory contents using misaligned field entries
If (LNotEqual (BIT2, 0))
    { Return (5) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA55AA2))
    { Return (6) }

// set memory contents to known values using misaligned field entries
Store (1, BIT3)
// verify memory
contents using misaligned field entries
If (LNotEqual (BIT3, 1))
    { Return (7) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA55AAA))
    { Return (8) }

// set memory contents to known values using misaligned field entries
Store (1, BIT4)
// verify memory contents using misaligned field entries
If (LNotEqual (BIT4, 1))
    { Return (9) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA55ABA))
    { Return (10) }

// set memory contents to known values using misaligned field entries
Store (0, BIT5)
// verify memory contents using misaligned field entries
If (LNotEqual (BIT5, 0))
    { Return (11) }
// verify memory
contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA55A9A))
    { Return (12) }

// set memory contents to known values using misaligned field entries
Store (1, BIT6)
// verify memory contents using misaligned field entries
If (LNotEqual (BIT6, 1))
    { Return (13) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA55ADA))
    { Return (14) }

// set memory contents to known values using misaligned field entries

```

```

Store (0, BIT7)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT7, 0))
        { Return (15) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55A5A))
        { Return (16) }

// set memory
contents to known values using misaligned field entries
Store (1, BIT8)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT8, 1))
        { Return (17) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55B5A))
        { Return (18) }

// set memory contents to known values using misaligned field entries
Store (0, BIT9)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BIT9, 0))
        { Return (19) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5595A))
        { Return (20) }

// set memory contents to known values using misaligned field entries
Store (1, BITA)
    // verify memory contents using misaligned field
entries
    If (LNotEqual (BITA, 1))
        { Return (21) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA55D5A))
        { Return (22) }

// set memory contents to known values using misaligned field entries
Store (0, BITB)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BITB, 0))
        { Return (23) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA5555A))
        { Return (24) }

// set memory contents to known values using misaligned field entries
Store (0, BITC)

```

```

// verify memory contents using misaligned field entries
If (LNotEqual (BITC, 0))
    { Return (25) }
// verify memory contents using aligned field
entries
If (LNotEqual (DWD0, 0x5AA5455A))
    { Return (26) }

// set memory contents to known values using misaligned field entries
Store (1, BITD)
// verify memory contents using misaligned field entries
If (LNotEqual (BITD, 1))
    { Return (27) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA5655A))
    { Return (28) }

// set memory contents to known values using misaligned field entries
Store (0, BITE)
// verify memory contents using misaligned field entries
If (LNotEqual (BITE, 0))
    { Return (29) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA5255A))
    { Return (30) }

// set memory contents to known values using
misaligned field entries
Store (1, BITF)
// verify memory contents using misaligned field entries
If (LNotEqual (BITF, 1))
    { Return (31) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA5A55A))
    { Return (32) }

// set memory contents to known values using misaligned field entries
Store (0, BI10)
// verify memory contents using misaligned field entries
If (LNotEqual (BI10, 0))
    { Return (33) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5AA4A55A))
    { Return (34) }

// set memory contents to known values using misaligned field entries
Store (1, BI11)
// verify memory contents using misaligned field entries

```



```

    If (LNotEqual
(BI11, 1))
        { Return (35) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA6A55A))
        { Return (36) }

// set memory contents to known values using misaligned field entries
Store (0, BI12)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI12, 0))
        { Return (37) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5AA2A55A))
        { Return (38) }

// set memory contents to known values using misaligned field entries
Store (1, BI13)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI13, 1))
        { Return (39) }
    // verify memory contents using aligned field entries
    If (LNotEqual
(DWD0, 0x5AAAA55A))
        { Return (40) }

// set memory contents to known values using misaligned field entries
Store (1, BI14)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI14, 1))
        { Return (41) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5ABAA55A))
        { Return (42) }

// set memory contents to known values using misaligned field entries
Store (0, BI15)
    // verify memory contents using misaligned field entries
    If (LNotEqual (BI15, 0))
        { Return (43) }
    // verify memory contents using aligned field entries
    If (LNotEqual (DWD0, 0x5A9AA55A))
        { Return (44) }

// set memory contents to known values using misaligned field entries

Store (1, BI16)
    // verify memory contents using misaligned field entries

```

```

If (LNotEqual (BI16, 1))
    { Return (45) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5ADAA55A))
    { Return (46) }

// set memory contents to known values using misaligned field entries
Store (0, BI17)
// verify memory contents using misaligned field entries
If (LNotEqual (BI17, 0))
    { Return (47) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5A5AA55A))
    { Return (48) }

// set memory contents to known values using misaligned field entries
Store (1, BI18)
// verify memory contents using misaligned field entries
If (LNotEqual (BI18, 1))

{ Return (49) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5B5AA55A))
    { Return (50) }

// set memory contents to known values using misaligned field entries
Store (0, BI19)
// verify memory contents using misaligned field entries
If (LNotEqual (BI19, 0))
    { Return (51) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x595AA55A))
    { Return (52) }

// set memory contents to known values using misaligned field entries
Store (1, BI1A)
// verify memory contents using misaligned field entries
If (LNotEqual (BI1A, 1))
    { Return (53) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x5D5AA55A))

    { Return (54) }

// set memory contents to known values using misaligned field entries
Store (0, BI1B)
// verify memory contents using misaligned field entries
If (LNotEqual (BI1B, 0))

```

```

    { Return (55) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x555AA55A))
    { Return (56) }

// set memory contents to known values using misaligned field entries
Store (0, BI1C)
// verify memory contents using misaligned field entries
If (LNotEqual (BI1C, 0))
    { Return (57) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x455AA55A))
    { Return (58) }

// set memory contents to known values using misaligned field entries
Store (1, BI1D)

// verify memory contents using misaligned field entries
If (LNotEqual (BI1D, 1))
    { Return (59) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x655AA55A))
    { Return (60) }

// set memory contents to known values using misaligned field entries
Store (0, BI1E)
// verify memory contents using misaligned field entries
If (LNotEqual (BI1E, 0))
    { Return (61) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x255AA55A))
    { Return (62) }

// set memory contents to known values using misaligned field entries
Store (1, BI1F)
// verify memory contents using misaligned field entries
If (LNotEqual (BI1F, 1))
    { Return (63) }

// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA55A))
    { Return (64) }

// set memory contents to known values using misaligned field entries
Store (3, B2_0)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_0, 3))

```

```

    { Return (65) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA55B))
    { Return (66) }

// set memory contents to known values using misaligned field entries
Store (1, B2_1)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_1, 1))
    { Return (67) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA557))
    { Return (68) }
}

// set memory contents to known values using misaligned field entries
Store (0, B2_2)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_2, 0))
    { Return (69) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA547))
    { Return (70) }

// set memory contents to known values using misaligned field entries
Store (3, B2_3)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_3, 3))
    { Return (71) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA5C7))
    { Return (72) }

// set memory contents to known values using misaligned field entries
Store (3, B2_4)
// verify memory contents
using misaligned field entries
If (LNotEqual (B2_4, 3))
    { Return (73) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA7C7))
    { Return (74) }

// set memory contents to known values using misaligned field entries
Store (0, B2_5)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_5, 0))
    { Return (75) }

```

```

// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55AA3C7))
    { Return (76) }

// set memory contents to known values using misaligned field entries
Store (1, B2_6)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_6, 1))
    { Return (77) }
// verify memory contents
using aligned field entries
If (LNotEqual (DWD0, 0xA55A93C7))
    { Return (78) }

// set memory contents to known values using misaligned field entries
Store (1, B2_7)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_7, 1))
    { Return (79) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55A53C7))
    { Return (80) }

// set memory contents to known values using misaligned field entries
Store (0, B2_8)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_8, 0))
    { Return (81) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55853C7))
    { Return (82) }

// set memory contents
to known values using misaligned field entries
Store (1, B2_9)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_9, 1))
    { Return (83) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA55453C7))
    { Return (84) }

// set memory contents to known values using misaligned field entries
Store (2, B2_A)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_A, 2))
    { Return (85) }
// verify memory contents using aligned field entries

```

```

If (LNotEqual (DWD0, 0xA56453C7))
    { Return (86) }

// set memory contents to known values using misaligned field entries
Store (2, B2_B)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_B, 2))
    { Return (87) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA5A453C7))
    { Return (88) }

// set memory contents to known values using misaligned field entries
Store (3, B2_C)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_C, 3))
    { Return (89) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xA7A453C7))
    { Return (90) }

// set memory contents to known values using misaligned field entries
Store (3, B2_D)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_D, 3))
    { Return (91) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0xAFA453C7))
    { Return (92) }

// set memory contents to known values using misaligned field entries
Store (1, B2_E)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_E, 1))
    { Return (93) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x9FA453C7))
    { Return (94) }

// set memory contents to known values using misaligned field entries
Store (0, B2_F)
// verify memory contents using misaligned field entries
If (LNotEqual (B2_F, 0))
    { Return (95) }
// verify memory contents using aligned field entries
If (LNotEqual (DWD0, 0x1FA453C7))
    { Return (96) }

```

```

    Return (0) // pass
} // MADM: Misaligned
Dynamic RAM SystemMemory OperationRegion

Method (TEST)
{
    Store ("+++++++ IndexOp4 Test", Debug)

    // MADM (Misaligned Dynamic RAM SystemMemory OperationRegion) arguments:
    // Arg0 -- SystemMemory OperationRegion base address
    Store (MADM (0x800000), Local0)
    If (LNotEqual (Local0, 0)) // MADM returns zero if successful
        { Return (Local0) } // failure: return MADM error code

    Return (Local0)
} // TEST
} // IDX4

//
// test Event.asl
//
// EventOp, ResetOp, SignalOp, and WaitOp test cases.
//
Device (EVNT)
{
    Event (EVNT) // event synchronization object

    Method (TEVN, 1)
    // Arg0: time to Wait for event in milliseconds
    { // TEVN control method to test ResetOp, SignalOp, and WaitOp
        // reset EVNT to initialization (zero) state
        Reset (EVNT)

        // prime EVNT
with two outstanding signals
        Signal (EVNT)
        Signal (EVNT)

        // acquire existing signal
        Store (Wait (EVNT, Arg0), Local0)

        // validate Local0 is a Number
        Store (ObjectType (Local0), Local1)
        If (LNotEqual (Local1, 1)) // Number is type 1
            { Return (0x21) } // Local1 indicates Local0 is not a Number
    }
}

```

```

If (LNotEqual (Local0, 0)) // Number is type 1
    { Return (0x22) } // timeout occurred without acquiring signal

Store ("Acquire 1st existing signal PASS", Debug)

// acquire existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
    { Return (0x31) } // Local1 indicates Local0 is not a Number

If (LNotEqual (Local0, 0))
// Number is type 1
    { Return (0x32) } // timeout occurred without acquiring signal

Store ("Acquire 2nd existing signal PASS", Debug)

// ensure WaitOp timeout test cases do not hang
if (LEqual (Arg0, 0xFFFF))
    { Store (0xFFFE, Arg0) }

// acquire non-existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
    { Return (0x41) } // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0)) // Number is type 1
    { Return (0x42) } // non-existent signal was acquired

Store ("Acquire signal timeout PASS", Debug)

// prime EVNT with two outstanding signals
Signal (EVNT)
Signal (EVNT)

// reset EVNT to initialization
(zero) state
Reset (EVNT)

// acquire non-existing signal

```



```

Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
  { Return (0x51) } // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0)) // Number is type 1
  { Return (0x52) } // non-existent signal was acquired

Store ("Reset signal PASS", Debug)

// acquire non-existing signal using Lvalue timeout
Store (Wait (EVNT, Zero), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
  { Return (0x61) } // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0)) // Number is type 1
  { Return (0x62) } // non-existent signal was acquired

Store ("Zero Lvalue PASS", Debug)

// acquire non-existing signal using Lvalue timeout
Store (Wait (EVNT, One), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
  { Return (0x71) } // Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0)) // Number is type 1
  { Return (0x72) } // non-existent signal was acquired

Store ("One Lvalue PASS", Debug)

// Lvalue Event test cases
// ILLEGAL SOURCE OPERAND Store (EVNT, Local2)

// validate Local2 is an Event
Store (ObjectType (EVNT), Local1)
If (LNotEqual (Local1, 7)) // Event is type 7
  { Return (0x81) } // Local1 indicates Local0 is not a Number

```

```

// reset EVNT to initialization (zero) state
Reset (EVNT)

// prime EVNT with two outstanding signals
Signal (EVNT)

// acquire existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
  { Return (0x82) } // Local1 indicates Local0 is not a Number

If (LNotEqual (Local0, 0)) // Number is type 1
  { Return (0x83) } // timeout occurred without acquiring signal

Store ("Acquire Lvalue existing signal PASS", Debug)

// acquire non-existing signal
Store (Wait (EVNT, Arg0), Local0)

// validate Local0 is a Number
Store (ObjectType (Local0), Local1)
If (LNotEqual (Local1, 1)) // Number is type 1
  { Return (0x84) }
// Local1 indicates Local0 is not a Number

If (LEqual (Local0, 0)) // Number is type 1
  { Return (0x85) } // non-existent signal was acquired

Store ("Acquire Lvalue signal timeout PASS", Debug)

Return (0) // success
} // TEVN control method to test ResetOp, SignalOp, and WaitOp

Method (TEST)
{
  Store ("+++++++ Event Test", Debug)

  Store (TEVN (100), Local0)

  Return (Local0)
} // TEST
} // EVNT

```

```

//
// test SizeOfLv.asl
//
// Test for SizeOf (Lvalue)
//
// This next section will contain the packages that the SizeOfOp will be
// exercised on. The first one, PKG0, is a regular package of 3 elements.
// The 2nd one, PKG1, is a nested package with 3 packages inside it, each
// with 3 elements. It is expected that SizeOf operator will return the
// same value for these two packages since they both have 3 elements. The
// final
package, PKG2, has 4 elements and the SizeOf operator is expected
// to return different results for this package.

Name (PKG0,
    Package (3)
        {0x0123, 0x4567, 0x89AB}
) // PKG0

Name (PKG1,
    Package (3)
    {
        Package (3) {0x0123, 0x4567, 0x89AB},
        Package (3) {0xCDEF, 0xFEDC, 0xBA98},
        Package (3) {0x7654, 0x3210, 0x1234}
    }
) // PKG1

Name (PKG2,
    Package (4)
        {0x0123, 0x4567, 0x89AB, 0x8888}
) // PKG2

Name (PKG3,
    Package (5)
        {0x0123, 0x4567, 0x89AB, 0x8888, 0x7777}
) // PKG3

// End Packages *****

// The following section will declare the data strings that will be used to
// exercise the SizeOf operator. STR0 and STR1 are expected to be equal,
// STR2 is expected to have a different SizeOf value than STR0 and STR1.

Name (STR0, "ACPI permits very flexible methods of expressing a system")

```

```

Name (STR1, "MIKE permits very flexible methods of expressing a system")

Name (STR2, "Needless to say, Mike and ACPI are frequently at odds")

// This string is being made in case we want to do a SizeOf comparison
// between strings and packages or buffers
Name (STR3, "12345")

// End Strings *****

// The following section will declare the buffers that will be used to exercise
// the SizeOf operator.

Name (BUF0, Buffer (10) {})
Name (BUF1, Buffer (10) {})
Name (BUF2, Buffer (8) {})
Name (BUF3, Buffer (5) {})

// End Buffers *****

Device (SZLV)
{

Method (CMPR, 2)
{
// CMPR is passed two arguments. If unequal, return 1 to indicate
// that, otherwise return 0 to indicate SizeOf each is equal.

Store (0x01, Local0)

if (LEqual (SizeOf(Arg0), SizeOf(Arg1)))
{
Store (0x00, Local0)
}

return (Local0)
} // CMPR

Method (TEST)
{

Store ("+++++++ SizeOfLv Test", Debug)

// TBD: SizeOf ("string")
//      SizeOf (Buffer)
//      SizeOf (Package)
//      SizeOf (String)
//      SizeOf (STR0) -- where Name (STR0,...) -- lot's of cases

```

```

//      buffer, string, package,
//      SizeOf (METH) -- where METH control method returns
//      buffer, string, package,

// TBD:  SLOC [SizeOf (Local0)] -- dup SARG

// Compare the elements that we expect to be the same. Exit out with an error
// code on the first failure.
if (LNotEqual (0x00, CMPR (STR0, STR1)))
{
    Return (0x01)
}

if (LNotEqual (0x00, CMPR (STR3, BUF3)))

{
    Return (0x02)
}

if (LNotEqual (0x00, CMPR (STR3, PKG3)))
{
    Return (0x03)
}

// In the following section, this test will cover the SizeOf
// operator for Local values.
// In this case, both Local0 and Local1 should have the same Size
Store (STR0, Local0)
Store (STR1, Local1)

if (LNotEqual (SizeOf (Local0), SizeOf (Local1)))
{
    Return (0x04)
}

// Now create a case where Local0 and Local1 are different
Store (STR2, Local1)

if (LEqual (SizeOf (Local0), SizeOf (Local1)))
{
    Return (0x05)
}

// Finally, check for the return of SizeOf for a known Buffer. Just
// in case we magically pass above cases due to all Buffers being Zero
// bytes in size, or Infinity, etc.
if (LNotEqual

```

```

(0x05, SizeOf (BUF3)))
    {
        Return (0x06)
    }

    Return (0)
} // TEST
} // SZLV

//
// test BytField.asl
//
// BytField test
// This is just a subset of the many RegionOp/Index Field test cases.
// Tests access of TBD.
//
Scope (\_SB) // System Bus
{ // _SB system bus
    Device (BYTF)
    { // Test device name
        Method (TEST)
        {
            Store ("+++++++ BytField Test", Debug)

            Return (\_TZ.C19B.RSLT)
        } // TEST
    } // BYTF

    Device (C005)
    { // Device C005
        Device (C013)
        { // Device C013
        } // Device C013
    } // Device C005

    Method (C115)
    { // C115 control method
        Acquire (\_GL, 0xFFFF)
        Store (\_SB.C005.C013.C058.C07E, Local0)
        Release (\_GL)
        And (Local0, 16, Local0)
        Store
(ShiftRight (Local0, 4, ), Local1)
        If (LEqual (Local1, 0))
        { Return (1) }
        Else
        { Return (0) }
    }
}

```

```

    } // C115 control method
} // _SB system bus

OperationRegion (C018, SystemIO, 0x5028, 4)
Field (C018, AnyAcc, NoLock, Preserve)
{ // Field overlaying C018
    C019, 32
} // Field overlaying C018

OperationRegion (C01A, SystemIO, 0x5030, 4)
Field (C01A, ByteAcc, NoLock, Preserve)
{ // Field overlaying C01A
    C01B, 8,
    C01C, 8,
    C01D, 8,
    C01E, 8
} // Field overlaying C01A

Mutex (\C01F, 0)
Name (\C020, 0)
Name (\C021, 0)

Method (\C022, 0)
{ // \C022 control method
    Acquire (\C01F, 0xFFFF)
    If (LEqual (\C021, 0))
    {
        Store (C019, Local0)
        And (Local0, 0xFFFEFFFE, Local0)
        Store (Local0, C019)
        Increment (\C021)
    }
    Release (\C01F)
} // \C022 control method

Scope (\_SB.C005.C013)
{ // Scope \_SB.C005.C013
    Device (C058)
    { // Device C058
        Name (_HID, "*PNP0A06")

        OperationRegion (C059, SystemIO, 0xE0, 2)
        Field (C059, ByteAcc, NoLock, Preserve)
        { // Field overlaying C059
            C05A, 8,
            C05B, 8
        } // Field overlaying C059
    }
}

```

```

OperationRegion (C05C, SystemIO, 0xE2, 2)
Field (C05C, ByteAcc, NoLock, Preserve)
{ // Field overlaying C05C
    C05D, 8,
    C05E, 8
} // Field overlaying C05C
IndexField (C05D, C05E, ByteAcc, NoLock, Preserve)
{ // IndexField overlaying C05D/C05E
    , 0x410, // skip
    C05F, 8,
    C060, 8,
    C061, 8,
    C062, 8,
    C063, 8,
    C064, 8,

C065, 8,
    C066, 8,
    C067, 8,
    C068, 8,
    C069, 8,
    C06A, 8,
    C06B, 8,
    C06C, 8,
    C06D, 8,
    C06E, 8,
    , 0x70, // skip
    C06F, 8,
    C070, 8,
    C071, 8,
    C072, 8,
    C073, 8,
    C074, 8,
    C075, 8,
    C076, 8,
    C077, 8,
    C078, 8,
    C079, 8,
    C07A, 8,
    C07B, 8,
    C07C, 8,
    C07D, 8,
    C07E, 8
} // IndexField overlaying C05D/C05E

```

```

OperationRegion (C07F, SystemIO, 0xE4, 2)
Field (C07F, ByteAcc, NoLock, Preserve)
{ // Field overlaying C07F

```



```

    C080, 8,
    C081, 8

} // Field overlaying C07F

    OperationRegion (C082, SystemIO, 0xE0, 1)
    Field (C082, ByteAcc, NoLock, Preserve)
    { // Field overlaying C082
        C083, 8
    } // Field overlaying C082

    OperationRegion (C084, SystemIO, 0xFF, 1)
    Field (C084, ByteAcc, NoLock, Preserve)
    { // Field overlaying C084
        C085, 8
    } // Field overlaying C084

    OperationRegion (C086, SystemIO, 0xFD, 1)
    Field (C086, ByteAcc, NoLock, Preserve)
    { // Field overlaying C086
        C087, 8
    } // Field overlaying C086

    Mutex (C088, 0)
    Mutex (C089, 0)
    Mutex (C08A, 0)
    Mutex (C08B, 0)
    Mutex (C08C, 0)
    Mutex (C08D, 0)

    Name (C08E, 0xFFFFFFFF)
    Name (C08F, 0)

    Method (C0AA, 4)
    { // C0AA control method

Store (Buffer (4) {}, Local7)
    CreateByteField (Local7, 0, C0AB)
    CreateByteField (Local7, 1, C0AC)
    CreateByteField (Local7, 2, C0AD)
    CreateByteField (Local7, 3, C0AE)
    Acquire (^C08B, 0xFFFF)
    Acquire (\_GL, 0xFFFF)
    \C022 ()
    Store (1, \_SB.C005.C013.C058.C06B)
    While (LNot (LEqual (0, \_SB.C005.C013.C058.C06B)))
    { Stall (100) }
    Store (Arg3, \_SB.C005.C013.C058.C06E)

```

```

    Store (Arg2, \_SB.C005.C013.C058.C06D)
    Store (Arg1, \_SB.C005.C013.C058.C06C)
    Store (Arg0, \_SB.C005.C013.C058.C06B)
    While (LNot (LEqual (0, \_SB.C005.C013.C058.C06B)))
        { Stall (100) }
    Store (\_SB.C005.C013.C058.C06E, C0AB)
    Store (\_SB.C005.C013.C058.C06D, C0AC)
    Store (\_SB.C005.C013.C058.C06C, C0AD)

Store (\_SB.C005.C013.C058.C06B, C0AE)
    If (LNot (LEqual (Arg0, 23)))
    {
        Store (2, \_SB.C005.C013.C058.C06B)
        Stall (100)
    }
    Release (\_GL)
    Release (^C08B)
    Return (Local7)
} // C0AA control method
} // Device C058
} // Scope \_SB.C005.C013

Scope (\_TZ)
{ // \_TZ thermal zone scope
    Name (C18B, Package (2)
    {
        Package (2)
        {
            Package (5) {0x05AC, 0x0CD2, 0x0D68, 0x0DE0, 0x0E4E},
            Package (5) {0x0D04, 0x0D9A, 0x0DFE, 0x0E80, 0x0FA2}
        },
        Package (2)
        {
            Package (5) {0x05AC, 0x0CD2, 0x0D68, 0x0DE0, 0x0E4E},
            Package (5) {0x0D04, 0x0D9A, 0x0DFE, 0x0E80, 0x0FA2}
        }
    }) // C18B

    Name (C18C, Package (2)
    {
        Package (2)
        {

Package (3) {0x64, 0x4B, 0x32},
        Package (3) {0x64, 0x4B, 0x32}
        }
    }) // C81C

```

```

Name (C18D, 0)
Name (C18E, 0)
Name (C18F, 0)
Name (C190, 0)
Name (C191, 3)
Name (C192, 0)
Name (C193, 1)
Name (C194, 2)
Mutex (C195, 0)
Name (C196, 1)
Name (C197, 0x0B9C)
Name (C198, 0x0B9C)
Name (C199, 0xFFFFFFFF)
Name (C19A, 0)

Device (C19B)
{ // Device C19B
    Name (RSLT, 0) // default to zero

    Method (XINI)
    { // _INI control method (Uses Global Lock -- can't run under AcpiExec)
        Store (\_SB.C115, C19A)
        \_TZ.C19C._SCP (0)
        Subtract (0x0EB2, 0x0AAC, Local1) // Local1 = AACH - EB2h
        Divide (Local1, 10, Local0, Local2) // Local0 = Local1 / 10
            // Local2 = Local1 % 10

        \_SB.C005.C013.C058.C0AA (14, Local2, 0, 0)
        Store
            (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 0, )), C18D)
        Store
            (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 1, )), C18E)
        Store
            (DerefOf (Index (DerefOf (Index (\_TZ.C18C, C19A, )), 2, )), C18F)

        Store (1, RSLT) // set RSLT to 1 if _INI control method completes
    } // _INI control method

    // PowerResource (C19D) {...}
} // Device C19B

ThermalZone (C19C)
{
    Method (_SCP, 1)
    { // _SCP control method
        Store (Arg0, Local0)
        If (LEqual (Local0, 0))
        {

```

```

        Store (0, \_TZ.C192)
        Store (1, \_TZ.C193)
        Store (2, \_TZ.C194)
        Store (3, \_TZ.C191)
    }
    Else
    {

        Store (0, \_TZ.C191)
        Store (1, \_TZ.C192)
        Store (2, \_TZ.C193)
        Store (3, \_TZ.C194)
    }
} // _SCP control method
} // ThermalZone C19C
} // \_TZ thermal zone scope

//
// test Dwrdfld.asl
//
Name (BUFR, buffer(10) {0,0,0,0,0,0,0,0,0,0} )

Device (DWDF)
{
    Method (TEST)
    {
        Store ("+++++++ Dwrdfld Test", Debug)

        CreateByteField (BUFR, 0, BYTE)
        Store (0xAA, BYTE)

        CreateWordField (BUFR, 1, WORD)
        Store (0xBBCC, WORD)

        CreateDWordField (BUFR, 3, DWRD)
        Store (0xDDEEFF00, DWRD)

        CreateByteField (BUFR, 7, BYT2)
        Store (0x11, BYT2)

        CreateWordField (BUFR, 8, WRD2)
        Store (0x2233, WRD2)

        Return (0)

    } // End Method TEST
} // Device DWDF

```

```

//
// test DivAddx.asl
//
Name (B1LO,
0xAA)
Name (B1HI, 0xBB)

Method (MKW_, 2)
{ // This control method will take two bytes and make them into a WORD

    Multiply (B1HI, 256, Local0) // Make high byte.....high
    Or (Local0, B1LO, Local0) // OR in the low byte
    Return (Local0) // Return the WORD

} // MKW_

Device (DVAX)
{
    Method (TEST)
    {

        Store ("+++++++ DivAddx Test", Debug)

        Store (25, B1LO)
        Store (0, B1HI)

        // We'll multiply 25 * 3 to get 75, add 99 to it then divide
        // by 100. We expect to get 74 for the remainder and 1 for
        // the quotient.
        Divide(
            Add (Multiply (3, MKW_ (B1LO, B1HI)), 0x63),
                // Dividend,
            100, // Divisor
            Local4, // Remainder
            Local2) // Quotient

        If (LAnd (LEqual (74, Local4), LEqual (1, Local2)))

        { // Indicate Pass
            Store (0x00, Local0)
        }

        Else
        { // Indicate Fail
            Store (0x01, Local0)
        }
    }
}

```

```

    Return (Local0)
  } // End Method TEST
} // Device DVAX

//
// test IndexFld.asl (IndexOp6.asl)
//
// IndexFld test
// This is just a subset of the many RegionOp/Index Field test cases.
// Tests index field element AccessAs macro.
// Also tests name resolution of index field elements with same names
// but different namespace scopes.
//
Device (IDX6)
{ // Test device name

  OperationRegion (SIO, SystemIO, 0x100, 2)
  Field (SIO, ByteAcc, NoLock, Preserve)
  {
    INDX, 8,
    DATA, 8
  }
  IndexField (INDX, DATA, AnyAcc, NoLock, WriteAsOnes)
  {
    AccessAs (ByteAcc, 0),
    IFE0, 8,
    IFE1, 8,
    IFE2, 8,
    IFE3, 8,
    IFE4,
8,
    IFE5, 8,
    IFE6, 8,
    IFE7, 8,
    IFE8, 8,
    IFE9, 8,
  }

  Device (TST_)
  { // TST_: provides a different namespace scope for IFE0 and IFE1
    OperationRegion (SIO2, SystemIO, 0x100, 2)
    Field (SIO2, ByteAcc, NoLock, Preserve)
    {
      IND2, 8,
      DAT2, 8
    }
    IndexField (IND2, DAT2, AnyAcc, NoLock, WriteAsOnes)
    {

```

```

        IFE0, 8, // duplicate IndexField name with different scope
        IFE1, 8
    }
} // TST_: provides a different namespace scope for IFE0 and IFE1

Method (TEST)
{
    Store ("+++++++ IndexOp6 Test", Debug)

    Store (IFE0, Local0)
    Store (IFE1, Local1)
    Store (IFE2, Local2)

    // validate name resolution of IndexFields with different scopes
    Store (\IDX6.IFE0, Local3)
    Store (\IDX6.IFE1, Local4)
    // verioading of namespace can resolve following names
    Store (\IDX6.TST_IFE0, Local5)
    Store (\IDX6.TST_IFE1, Local6)

    Return (0)
} // TEST
} // IDX6

//
// test IndexOp5.asl
//
// IndexOp5 test
// This is just a subset of the many RegionOp/Index Field test cases.
// Tests copying string into buffer then performing IndexOp on result.
//
Device (IDX5)
{ // Test device name

    Name (OSFL, 0) // 0 == Windows 98, 1 == Windows NT

    // MCTH is a control method to compare two strings. It returns
    // zero if the strings mismatch, or 1 if the strings match.
    // This exercises the test case of copying a string into a buffer
    // and performing an IndexOp on the resulting buffer.
    Method (MCTH, 2, Serialized) // Control Method to compare two strings
    { // MCTH: Control Method to compare two strings

// Arg0: first string to compare
// Arg1: second string to compare
// Return: zero if strings mismatch, 1 if strings match

        // check if first string's length is less than second string's length

```

```

If (LLess (SizeOf (Arg0), SizeOf (Arg1)))
    { Return (0) }

// increment length to include NULL termination character
Add (SizeOf (Arg0), 1, Local0) // Local0 = strlen(Arg0) + 1

// create two buffers of size Local0 [strlen(Arg0)+1]
Name (BUF0, Buffer (Local0) { })
Name (BUF1, Buffer (Local0) { })

// copy strings into buffers
Store (Arg0, BUF0)
Store (Arg1, BUF1)

// validate BUF0 and BUF1 are still buffers
Store (ObjectType (BUF0), Local1)
If (LNotEqual (Local1, 3)) // Buffer is type 3
    { Return (20) }
Store (ObjectType (BUF1), Local1)
If
(LNotEqual (Local1, 3)) // Buffer is type 3
    { Return (21) }

// Decrement because the Index base below is zero based
// while Local0 length is one based.
Decrement (Local0)

While (Local0)
{ // loop through all BUF0 buffer elements
    Decrement (Local0)

    // check if BUF0[n] == BUF1[n]
    If (LEqual (DerefOf (Index (BUF0, Local0, )),
        DerefOf (Index (BUF1, Local0, )))
        { } // this is how the code was really implemented
    Else
        { Return (Zero) }
} // loop through all BUF0 buffer elements

Return (One) // strings / buffers match
} // MCTH: Control Method to compare two strings

Method (TEST)
{
    Store ("+++++++ IndexOp5 Test", Debug)

    If (MCTH (\_OS, "Microsoft Windows NT"))

```



```

        { Store
(1, OSFL) }

        If (LNotEqual (OSFL, 1))
            { Return (11) }

        Return (0)
    } // TEST
} // IDX5

//
// test IndexOp.asl
//
Scope (\_SB) // System Bus
{ // _SB system bus

    Method (C097)
        { Return (1) }

    Device (PCI2)
    { // Root PCI Bus
        Name (_HID, EISAID("PNP0A03"))
        Name (_ADR, 0x00000000)
        Name (_CRS, Buffer(26) {"\_SB_.PCI2._CRS....."})
        Method (_STA) {Return (0x0F)}

    Device (ISA)
    { // ISA bridge
        Name (_ADR, 0x00030000) // ISA bus ID

    Device (EC0)
    { // Embedded Controller
        Name (_GPE, 0) // EC use GPE0
        Name (_ADR, 0x0030000) // PCI address

        Method (_STA,0) // EC Status
            { Return(0xF) } // EC is functioning

    Name (_CRS, ResourceTemplate()
        {
            IO (Decode16, 0x62, 0x62, 1, 1)
            IO (Decode16, 0x66, 0x66, 1, 1)
        }
    )

    // create EC's region and field
    OperationRegion (RAM, SystemMemory, 0x400000, 0x100)

```

Field (RAM, AnyAcc, NoLock, Preserve)

```
{
    // AC information
    ADP, 1, // AC Adapter 1:On-line, 0:Off-line
    AFLT, 1, // AC Adapter Fault 1:Fault 0:Normal
    BAT0, 1, // BAT0 1:present, 0:not present
    , 1, // reserved
    , 28, // filler to force DWORD alignment

    // CMBatt information
    BPU0, 32, // Power Unit
    BDC0, 32, // Designed Capacity

    BFC0, 32, // Last Full Charge Capacity
    BTC0, 32, // Battery Technology
    BDV0, 32, // Design Voltage
    BST0, 32, // Battery State
    BPR0, 32, // Battery Present Rate
        // (Designed Capacity)x(%)/{(h)x100}
    BRC0, 32, // Battery Remaining Capacity
        // (Designed Capacity)(%)^100
    BPV0, 32, // Battery Present Voltage
    BTP0, 32, // Trip Point
    BCW0, 32, // Design capacity of Warning
    BCL0, 32, // Design capacity of Low
    BCG0, 32, // capacity granularity 1
    BG20, 32, // capacity granularity 2
    BMO0, 32, // Battery model number field
    BIF0, 32, // OEM Information(00h)

    BSN0, 32, // Battery Serial Number
    BTY0, 32, // Battery Type (e.g., "Li-Ion")
    BTY1, 32 // Battery Type (e.g., "Li-Ion")
} // Field
} // ECO: Embedded Controller
} // ISA bridge
} // PCI2 Root PCI Bus
```

Device (IDX0)

```
{ // Test device name
    Name (_HID, EISAID ("PNP0C0A")) // Control Method Battey ID
    Name (_PCL, Package() {\_SB})
    Method (_STA)
    {
        // _STA bits 0-3 indicate existence of battery slot
        // _STA bit 4 indicates battery (not) present
        If (\_SB.PCI2.ISA.EC0.BAT0)
            { Return (0x1F) } // Battery present
    }
}
```

```

else
    { Return (0x0F) } // Battery not present
} // _STA

Method (_BIF,, Serialized)
{
    Name (BUFR,
Package(13) {})
    Store (\_SB.PCI2.ISA.EC0.BPU0, Index (BUFR,0)) // Power Unit
    Store (\_SB.PCI2.ISA.EC0.BDC0, Index (BUFR,1)) // Designed Capacity
    Store (\_SB.PCI2.ISA.EC0.BFC0, Index (BUFR,2)) // Last Full Charge Capa.
    Store (\_SB.PCI2.ISA.EC0.BTC0, Index (BUFR,3)) // Battery Technology
    Store (\_SB.PCI2.ISA.EC0.BDV0, Index (BUFR,4)) // Designed Voltage
    Store (\_SB.PCI2.ISA.EC0.BCW0, Index (BUFR,5)) // Designed warning level
    Store (\_SB.PCI2.ISA.EC0.BCL0, Index (BUFR,6)) // Designed Low level
    Store (\_SB.PCI2.ISA.EC0.BCG0, Index (BUFR,7)) // Capacity granularity 1
    Store (\_SB.PCI2.ISA.EC0.BG20, Index (BUFR,8)) // Capacity granularity 2

    Store ("", Index (BUFR,9)) // Model Number

    Store ("", Index (BUFR,10)) // Serial Number

    Store
("LiOn", Index (BUFR,11)) // Battery Type

    Store ("Chicony", Index (BUFR,12)) // OEM Information

    Return (BUFR)
} // _BIF

Method (_BST,, Serialized)
{
    Name (BUFR, Package(4) {1, 0x100, 0x76543210, 0x180})
    Return (BUFR)
} // _BST

Method (_BTP,1)
{
    Store (arg0, \_SB.PCI2.ISA.EC0.BTP0) // Set Battery Trip point
}

Method (TEST,, Serialized)
{

    Store ("+++++++ IndexOp Test", Debug)

    // test storing into uninitialized package elements
    Name (PBUF, Package(4) {}) // leave uninitialized

```

```
Store (0x01234567, Index (PBUF,0))
Store (0x89ABCDEF, Index (PBUF,1))
Store (0xFEDCBA98, Index (PBUF,2))
Store (0x76543210, Index (PBUF,3))
```

```
// verify values stored into uninitialized package elements
```

```
If (LNotEqual (DerefOf (Index (PBUF,0)), 0x01234567))
    { Return (0x10) }
```

```
If (LNotEqual (DerefOf (Index (PBUF,1)), 0x89ABCDEF))
    { Return (0x11) }
```

```
If (LNotEqual (DerefOf (Index (PBUF,2)), 0xFEDCBA98))
    { Return (0x12) }
```

```
If (LNotEqual (DerefOf (Index (PBUF,3)), 0x76543210))
    { Return (0x13) }
```

```
// store _BIF package return value into Local0
Store (_BIF, Local0)
```

```
// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)
```

```
// validate Local0 is a Package
If (LNotEqual (Local1, 4)) // Package type is 4
    { Return (0x21) } // failure
```

```
// test storing into buffer field elements
```

```
Name (BUFR, Buffer(16))
    { // initial values
      00, 00, 00, 00, 00, 00, 00, 00, 00,
      00, 00, 00, 00, 00, 00, 00, 00,
    }
```

```
) // BUFR
```

```
// test storing into buffer field elements
```

```
Store (0x01234567, Index (BUFR,0)) // should only store 0x67
Store (0x89ABCDEF, Index (BUFR,4)) // should only store 0xEF
Store (0xFEDCBA98, Index (BUFR,8)) // should only store 0x98
Store (0x76543210, Index (BUFR,12)) // should only store 0x10
```

```
// verify storing into buffer field elements
```

```
If (LNotEqual (DerefOf (Index (BUFR,0)), 0x67))
    { Return (0x30) }
```

```

    If (LNotEqual (DerefOf (Index (BUFR,1)), 0))
        { Return (0x31) }

    If (LNotEqual (DerefOf (Index (BUFR,4)), 0xEF))
        { Return (0x34) }

    If (LNotEqual (DerefOf
(Index (BUFR,8)), 0x98))
        { Return (0x38) }

    If (LNotEqual (DerefOf (Index (BUFR,12)), 0x10))
        { Return (0x3C) }

    Return (0) // pass
} // TEST
} // IDX0
} // _SB system bus

//
// test BitIndex.asl
//
// BitIndex test
// This is a test case for accessing fields defined as single bits in
// memory. This is done by creating two index fields that overlay the
// same DWORD in memory. One field accesses the DWORD as a DWORD, the
// other accesses individual bits of the same DWORD field in memory.
//
Scope (\_SB) // System Bus
{ // _SB system bus
    OperationRegion (RAM, SystemMemory, 0x800000, 0x100)
    Field (RAM, AnyAcc, NoLock, Preserve)
    { // Any access
        TREE, 3,
        WRD0, 16,
        WRD1, 16,
        WRD2, 16,
        WRD3, 16,
        WRD4, 16,
        DWRD, 32, // DWORD field
    }
    Field (RAM, AnyAcc, NoLock, Preserve)
    { // Any access
        THRE, 3,
        WD00, 16,
        WD01, 16,
        WD02, 16,
        WD03, 16,

```

```

WD04, 16,
BYT0, 8, // Start off with a BYTE
BIT0, 1, // single-bit field
BIT1, 1, // single-bit field
BIT2, 1, // single-bit field
BIT3, 1, // single-bit field
BIT4, 1, // single-bit field
BIT5, 1, // single-bit field
BIT6, 1, // single-bit field
BIT7, 1, // single-bit field
BIT8, 1, // single-bit field
BIT9, 1, // single-bit field
BITA, 1, // single-bit field
BITB, 1, // single-bit field
BITC, 1, // single-bit field
BITD, 1, // single-bit field
BITE, 1, // single-bit field
BITF, 1, // single-bit field
BYTZ, 8, // End with a BYTE for a total of 32 bits
}

```

Device (BITI)

```
{ // Test device name
```

Method (MBIT) // Test single bit memory accesses

```
{
    If (LNotEqual (DWRD, 0x00))
    {
        Store (0xFF00, Local0)
    }
    Else
    {
        // Prime Local0 with 0...assume passing condition
        Store (0, Local0)

        // set memory contents to known values using DWORD field
        Store (0x5A5A5A5A, DWRD)

        // Given the value programmed into DWRD, only the odd bits
        // of the lower nibble should be set. BIT1, BIT3 should be set.
        // BIT0 and BIT2 should be clear

        If (BIT0)
        {
            Or (Local0, 0x01, Local0)
        }
    }
}

```

```

    If (LNot (BIT1))
    {
        Or (Local0, 0x02, Local0)
    }

    If (BIT2)
    {
        Or (Local0, 0x04, Local0)
    }

    If (LNot (BIT3))
    {
        Or (Local0, 0x08, Local0)
    }

    // Now check the upper nibble. Only the "even" bits should
    // be set. BIT4, BIT6. BIT5 and BIT7 should be clear.
    If (LNot (BIT4))
    {
        Or (Local0, 0x10, Local0)
    }

    If (BIT5)
    {
        Or (Local0, 0x20, Local0)
    }

    If (LNot (BIT6))
    {
        Or (Local0, 0x40, Local0)
    }

    If (BIT7)
    {
        Or (Local0, 0x80, Local0)
    }
} // End Else DWRD zeroed out

Return (Local0)
} // MBIT: Test single bit memory accesses

Method (TEST)
{

    Store ("+++++++ BitIndex Test", Debug)

```

```

// Zero out DWRD
Store (0x00000000, DWRD)

// MBIT returns zero if successful
// This may be causing problems -- Return (MBIT)
Store (MBIT, Local0)

Return (Local0)
} // TEST
} // BITI
} // _SB system bus

//
// test IndexOp3.asl
//
// Additional IndexOp test cases to support ACPI_CMB (control method battery
// test) on Compaq laptops. Test cases include storing a package into
// an IndexOp target and validating that changing source and destination
// package contents are independent of each other.
//
Scope (\_SB) // System Bus
{ // _SB system bus

Name (C174, 13)
Name (C175,
8)

Device (C158)
{ // C158: AC Adapter device
Name (_HID, "ACPI0003") // AC Adapter device
Name (_PCL, Package (1) {\_SB})

Method (_PSR)
{
Acquire (\_GL, 0xFFFF)
Release (\_GL)
And (Local0, 1, Local0) // Local0 &= 1
Return (Local0)
} // _PSR
} // C158: AC Adapter device

Name (C176, Package (4) {"Primary", "MultiBay", "DockRight", "DockLeft"})

Name (C177, Package (4) {0x99F5, 0x99F5, 0x995F, 0x995F})

Name (C178, Package (4)
{
Package (4) {0, 0, 0x966B, 0x4190},

```



```

Package (4) {0, 0, 0x966B, 0x4190},
Package (4) {0, 0, 0x966B, 0x4190},
Package (4) {0, 0, 0x966B, 0x4190}
}) // C178

Name (C179, Package (4) {0, 0, 0x966B, 0x4190})

Name (C17A, Package (4)
{
Package (3) {0, 0, 0},
Package (3)
{0, 0, 0},
Package (3) {0, 0, 0},
Package (3) {0, 0, 0}
}) // C17A

Method (C17B, 1, Serialized)
{ // C17B: _BIF implementation
Name (C17C, Package (13)
{ // C17C: _BIF control method return package
0, // Power Unit (0 ==> mWh and mW)
0x99F5, // Design Capacity
0x99F5, // Last Full Charge Capacity
1, // Battery Technology (1 ==> rechargeable)
0x3840, // Design Voltage
0x1280, // Design Capacity of Warning
0x0AC7, // Design Capacity of Low
1, // Battery Capacity Granularity 1 (Low -- Warning)
1, // Battery Capacity Granularity 2 (Warning -- Full)
"2891", // Model Number (ASCIIZ)
"(-Unknown-)", // Serial Number
(ASCIIZ)
"Lion", // Battery Type (ASCIIZ)
0 // OEM Information (ASCIIZ)
}) // C17C: _BIF control method return package

And (Arg0, 7, Local0) // Local0 = Arg0 & 7

ShiftRight (Local0, 1, Local4) // Local4 = Local0 >> 1

Store (C179, Index (C178, Local4, )) // C178->Local4 = C179

// verify source and destination packages can be altered independent
// of each other (i.e., changing one's contents does NOT change other's
// contents)
Store (0x1234, Index (C179, 2, )) // C179[2] = 0x1234
Store (DerefOf (Index (C179, 2, )), Local2) // Local2 = C179[2]
if (LNotEqual (Local2, 0x1234))

```

```

    { Return (0x1234) }
                                     // Local2 = C178[0,2]
Store (DerefOf (Index (DerefOf
(Index (C178, 0, )), 2, )), Local2)
    if (LNotEqual (Local2, 0x966B))
        { Return (0x1234) }

// Restore data to allow iterative execution
Store (0x966B, Index (C179, 2, )) // C179[2] = 0x966B

                                     // C178[0,3] = 0x5678
Store (0x5678, Index (DerefOf (Index (C178, 0, )), 3, ))
                                     // Local2 = C178[0,3]
Store (DerefOf (Index (DerefOf (Index (C178, 0, )), 3, )), Local2)
    if (LNotEqual (Local2, 0x5678))
        { Return (0x5678) }

Store (DerefOf (Index (C179, 3, )), Local2) // Local2 = C179[3]
    if (LNotEqual (Local2, 0x4190))
        { Return (0x5678) }

// Restore data to allow iterative execution
Store (0x4190, Index (DerefOf (Index (C178, 0, )), 3, )) // C179[2] = 0x4190

Return (C17C)
} // C17B: _BIF implementation

Device (C154)
{ // C154: Battery 0
    Name (_HID, "*PNP0C0A") // Control Method Battery ID
    Name (_UID, 0) // first instance

    Method (_BIF)
    { // _BIF
        Return (C17B (48))
    } // _BIF
} // C154: Battery 0

Device (IDX3)
{
    Method (LCLB, Serialized)
    { // LCLB control method: test Index(Local#) where Local# is buffer
        // Local0 is index counter
        // Local1 is buffer
        // Local2 receives BUFR[Local0] via Deref(Index(Local1...))
        // Local3 is Local1 or Local2 object type
        // Local4 is return error code

```

```

Name (BUFR, Buffer () {0, 1, 2, 3, 4, 5, 6, 7, 8, 9})

// save PKG into Local1
Store (BUFR, Local1)

// save Local2
object type value into Local3
Store (ObjectType (Local1), Local3)

// validate Local1 is a Buffer
If (LNotEqual (Local3, 3)) // Buffer type is 3
{ Return (0x9F) }

Store (0, Local0)
While (LLess (Local0, 5))
{ // While (Local0 < 5)
// Local2 = Local1[Local0]
Store (DerefOf (Index (Local1, Local0, )), Local2)

// save Local2 object type value into Local3
Store (ObjectType (Local2), Local3)

// validate Local2 is a Number
If (LNotEqual (Local3, 1)) // Number type is 1
{ Return (0x9E) }

// validate Local1[Local0] value == Local0
If (LNotEqual (Local0, Local2))
{ // Local0 != Local2 == PKG[Local0]
// Local4 = 0x90
+ loop index (Local0)
Add (0x90, Local0, Local4)

// return 0x90 + loop index
Return (Local4)
}

Increment (Local0)
} // While (Local0 < 5)

Store ("DerefOf(Index(LocalBuffer,,)) PASS", Debug)

Return (0) // Pass
} // LCLB control method: test Index(Local#) where Local# is buffer

Method (LCLP,, Serialized)

```

```

{ // LCLP control method: test Index(Local#) where Local# is package
  // Local0 is index counter
  // Local1 is package
  // Local2 receives PKG[Local0] via Deref(Index(Local1...))
  // Local3 is Local1 or Local2 object type
  // Local4 is return error code

Name (PKG, Package () {0, 1, 2, 3, 4, 5, 6, 7, 8, 9})

// save PKG into Local1
Store (PKG, Local1)

// save Local2 object type value into Local3
Store (ObjectType (Local1), Local3)

// validate Local1 is a Package
If (LNotEqual (Local3, 4)) // Package type is 4
  { Return (0x8F) }

Store (0, Local0)
While (LLess (Local0, 5))
{ // While (Local0 < 5)
  // Local2 = Local1[Local0]
  Store (DerefOf (Index (Local1, Local0, )), Local2)

  // save Local2 object type value into Local3
  Store (ObjectType (Local2), Local3)

  // validate Local2 is a Number
  If (LNotEqual (Local3, 1)) // Number type is 1
    { Return (0x8E) }

  // validate Local1[Local0] value == Local0
  If (LNotEqual (Local0, Local2))
  { // Local0 != Local2 == PKG[Local0]

// Local4 = 0x80 + loop index (Local0)
  Add (0x80, Local0, Local4)

  // return 0x80 + loop index
  Return (Local4)
}

Increment (Local0)
} // While (Local0 < 5)

Store ("DerefOf(Index(LocalPackage,..)) PASS", Debug)

```

```

    Return (0) // Pass
} // LCLP control method: test Index(Local#) where Local# is package

Method (TEST)
{

    Store ("+++++++ IndexOp3 Test", Debug)

    // store _BIF package return value into Local0
    Store (\_SB.C154._BIF, Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Package
    If (LNotEqual (Local1, 4) // Package type is 4
    { // failure: did not return a Package
(type 4)
        // if Local0 is a Number, it contains an error code
        If (LEqual (Local1, 1) // Number type is 1
            { Return (Local0) } // return Local0 error code
        Else // Local0 is not a Number
            { Return (1) } // return default error code
        } // failure: did not return a Package (type 4)

        // save LCLB control method return value into Local2
        Store (LCLB, Local2)
        If (LNotEqual (Local2, 0))
            { Return (Local2) } // return failure code

        // save LCLP control method return value into Local2
        Store (LCLP, Local2)
        If (LNotEqual (Local2, 0))
            { Return (Local2) } // return failure code

        Return (0) // Pass
    } // TEST
} // IDX3: Test device name
} // _SB system bus

//
// MTL developed test to exercise Indexes into buffers
//
Device (IDX7)
{

    Name (PKG4, Package() {

```

```

    0x2,
    "A short string",
    Buffer() {0xA, 0xB, 0xC, 0xD},
    0x1234,
    Package() {IDX7, 0x3}
  })

//
// Generic Test method
//
// This test returns 0xE (14) - ObjectType = Buffer Field
Method(TST1,, Serialized)
{
  Name (DEST, Buffer ()           // 62 characters plus NULL
        {"Destination buffer that is longer than the short source buffer"})

  // verify object type returned by Index(Buffer,Element,)
  Store (Index (DEST, 2, ), Local1)
  Store (ObjectType (Local1), Local2)
  If (LEqual(Local2, 14))
  {
    Return(0)
  }
  Else
  {
    Return(0x1)
  }
}

Method(TST2,, Serialized)
{
  Name (BUF0, Buffer() {0x1, 0x2, 0x3, 0x4, 0x5})
  Store(0x55, Index(BUF0, 2))
  Store(DerefOf(Index(BUF0, 2)), Local0)
  If (LEqual(Local0, 0x55))
  {
    Return(0)
  }
  Else
  {
    Return(0x2)
  }
}

```

```

Method(TST3,, Serialized)
{
    Name (BUF1, Buffer() {0x1, 0x2, 0x3, 0x4, 0x5})
    Store(Index(BUF1, 1), Local0)
    Store(DerefOf(Local0), Local1)
    If (LEqual(Local1, 0x2))
    {
        Return(0)
    }
    Else
    {
        Return(0x3)
    }
}

```

```

Method(TST4)
{
    // Index (PKG4, 0) is a Number
    Store (Index (PKG4, 0), Local0)
    Store (ObjectType(Local0), Local1)
    If (LEqual(Local1, 0x1))
    {
        Return(0)
    }
}
Else
{
    Return(0x4)
}
}

```

```

Method(TST5)
{
    // Index (PKG4, 1) is a String
    Store (Index (PKG4, 1), Local0)
    Store (ObjectType(Local0), Local1)
    If (LEqual(Local1, 0x2))
    {
        Return(0)
    }
    Else
    {
        Return(0x5)
    }
}

```

```

Method(TST6)
{
    // Index (PKG4, 2) is a Buffer
    Store (Index (PKG4, 2), Local0)
    Store (ObjectType(Local0), Local1)
    If (LEqual(Local1, 0x3))
    {
        Return(0)
    }
    Else
    {
        Return(0x6)
    }
}

```

```

Method(TST7)
{
    // Index (PKG4, 3) is a Number
    Store (Index (PKG4, 3), Local0)
    Store (ObjectType(Local0), Local1)
    If (LEqual(Local1, 0x1))
    {

```

```

Return(0)
    }
    Else
    {
        Return(0x7)
    }
}

```

```

Method(TST8)
{
    // Index (PKG4, 4) is a Package
    Store (Index (PKG4, 4), Local0)
    Store (ObjectType(Local0), Local1)
    If (LEqual(Local1, 0x4))
    {
        Return(0)
    }
    Else
    {
        Return(0x8)
    }
}

```



```

}

Method(TST9)
{
    // Derefof (Index (PKG4, 0)) is a Number
    Store (Derefof (Index (PKG4, 0)), Local0)
    If (LEqual(Local0, 0x2))
    {
        Return(0)
    }
    Else
    {
        Return(0x9)
    }
}

```

```

Method(TSTA)
{
    // Derefof (Index (PKG4, 1)) is a String
    Store (Derefof (Index (PKG4, 1)), Local0)
    Store (SizeOf(Local0), Local1)
    If (LEqual(Local1, 0xE))
    {

        Return(0)
    }
    Else
    {
        Return(0xA)
    }
}

```

```

Method(TSTB)
{
    // Derefof (Index (PKG4, 2)) is a Buffer
    Store (Derefof (Index (PKG4, 2)), Local0)
    Store (SizeOf(Local0), Local1)
    If (LEqual(Local1, 0x4))
    {
        Return(0)
    }
    Else
    {
        Return(0xB)
    }
}

```

```
}
```

```
Method(TSTC)
```

```
{  
  // Derefof (Index (PKG4, 3)) is a Number  
  Store (Derefof (Index (PKG4, 3)), Local0)  
  If (LEqual(Local0, 0x1234))  
  {  
    Return(0)  
  }  
  Else  
  {  
    Return(0xC)  
  }  
}
```

```
Method(TSTD)
```

```
{  
  // Derefof (Index (PKG4, 4)) is a Package  
  Store (Derefof (Index (PKG4, 4)), Local0)  
  Store (SizeOf(Local0), Local1)  
  If (LEqual(Local1,  
0x2))  
  {  
    Return(0)  
  }  
  Else  
  {  
    Return(0xD)  
  }  
}
```

```
Method(TSTE)
```

```
{  
  // Derefof (Index (PKG4, 2)) is a Buffer  
  Store (Derefof (Index (PKG4, 2)), Local0)  
  // Derefof (Index (Local0, 1)) is a Number  
  Store (Derefof (Index (Local0, 1)), Local1)  
  If (LEqual(Local1, 0xB))  
  {  
    Return(0)  
  }  
  Else  
  {  
    Return(0xE)  
  }  
}
```

```

}

Method (TSTF,, Serialized)
{
    Name (SRCB, Buffer (12) { }) // 12 characters
    Store ("Short Buffer", SRCB)

    Name (DEST, Buffer ()          // 62 characters plus NULL
          {"Destination buffer that is longer than the short source buffer"})

    // overwrite DEST contents, starting at buffer position 2
    Store (SRCB, Index (DEST,
2))

    //
    // The DEST buffer element should be replaced with the last element of
    // the SRCB element (i.e. 's'->'r')
    Store (DerefOf (Index (DEST, 2)), Local0)

    If (LNotEqual (Local0, 0x72)) // 'r'
    {
        // DEST element does not match the value from SRCB
        Return(Or(Local0, 0x1000))
    }

    Return(0)
}

Method (TSTG,, Serialized)
{
    Name (SRCB, Buffer (12) { }) // 12 characters
    Store ("Short Buffer", SRCB)

    Name (DEST, Buffer ()          // 62 characters plus NULL
          {"Destination buffer that is longer than the short source buffer"})

    // overwrite DEST contents, starting at buffer position 2
    Store (SRCB, Index (DEST, 2))

    //
    // The next element of DEST should be unchanged
    //
    Store (DerefOf (Index (DEST,
3)), Local0)

    If (LNotEqual (Local0, 0x74)) // 't'

```

```

{
    // DEST has been changed
    Return(Or(Local0, 0x2000))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 4)), Local0)

If (LNotEqual (Local0, 0x69))    // 'i'
{
    // DEST has been changed
    Return(Or(Local0, 0x2100))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 5)), Local0)

If (LNotEqual (Local0, 0x6E))    // 'n'
{
    // DEST has been changed
    Return(Or(Local0, 0x2200))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 6)), Local0)

If (LNotEqual (Local0, 0x61))
// 'a'
{
    // DEST has been changed
    Return(Or(Local0, 0x2300))
}

//
// The next element of DEST should be unchanged
//
Store (DerefOf (Index (DEST, 7)), Local0)

If (LNotEqual (Local0, 0x74))    // 't'
{
    // DEST has been changed
    Return(Or(Local0, 0x2400))
}

```

```

}

//
// Verify DEST elements beyond end of SRCB buffer copy
// have not been changed
Store (DerefOf (Index (DEST, 14)), Local0)

If (LNotEqual (Local0, 0x66)) // 'f'
{
    // DEST has been changed
    Return(Or(Local0, 0x2400))
}

Return(0)
}

//
// This test shows that MS ACPI.SYS stores only the lower 8-bits of a 32-bit
// number into the index'ed buffer
//
Method (TSTH,,
Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a number > UINT8 into an index of the buffer
    Store (0x12345678, Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x78)) // 0x78
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64)) // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65)) // 'e'
    {
        Return(Or(Local0, 0x3200))
    }
}

```

```

Store (DerefOf (Index (DBUF, 5)), Local0)
If (LNotEqual (Local0, 0x66)) // 'f'
{
    Return(Or(Local0, 0x3300))
}

Return(0)
}

Method (TSTI,, Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a String into an index of the buffer
    Store ("ABCDEFGH", Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x48)) // 'H'
    {
        Return(Or(Local0, 0x4000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64)) // 'd'
    {
        Return(Or(Local0, 0x4100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65)) // 'e'
    {
        Return(Or(Local0, 0x4200))
    }

    Store (DerefOf (Index (DBUF, 5)), Local0)
    If (LNotEqual (Local0, 0x66)) // 'f'
    {
        Return(Or(Local0,
0x4300))
    }

    Return(0)
}

Method(TSTJ,, Serialized)

```

```

{
  // Create a Destination Buffer
  Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxy"})

  // Store a number > UINT8 into an index of the buffer
  Store (0x1234, Index(DBUF, 2))

  // Check the results
  Store (DerefOf (Index (DBUF, 2)), Local0)
  If (LNotEqual (Local0, 0x34)) // 0x34
  {
    Return(Or(Local0, 0x3000))
  }

  Store (DerefOf (Index (DBUF, 3)), Local0)
  If (LNotEqual (Local0, 0x64)) // 'd'
  {
    Return(Or(Local0, 0x3100))
  }

  Store (DerefOf (Index (DBUF, 4)), Local0)
  If (LNotEqual (Local0, 0x65)) // 'e'
  {
    Return(Or(Local0, 0x3200))
  }

  Store (DerefOf (Index (DBUF, 5)), Local0)
  If (LNotEqual (Local0, 0x66)) // 'f'

{
  Return(Or(Local0, 0x3300))
}

  Return(0)
}

Method(TSTK,, Serialized)
{
  // Create a Destination Buffer
  Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxy"})

  // Store a number > UINT8 into an index of the buffer
  Store (0x123456, Index(DBUF, 2))

  // Check the results
  Store (DerefOf (Index (DBUF, 2)), Local0)
  If (LNotEqual (Local0, 0x56)) // 0x56
  {

```

```

    Return(Or(Local0, 0x3000))
}

Store (DerefOf (Index (DBUF, 3)), Local0)
If (LNotEqual (Local0, 0x64)) // 'd'
{
    Return(Or(Local0, 0x3100))
}

Store (DerefOf (Index (DBUF, 4)), Local0)
If (LNotEqual (Local0, 0x65)) // 'e'
{
    Return(Or(Local0, 0x3200))
}

Store (DerefOf (Index (DBUF, 5)), Local0)
If (LNotEqual
(Local0, 0x66)) // 'f'
{
    Return(Or(Local0, 0x3300))
}

Return(0)
}

Method(TSTL,, Serialized)
{
    // Create a Destination Buffer
    Name (DBUF, Buffer () {"abcdefghijklmnopqrstuvwxyz"})

    // Store a number > UINT8 into an index of the buffer
    Store (0x12, Index(DBUF, 2))

    // Check the results
    Store (DerefOf (Index (DBUF, 2)), Local0)
    If (LNotEqual (Local0, 0x12)) // 0x12
    {
        Return(Or(Local0, 0x3000))
    }

    Store (DerefOf (Index (DBUF, 3)), Local0)
    If (LNotEqual (Local0, 0x64)) // 'd'
    {
        Return(Or(Local0, 0x3100))
    }

    Store (DerefOf (Index (DBUF, 4)), Local0)
    If (LNotEqual (Local0, 0x65)) // 'e'

```



```

    {
        Return(Or(Local0, 0x3200))
    }

    Store (DerefOf (Index (DBUF,
5)), Local0)
    If (LNotEqual (Local0, 0x66)) // 'f'
    {
        Return(Or(Local0, 0x3300))
    }

    Return(0)
}

Method(TEST)
{
    Store ("+++++++ IndexOp7 Test", Debug)

    Store(TST1(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TST2(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TST3(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TST4(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TST5(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }
}

```

```
Store(TST6(), Local0)
if (LGreater (Local0, 0))

{
    Return(Local0)
}

Store(TST7(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TST8(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TST9(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TSTA(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TSTB(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TSTC(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}

Store(TSTD(), Local0)
if (LGreater (Local0, 0))
{
    Return(Local0)
}
```

```

    Store(TSTE(),
Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

/* No longer ACPI compliant */
/*
    Store(TSTF(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }
*/

    Store(TSTG(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TSTH(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

/* No longer ACPI compliant */
/*
    Store(TSTI(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }
*/

    Store(TSTJ(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

    Store(TSTK(), Local0)
    if (LGreater (Local0, 0))
    {
        Return(Local0)
    }

```

```

Store(TSTL(), Local0)
  if (LGreater (Local0, 0))
  {
    Return(Local0)
  }

  Return(Local0)

}

} // Device(IDX7)

//
// test MatchOp.asl
//
// MatchOp test cases that utilize nested DerefOf(Index(...)) to validate
// MatchOp, DerefOfOp, and IndexOp of nested packages.
//
Device (MTCH)
{

  Method (TEST,, Serialized)
  {
    Store ("+++++++ MatchOp Test", Debug)

    Name (TIM0, Package ()
      {
        Package () {0x78, 0xB4, 0xF0, 0x0384},
        Package () {0x23, 0x21, 0x10, 0},
        Package () {0x0B, 9, 4, 0},
        Package () {0x70, 0x49, 0x36, 0x27, 0x19},
        Package () {0, 1, 2, 1, 2},
        Package () {0, 0, 0, 1, 1},
        Package () {4, 3, 2, 0},
        Package () {2, 1, 0, 0}
      }) // TIM0

    Name (TMD0, Buffer
(20) {0xFF, 0xFF, 0xFF, 0xFF })
    CreateDWordField (TMD0, 0, PIO0) // 0xFFFFFFFF
    CreateDWordField (TMD0, 4, DMA0)
    CreateDWordField (TMD0, 8, PIO1)
    CreateDWordField (TMD0, 12, DMA1)
    CreateDWordField (TMD0, 16, CHNF)

```

```

// validate PIO0 value
Store (PIO0, Local3)

// save Local3 object type value into Local2
Store (ObjectType (Local3), Local2)

// validate Local3 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
  { Return (2) } // failure

// validate Local3 Number value
If (LNotEqual (Local3, 0xFFFFFFFF)) // Number value 0xFFFFFFFF
  { Return (3) } // failure

Store ("DWordField PASS", Debug)

Store (0, Local5)
Store (Match (DerefOf (Index (TIM0, 1, )), MLE, Local5, MTR, 0, 0), Local6)

// save Local6 object type value into Local2
Store (ObjectType (Local6), Local2)

// validate Local6 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
  { Return (4) } // failure

Store ("Match(DerefOf(Index(TIM0,1)),... PASS", Debug)

// validate following produces a nested package to validate
// that MatchOp did not corrupt SearchPackage (TIM0)
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4)) // Package type is 4
  { Return (5) } // failure

Store ("DerefOf(Index(TIM0,1)),... PASS", Debug)

And (Match (DerefOf (Index (TIM0, 0, )), MGE, PIO0, MTR, 0, 0), 3, Local0)

// save Local0 object type value into Local2
Store (ObjectType (Local0), Local2)

```

```

// validate Local0 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
  { Return (6) } // failure

// validate Local0 Number value
If (LNotEqual (Local0, 3)) // Number value 3
  { Return (7) } // failure

Store ("And(Match(DerefOf(Index(TIM0,0)),... PASS", Debug)

// again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4)) // Package type is 4
  { Return (8) } // failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)

// again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value
into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4)) // Package type is 4
  { Return (9) } // failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)

// test nested DerefOf(Index) operators
Store (DerefOf (Index (DerefOf (Index (TIM0, 1, )), Local0, )), Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1

```

```

    { Return (10) } // failure

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
    { Return (11) } // failure

Store ("DerefOf(Index(DerefOf(Index(TIM0,1)),... PASS", Debug)

// again, validate following produces a nested package
Store
(DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4)) // Package type is 4
    { Return (12) } // failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)

// retest nested DerefOf(Index) operators
Store (DerefOf (Index (DerefOf (Index (TIM0, 1, )), Local0, )), Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
    { Return (13) } // failure

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
    { Return (14) } // failure

Store ("DerefOf(Index(DerefOf(Index(TIM0,1)),... PASS again", Debug)

// again, validate following produces a nested package
Store (DerefOf (Index (TIM0, 1, )), Local4)

// save Local4 object type value into Local2
Store (ObjectType (Local4), Local2)

// validate Local4 is a Package
If (LNotEqual (Local2, 4)) // Package type is 4

```

```

        { Return (15) } // failure

Store ("DerefOf(Index(TIM0,1)),... PASS again", Debug)

    Return (0) // pass
} // TEST
} // MTCB

//
// test WhileBrk.asl
//
// This code tests the Break term and While term
//
// Syntax of Break term
//   BreakTerm := Break
// The break operation causes the current package execution to complete.
//
// Syntax of While Term
//   WhileTerm := While(
//     Predicate //TermArg=>Integer
//   ) {TermList}
// Predicate is evaluated as an integer.
// If the integer is non-zero, the list of terms in TermList is executed.
// The operation repeats
// until the Predicate evaluates to zero.
//
// MTL NOTE: This test has been modified to reflect ACPI 2.0 break
// NOTE: This test, when run under the MS ACPI.SYS grinds the system to
// a halt.
//
Device (WHLB)
{
    Name (CNT0, 0)
    Name (CNT1, 0)

    Method (TEST)
    {
        // Check Break statement nested in If nested in While nested in
        // While only exits inner-most While loop
        Store (0, CNT0)

        While (LLess (CNT0, 4))
        {
            Store (0, CNT1)
            While (LLess (CNT1, 10))
            {
                if (LEqual (CNT1, 1))

```



```

    {
        Break    // exit encompassing loop
    }

    Increment (CNT1)
}

If (LNotEqual (CNT1, 1))
{
    // failure
    Return (7)
}

Increment (CNT0)
}

// Verify Break only exited inner-most While loop

If (LNotEqual (CNT0, 4))
{
    // failure
    Return (8)
}

Store ("While/While/If/Break PASS", Debug)

Store ("+++++++ WhileBrk Test", Debug)

// Check Break statement nested in While
Store (0, CNT0)

While (LLess (CNT0, 10))
{
    Break    // exit encompassing package
    Increment (CNT0)
}

If (LNotEqual (CNT0, 0)) // instruction after Break executed
{
    Return (4)
}

Store (0, CNT0)

// Test While Term
While (LLess (CNT0, 10))

```

```

{
  Increment (CNT0)
}

// Check if the while loop was executed until the condition is satisfied.
If (LNotEqual (CNT0, 10))
{
  Return (1)
}

// While loop in a reverse order
While (LGreater (CNT0, 0))
{
  Decrement (CNT0)
}

// Check if the while loop was executed until the condition is satisfied.
If (LNotEqual (CNT0, 0))
{
  Return (2)
}

Store ("While/Break PASS", Debug)

// Check Break statement nested in If nested in While
Store (0, CNT0)

While (LLess (CNT0, 10))
{
  if (LEqual (CNT0, 5))
  {
    Break // exit encompassing Package (If)

    // if we execute the next instruction,
    // Break did not exit the loop
    Store (20, CNT0) // exit While loop with value larger
                    // than above
  }

  Increment (CNT0) // check if Break exited both If and
While
} // While

If (LGreater (CNT0, 19))

```

```

    { // instruction after Break inside IfOp executed
      Return (5)
    }

//
// Break will exit out of the while loop, therefore
// the CNT0 counter should still Increment until 5
//
If (LNotEqual (CNT0, 5))
{ // instruction after Break inside WhileOp executed
  Return (6)
}
Store ("While/If/Break PASS", Debug)

// All the conditions passed
Return (0)
} // TEST
} // WHLB

//
// test IndexOp2.asl
//
// Additional IndexOp test cases to support ACPICMBA (control method battery
// test) on Toshiba Portege 7020CT. Test cases include appropriate bit
// shifting of Field elements and reading Field elements greater than 64 bits.
//
// MTL NOTE: This test has been modified slightly from the original test
// to take into account ACPI
// specification limitations.
//
Scope (\_SB) // System Bus
{ // _SB system bus

  Device (MEM)
  { // MEM
    Name (_HID, 0x010CD041)
    Name (_STA, 0x0F)

    OperationRegion (SMEM, SystemMemory, 0x800000, 0x100)
    Field (SMEM, AnyAcc, NoLock, Preserve)
    { // Field: SMEM overlay using 32-bit field elements
      SMD0, 32, // 32-bits
      SMD1, 32, // 32-bits
      SMD2, 32, // 32-bits
      SMD3, 32 // 32-bits
    } // Field: SMEM overlay using 32-bit field elements
  }
}

```

```

Field (SMEM, AnyAcc, NoLock, Preserve)
{ // Field: SMEM overlay using greater than 32-bit field elements
  SME0, 69, // larger than an integer (32 or 64)
  SME1, 97 // larger than an integer
} // Field: SMEM overlay using greater than 32-bit field elements

```

```

OperationRegion (SRAM, SystemMemory,
0x100B0000, 0xF000)

```

```

Field (SRAM, AnyAcc, NoLock, Preserve)
{ // Field: SRAM overlay
  , 0x34000, // skip
  IEAX, 0x20,
  IEBX, 0x20,
  IECX, 0x20,
  IEDX, 0x20,
  IESI, 0x20,
  IEDI, 0x20,
  IEBP, 0x20,
  , 0x20,
  OEAX, 0x20,
  OEBX, 0x20,
  OECX, 0x20,
  OEDX, 0x20,
  OESI, 0x20,
  OEDI, 0x20,
  OEBP, 0x20,
  , 0x618, // skip
  ACST, 1,
  BES1, 1,
  BES2, 1,
  , 5, // skip
  BMN1, 0x68,
  BSN1, 0x58,
  BTP1, 0x48,
  BPU1, 0x20,
  BDC1, 0x20,
  BLF1, 0x20,
  BTC1, 0x20,

  BDV1, 0x20,
  BST1, 0x20,
  BPR1, 0x20,
  BRC1, 0x20,
  BPV1, 0x20,
  , 0x20,
  BCW1, 0x20,
  BCL1, 0x20,
  BG11, 0x20,

```

BG21, 0x20,
BOI1, 0x20,
 , 0x530, // skip
BMN2, 0x68,
BSN2, 0x58,
BTP2, 0x48,
BPU2, 0x20,
BDC2, 0x20,
BLF2, 0x20,
BTC2, 0x20,
BDV2, 0x20,
BST2, 0x20,
BPR2, 0x20,
BRC2, 0x20,
BPV2, 0x20,
 , 0x20,
BCW2, 0x20,
BCL2, 0x20,
BG12, 0x20,
BG22, 0x20,
BOI2, 0x20,
 , 0x518, // skip
AC01, 0x10,
AC11,
0x10,
PSV1, 0x10,
CRT1, 0x10,
TMP1, 0x10,
AST1, 0x10,
AC21, 0x10,
AC31, 0x10,
AC02, 0x10,
AC12, 0x10,
PSV2, 0x10,
CRT2, 0x10,
TMP2, 0x10,
AST2, 0x10,
AC22, 0x10,
AC32, 0x10,
AC03, 0x10,
AC13, 0x10,
PSV3, 0x10,
CRT3, 0x10,
TMP3, 0x10,
AST3, 0x10,
AC23, 0x10,
AC33, 0x10,
 , 0x80, // skip

TMPF, 0x10,
 , 0x570, // skip
FANH, 1,
FANL, 7,
TF11, 1,
TF21, 1,
TF31, 1,
 , 1,
TF10, 1,
TF20, 1,
TF30, 1,
 , 1,
TP11, 1,
TP21, 1,
TP31, 1,
 , 0x6D, // 109
GP50, 1,
GP51, 1,
GP52, 1,
GP53, 1,
 , 4,
GP60, 1,
GP61, 1,
GP62, 1,
GP63, 1,
GP64, 1,
GP65, 1,
GP66, 1,
 , 1,
GP70, 1,
GP71, 1,
GP72, 1,
GP73, 1,
GP74, 1,
GP75, 1,
GP76, 1,
 , 1,
WED0, 1,
WED1, 1,
WED2, 1,
WED3, 1,
WED4, 1,
 , 3,
SBL0, 1,
SBL1, 1,
SBL2, 1,

```

SBL3, 1,
    , 4,
    LIDS, 1,
    VALF, 1,
    , 2,
    DCKI, 1,
    DCKF, 1,
    BT1F, 1,
    BT2F, 1,
    , 0x7D0, // skip
    HKCD, 8,
    , 8,
    DLID, 0x20,
    DSRN, 0x20,
    , 0x20,
    BDID, 0x20,
    DSPW, 1,
    VGAF, 1,
    VWE0, 1,
    VWE1, 1,
    PPSC, 1,
    SPSC, 1,
    EWLD, 1,
    EWPS, 1,
    , 0x1768, // skip
    PRES, 0x8000
} // Field: SRAM overlay
} // MEM

```

Device (BAT1)

```

{ // BAT1
    Name (_HID, EISAID ("PNP0C0A")) // Control Method Battery ID
    Name (_UID, 1)
    Name (_PCL, Package (1) {\_SB})

```

Method

```

(_STA)
{ // _STA
    If (\_SB.MEM.BES1)
        { Return (0x1F) } // battery present
    Else
        { Return (0x0F) } // battery not present
} // _STA

```

Method (_BIF,, Serialized)

```

{ // _BIF
    Name (BUFR, Package (13) {})

```

```

Store (\_SB.MEM.BPU1, Index (BUFR, 0))
Store (\_SB.MEM.BDC1, Index (BUFR, 1))
Store (\_SB.MEM.BLF1, Index (BUFR, 2))
Store (\_SB.MEM.BTC1, Index (BUFR, 3))
Store (\_SB.MEM.BDV1, Index (BUFR, 4))
Store (\_SB.MEM.BCW1, Index (BUFR, 5))
Store (\_SB.MEM.BCL1, Index (BUFR, 6))
Store (\_SB.MEM.BG11, Index (BUFR, 7))
Store (\_SB.MEM.BG21, Index (BUFR, 8))
Store (\_SB.MEM.BMN1, Index (BUFR, 9))
Store (\_SB.MEM.BSN1, Index (BUFR, 10))
Store (\_SB.MEM.BTP1,
Index (BUFR, 11))
Store (\_SB.MEM.BO11, Index (BUFR, 12))

Return (BUFR)
} // _BIF
} // BAT1

Device (IDX2)
{
Method (B2IB,, Serialized)
{ // B2IB: store from Buffer into Index'ed Buffer

Name (SRCB, Buffer () {"Short Buffer"}) // 12 characters plus NULL

Name (DEST, Buffer () // 62 characters plus NULL
{"Destination buffer that is longer than the short source buffer"})

// verify object type returned by Index(Buffer,Element,)

Store (Index (DEST, 2, ), Local1)
Store (ObjectType (Local1), Local2)

If (LNotEqual (Local2, 14)) // Buffer Field is type 14
{
// Local2 indicates Local1 is not a Buffer Field

Return (0x61)
}

// verify object type
and value returned by Derefof(Index(Buffer,Element,))
// should return Number containing element value

Store (Derefof (Local1), Local3)
Store (ObjectType (Local3), Local4)

```



```

If (LNotEqual (Local4, 1)) // Number is type 1
{
    // Local2 indicates Local1 is not a Number
    Return (0x62)
}
Else
{
    If (LNotEqual (Local3, 0x73)) // expect 's' element from DEST
    {
        Return (0x63)
    }
}

Store ("DerefOf(Index(Buffer,,)) PASS", Debug)

//
// The following sections have been rewritten because storing into
// an Indexed buffer only changes one byte - the FIRST byte of the
// buffer is written to the source index. This is the ONLY byte

// written -- as per ACPI 2.0
//
// Overwrite DEST contents, at buffer position 2 [only]

Store (SRCB, Index (DEST, 2, ))

//
// Check that the next byte is not changed
//
Store (DerefOf (Index (DEST, 3, )), Local0)
If (LNotEqual (Local0, 0x74)) // 't'
{
    // DEST element is not matching original value
    If (LEqual (Local0, 0x68))
    {
        // DEST element was altered to 'h'
        Return (0x68)
    }
}
Else
{
    // DEST element is an unknown value
    Return (0x69)
}
}

//

```

```

// Check that the elements beyond the SRCB buffer copy
// have not been altered.

//
Store (DerefOf (Index (DEST, 14)), Local0)

//
// This should be an 'f'.
//
If (LNotEqual (Local0, 0x66))
{
    // DEST element was zero'd by buffer copy
    If (LEqual (Local0, 0))
    {
        // DEST element is zero
        Return (0x6A)
    }
    Else
    {
        // DEST element is unknown value
        Return (0x6B)
    }
}

Store ("Store(SRCB,Index(Buffer,)) PASS", Debug)

//
// verify altering SRCB does NOT alter DEST
//
Store (0x6A, Index (SRCB, 1)) // SRCB = "Sjort Buffer"

Store (DerefOf (Index (SRCB, 1)), Local0)

If (LNotEqual (Local0, 0x6A)) // 'j'

{
    // SRCB element is unaltered
    Return (0x71)
}

Store (DerefOf (Index (DEST, 3)), Local0) // DEST = "Destination buffer that..."

If (LNotEqual (Local0, 0x74)) // 't'
{
    // DEST element is altered
    If (LEqual (Local0, 0x6A)) // 'j'
    {
        // SRCB change altered DEST element
    }
}

```

```

    Return (0x72)
}
Else
{
    // DEST element is unknown value
    Return (0x73)
}
}

// verify altering DEST does NOT alter SRCB

Store (0x6B, Index (DEST, 4, )) // DEST = "DeSkination buffer..."

Store (DerefOf (Index (DEST, 4, )), Local0)

If (LNotEqual (Local0, 0x6B)) // 'k'

{
    // DEST element is unaltered
    Return (0x74)
}

Store (DerefOf (Index (SRCB, 2, )), Local0)

If (LNotEqual (Local0, 0x6F)) // 'o'
{ // SRC element is altered
    If (LEqual (Local0, 0x6B)) // 'k'
    {
        // DEST change altered SRCB element
        Return (0x75)
    }
    Else
    {
        // SRCB element is unknown value
        Return (0x76)
    }
}

Store ("SRCB and DEST independent PASS", Debug)

// verify string can be written to Index target/destination
// Only FIRST byte is written

Store ("New Buff", Index (DEST, 2, )) // DEST = "DeNkination buffer..."

Store (DerefOf (Index (DEST, 2, )), Local0)

```

```

If (LNotEqual (Local0, 0x4E))    // 'N'
{
    // DEST element is unaltered
    Return (0x81)
}

Store (DerefOf (Index (DEST, 6, )), Local0)

If (LNotEqual (Local0, 0x61))    // 'a'
{
    // DEST element is unaltered
    Return (0x82)
}

Store (DerefOf (Index (DEST, 10, )), Local0)

If (LNotEqual (Local0, 0x6E))    // 'n'
{
    // DEST element is unaltered
    Return (0x83)
}

Store ("Store(String,Index) PASS", Debug)

Return (0) // pass
} // B2IB: store from Buffer into Index'ed Buffer

Method (FB2P,, Serialized)
{ // FB2P: store from Field Buffer into Index'ed Package
    Name (DEST, Package (2) { })

// initialize memory using 32-bit field elements
    Store (0x01234567, \_SB.MEM.SMD0)
    Store (0x89ABCDEF, \_SB.MEM.SMD1)
    Store (0xFEDCBA98, \_SB.MEM.SMD2)
    Store (0x76543210, \_SB.MEM.SMD3)

// move greater than 64-bit buffers into DEST package
    Store (\_SB.MEM.SME0, Index (DEST, 0))
    Store (\_SB.MEM.SME1, Index (DEST, 1))

// validate DEST contents
    Store (DerefOf (Index (DEST, 0, )), Local0)
    Store (DerefOf (Index (DEST, 1, )), Local1)

// verify Local0 and Local1 are Buffers

```

```

Store (ObjectType (Local0), Local2)
if (LNotEqual (Local2, 3)) // Buffer type is 3
{
    Return (0x11)
}

Store (ObjectType (Local1), Local3)
if (LNotEqual (Local3, 3)) // Buffer type is 3
{

Return (0x12)
}

// validate DEST buffer contents
Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 0)), Local4)
If (LNotEqual (Local4, 0x67))
{
    Return (0x13)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 1)), Local4)
If (LNotEqual (Local4, 0x45))
{
    Return (0x14)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 4)), Local4)
If (LNotEqual (Local4, 0xEF))
{
    Return (0x15)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0, ), 5, )), Local4)
If (LNotEqual (Local4, 0xCD))
{
    Return (0x16)
}

Store ("Store(Mem,PkgElement) PASS", Debug)

// validate changing source \_SB.MEM.SMD* does
not impact DEST
Store (0x12345678, \_SB.MEM.SMD0)

Store (DerefOf (Index (DerefOf (Index (DEST, 0, ), 0, )), Local5)
If (LNotEqual (Local5, 0x67))
{

```

```

    Return (0x21)
}

Store (DerefOf (Index (DerefOf (Index (DEST, 0, )), 1, )), Local5)
If (LNotEqual (Local5, 0x45))
{
    Return (0x22)
}

// validate changing DEST does not impact source \_SB.MEM.SMD*
Store (0x30, Index (DerefOf (Index (DEST, 0)), 0))

Store (DerefOf (Index (DerefOf (Index (DEST, 0)), 0)), Local5)
If (LNotEqual (Local5, 0x30))
{
    Return (0x23)
}

//
// This section was modified from the original iPCO code because
// it attempted to compare two buffers. This is not allowed until

// ACPI v2.0, so the test has been modified to just check the
// changed \_SB.MEM.SMD0
//
Store (\_SB.MEM.SMD0, Local5)

If (LNotEqual (Local5, 0x12345678))
{
    Return (0x24)
}

Store ("Mem and Pkg independent PASS", Debug)

Return (0)
} // FB2P: store from Field Buffer into Index'ed Package

Method (TEST)
{
    Store ("+++++++ IndexOp2 Test", Debug)

    // store _BIF package return value into Local0

    Store (\_SB.BAT1._BIF, Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

```

```

// validate Local0 is a Package
If (LNotEqual (Local1, 4)) // Package type is 4
{
    // failure
    Return (2)
}

// validate source and destination buffers are independent of each
// of each other (i.e., changing one's contents does not change
// other's contents) using B2IB (store from Buffer into Index'ed
// Buffer) and FB2P (store from Field Buffer into Index'ed Package)

// call B2IB (store from Buffer into Index'ed Buffer)
Store (B2IB, Local2) // Local2 is B2IB return value

// save Local2 object type value into Local3
Store (ObjectType (Local2), Local3)

// validate Local2 is a Number
If (LNotEqual (Local3, 1)) // Number type is 1
{
    // failure
    Return (4)
}

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local2, 0))
{
    // return B2IB error code

Return (Local2)
}

// call FB2P (store from Field Buffer into Index'ed Package)
Store (FB2P, Local2) // Local2 is FB2P return value

// save Local2 object type value into Local3
Store (ObjectType (Local2), Local3)

// validate Local2 is a Number
If (LNotEqual (Local3, 1)) // Number type is 1
{
    // failure
    Return (5)
}

```

```

        // zero indicates pass, non-zero is an error code
        If (LNotEqual (Local2, 0))
        {
            // return FB2P error code
            Return (Local2)
        }

        Return (0)
    } // TEST
} // IDX2: Test device name
} // _SB system bus

//
// test SizeOf.asl
//
// Test for SizeOf
// test cases include following SizeOf arguments:
// buffer, buffer
// field;
// control method argument, control method local variable;
// control method return values;
// direct string, string;
// package;
// buffer, package, and string package elements
//
// MTL NOTE: This test has been modified to remove any SizeOf(Index(Buff,...
// calls because it is not legal to perform a SizeOf operation on a Buffer Field.
// This test has also been extended to test additional Package element sizes.
//
Device (SIZO)
{
    // SAR0 control method validates SizeOf(Arg)
    // SAR0 should only be called by SARG
    Method (SAR0, 2)
    // Arg0 object to determine size of
    // Arg1 expected Arg length
    { // SAR0: SizeOf(Arg) test control method
        // Local0 Arg0 length
        // Local1 Local0 object type

        // Store first string size (Arg0) into Local7
        Store (SizeOf (Arg0), Local0)

        // save Local0 object type value
into Local1
        Store (ObjectType (Local0), Local1)
    }
}

```



```

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{ Return (0x21) }

// If strings are not of equal size, return error code
If (LNotEqual (Local0, Arg1))
{ Return (0x22) }

Return (0)
} // SAR0: SizeOf(Arg) test control method

Method (SARG,, Serialized)
{ // SARG: SizeOf(Arg) test control method
Name (BUFR, Buffer (12) {}) // uninitialized Buffer
Name (BUF1, Buffer() {0x01, 0x02, 0x03, 0x04, 0x05})
Name (PKG0, Package (4) {}) // uninitialized Package
Name (STR0, "String")
Name (PKG1, Package (4)
{
BUFR,
"String2",
STR0,
PKG0
}) // PKG1

Name (PKG2, Package (4)
{
Buffer
(15) {},
"String 1",
Package (2) {}
}) // PKG2

// Namespace entry buffer reference
Store (SAR0 (BUFR, 12), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
Return (0x23)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
Return (Local0)
}

```

```

}

Store ("SizeOf(Arg=BUFR) PASS", Debug)

// Namespace entry package reference
Store (SAR0 (PKG0, 4), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{

Return (0x24)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=PKG0) PASS", Debug)

// Namespace entry string reference
Store (SAR0 (STR0, 6), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x25)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=STR0) PASS", Debug)

// direct string reference
Store (SAR0 ("String", 6), Local0)

```

```

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate
Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x26)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=String) PASS", Debug)

Store (0x55, Index (BUF1, 2))

/*****
//
// This section is commented because it is illegal to
// perform a SizeOf operation on a Buffer Field
//
// Namespace BufferField reference
Store (SAR0 (Index (BUFR, 2, ), 10), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{ Return (0x27) }

If (LNotEqual
(Local0, 0)) // Local0 is SAR0 return error code
{ Return (Local0) }

Store ("SizeOf(Arg=BufferField) PASS", Debug)
*****/

// Namespace BufferPackageElement reference
//
Store (SAR0 (Index(PKG1, 0), 12), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

```

```

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x28)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=PackageBuffer NTE Reference Element) PASS", Debug)

// Namespace StringPackageElement reference
Store (SAR0 (Index (PKG1, 1, ), 7), Local0)

// save Local0 object type
value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x29)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package String Element) PASS", Debug)

// Namespace StringPackageElement reference
Store (SAR0 (Index (PKG1, 2, ), 6), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x2A)
}

```

```

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package
String NTE Reference Element) PASS", Debug)

// Namespace PackagePackageElement reference
Store (SAR0 (Index (PKG1, 3, ), 4), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x2B)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package Package NTE Reference Element) PASS", Debug)

// Package Buffer Element
Store (SAR0 (Index (PKG2, 0), 15), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x2B)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package Buffer Element) PASS", Debug)

```

```

// Package String Element
Store (SAR0 (Index (PKG2, 1), 8), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x2B)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package String Element) PASS", Debug)

// Package Package Element
Store (SAR0 (Index (PKG2, 2), 2), Local0)

// save Local0 object type value into Local1

Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x2B)
}

If (LNotEqual (Local0, 0)) // Local0 is SAR0 return error code
{
    Return (Local0)
}

Store ("SizeOf(Arg=Package Package Element) PASS", Debug)

Store ("SizeOf(Arg) PASS", Debug)

Return (0)
} // SARG: SizeOf(Arg) test control method

Method (SBUF,, Serialized)
{ // SBUF: SizeOf(Buffer) test control method
    Name (BUFR, Buffer (12) {})

```

```

// store size of BUFR buffer into Local0
Store (SizeOf (BUFR), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x31)
}

If (LNotEqual (Local0, 12)) // BUFR size is 12
{
    Return (0x32)
}

Store ("SizeOf(BUFR) PASS", Debug)

Return (0)
} // SBUF: SizeOf(Buffer) test control method

/*****
//
// This section is commented because it is illegal to
// perform a SizeOf operation on a Buffer Field
//
Method (SIND)
{ // SIND: SizeOf(Index(,)) test control method
    Name (BUFR, Buffer (12) { })

    // store size of Index(BUFR,2,) buffer into Local0
    Store (SizeOf (Index (BUFR, 2, )), Local0)

    // save Local0 object type value into Local1
    Store (ObjectType (Local0), Local1)

    // validate Local0 is a Number
    If (LNotEqual (Local1, 1)) // Number type is 1
    {

Return (0x41)
    }

    If (LNotEqual (Local0, 10)) // 12 - 2 = 10
    {
        Return (0x42)
    }
}

```

```

}

Store ("SizeOf(Index(BUFR,,)) PASS", Debug)

// TBD: strings and packages

Return (0)
} // SIND: SizeOf(Index(,,)) test control method
*****/

Method (SLOC,, Serialized)
{ // SLOC: SizeOf(Local) test control method
  Name (BUFR, Buffer (12) {}) // uninitialized Buffer
  Name (STR0, "String")
  Name (PKG0, Package (4) {}) // uninitialized Package

  // store BUFR Buffer into Local2
  Store (BUFR, Local2)

  // store size of BUFR buffer into Local0
  Store (SizeOf (Local2), Local0)

  // save Local0 object type value into Local1
  Store (ObjectType (Local0), Local1)

  // validate Local0 is a Number

  If (LNotEqual (Local1, 1)) // Number type is 1
  {
    Return (0x51)
  }

  If (LNotEqual (Local0, 12)) // BUFR size is 12
  {
    Return (0x52)
  }

  Store ("SizeOf(Local2=Buffer) PASS", Debug)

  // store STR0 string into Local2
  Store (STR0, Local2)

  // store size of STR0 buffer into Local0
  Store (SizeOf (Local2), Local0)

  // save Local0 object type value into Local1

```



```

Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x53)
}

If (LNotEqual (Local0, 6)) // STR0 size is 6
{
    Return (0x54)
}

Store ("SizeOf(Local2=String) PASS", Debug)

// store PKG0 Package into Local2
Store (PKG0,
Local2)

// store size of PKG0 buffer into Local0
Store (SizeOf (Local2), Local0)

// save Local0 object type value into Local1
Store (ObjectType (Local0), Local1)

// validate Local0 is a Number
If (LNotEqual (Local1, 1)) // Number type is 1
{
    Return (0x55)
}

If (LNotEqual (Local0, 4)) // PKG0 size is 4
{
    Return (0x56)
}

Store ("SizeOf(Local2=Package) PASS", Debug)

Return (0)
} // SLOC: SizeOf(Local) test control method

Method (TEST)
{
    Store ("+++++++ SizeOf Test", Debug)

// Store current operating system string into Local0

```

```

Store (_OS, Local0)

Store (SizeOf (_OS), Local3)

// save Local3 object type value into Local4
Store (ObjectType (Local3), Local4)

// validate
Local3 is a Number
If (LNotEqual (Local4, 1)) // Number type is 1
{
    // failure
    Return (0x61)
}

// Store current operating system string into Local0
// This verifies above SizeOf(_OS) did not corrupt ACPI namespace
Store (_OS, Local0)

// Store SARG [Validate SizeOf(Arg)] return value into Local1
Store (SARG, Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
{
    // failure
    Return (0x62)
}

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
    // return SARG error code
    Return (Local1)
}

// Store SBUF [Validate
SizeOf(Buffer)] return value into Local1
Store (SBUF, Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number

```

```

If (LNotEqual (Local2, 1)) // Number type is 1
{
    // failure
    Return (0x63)
}

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
    // return SBUF error code
    Return (Local1)
}

/*****
//
// This section is commented because it is illegal to
// perform a SizeOf operation on a Buffer Field
//
// Store SIND [verify SizeOf(Index(,))] return value into Local1
Store (SIND, Local1)

// save Local1 object type value into Local2
Store (ObjectType
(Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1
{
    // failure
    Return (0x64)
}

// zero indicates pass, non-zero is an error code
If (LNotEqual (Local1, 0))
{
    // return SARG error code
    Return (Local1)
}
*****/

// Store SLOC [verify SizeOf(Local)] return value into Local1
Store (SLOC, Local1)

// save Local1 object type value into Local2
Store (ObjectType (Local1), Local2)

// validate Local1 is a Number
If (LNotEqual (Local2, 1)) // Number type is 1

```

```

    {
        // failure
        Return (0x65)
    }

    // zero indicates pass, non-zero is an error code
    If (LNotEqual (Local1, 0))
    {
        // return SLOC error code
        Return (Local1)
    }

    // TBD:  SizeOf (METH) -- where METH control method returns
    //        buffer, BufferField, string, package, package element

    Return (0)
} // TEST
} // SIZO

//
// test SmiShare.asl
//
Scope (\_SB) // System Bus
{ // _SB system bus
    // Declare an OpRegion in Memory starting at offset 0x400000 that is 10 bytes long
    OperationRegion(RAM1, SystemMemory, 0x400000, 0xA)

    Field (RAM1, AnyAcc, NoLock, Preserve)
    {
        BI1T, 1, // Create some bits in memory to access
        BI2T, 2,
        BI3T, 3,
        LST2, 2
    } // End Field RAM1

    Field (RAM1, WordAcc, NoLock, WriteAsZeros)
    {
        WRD, 16
    } // End 2nd Field RAM1

    Field (RAM1, ByteAcc, NoLock, WriteAsOnes)
    {
        BYTE, 8
    } //
End 3rd Field RAM1

```

```

Field (RAM1, ByteAcc, NoLock, Preserve)
{
    SMIC, 8,
    SMID, 8
}

Device (MBIT)
{
    Method (_INI)
    {
        Store (0, BI1T)
        Store (3, BI2T)
        Store (7, BI3T)
        Store (0, LST2)
    } // End _INI Method
} // End Device MBIT

Device (MWRD)
{
    Method (_INI)
    {
        Store (0, WRD)
    } // End _INI Method
} // End Device MWRD

Device (MBYT)
{
    Method (_INI)
    {
        Store (0, BYTE)
        Store (0xC, SMIC)
        Store (0xD, SMID)
    } // End _INI Method
} // End Device MBYT

/*
// Declare an OpRegion in Memory starting at offset 0x400000 that is 10 bytes long
OperationRegion(\RAM1, SystemMemory, 0x400000, 0xA)

Field (\RAM1, AnyAcc,
NoLock, Preserve)
{
    BI1T, 1,    // Create some bits in memory to access
    BI2T, 2,
    BI3T, 3,
    LST2, 2
} // End Field RAM1

```

Field (\RAM1, WordAcc, NoLock, WriteAsZeros)

```
{  
    WRD, 16  
} // End 2nd Field RAM1
```

Field (\RAM1, ByteAcc, NoLock, WriteAsOnes)

```
{  
    BYTE, 8  
} // End 3rd Field RAM1
```

Field (\RAM1, ByteAcc, NoLock, Preserve)

```
{  
    SMIC, 8,  
    SMID, 8  
}
```

*/

Method (SMIX)

```
{  
    Return (BYTE)  
} // End SMIX
```

Method (EVNT)

```
{  
    Store (SMIX, Local0)  
  
    Notify (\_SB_, 0x29)  
    If (And (Local0, 0x01))  
    { Notify (\_SB_.SMIS, 0x21) }  
  
    If (And (Local0, 0x02))  
    { Notify (\_SB_.SMIS, 0x22) }  
  
    If (And (Local0, 0x04))  
    { Notify (\_SB_.SMIS, 0x24) }  
  
    If (And (Local0, 0x08))  
    { Notify (\_SB_.SMIS, 0x28) }  
  
} // End Method EVNT
```

Method (NTFY)

```
{  
    Notify (\_SB_, 1)  
    Notify (\_TZ_.TZ1, 2)  
    Notify (\_PR_.CPU0, 3)  
  
    Notify (\_SB_, 0x81)  
    Notify (\_TZ_.TZ1, 0x82)
```

```

Notify (\_PR_.CPU0, 0x83)
}

Device (SMIS)
{
Method (BINK)
{
    Store (0, Local0)          // Zero out Local0

    If (LNotEqual (SMID, 0xD))
    { Or (0x80, Local0, Local0)}

    If (LNotEqual (SMIC, 0xC))
    { Or (0x40, Local0, Local0)}

    If (LNotEqual (BYTE, 0))
    { Or (0x20, Local0, Local0)}

    If (LNotEqual (WRD, 0))
    { Or (0x10, Local0, Local0)}

    If (LNotEqual (LST2, 0))
    { Or (0x8, Local0, Local0)}

    If (LNotEqual (BI3T, 0x7))
    { Or (0x4, Local0,
Local0)}

    If (LNotEqual (BI2T, 0x3))
    { Or (0x2, Local0, Local0)}

    If (LNotEqual (BI1T, 0))
    { Or (0x1, Local0, Local0)}

    Return (Local0)
} // End Method BINK

Method (TEST)
{
    Store ("+++++++ SmiShare Test", Debug)

    // Expect EVNT to generate Notify value we just previously
    // stored in BYTE

    Store (0x20, BYTE)
    EVNT ()
    Store (0x21, BYTE)
    EVNT ()
}

```

```

    Store (0x22, BYTE)
    EVNT ()
    Store (0x23, BYTE)
    EVNT ()

    NTFY ()
    Return (0) // pass
} // End Method TEST
} // Device SMIS

```

```
Device(CNDT)
```

```
{
  Method(TEST)
  {
    If (ECOK)
    {
      return("Broken")
    }
    Else
    {
      return("Works")
    }
  }
}

```

```
Method(ECOK)
```

```
{
  Return(0x0)
}
}
```

```
} // _SB system bus
```

```
/* Test a very big buffer */
```

```
Name(WQAB, Buffer(6756))
```

```
{
  0x46,0x4F,0x4D,0x42,0x01,0x00,0x00,0x00,
  0x54,0x1A,0x00,0x00,0xBA,0xAD,0x00,0x00,
  0x44,0x53,0x00,0x01,0x1A,0x7D,0xDA,0x54,
  0x98,0xBD,0x92,0x00,0x01,0x06,0x18,0x42,
  0x10,0x47,0x10,0x92,0x46,0x62,0x02,0x89,
  0x80,0x90,0x18,0x18,0x14,0x81,0x85,0x00,
  0x49,0x02,0x88,0xC4,0x41,0xE1,0x20,0xD4,
  0x9F,0x40,0x7E,0x05,0x20,0x74,0x28,0x40,
  0xA6,0x00,0x83,0x02,0x9C,0x22,0x88,0xA0,
  0x57,0x01,0x36,0x05,0x98,0x14,0x60,0x51,
  0x80,0x76,0x01,0x96,0x05,0xE8,0x16,0x20,

```


0x1D,0x96,0x88,0x04,0x47,0x89,0x01,0x47,
0xE9,0xC4,0x16,0x6E,0xD8,0xE0,0x85,0xA2,
0x68,0x06,0x51,0x12,0x94,0x8B,0x20,0x5D,
0x10,0x52,0x2E,0xC0,0x37,0x82,0x06,0x10,
0xA5,0x77,0x01,0xB6,0x05,0x98,0x86,0x27,
0xD2,0x20,0xE4,0x60,0x08,0x54,0xCE,0x80,
0x20,0x69,0x44,0x21,0x1E,0xA7,0x44,0x08,
0x0A,0x84,0x90,0xD4,0xF1,0xA0,0xA0,0x71,
0x88,0xAD,0xCE,0x46,0x93,0xA9,0x74,0x7E,
0x48,0x82,0x70,0xC6,0x2A,0x7E,0x3A,0x9A,
0xD0,0xD9,0x9C,0x60,0xE7,0x18,0x72,0x3C,
0x48,0xF4,0x20,0xB8,0x00,0x0F,0x1C,0x2C,
0x34,0x84,0x22,0x6B,0x80,0xC1,0x8C,0xDD,
0x63,0xB1,0x0B,0x4E,0x0A,0xEC,0x61,0xB3,
0x01,0x19,0xA2,0x24,0x38,0xD4,0x11,0xC0,
0x12,0x05,0x98,0x1F,0x87,0x0C,0x0F,0x95,
0x8C,0x25,0x24,0x1B,0xAB,0x87,0xC2,0xA5,
0x40,0x68,0x6C,0x27,0xED,0x19,0x45,0x2C,
0x79,0x4A,0x82,0x49,0xE0,0x51,0x44,0x36,
0x1A,0x27,0x28,0x1B,0x1A,0x25,0x03,0x42,
0x9E,0x05,0x58,0x07,0x26,0x04,0x76,0x2F,
0xC0,0x9A,0x00,0x73,0xB3,0x90,0xB1,0xB9,
0xE8,0xFF,0x0F,0x71,0xB0,0x31,0xDA,0x9A,
0xAE,0x90,0xC2,0xC4,0x88,0x12,0x2C,0x5E,
0xC5,0xC3,0x10,0xCA,0x93,0x42,0xA8,0x48,
0x95,0xA1,0x68,0xB4,0x51,0x2A,0x14,0xE0,
0x4C,0x80,0x30,0x5C,0x1D,0x03,0x82,0x46,
0x88,0x15,0x29,0x56,0xFB,0x83,0x20,0xF1,
0x2D,0x40,0x54,0x01,0xA2,0x48,0xA3,0x41,
0x9D,0x03,0x3C,0x5C,0x0F,0xF5,0xF0,0x3D,
0xF6,0x93,0x0C,0x72,0x90,0x67,0xF1,0xA8,
0x70,0x9C,0x06,0x49,0xE0,0x0B,0x80,0x4F,
0x08,0x1E,0x38,0xDE,0x35,0xA0,0x66,0x7C,
0xBC,0x4C,0x10,0x1C,0x6A,0x88,0x1E,0x68,
0xB8,0x13,0x38,0x44,0x06,0xE8,0x49,0x3D,
0x52,0x60,0x07,0x77,0x32,0xEF,0x01,0xAF,
0x0A,0xCD,0x5E,0x12,0x08,0xC1,0xF1,0xF8,
0x7E,0xC0,0x26,0x9C,0xC0,0xF2,0x07,0x81,
0x1A,0x99,0xA1,0x3D,0xCA,0xD3,0x8A,0x19,
0xF2,0x31,0xC1,0x04,0x16,0x0B,0x21,0x05,
0x10,0x1A,0x0F,0xF8,0x6F,0x00,0x8F,0x17,
0xBE,0x12,0xC4,0xF6,0x80,0x12,0x0C,0x0B,
0x21,0x23,0xAB,0xF0,0x78,0xE8,0x28,0x7C,
0x95,0x38,0x9C,0xD3,0x8A,0x67,0x82,0xE1,
0x20,0xF4,0x05,0x90,0x00,0x51,0xE7,0x0C,
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0xDF,0x12,0xC4,0x4D,0x69,0x88,0x35,0x01,
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0x62,0x79,0x5D,0x01,0xB1,0xF0,0x20,0x02,
0x72,0xE6,0x97,0x9F,0x80,0xAC,0xE0,0xA5,
0xF3,0x10,0xC0,0xDE,0x10,0x81,0x48,0x72,
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0x30,0x60,0x0A,0x42,0x33,0x81,0xD0,0x8C,
0x20,0x54,0x7C,0x07,0x10,0x16,0x04,0x84,

```
0x86,0x03,0xD1,0x00,0xFE,0xFF,0x8F,0x0C,
0x02,0xD1,0x00,0x9C,0x23,0xC4,0x61,0x85,
0x82,0xD0,0xF4,0x20,0x34,0x6C,0x09,0x50,
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0x42,0x55,0x24,0x39,0x9A,0x50,0x10,0x1D,
0x4D,0x08,0x08,0xCD,0x07,0x46,0x75,0x35,
0x39,0x6E,0x50,0x10,0xAA,0x1D,0x84,0x06,
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0x02,0xB2,0x9E,0x2A,0x87,0x0A,0x0A,0x22,
0x30,0xA7,0x02,0xA2,0x49,0x41,0xA8,0x8E,
0x2C,0x47,0x0A,0x9A,0x06,0x84,0x25,0x06,
0xA1,0xC9,0xDA,0x80,0xB0,0x0C,0x75,0x0E,
0x24,0x14,0x84,0xE6,0x04,0xA1,0x4A,0xF2,
0x0C,0x8F,0x82,0xE8,0x38,0x42,0x80,0x68,
0x7A,0x10,0xAA,0xA6,0xCF,0x00,0x28,0x88,
0x06,0x40,0x40,0x68,0x4E,0x30,0xAA,0xA8,
0xD1,0xD1,0x84,0x82,0x50,0xDD,0x2F,0x4E,
0x81,0xF8,0xFF,0x0F,
}) // END MBUF
```

```
} //end DefinitionBlock
```

Found in path(s):

```
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/tests/misc/grammar.asl
```

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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/events/evsci.c

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% {

/*

*/

*

* Module Name: aslparser.y - Master Bison/Yacc input file for iASL

*

/

/*

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 *****/

```
#include "aslcompiler.h"
#include "acpi.h"
#include "accommon.h"
```

```
#define _COMPONENT      ACPI_COMPILER
        ACPI_MODULE_NAME  ("aslparse")
```

```
/*
 * Global Notes:
 *
 * October 2005: The following list terms have been optimized (from the
 * original ASL grammar in the ACPI specification) to force the immediate
 * reduction of each list item so that the parse stack use doesn't increase on
 * each list element and possibly overflow on very large lists (>4000 items).
 * This dramatically reduces use of the parse stack overall.
 *
 *   ArgList, TermList, ByteList,
   DWordList, PackageList,
 *   ResourceMacroList, and FieldUnitList
 */
```

```
void *
AslLocalAllocate (
    unsigned int      Size);
```

```
/* Bison/yacc configuration */
```

```
#define static
#undef malloc
#define malloc      AslLocalAllocate
#undef alloca
#define alloca      AslLocalAllocate
```

```

#define yyname      AslCompilername

#define YYINITDEPTH    600      /* State stack depth */
#define YYDEBUG        1        /* Enable debug output */
#define YYERROR_VERBOSE 1        /* Verbose error messages */
#define YYFLAG         -32768

/* Define YYMALLOC/YYFREE to prevent redefinition errors */

#define YYMALLOC      AslLocalAllocate
#define YYFREE        ACPI_FREE
% }

/*
* Declare the type of values in the grammar
*/
%union {
    UINT64      i;
    char        *s;
    ACPI_PARSE_OBJECT *n;
}

/*
* These shift/reduce conflicts are expected. There should be zero
* reduce/reduce conflicts.
*/
%expect
124

/*! [Begin] no source code translation */

/*
* The M4 macro processor is used to bring in the parser items,
* in order to keep this master file smaller, and to break up
* the various parser items.
*/

/* Token types */

/*****
*
* Token types: These are returned by the lexer
*
* NOTE: This list MUST match the AslKeywordMapping table found
* in aslmap.c EXACTLY! Double check any changes!
*****/

```

```

*
*****/

/*
* Most tokens are defined to return <i>, which is a UINT64.
*
* These tokens return <s>, a pointer to the associated lexed string:
*
* PARSEOP_NAMESEG
* PARSEOP_NAMESTRING
* PARSEOP_STRING_LITERAL
* PARSEOP_STRUCTURE_NAMESTRING
*/
%token <i> PARSEOP_ACCESSAS
%token <i> PARSEOP_ACCESSATTRIB_BLOCK
%token <i> PARSEOP_ACCESSATTRIB_BLOCK_CALL
%token <i> PARSEOP_ACCESSATTRIB_BYTE
%token <i> PARSEOP_ACCESSATTRIB_BYTES
%token
<i> PARSEOP_ACCESSATTRIB_QUICK
%token <i> PARSEOP_ACCESSATTRIB_RAW_BYTES
%token <i> PARSEOP_ACCESSATTRIB_RAW_PROCESS
%token <i> PARSEOP_ACCESSATTRIB_SND_RCV
%token <i> PARSEOP_ACCESSATTRIB_WORD
%token <i> PARSEOP_ACCESSATTRIB_WORD_CALL
%token <i> PARSEOP_ACCESSTYPE_ANY
%token <i> PARSEOP_ACCESSTYPE_BUF
%token <i> PARSEOP_ACCESSTYPE_BYTE
%token <i> PARSEOP_ACCESSTYPE_DWORD
%token <i> PARSEOP_ACCESSTYPE_QWORD
%token <i> PARSEOP_ACCESSTYPE_WORD
%token <i> PARSEOP_ACQUIRE
%token <i> PARSEOP_ADD
%token <i> PARSEOP_ADDRESSINGMODE_7BIT
%token <i> PARSEOP_ADDRESSINGMODE_10BIT
%token <i> PARSEOP_ADDRESSTYPE ACPI
%token <i> PARSEOP_ADDRESSTYPE_MEMORY
%token <i> PARSEOP_ADDRESSTYPE_NVS
%token <i> PARSEOP_ADDRESSTYPE_RESERVED
%token <i> PARSEOP_ALIAS
%token <i> PARSEOP_AND
%token <i> PARSEOP_ARG0
%token <i> PARSEOP_ARG1
%token <i> PARSEOP_ARG2
%token <i> PARSEOP_ARG3
%token <i> PARSEOP_ARG4
%token <i> PARSEOP_ARG5
%token <i> PARSEOP_ARG6

```

%token <i> PARSEOP_BANKFIELD
%token <i> PARSEOP_BITSPERBYTE_EIGHT
%token
<i> PARSEOP_BITSPERBYTE_FIVE
%token <i> PARSEOP_BITSPERBYTE_NINE
%token <i> PARSEOP_BITSPERBYTE_SEVEN
%token <i> PARSEOP_BITSPERBYTE_SIX
%token <i> PARSEOP_BREAK
%token <i> PARSEOP_BREAKPOINT
%token <i> PARSEOP_BUFFER
%token <i> PARSEOP_BUSMASTERTYPE_MASTER
%token <i> PARSEOP_BUSMASTERTYPE_NOTMASTER
%token <i> PARSEOP_BYTECONST
%token <i> PARSEOP_CASE
%token <i> PARSEOP_CLOCKPHASE_FIRST
%token <i> PARSEOP_CLOCKPHASE_SECOND
%token <i> PARSEOP_CLOCKPOLARITY_HIGH
%token <i> PARSEOP_CLOCKPOLARITY_LOW
%token <i> PARSEOP_CONCATENATE
%token <i> PARSEOP_CONCATENATERESTEMPLATE
%token <i> PARSEOP_CONDREFOF
%token <i> PARSEOP_CONNECTION
%token <i> PARSEOP_CONTINUE
%token <i> PARSEOP_COPYOBJECT
%token <i> PARSEOP_CREATEBITFIELD
%token <i> PARSEOP_CREATEBYTEFIELD
%token <i> PARSEOP_CREATEDWORDFIELD
%token <i> PARSEOP_CREATEFIELD
%token <i> PARSEOP_CREATEQWORDFIELD
%token <i> PARSEOP_CREATEWORDFIELD
%token <i> PARSEOP_DATABUFFER
%token <i> PARSEOP_DATATABLEREGION
%token
<i> PARSEOP_DEBUG
%token <i> PARSEOP_DECODETYPE_POS
%token <i> PARSEOP_DECODETYPE_SUB
%token <i> PARSEOP_DECREMENT
%token <i> PARSEOP_DEFAULT
%token <i> PARSEOP_DEFAULT_ARG
%token <i> PARSEOP_DEFINITION_BLOCK
%token <i> PARSEOP_DEREOF
%token <i> PARSEOP_DEVICE
%token <i> PARSEOP_DEVICEPOLARITY_HIGH
%token <i> PARSEOP_DEVICEPOLARITY_LOW
%token <i> PARSEOP_DIVIDE
%token <i> PARSEOP_DMA
%token <i> PARSEOP_DMATYPE_A
%token <i> PARSEOP_DMATYPE_COMPATIBILITY

%token <i> PARSEOP_DMATYPE_B
%token <i> PARSEOP_DMATYPE_F
%token <i> PARSEOP_DWORDCONST
%token <i> PARSEOP_DWORDIO
%token <i> PARSEOP_DWORDMEMORY
%token <i> PARSEOP_DWORDSPACE
%token <i> PARSEOP_EISAID
%token <i> PARSEOP_ELSE
%token <i> PARSEOP_ELSEIF
%token <i> PARSEOP_ENDDEPENDENTFN
%token <i> PARSEOP_ENDIAN_BIG
%token <i> PARSEOP_ENDIAN_LITTLE
%token <i> PARSEOP_ENDTAG
%token <i> PARSEOP_ERRORNODE
%token <i> PARSEOP_EVENT
%token <i> PARSEOP_EXTENDEDEDIO
%token <i> PARSEOP_EXTENDEDMEMORY
%token <i> PARSEOP_EXTENDEDSPACE
%token <i> PARSEOP_EXTERNAL
%token
<i> PARSEOP_FATAL
%token <i> PARSEOP_FIELD
%token <i> PARSEOP_FINDSETLEFTBIT
%token <i> PARSEOP_FINDSETRIGHTBIT
%token <i> PARSEOP_FIXEDDMA
%token <i> PARSEOP_FIXEDIO
%token <i> PARSEOP_FLOWCONTROL_HW
%token <i> PARSEOP_FLOWCONTROL_NONE
%token <i> PARSEOP_FLOWCONTROL_SW
%token <i> PARSEOP_FROMBCD
%token <i> PARSEOP_FUNCTION
%token <i> PARSEOP_GPIO_INT
%token <i> PARSEOP_GPIO_IO
%token <i> PARSEOP_I2C_SERIALBUS
%token <i> PARSEOP_I2C_SERIALBUS_V2
%token <i> PARSEOP_IF
%token <i> PARSEOP_INCLUDE
%token <i> PARSEOP_INCLUDE_END
%token <i> PARSEOP_INCREMENT
%token <i> PARSEOP_INDEX
%token <i> PARSEOP_INDEXFIELD
%token <i> PARSEOP_INTEGER
%token <i> PARSEOP_INTERRUPT
%token <i> PARSEOP_INTLEVEL_ACTIVEBOTH
%token <i> PARSEOP_INTLEVEL_ACTIVEHIGH
%token <i> PARSEOP_INTLEVEL_ACTIVELOW
%token <i> PARSEOP_INTTYPE_EDGE
%token <i> PARSEOP_INTTYPE_LEVEL

%token <i> PARSEOP_IO
%token <i> PARSEOP_IODECODETYPE_10
%token <i> PARSEOP_IODECODETYPE_16
%token <i> PARSEOP_IORESTRICT_IN
%token
<i> PARSEOP_IORESTRICT_NONE
%token <i> PARSEOP_IORESTRICT_OUT
%token <i> PARSEOP_IORESTRICT_PRESERVE
%token <i> PARSEOP_IRQ
%token <i> PARSEOP_IRQNOFLAGS
%token <i> PARSEOP_LAND
%token <i> PARSEOP_LEQUAL
%token <i> PARSEOP_LGREATER
%token <i> PARSEOP_LGREATEREQUAL
%token <i> PARSEOP_LLESS
%token <i> PARSEOP_LLESSEQUAL
%token <i> PARSEOP_LNOT
%token <i> PARSEOP_LNOTEQUAL
%token <i> PARSEOP_LOAD
%token <i> PARSEOP_LOADTABLE
%token <i> PARSEOP_LOCAL0
%token <i> PARSEOP_LOCAL1
%token <i> PARSEOP_LOCAL2
%token <i> PARSEOP_LOCAL3
%token <i> PARSEOP_LOCAL4
%token <i> PARSEOP_LOCAL5
%token <i> PARSEOP_LOCAL6
%token <i> PARSEOP_LOCAL7
%token <i> PARSEOP_LOCKRULE_LOCK
%token <i> PARSEOP_LOCKRULE_NOLOCK
%token <i> PARSEOP_LOR
%token <i> PARSEOP_MATCH
%token <i> PARSEOP_MATCHTYPE_MEQ
%token <i> PARSEOP_MATCHTYPE_MGE
%token <i> PARSEOP_MATCHTYPE_MGT
%token <i> PARSEOP_MATCHTYPE_MLE
%token <i> PARSEOP_MATCHTYPE_MLT
%token <i> PARSEOP_MATCHTYPE_MTR
%token <i> PARSEOP_MAXTYPE_FIXED
%token <i> PARSEOP_MAXTYPE_NOTFIXED
%token
<i> PARSEOP_MEMORY24
%token <i> PARSEOP_MEMORY32
%token <i> PARSEOP_MEMORY32FIXED
%token <i> PARSEOP_MEMTYPE_CACHEABLE
%token <i> PARSEOP_MEMTYPE_NONCACHEABLE
%token <i> PARSEOP_MEMTYPE_PREFETCHABLE
%token <i> PARSEOP_MEMTYPE_WRITECOMBINING

%token <i> PARSEOP_METHOD
%token <i> PARSEOP_METHODCALL
%token <i> PARSEOP_MID
%token <i> PARSEOP_MINTYPE_FIXED
%token <i> PARSEOP_MINTYPE_NOTFIXED
%token <i> PARSEOP_MOD
%token <i> PARSEOP_MULTIPLY
%token <i> PARSEOP_MUTEX
%token <i> PARSEOP_NAME
%token <s> PARSEOP_NAMESEG
%token <s> PARSEOP_NAMESTRING
%token <i> PARSEOP_NAND
%token <i> PARSEOP_NOOP
%token <i> PARSEOP_NOR
%token <i> PARSEOP_NOT
%token <i> PARSEOP_NOTIFY
%token <i> PARSEOP_OBJECTTYPE
%token <i> PARSEOP_OBJECTTYPE_BFF
%token <i> PARSEOP_OBJECTTYPE_BUF
%token <i> PARSEOP_OBJECTTYPE_DDB
%token <i> PARSEOP_OBJECTTYPE_DEV
%token <i> PARSEOP_OBJECTTYPE_EVT
%token <i> PARSEOP_OBJECTTYPE_FLD
%token <i> PARSEOP_OBJECTTYPE_INT
%token <i> PARSEOP_OBJECTTYPE_MTH
%token
<i> PARSEOP_OBJECTTYPE_MTX
%token <i> PARSEOP_OBJECTTYPE_OPR
%token <i> PARSEOP_OBJECTTYPE_PKG
%token <i> PARSEOP_OBJECTTYPE_POW
%token <i> PARSEOP_OBJECTTYPE_PRO
%token <i> PARSEOP_OBJECTTYPE_STR
%token <i> PARSEOP_OBJECTTYPE_THZ
%token <i> PARSEOP_OBJECTTYPE_UNK
%token <i> PARSEOP_OFFSET
%token <i> PARSEOP_ONE
%token <i> PARSEOP_ONES
%token <i> PARSEOP_OPERATIONREGION
%token <i> PARSEOP_OR
%token <i> PARSEOP_PACKAGE
%token <i> PARSEOP_PACKAGE_LENGTH
%token <i> PARSEOP_PARITYTYPE_EVEN
%token <i> PARSEOP_PARITYTYPE_MARK
%token <i> PARSEOP_PARITYTYPE_NONE
%token <i> PARSEOP_PARITYTYPE_ODD
%token <i> PARSEOP_PARITYTYPE_SPACE
%token <i> PARSEOP_PINCONFIG
%token <i> PARSEOP_PINFUNCTION

%token <i> PARSEOP_PINGROUP
 %token <i> PARSEOP_PINGROUPCONFIG
 %token <i> PARSEOP_PINGROUPFUNCTION
 %token <i> PARSEOP_PIN_NOPULL
 %token <i> PARSEOP_PIN_PULLDEFAULT
 %token <i> PARSEOP_PIN_PULLDOWN
 %token <i> PARSEOP_PIN_PULLUP
 %token <i> PARSEOP_POWERRESOURCE
 %token <i> PARSEOP_PROCESSOR
 %token <i> PARSEOP_QWORDCONST
 %token
 <i> PARSEOP_QWORDIO
 %token <i> PARSEOP_QWORDMEMORY
 %token <i> PARSEOP_QWORDSPACE
 %token <i> PARSEOP_RANGETYPE_ENTIRE
 %token <i> PARSEOP_RANGETYPE_ISAONLY
 %token <i> PARSEOP_RANGETYPE_NONISAONLY
 %token <i> PARSEOP_RAW_DATA
 %token <i> PARSEOP_READWRITETYPE_BOTH
 %token <i> PARSEOP_READWRITETYPE_READONLY
 %token <i> PARSEOP_REFOF
 %token <i> PARSEOP_REGIONSPACE_CMOS
 %token <i> PARSEOP_REGIONSPACE_EC
 %token <i> PARSEOP_REGIONSPACE_FIXEDHW
 %token <i> PARSEOP_REGIONSPACE_GPIO
 %token <i> PARSEOP_REGIONSPACE_GSBUS
 %token <i> PARSEOP_REGIONSPACE_IO
 %token <i> PARSEOP_REGIONSPACE_IPMI
 %token <i> PARSEOP_REGIONSPACE_MEM
 %token <i> PARSEOP_REGIONSPACE_PCC
 %token <i> PARSEOP_REGIONSPACE_PCI
 %token <i> PARSEOP_REGIONSPACE_PCIBAR
 %token <i> PARSEOP_REGIONSPACE_SMBUS
 %token <i> PARSEOP_REGISTER
 %token <i> PARSEOP_RELEASE
 %token <i> PARSEOP_RESERVED_BYTES
 %token <i> PARSEOP_RESET
 %token <i> PARSEOP_RESOURCETEMPLATE
 %token <i> PARSEOP_RESOURCETYPE_CONSUMER
 %token <i> PARSEOP_RESOURCETYPE_PRODUCER
 %token
 <i> PARSEOP_RETURN
 %token <i> PARSEOP_REVISION
 %token <i> PARSEOP_SCOPE
 %token <i> PARSEOP_SERIALIZERULE_NOTSERIAL
 %token <i> PARSEOP_SERIALIZERULE_SERIAL
 %token <i> PARSEOP_SHARETYPE_EXCLUSIVE
 %token <i> PARSEOP_SHARETYPE_EXCLUSIVEWAKE

%token <i> PARSEOP_SHARETYPE_SHARED
%token <i> PARSEOP_SHARETYPE_SHAREDWAKE
%token <i> PARSEOP_SHIFTLEFT
%token <i> PARSEOP_SHIFTRIGHT
%token <i> PARSEOP_SIGNAL
%token <i> PARSEOP_SIZEOF
%token <i> PARSEOP_SLAVEMODE_CONTROLLERINIT
%token <i> PARSEOP_SLAVEMODE_DEVICEINIT
%token <i> PARSEOP_SLEEP
%token <i> PARSEOP_SPI_SERIALBUS
%token <i> PARSEOP_SPI_SERIALBUS_V2
%token <i> PARSEOP_STALL
%token <i> PARSEOP_STARTDEPENDENTFN
%token <i> PARSEOP_STARTDEPENDENTFN_NOPRI
%token <i> PARSEOP_STOPBITS_ONE
%token <i> PARSEOP_STOPBITS_ONEPLUSHALF
%token <i> PARSEOP_STOPBITS_TWO
%token <i> PARSEOP_STOPBITS_ZERO
%token <i> PARSEOP_STORE
%token <s> PARSEOP_STRING_LITERAL
%token <i> PARSEOP_SUBTRACT
%token <i> PARSEOP_SWITCH
%token <i> PARSEOP_THERMALZONE
%token
<i> PARSEOP_TIMER
%token <i> PARSEOP_TOBCD
%token <i> PARSEOP_TOBUFFER
%token <i> PARSEOP_TODECIMALSTRING
%token <i> PARSEOP_TOHEXSTRING
%token <i> PARSEOP_TOINTEGER
%token <i> PARSEOP_TOSTRING
%token <i> PARSEOP_TOUUID
%token <i> PARSEOP_TRANSLATIONTYPE_DENSE
%token <i> PARSEOP_TRANSLATIONTYPE_SPARSE
%token <i> PARSEOP_TYPE_STATIC
%token <i> PARSEOP_TYPE_TRANSLATION
%token <i> PARSEOP_UART_SERIALBUS
%token <i> PARSEOP_UART_SERIALBUS_V2
%token <i> PARSEOP_UNICODE
%token <i> PARSEOP_UNLOAD
%token <i> PARSEOP_UPDATERULE_ONES
%token <i> PARSEOP_UPDATERULE_PRESERVE
%token <i> PARSEOP_UPDATERULE_ZEROS
%token <i> PARSEOP_VAR_PACKAGE
%token <i> PARSEOP_VENDORLONG
%token <i> PARSEOP_VENDORSHORT
%token <i> PARSEOP_WAIT
%token <i> PARSEOP_WHILE

%token <i> PARSEOP_WIREMODE_FOUR
%token <i> PARSEOP_WIREMODE_THREE
%token <i> PARSEOP_WORDBUSNUMBER
%token <i> PARSEOP_WORDCONST
%token <i> PARSEOP_WORDIO
%token <i> PARSEOP_WORDSPLACE
%token <i> PARSEOP_XFERSIZE_8
%token <i> PARSEOP_XFERSIZE_16
%token
<i> PARSEOP_XFERSIZE_32
%token <i> PARSEOP_XFERSIZE_64
%token <i> PARSEOP_XFERSIZE_128
%token <i> PARSEOP_XFERSIZE_256
%token <i> PARSEOP_XFERTYPE_8
%token <i> PARSEOP_XFERTYPE_8_16
%token <i> PARSEOP_XFERTYPE_16
%token <i> PARSEOP_XOR
%token <i> PARSEOP_ZERO

/* ToPld macro */

%token <i> PARSEOP_TOPLD
%token <i> PARSEOP_PLD_REVISION
%token <i> PARSEOP_PLD_IGNORECOLOR
%token <i> PARSEOP_PLD_RED
%token <i> PARSEOP_PLD_GREEN
%token <i> PARSEOP_PLD_BLUE
%token <i> PARSEOP_PLD_WIDTH
%token <i> PARSEOP_PLD_HEIGHT
%token <i> PARSEOP_PLD_USERVISIBLE
%token <i> PARSEOP_PLD_DOCK
%token <i> PARSEOP_PLD_LID
%token <i> PARSEOP_PLD_PANEL
%token <i> PARSEOP_PLD_VERTICALPOSITION
%token <i> PARSEOP_PLD_HORIZONTALPOSITION
%token <i> PARSEOP_PLD_SHAPE
%token <i> PARSEOP_PLD_GROUPORIENTATION
%token <i> PARSEOP_PLD_GROUPTOKEN
%token <i> PARSEOP_PLD_GROUPPOSITION
%token <i> PARSEOP_PLD_BAY
%token <i> PARSEOP_PLD_EJECTABLE
%token <i> PARSEOP_PLD_EJECTREQUIRED
%token <i> PARSEOP_PLD_CABINETNUMBER
%token
<i> PARSEOP_PLD_CARDCAGENUMBER
%token <i> PARSEOP_PLD_REFERENCE
%token <i> PARSEOP_PLD_ROTATION
%token <i> PARSEOP_PLD_ORDER

```

%token <i> PARSEOP_PLD_RESERVED
%token <i> PARSEOP_PLD_VERTICALOFFSET
%token <i> PARSEOP_PLD_HORIZONTALOFFSET

/*
* C-style expression parser. These must appear after all of the
* standard ASL operators and keywords.
*
* Note: The order of these tokens implements the precedence rules
* (low precedence to high). See asrules.y for an exhaustive list.
*/
%right <i> PARSEOP_EXP_EQUALS
    PARSEOP_EXP_ADD_EQ
    PARSEOP_EXP_SUB_EQ
    PARSEOP_EXP_MUL_EQ
    PARSEOP_EXP_DIV_EQ
    PARSEOP_EXP_MOD_EQ
    PARSEOP_EXP_SHL_EQ
    PARSEOP_EXP_SHR_EQ
    PARSEOP_EXP_AND_EQ
    PARSEOP_EXP_XOR_EQ
    PARSEOP_EXP_OR_EQ

%left <i> PARSEOP_EXP_LOGICAL_OR
%left <i> PARSEOP_EXP_LOGICAL_AND
%left <i> PARSEOP_EXP_OR
%left <i> PARSEOP_EXP_XOR
%left <i> PARSEOP_EXP_AND
%left <i> PARSEOP_EXP_EQUAL

    PARSEOP_EXP_NOT_EQUAL
%left <i> PARSEOP_EXP_GREATER
    PARSEOP_EXP_LESS
    PARSEOP_EXP_GREATER_EQUAL
    PARSEOP_EXP_LESS_EQUAL
%left <i> PARSEOP_EXP_SHIFT_RIGHT
    PARSEOP_EXP_SHIFT_LEFT
%left <i> PARSEOP_EXP_ADD
    PARSEOP_EXP_SUBTRACT
%left <i> PARSEOP_EXP_MULTIPLY
    PARSEOP_EXP_DIVIDE
    PARSEOP_EXP_MODULO

%right <i> PARSEOP_EXP_NOT
    PARSEOP_EXP_LOGICAL_NOT

%left <i> PARSEOP_EXP_INCREMENT
    PARSEOP_EXP_DECREMENT

```

```

%left <i> PARSEOP_OPEN_PAREN
      PARSEOP_CLOSE_PAREN

/* Brackets for Index() support */

%left <i> PARSEOP_EXP_INDEX_LEFT
%right <i> PARSEOP_EXP_INDEX_RIGHT

/* Macros */

%token <i> PARSEOP_PRINTF
%token <i> PARSEOP_FPRINTF
%token <i> PARSEOP_FOR

/* Structures */

%token <i> PARSEOP_STRUCTURE
%token <s> PARSEOP_STRUCTURE_NAMESTRING
%token <i> PARSEOP_STRUCTURE_TAG
%token <i> PARSEOP_STRUCTURE_ELEMENT
%token <i> PARSEOP_STRUCTURE_INSTANCE
%token <i> PARSEOP_STRUCTURE_REFERENCE
%token
<i> PARSEOP_STRUCTURE_POINTER

/* Top level */

%token <i> PARSEOP_ASL_CODE

/*****
*
* Tokens below are not in the aslmap.c file
*
*****/

/* Tokens below this are not in the aslmap.c file */

/* Specific parentheses tokens are not used at this time */
/* PARSEOP_EXP_PAREN_OPEN */
/* PARSEOP_EXP_PAREN_CLOSE */

/* ASL+ variable creation */

%token <i> PARSEOP_INTEGER_TYPE
%token <i> PARSEOP_STRING_TYPE

```

```
%token <i> PARSEOP_BUFFER_TYPE
%token <i> PARSEOP_PACKAGE_TYPE
%token <i> PARSEOP_REFERENCE_TYPE
```

```
/*
* Special functions. These should probably stay at the end of this
* table.
*/
```

```
%token <i> PARSEOP__DATE__
%token <i> PARSEOP__FILE__
%token <i> PARSEOP__LINE__
%token <i> PARSEOP__PATH__
%token <i> PARSEOP__METHOD__
```

```
/* Production types/names */
```

```
/******
*
* Production names
*
*****/
```

```
%type <n> ArgList
%type <n> AslCode
%type <n> BufferData
%type <n> BufferTermData
%type <n> CompilerDirective
%type <n> DataObject
%type <n> DefinitionBlockTerm
%type <n> DefinitionBlockList
%type <n> IntegerData
%type <n> NamedObject
%type <n> NameSpaceModifier
%type <n> Object
%type <n> PackageData
%type <n> ParameterTypePackage
%type <n> ParameterTypePackageList
%type <n> ParameterTypesPackage
%type <n> ParameterTypesPackageList
%type <n> RequiredTarget
%type <n> SimpleName
%type <n> StringData
%type <n> Target
%type <n> Term
```

```

%type <n> TermArg
%type <n> TermList
%type <n> MethodInvocationTerm

/* Type4Opcode is obsolete */

%type <n> Type1Opcode
%type <n> Type2BufferOpcode
%type <n> Type2BufferOrStringOpcode
%type <n> Type2IntegerOpcode
%type <n> Type2Opcode
%type <n> Type2StringOpcode
%type <n> Type3Opcode
%type <n> Type5Opcode
%type <n> Type6Opcode

%type
<n> AccessAsTerm
%type <n> ExternalTerm
%type <n> FieldUnit
%type <n> FieldUnitEntry
%type <n> FieldUnitList
%type <n> IncludeTerm
%type <n> OffsetTerm
%type <n> OptionalAccessAttribTerm

/* Named Objects */

%type <n> BankFieldTerm
%type <n> CreateBitFieldTerm
%type <n> CreateByteFieldTerm
%type <n> CreateDWordFieldTerm
%type <n> CreateFieldTerm
%type <n> CreateQWordFieldTerm
%type <n> CreateWordFieldTerm
%type <n> DataRegionTerm
%type <n> DeviceTerm
%type <n> EventTerm
%type <n> FieldTerm
%type <n> FunctionTerm
%type <n> IndexFieldTerm
%type <n> MethodTerm
%type <n> MutexTerm
%type <n> OpRegionTerm
%type <n> OpRegionSpaceIdTerm
%type <n> PowerResTerm
%type <n> ProcessorTerm
%type <n> ThermalZoneTerm

```

/ Namespace modifiers */*

%type <n> AliasTerm
%type <n> NameTerm
%type <n> ScopeTerm

/ Type 1 opcodes */*

%type <n> BreakPointTerm
%type <n> BreakTerm
%type <n> CaseDefaultTermList
%type <n> CaseTerm
%type <n> ContinueTerm
%type <n> DefaultTerm
%type <n> ElseTerm
%type <n>
FatalTerm
%type <n> ElseIfTerm
%type <n> IfTerm
%type <n> LoadTerm
%type <n> NoOpTerm
%type <n> NotifyTerm
%type <n> ReleaseTerm
%type <n> ResetTerm
%type <n> ReturnTerm
%type <n> SignalTerm
%type <n> SleepTerm
%type <n> StallTerm
%type <n> SwitchTerm
%type <n> UnloadTerm
%type <n> WhileTerm
/ %type <n> CaseTermList */*

/ Type 2 opcodes */*

%type <n> AcquireTerm
%type <n> AddTerm
%type <n> AndTerm
%type <n> ConcatResTerm
%type <n> ConcatTerm
%type <n> CondRefOfTerm
%type <n> CopyObjectTerm
%type <n> DecTerm
%type <n> DerefOfTerm
%type <n> DivideTerm
%type <n> FindSetLeftBitTerm
%type <n> FindSetRightBitTerm

%type <n> FromBCDTerm
%type <n> IncTerm
%type <n> IndexTerm
%type <n> LAndTerm
%type <n> LEqualTerm
%type <n> LGreaterEqualTerm
%type <n> LGreaterTerm
%type <n> LLessEqualTerm
%type <n> LLessTerm
%type <n> LNotEqualTerm
%type <n> LNotTerm
%type <n> LoadTableTerm
%type <n> LOrTerm
%type <n> MatchTerm
%type <n> MidTerm
%type <n> ModTerm
%type <n> MultiplyTerm
%type <n> NAndTerm
%type
<n> NOrTerm
%type <n> NotTerm
%type <n> ObjectTypeTerm
%type <n> OrTerm
%type <n> RawDataBufferTerm
%type <n> RefOfTerm
%type <n> ShiftLeftTerm
%type <n> ShiftRightTerm
%type <n> SizeOfTerm
%type <n> StoreTerm
%type <n> SubtractTerm
%type <n> TimerTerm
%type <n> ToBCDTerm
%type <n> ToBufferTerm
%type <n> ToDecimalStringTerm
%type <n> ToHexStringTerm
%type <n> ToIntegerTerm
%type <n> ToStringTerm
%type <n> WaitTerm
%type <n> XOrTerm

/* Keywords */

%type <n> AccessAttribKeyword
%type <n> AccessTypeKeyword
%type <n> AddressingModeKeyword
%type <n> AddressKeyword
%type <n> AddressSpaceKeyword
%type <n> BitsPerByteKeyword

%type <n> ClockPhaseKeyword
%type <n> ClockPolarityKeyword
%type <n> DecodeKeyword
%type <n> DevicePolarityKeyword
%type <n> DMATypeKeyword
%type <n> EndianKeyword
%type <n> FlowControlKeyword
%type <n> InterruptLevel
%type <n> InterruptTypeKeyword
%type <n> IODecodeKeyword
%type <n> IoRestrictionKeyword
%type <n> LockRuleKeyword
%type <n> MatchOpKeyword
%type <n> MaxKeyword
%type
 <n> MemTypeKeyword
%type <n> MinKeyword
%type <n> ObjectTypeKeyword
%type <n> OptionalBusMasterKeyword
%type <n> OptionalReadWriteKeyword
%type <n> ParityTypeKeyword
%type <n> PinConfigByte
%type <n> PinConfigKeyword
%type <n> RangeTypeKeyword
%type <n> RegionSpaceKeyword
%type <n> ResourceTypeKeyword
%type <n> SerializeRuleKeyword
%type <n> ShareTypeKeyword
%type <n> SlaveModeKeyword
%type <n> StopBitsKeyword
%type <n> TranslationKeyword
%type <n> TypeKeyword
%type <n> UpdateRuleKeyword
%type <n> WireModeKeyword
%type <n> XferSizeKeyword
%type <n> XferTypeKeyword

/* Types */

%type <n> SuperName
%type <n> ObjectTypeSource
%type <n> DerefOfSource
%type <n> RefOfSource
%type <n> CondRefOfSource
%type <n> ArgTerm
%type <n> LocalTerm
%type <n> DebugTerm

```
%type <n> Integer
%type <n> ByteConst
%type <n> WordConst
%type <n> DWordConst
%type <n> QWordConst
%type <n> String

%type <n> ConstTerm
%type <n> ConstExprTerm
%type <n> ByteConstExpr
%type <n> WordConstExpr
%type <n> DWordConstExpr
%type
<n> QWordConstExpr

%type <n> DWordList
%type <n> BufferTerm
%type <n> ByteList

%type <n> PackageElement
%type <n> PackageList
%type <n> PackageTerm

/* Macros */

%type <n> EISAIDTerm
%type <n> ResourceMacroList
%type <n> ResourceMacroTerm
%type <n> ResourceTemplateTerm
%type <n> PldKeyword
%type <n> PldKeywordList
%type <n> ToPLDTerm
%type <n> ToUUIDTerm
%type <n> UnicodeTerm
%type <n> PrintfArgList
%type <n> PrintfTerm
%type <n> FprintfTerm
%type <n> ForTerm

/* Resource Descriptors */

%type <n> ConnectionTerm
%type <n> DMATerm
%type <n> DWordIOTerm
%type <n> DWordMemoryTerm
%type <n> DWordSpaceTerm
%type <n> EndDependentFnTerm
%type <n> ExtendedIOTerm
```

%type <n> ExtendedMemoryTerm
%type <n> ExtendedSpaceTerm
%type <n> FixedDmaTerm
%type <n> FixedIOTerm
%type <n> GpioIntTerm
%type <n> GpioIoTerm
%type <n> I2cSerialBusTerm
%type <n> I2cSerialBusTermV2
%type <n> InterruptTerm
%type <n> IOTerm
%type <n> IRQNoFlagsTerm
%type <n> IRQTerm
%type <n> Memory24Term
%type <n>
Memory32FixedTerm
%type <n> Memory32Term
%type <n> NameSeg
%type <n> NameString
%type <n> PinConfigTerm
%type <n> PinFunctionTerm
%type <n> PinGroupTerm
%type <n> PinGroupConfigTerm
%type <n> PinGroupFunctionTerm
%type <n> QWordIOTerm
%type <n> QWordMemoryTerm
%type <n> QWordSpaceTerm
%type <n> RegisterTerm
%type <n> SpiSerialBusTerm
%type <n> SpiSerialBusTermV2
%type <n> StartDependentFnNoPriTerm
%type <n> StartDependentFnTerm
%type <n> UartSerialBusTerm
%type <n> UartSerialBusTermV2
%type <n> VendorLongTerm
%type <n> VendorShortTerm
%type <n> WordBusNumberTerm
%type <n> WordIOTerm
%type <n> WordSpaceTerm

/* Local types that help construct the AML, not in ACPI spec */

%type <n> AmlPackageLengthTerm
%type <n> IncludeEndTerm
%type <n> NameStringItem
%type <n> TermArgItem

%type <n> OptionalAccessSize
%type <n> OptionalAccessTypeKeyword

%type <n> OptionalAddressingMode
%type <n> OptionalAddressRange
%type <n> OptionalBitsPerByte
%type <n> OptionalBuffer_Last
%type <n> OptionalByteConstExpr
%type
<n> OptionalCount
%type <n> OptionalDataCount
%type <n> OptionalDecodeType
%type <n> OptionalDevicePolarity
%type <n> OptionalDWordConstExpr
%type <n> OptionalEndian
%type <n> OptionalFlowControl
%type <n> OptionalIoRestriction
%type <n> OptionalListString
%type <n> OptionalLockRuleKeyword
%type <n> OptionalMaxType
%type <n> OptionalMemType
%type <n> OptionalMinType
%type <n> OptionalNameString
%type <n> OptionalNameString_First
%type <n> OptionalNameString_Last
%type <n> OptionalObjectTypeKeyword
%type <n> OptionalParameterTypePackage
%type <n> OptionalParameterTypesPackage
%type <n> OptionalParentheses
%type <n> OptionalParityType
%type <n> OptionalPredicate
%type <n> OptionalQWordConstExpr
%type <n> OptionalRangeType
%type <n> OptionalReference
%type <n> OptionalResourceType
%type <n> OptionalResourceType_First
%type <n> OptionalProducerResourceType
%type <n> OptionalReturnArg
%type <n> OptionalSerializeRuleKeyword
%type <n> OptionalShareType
%type <n> OptionalShareType_First
%type
<n> OptionalSlaveMode
%type <n> OptionalStopBits
%type <n> OptionalStringData
%type <n> OptionalSyncLevel
%type <n> OptionalTermArg
%type <n> OptionalTranslationType_Last
%type <n> OptionalType
%type <n> OptionalType_Last
%type <n> OptionalUpdateRuleKeyword

```

%type <n> OptionalWireMode
%type <n> OptionalWordConst
%type <n> OptionalWordConstExpr
%type <n> OptionalXferSize

/*
 * ASL+ (C-style) parser
 */

/* Expressions and symbolic operators */

%type <n> Expression
%type <n> EqualsTerm
%type <n> IndexExpTerm

/* ASL+ Named object declaration support */
/*
%type <n> NameTermAslPlus

%type <n> BufferBegin
%type <n> BufferEnd
%type <n> PackageBegin
%type <n> PackageEnd
%type <n> OptionalLength
*/
/* ASL+ Structure declarations */
/*
%type <n> StructureTerm
%type <n> StructureTermBegin
%type <n> StructureType
%type <n> StructureTag
%type <n> StructureElementList
%type <n> StructureElement
%type <n> StructureElementType
%type <n> OptionalStructureElementType
%type <n> StructureId
*/
/*
Structure instantiation */
/*
%type <n> StructureInstanceTerm
%type <n> StructureTagReference
%type <n> StructureInstanceEnd
*/
/* Pseudo-instantiation for method Args/Locals */
/*
%type <n> MethodStructureTerm
%type <n> LocalStructureName

```

```

*/
/* Direct structure references via the Index operator */
/*
%type <n> StructureReference
%type <n> StructureIndexTerm
%type <n> StructurePointerTerm
%type <n> StructurePointerReference
%type <n> OptionalDefinePointer
*/

%%

/* Production rules */

/*****
*
* ASL Root and Secondary Terms
*
*****/

/*
* Root term. Allow multiple #line directives before the definition block
* to handle output from preprocessors
*/
AslCode
: DefinitionBlockList      { $<n>$ = TrLinkOpChildren (
                          TrCreateLeafOp (PARSEOP_ASL_CODE),1, $1);}
| error
  { YYABORT; $$ = NULL;}
;

/*
* Note concerning support for "module-level code".
*
* ACPI 1.0 allowed Type1 and Type2 executable opcodes outside of control
* methods (the so-called module-level code.) This support was explicitly
* removed in ACPI 2.0, but this type of code continues to be created by
* BIOS vendors. In order to support the disassembly and recompilation of
* such code (and the porting of ASL code to iASL), iASL supports this
* code in violation of the current ACPI specification.
*
* The grammar change to support module-level code is to revert the
* {ObjectList} portion of the DefinitionBlockTerm in ACPI 2.0 to the
* original use of {TermList} instead (see below.) This allows the use
* of Type1 and Type2 opcodes at module level.

```

```

*
* 04/2016: The module-level code is now allowed in the following terms:
* DeviceTerm, PowerResTerm, ProcessorTerm, ScopeTerm, ThermalZoneTerm.
* The ObjectList term is obsolete and has been removed.
*/

```

```

DefinitionBlockTerm

```

```

: PARSEOP_DEFINITION_BLOCK
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_DEFINITION_BLOCK);
COMMENT_CAPTURE_OFF;}
  String ''
  String ''
  ByteConst ''
  String ''
  String ''
  DWordConst
  PARSEOP_CLOSE_PAREN    {TrSetOpIntegerWidth ($6,$8);
                          TrSetOpEndLineNumber (<n>3); COMMENT_CAPTURE_ON;}
  {' TermList '}        {$$ = TrLinkOpChildren (<n>3,7,
                          $4,$6,$8,$10,$12,$14,$18);}
;

```

```

DefinitionBlockList

```

```

: DefinitionBlockTerm
| DefinitionBlockTerm
  DefinitionBlockList    {$$ = TrLinkPeerOps (2, $1,$2);}
;

```

```

/***** Basic ASCII identifiers *****/

```

```

/* Allow IO, DMA, IRQ Resource macro and FOR macro names to also be used as identifiers */

```

```

NameString

```

```

: NameSeg      {}
| PARSEOP_NAMESTRING    {$$ = TrCreateValuedLeafOp
(PARSEOP_NAMESTRING, (ACPI_NATIVE_INT) $1);}
| PARSEOP_IO           {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IO");}
| PARSEOP_DMA          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING,
(ACPI_NATIVE_INT) "DMA");}
| PARSEOP_IRQ          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IRQ");}
| PARSEOP_FOR          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"FOR");}
;
/*

```

```

NameSeg

```

```

: PARSEOP_NAMESEG      {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,

```

```

(ACPI_NATIVE_INT)
    TrNormalizeNameSeg ($1);}
;
*/

NameSeg
: PARSEOP_NAMESEG      {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,
    (ACPI_NATIVE_INT) AslCompilerIval.s);}
;

/***** Fundamental argument/statement types *****/

Term
: Object                {}
| Type1Opcode           {}
| Type2Opcode           {}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2StringOpcode    {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOpcode    {}
| Type2BufferOrStringOpcode {}
| error                 {$$ = AslDoError(); yyclearin;}
;

SuperName
: SimpleName           {}
| DebugTerm           {}
| Type6Opcode         {}
;

Target
:                      {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
| ','                 {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
| ',' SuperName      {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
;

RequiredTarget
: ',' SuperName      {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
;

TermArg
: SimpleName         {$$ = TrSetOpFlags ($1,
OP_IS_TERM_ARG);}
| Type2Opcode        {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| DataObject         {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| PARSEOP_OPEN_PAREN
    TermArg
    PARSEOP_CLOSE_PAREN    {$$ = TrSetOpFlags ($2, OP_IS_TERM_ARG);}

```



```

;

/*
NOTE: Removed from TermArg due to reduce/reduce conflicts:
| Type2IntegerOpcode      {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2StringOpcode       {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2BufferOpcode       {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2BufferOrStringOpcode {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}

*/

MethodInvocationTerm
: NameString
  PARSEOP_OPEN_PAREN      {TrSetOpIntegerValue (PARSEOP_METHODCALL, $1);
COMMENT_CAPTURE_OFF;}
  ArgList
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkChildOp ($1,$4); COMMENT_CAPTURE_ON;}
;

/* OptionalCount must appear before ByteList or an incorrect reduction
will result */

OptionalCount
:
  | ' '          {$$ = TrCreateLeafOp (PARSEOP_ONES);} /* Placeholder is a OnesOp object */
  | ' ' TermArg  {$$ = TrCreateLeafOp (PARSEOP_ONES);} /* Placeholder is a OnesOp object */
  | ' ' TermArg  {$$ = $2;}
;

/*
* Data count for buffers and packages (byte count for buffers,
* element count for packages).
*/

OptionalDataCount

  /* Legacy ASL */
:
  | PARSEOP_OPEN_PAREN
    TermArg
    PARSEOP_CLOSE_PAREN    {$$ = $2;}
  | PARSEOP_OPEN_PAREN
    PARSEOP_CLOSE_PAREN    {$$ = NULL;}

  /* C-style (ASL+) -- adds equals term */

  | PARSEOP_EXP_EQUALS      {$$ = NULL;}

  | PARSEOP_OPEN_PAREN
    TermArg

```

```

    PARSEOP_CLOSE_PAREN
    PARSEOP_EXP_EQUALS      {$$ = $2;}

| PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN
  String
  PARSEOP_EXP_EQUALS
  {$$ = NULL;}
;

/***** List Terms *****/

/* ACPI 3.0 -- allow semicolons between terms */

TermList
:
  {$$ = NULL;}
| TermList Term      {$$ = TrLinkPeerOp (
                      TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
| TermList Term ';'  {$$ = TrLinkPeerOp (
                      TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
| TermList ';' Term  {$$ = TrLinkPeerOp (
                      TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
| TermList ';' Term ';'  {$$ = TrLinkPeerOp (
                          TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
;

ArgList
:
  {$$ = NULL;}
| TermArg
| ArgList ';'      /* Allows a trailing comma at list end */
| ArgList ';'
  TermArg          {$$ = TrLinkPeerOp
($1,$3);}
;

ByteList
:
  {$$ = NULL;}
| ByteConstExpr
| ByteList ';'      /* Allows a trailing comma at list end */
| ByteList ';'
  ByteConstExpr    {$$ = TrLinkPeerOp ($1,$3);}
;

DWordList
:
  {$$ = NULL;}
| DWordConstExpr
| DWordList ';'      /* Allows a trailing comma at list end */

```

```

| DWordList ','
  DWordConstExpr      {$$ = TrLinkPeerOp ($1,$3);}
;

FieldUnitList
:
  {$$ = NULL;}
| FieldUnit
| FieldUnitList ',' /* Allows a trailing comma at list end */
| FieldUnitList ','
  FieldUnit           {$$ = TrLinkPeerOp ($1,$3);}
;

FieldUnit
: FieldUnitEntry      {}
| OffsetTerm          {}
| AccessAsTerm        {}
| ConnectionTerm      {}
;

FieldUnitEntry
: ',' AmlPackageLengthTerm  {$$ = TrCreateOp
(PARSEOP_RESERVED_BYTES,1,$2);}
| NameSeg ','
  AmlPackageLengthTerm      {$$ = TrLinkChildOp ($1,$3);}
;

Object
: CompilerDirective     {}
| NamedObject           {}
| NameSpaceModifier     {}
/* | StructureTerm      {} */
;

PackageList
:
  {$$ = NULL;}
| PackageElement
| PackageList ',' /* Allows a trailing comma at list end */
| PackageList ','
  PackageElement        {$$ = TrLinkPeerOp ($1,$3);}
;

PackageElement
: DataObject            {}
| NameString           {}
;

/* Rules for specifying the type of one method argument or return value */

```

ParameterTypePackage

```
:                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| ParameterTypePackage ','
  ObjectTypeKeyword    {$$ = TrLinkPeerOps (2,$1,$3);}
;
```

ParameterTypePackageList

```
:
                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| '{' ParameterTypePackage '}' {$$ = $2;}
;
```

OptionalParameterTypePackage

```
:                {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
| ',' ParameterTypePackageList {$$ = TrLinkOpChildren (
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
;
```

/* Rules for specifying the types for method arguments */

ParameterTypesPackage

```
: ParameterTypePackageList    {$$ = $1;}
| ParameterTypesPackage ','
  ParameterTypePackageList    {$$ = TrLinkPeerOps (2,$1,$3);}
;
```

ParameterTypesPackageList

```
:                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| '{' ParameterTypesPackage '}' {$$ = $2;}
;
```

OptionalParameterTypesPackage

```
:                {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
| ',' ParameterTypesPackageList {$$ = TrLinkOpChildren (
                                TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
;
```

/*

* Case-Default list; allow only one Default term and unlimited Case terms

*/

CaseDefaultTermList

```
:                {$$ = NULL;}
| CaseTerm        {}
| DefaultTerm     {}
```

```

| CaseDefaultTermList
  CaseTerm          {$$ = TrLinkPeerOp ($1,$2);}
| CaseDefaultTermList
  DefaultTerm       {$$ = TrLinkPeerOp ($1,$2);}

/* Original - attempts to force zero or one default term within the switch */

/*
CaseDefaultTermList
:                {$$ = NULL;}
| CaseTermList
  DefaultTerm
  CaseTermList   {$$ = TrLinkPeerOp ($1,TrLinkPeerOp ($2, $3));}
| CaseTermList
  CaseTerm       {$$ = TrLinkPeerOp ($1,$2);}
;

CaseTermList
:                {$$ = NULL;}
| CaseTerm       {}
| CaseTermList
  CaseTerm
    {$$ = TrLinkPeerOp ($1,$2);}
;
*/

/*****
*
* ASL Data and Constant Terms
*
*****/

DataObject
: BufferData      {}
| PackageData    {}
| IntegerData    {}
| StringData     {}
;

BufferData
: Type5Opcode    {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOrStringOpcode {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOpcode {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| BufferTerm      {}
;

PackageData

```

```

: PackageTerm      {}
;

IntegerData
: Type2IntegerOpcode    {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Integer
    {}
| ConstTerm           {}
;

StringData
: Type2StringOpcode    {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| String              {}
;

ByteConst
: Integer              {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
;

WordConst
: Integer              {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
;

DWordConst
: Integer              {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
;

QWordConst
: Integer              {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
;

/*
* The OP_COMPILE_TIME_CONST flag in the following constant expressions
* enables compile-time constant folding to reduce the Type3OpCodes/Type2IntegerOpCodes
* to simple integers. It is an error if these types of expressions cannot be
* reduced, since the AML grammar for ****ConstExpr requires a simple constant.
* Note: The required byte length of the constant
* is passed through to the
* constant folding code in the node AmlLength field.
*/

ByteConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 1);}
| Type2IntegerOpcode  {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 1);}
| ConstExprTerm       {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
| ByteConst           {}

```

```

;

WordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 2);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 2);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
| WordConst            {}
;

DWordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 4);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 4);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
| DWordConst           {}
;

QWordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 8);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 8);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
| QWordConst           {}
;

ConstTerm
: ConstExprTerm        {}
| PARSEOP_REVISION     {$$ = TrCreateLeafOp (PARSEOP_REVISION);}
;

ConstExprTerm
: PARSEOP_ZERO         {$$ = TrCreateValuedLeafOp (PARSEOP_ZERO, 0);}
| PARSEOP_ONE          {$$ = TrCreateValuedLeafOp (PARSEOP_ONE, 1);}
| PARSEOP_ONES         {$$ = TrCreateValuedLeafOp (PARSEOP_ONES, ACPI_UINT64_MAX);}
| PARSEOP__DATE__      {$$ = TrCreateConstantLeafOp (PARSEOP__DATE__);}
| PARSEOP__FILE__      {$$ = TrCreateConstantLeafOp (PARSEOP__FILE__);}
| PARSEOP__LINE__      {$$ = TrCreateConstantLeafOp (PARSEOP__LINE__);}
| PARSEOP__PATH__      {$$ = TrCreateConstantLeafOp (PARSEOP__PATH__);}
| PARSEOP__METHOD__    {$$ = TrCreateConstantLeafOp (PARSEOP__METHOD__);}
;

Integer
: PARSEOP_INTEGER      {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER,
AslCompilerIval.i);}

```

```

;

String
: PARSEOP_STRING_LITERAL    {$$ = TrCreateValuedLeafOp (PARSEOP_STRING_LITERAL,

                               (ACPI_NATIVE_INT) AslCompilerIval.s);}

;

/*****
*
* ASL Opcode Terms
*
*****/

CompilerDirective
: IncludeTerm                {}
| IncludeEndTerm              {}
| ExternalTerm                {}
;

NamedObject
: BankFieldTerm              {}
| CreateBitFieldTerm          {}
| CreateByteFieldTerm         {}
| CreateDWordFieldTerm        {}
| CreateFieldTerm             {}
| CreateQWordFieldTerm        {}
| CreateWordFieldTerm         {}
| DataRegionTerm              {}
| DeviceTerm                  {}
| EventTerm                   {}
| FieldTerm                   {}
| FunctionTerm                {}
| IndexFieldTerm              {}
| MethodTerm                  {}
| MutexTerm                   {}
{}
| OpRegionTerm                {}
| PowerResTerm                {}
| ProcessorTerm               {}
| ThermalZoneTerm             {}
;

NameSpaceModifier
: AliasTerm                   {}
| NameTerm                    {}
/* | NameTermAslPlus           {} */

```



```
| ScopeTerm      {}  
;
```

```
SimpleName  
: NameString    {}  
| LocalTerm     {}  
| ArgTerm       {}  
;
```

```
/* For ObjectType(), SuperName except for MethodInvocationTerm */
```

```
ObjectTypeSource  
: SimpleName    {}  
| DebugTerm     {}  
| RefOfTerm     {}  
| DerefOfTerm   {}  
| IndexTerm     {}  
| IndexExpTerm  {}  
;
```

```
/* For DeRefOf(), SuperName except for DerefOf and Debug */
```

```
DerefOfSource  
: SimpleName    {}  
| RefOfTerm     {}  
| DerefOfTerm   {}  
| IndexTerm     {}  
| IndexExpTerm  {}  
| StoreTerm     {}  
| EqualsTerm    {}  
| MethodInvocationTerm {}  
;
```

```
/* For RefOf(), SuperName except for RefOf and MethodInvocationTerm */
```

```
RefOfSource  
: SimpleName    {}  
| DebugTerm     {}  
| DerefOfTerm   {}  
| IndexTerm     {}  
| IndexExpTerm  {}  
;
```

```
/* For CondRefOf(), SuperName except for RefOf and MethodInvocationTerm */
```

```
CondRefOfSource  
: SimpleName    {}
```

```

| DebugTerm          {}
| DerefOfTerm       {}
| IndexTerm         {}
| IndexExpTerm      {}
;

/*
* Opcode types, as defined in the ACPI specification
*/
Type1Opcode
: BreakTerm         {}
| BreakPointTerm   {}
| ContinueTerm     {}
| FatalTerm        {}
    {}
| ForTerm           {}
| ElseIfTerm       {}
| LoadTerm         {}
| NoOpTerm         {}
| NotifyTerm       {}
| ReleaseTerm      {}
| ResetTerm        {}
| ReturnTerm       {}
| SignalTerm       {}
| SleepTerm        {}
| StallTerm        {}
| SwitchTerm       {}
| UnloadTerm       {}
| WhileTerm        {}
;

Type2Opcode
: AcquireTerm       {}
| CondRefOfTerm     {}
| CopyObjectTerm    {}
| DerefOfTerm       {}
| ObjectTypeTerm    {}
| RefOfTerm         {}
| SizeOfTerm        {}
| StoreTerm         {}
| EqualsTerm        {}
| TimerTerm         {}
| WaitTerm          {}
    {}
| MethodInvocationTerm {}
;

/*

```

```

* Type 3/4/5 opcodes
*/
Type2IntegerOpcode      /* "Type3" opcodes */
: Expression             {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| AddTerm                {}
| AndTerm                {}
| DecTerm                {}
| DivideTerm             {}
| FindSetLeftBitTerm     {}
| FindSetRightBitTerm    {}
| FromBCDTerm            {}
| IncTerm                {}
| IndexTerm              {}
/* | StructureIndexTerm    {} */
/* | StructurePointerTerm  {} */
| LAndTerm               {}
| LEqualTerm             {}
| LGreaterTerm           {}
| LGreaterEqualTerm     {}
| LLessTerm              {}
| LLessEqualTerm        {}
| LNotTerm               {}
| LNotEqualTerm         {}
| LoadTableTerm         {}
                        {}
| LOrTerm                {}
| MatchTerm              {}
| ModTerm                {}
| MultiplyTerm           {}
| NAndTerm               {}
| NOrTerm                {}
| NotTerm                {}
| OrTerm                 {}
| ShiftLeftTerm         {}
| ShiftRightTerm        {}
| SubtractTerm           {}
| ToBCDTerm              {}
| ToIntegerTerm          {}
| XOrTerm                {}
;

Type2StringOpcode       /* "Type4" Opcodes */
: ToDecimalStringTerm   {}
| ToHexStringTerm       {}
| ToStringTerm          {}
;

Type2BufferOpcode       /* "Type5" Opcodes */

```

```

: ToBufferTerm      {}
| ConcatResTerm     {}
;

Type2BufferOrStringOpcode
: ConcatTerm        {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| PrintfTerm        {}
| FprintfTerm       {}
| MidTerm           {}
;

/*
* A type 3 opcode evaluates to an Integer and cannot have a destination operand
*/
Type3Opcode
: EISAIDTerm        {}
;

/* Obsolete
Type4Opcode
: ConcatTerm        {}
| ToDecimalStringTerm {}
| ToHexStringTerm   {}
| MidTerm           {}
| ToStringTerm      {}
;
*/

/* Type 5 opcodes are a subset of Type2 opcodes, and return a constant */
Type5Opcode
: ResourceTemplateTerm {}
| UnicodeTerm          {}
| ToPLDTerm           {}
| ToUUIDTerm          {}
;

Type6Opcode
: RefOfTerm          {}
| DerefOfTerm        {}
| IndexTerm          {}
| IndexExpTerm       {}
/* | StructureIndexTerm {} */
/* | StructurePointerTerm
   {} */
| MethodInvocationTerm {}
;

```

```

/*****
*
* ASL Helper Terms
*
*****/

AmlPackageLengthTerm
: Integer          { $$ = TrSetOpIntegerValue (PARSEOP_PACKAGE_LENGTH,
              (ACPI_PARSE_OBJECT *) $1); }
;

NameStringItem
: ',' NameString   { $$ = $2; }
| ',' error        { $$ = AslDoError (); yyclearin; }
;

TermArgItem
: ',' TermArg      { $$ = $2; }
| ',' error        { $$ = AslDoError (); yyclearin; }
;

OptionalReference
:                  { $$ = TrCreateLeafOp (PARSEOP_ZERO); } /* Placeholder is a ZeroOp object */
| ','              { $$ = TrCreateLeafOp (PARSEOP_ZERO); } /* Placeholder is a ZeroOp object */
| ',' TermArg      { $$ = $2; }
;

OptionalReturnArg
:                  { $$ = TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
              OP_IS_NULL_RETURN); } /* Placeholder is a ZeroOp object */
| TermArg          { $$ = $1; }
;

OptionalSerializeRuleKeyword
:                  { $$ = NULL; }
| ','              { $$ = NULL; }
| ',' SerializeRuleKeyword { $$ = $2; }
;

OptionalTermArg
:                  { $$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG); }
| TermArg          { $$ = $1; }
;

OptionalWordConst
:                  { $$ = NULL; }
| WordConst        { $$ = $1; }

```

;

/*

*/

*

* ASL Primary Terms

*

*/

AccessAsTerm

```
: PARSEOP_ACCESSAS
  PARSEOP_OPEN_PAREN
  AccessTypeKeyword
  OptionalAccessAttribTerm
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateOp (PARSEOP_ACCESSAS,2,$3,$4);}
| PARSEOP_ACCESSAS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

AcquireTerm

```
: PARSEOP_ACQUIRE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp(PARSEOP_ACQUIRE);}
  SuperName
  ',' WordConstExpr
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$6);}
| PARSEOP_ACQUIRE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

AddTerm

```
: PARSEOP_ADD
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_ADD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

AliasTerm

```
: PARSEOP_ALIAS
```

```

PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_ALIAS);}
  NameString
  NameStringItem
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,2,$4,
                                TrSetOpFlags ($5, OP_IS_NAME_DECLARATION));}
| PARSEOP_ALIAS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

AndTerm

```

: PARSEOP_AND
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_AND);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_AND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

ArgTerm

```

: PARSEOP_ARG0          {$$ = TrCreateLeafOp (PARSEOP_ARG0);}
| PARSEOP_ARG1          {$$ = TrCreateLeafOp (PARSEOP_ARG1);}
| PARSEOP_ARG2          {$$ = TrCreateLeafOp (PARSEOP_ARG2);}
| PARSEOP_ARG3
  {$$ = TrCreateLeafOp (PARSEOP_ARG3);}
| PARSEOP_ARG4          {$$ = TrCreateLeafOp (PARSEOP_ARG4);}
| PARSEOP_ARG5          {$$ = TrCreateLeafOp (PARSEOP_ARG5);}
| PARSEOP_ARG6          {$$ = TrCreateLeafOp (PARSEOP_ARG6);}
;

```

BankFieldTerm

```

: PARSEOP_BANKFIELD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_BANKFIELD);}
  NameString
  NameStringItem
  TermArgItem
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
  OptionalUpdateRuleKeyword
  PARSEOP_CLOSE_PAREN  '{'
    FieldUnitList '}'   {$$ = TrLinkOpChildren (<n>3,7,
                                $4,$5,$6,$7,$8,$9,$12);}
| PARSEOP_BANKFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN

```

```

    '{ error '}'          {$$ = AslDoError(); yyclearin;}
;

BreakTerm
: PARSEOP_BREAK          {$$ = TrCreateOp (PARSEOP_BREAK, 0);}
;

BreakPointTerm
: PARSEOP_BREAKPOINT
    {$$ = TrCreateOp (PARSEOP_BREAKPOINT, 0);}
;

BufferTerm
: PARSEOP_BUFFER          {$<n>$ = TrCreateLeafOp (PARSEOP_BUFFER);
COMMENT_CAPTURE_OFF; }
OptionalDataCount
    '{ BufferTermData '}'  {$$ = TrLinkOpChildren ($<n>2,2,$3,$5); COMMENT_CAPTURE_ON;}
;

BufferTermData
: ByteList                {}
| StringData              {}
;

CaseTerm
: PARSEOP_CASE
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CASE);}
    DataObject
    PARSEOP_CLOSE_PAREN '{
    TermList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_CASE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ConcatTerm
: PARSEOP_CONCATENATE
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_CONCATENATE);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren
($<n>3,3,$4,$5,$6);}
| PARSEOP_CONCATENATE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```


ConcatResTerm

```
: PARSEOP_CONCATENATERESTEMPLATE
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (
                          PARSEOP_CONCATENATERESTEMPLATE);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_CONCATENATERESTEMPLATE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

CondRefOfTerm

```
: PARSEOP_CONDREFOF
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_CONDREFOF);}
  CondRefOfSource
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_CONDREFOF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ConnectionTerm

```
: PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN
  NameString
  PARSEOP_CLOSE_PAREN   {$ = TrCreateOp (PARSEOP_CONNECTION,1,$3);}
| PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_CONNECTION);}
  ResourceMacroTerm
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3, 1,
                          TrLinkOpChildren (
                          TrCreateLeafOp (PARSEOP_RESOURCETEMPLATE), 3,
                          TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                          TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
                          $4));}
| PARSEOP_CONNECTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ContinueTerm

```
: PARSEOP_CONTINUE     {$ = TrCreateOp (PARSEOP_CONTINUE, 0);}
;
```

CopyObjectTerm

```

: PARSEOP_COPYOBJECT
  PARSEOP_OPEN_PAREN
    {<n>$ = TrCreateLeafOp (PARSEOP_COPYOBJECT);}
  TermArg
  ',' SimpleName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,
                                TrSetOpFlags ($6, OP_IS_TARGET));}
| PARSEOP_COPYOBJECT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateBitFieldTerm

```

: PARSEOP_CREATEBITFIELD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_CREATEBITFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEBITFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateByteFieldTerm

```

: PARSEOP_CREATEBYTEFIELD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_CREATEBYTEFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEBYTEFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

CreateDWordFieldTerm

```

: PARSEOP_CREATEDWORDFIELD
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_CREATEDWORDFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEDWORDFIELD
  PARSEOP_OPEN_PAREN

```

```

    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

CreateFieldTerm
: PARSEOP_CREATEFIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEFIELD);}
  TermArg
  TermArgItem

  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,
                                TrSetOpFlags ($7, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

CreateQWordFieldTerm
: PARSEOP_CREATEQWORDFIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEQWORDFIELD);}
  TermArg
  TermArgItem
  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEQWORDFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

CreateWordFieldTerm
: PARSEOP_CREATEWORDFIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_CREATEWORDFIELD);}
  TermArg
  TermArgItem

  NameStringItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,
                                TrSetOpFlags ($6, OP_IS_NAME_DECLARATION));}
| PARSEOP_CREATEWORDFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DataRegionTerm
: PARSEOP_DATATABLEREGION
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DATATABLEREGION);}

```

```

NameString
TermArgItem
TermArgItem
TermArgItem
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,4,
                    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$5,$6,$7);}
| PARSEOP_DATATABLEREGION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DebugTerm
: PARSEOP_DEBUG          {$$ = TrCreateLeafOp (PARSEOP_DEBUG);}
;

DecTerm
: PARSEOP_DECREMENT
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp
(PARSEOP_DECREMENT);}
  SuperName
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_DECREMENT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DefaultTerm
: PARSEOP_DEFAULT '{'    {$<n>$ = TrCreateLeafOp (PARSEOP_DEFAULT);}
  TermList '}'          {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_DEFAULT '{'
  error '}'            {$$ = AslDoError(); yyclearin;}
;

DerefOfTerm
: PARSEOP_DEREFOP
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DEREFOP);}
  DerefOfSource
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_DEREFOP
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

DeviceTerm
: PARSEOP_DEVICE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_DEVICE);}
  NameString
  PARSEOP_CLOSE_PAREN

```

```
'{
    TermList '}'      {$$ = TrLinkOpChildren ($<n>3,2,
                          TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_DEVICE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

DivideTerm

```
: PARSEOP_DIVIDE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
  TermArg
  TermArgItem
  Target
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,$7);}
| PARSEOP_DIVIDE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

EISAIDTerm

```
: PARSEOP_EISAID
  PARSEOP_OPEN_PAREN
  StringData
  PARSEOP_CLOSE_PAREN    {$$ = TrSetOpIntegerValue (PARSEOP_EISAID, $3);}
| PARSEOP_EISAID
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

ElseIfTerm

```
: IfTerm ElseTerm
  {$$ = TrLinkPeerOp ($1,$2);}
;
```

ElseTerm

```
:          {$$ = NULL;}
| PARSEOP_ELSE '{'
  TermList      {$<n>$ = TrCreateLeafOp (PARSEOP_ELSE);}
  '}'          {$$ = TrLinkOpChildren ($<n>4,1,$3);}

| PARSEOP_ELSE '{'
  error '}'    {$$ = AslDoError(); yyclearin;}

| PARSEOP_ELSE
  error        {$$ = AslDoError(); yyclearin;}
;
```

```

| PARSEOP_ELSEIF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_ELSE);}
  TermArg                  {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'          {TrLinkOpChildren ($<n>5,2,$4,$8);}
  ElseTerm                 {TrLinkPeerOp ($<n>5,$11);}
                          {$$ = TrLinkOpChildren ($<n>3,1,$<n>5);}

```

```

| PARSEOP_ELSEIF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}

```

```

| PARSEOP_ELSEIF
  error
  {$$ = AslDoError(); yyclearin;}

```

```
;
```

EventTerm

```

: PARSEOP_EVENT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_EVENT);}
  NameString
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,
    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION));}

```

```

| PARSEOP_EVENT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}

```

```
;
```

ExternalTerm

```

: PARSEOP_EXTERNAL
  PARSEOP_OPEN_PAREN
  NameString
  OptionalObjectTypeKeyword
  OptionalParameterTypePackage
  OptionalParameterTypesPackage
  PARSEOP_CLOSE_PAREN     {$$ = TrCreateOp (PARSEOP_EXTERNAL,4,$3,$4,$5,$6);}

```

```

| PARSEOP_EXTERNAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}

```

```
;
```

FatalTerm

```

: PARSEOP_FATAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FATAL);}
  ByteConstExpr
  ',' DWordConstExpr
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}

```

```

| PARSEOP_FATAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

FieldTerm

```

: PARSEOP_FIELD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FIELD);}
  NameString
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
  OptionalUpdateRuleKeyword
  PARSEOP_CLOSE_PAREN '{'
    FieldUnitList '}'    {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$6,$7,$10);}
| PARSEOP_FIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  '{' error '}'          {$$ = AslDoError(); yyclearin;}
;

```

FindSetLeftBitTerm

```

: PARSEOP_FINDSETLEFTBIT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETLEFTBIT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}

| PARSEOP_FINDSETLEFTBIT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

FindSetRightBitTerm

```

: PARSEOP_FINDSETRIGHTBIT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FINDSETRIGHTBIT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_FINDSETRIGHTBIT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

/* Convert a For() loop to a While() loop */

ForTerm

```

: PARSEOP_FOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
  OptionalTermArg ','     {}

```

```

OptionalPredicate '
OptionalTermArg      {<n>$ = TrLinkPeerOp ($4,<n>3);
                      TrSetOpParent ($9,<n>3);}          /* New parent is WHILE */
PARSEOP_CLOSE_PAREN
{' TermList '}'      {<n>$ = TrLinkOpChildren
(<n>3,2,$7,$13);}
                      {<n>$ = TrLinkPeerOp ($13,$9);
                      $$ = <n>10;}
;

OptionalPredicate
:                    {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER, 1);}
| TermArg            {$$ = $1;}
;

FprintfTerm
: PARSEOP_FPRINTF
  PARSEOP_OPEN_PAREN  {<n>$ = TrCreateLeafOp (PARSEOP_FPRINTF);}
  TermArg '}'
  StringData
  PrintfArgList
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren (<n>3,3,$4,$6,$7);}
| PARSEOP_FPRINTF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

FromBCDTerm
: PARSEOP_FROMBCD
  PARSEOP_OPEN_PAREN  {<n>$ = TrCreateLeafOp (PARSEOP_FROMBCD);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_FROMBCD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

FunctionTerm
: PARSEOP_FUNCTION
  PARSEOP_OPEN_PAREN  {COMMENT_CAPTURE_OFF; <n>$ = TrCreateLeafOp
(PARSEOP_METHOD); }
  NameString
  OptionalParameterTypePackage
  OptionalParameterTypesPackage
  PARSEOP_CLOSE_PAREN '{' {COMMENT_CAPTURE_ON; }
  TermList '}'        {$$ = TrLinkOpChildren (<n>3,7,

```



```

        TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
        TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),
        TrCreateLeafOp (PARSEOP_SERIALIZERULE_NOTSERIAL),
        TrCreateValuedLeafOp (PARSEOP_BYTECONST, 0),$5,$6,$10);}
| PARSEOP_FUNCTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IfTerm
: PARSEOP_IF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_IF);}
  TermArg
  PARSEOP_CLOSE_PAREN
'{'
  TermList '}'           {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}

| PARSEOP_IF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IncludeTerm
: PARSEOP_INCLUDE
  PARSEOP_OPEN_PAREN
  String
  PARSEOP_CLOSE_PAREN     {$$ = TrSetOpIntegerValue (PARSEOP_INCLUDE, $3);
                           FIOpenIncludeFile ($3);}
;

IncludeEndTerm
: PARSEOP_INCLUDE_END     {$<n>$ = TrCreateLeafOp (PARSEOP_INCLUDE_END);
                           TrSetOpCurrentFilename ($$);}
;

IncTerm
: PARSEOP_INCREMENT
  PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
  SuperName
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_INCREMENT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IndexFieldTerm
: PARSEOP_INDEXFIELD

```

```

PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_INDEXFIELD);}
  NameString
  NameStringItem
  OptionalAccessTypeKeyword
  OptionalLockRuleKeyword
  OptionalUpdateRuleKeyword
  PARSEOP_CLOSE_PAREN '{'
    FieldUnitList '}'    {$$ = TrLinkOpChildren (<n>3,6,$4,$5,$6,$7,$8,$11);}
| PARSEOP_INDEXFIELD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  '{' error '}'          {$$ = AslDoError(); yyclearin;}
;

```

IndexTerm

```

: PARSEOP_INDEX
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_INDEX);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_INDEX
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

LAndTerm

```

: PARSEOP_LAND
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_LAND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

LEqualTerm

```

: PARSEOP_LEQUAL
  PARSEOP_OPEN_PAREN      {<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_LEQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

LGreaterEqualTerm

```
: PARSEOP_LGREATEREQUAL
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN   {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren (<n>3,2,$4,$5));}
| PARSEOP_LGREATEREQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

LGreaterTerm

```
: PARSEOP_LGREATER
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_LGREATER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

LLessEqualTerm

```
: PARSEOP_LLESSEQUAL
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN   {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren (<n>3,2,$4,$5));}
| PARSEOP_LLESSEQUAL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

LLessTerm

```
: PARSEOP_LLESS
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_LLESS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

LNotEqualTerm

```
: PARSEOP_LNOTEQUAL
```

```

    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
    TermArg
    TermArgItem
    PARSEOP_CLOSE_PAREN  {$$ = TrCreateOp (PARSEOP_LNOT, 1,
                                TrLinkOpChildren ($<n>3,2,$4,$5));}
| PARSEOP_LNOTEQUAL
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LNotTerm
: PARSEOP_LNOT
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
    TermArg
    PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_LNOT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LoadTableTerm
: PARSEOP_LOADTABLE
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_LOADTABLE);}
    TermArg

TermArgItem
    TermArgItem
    OptionalListString
    OptionalListString
    OptionalReference
    PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,6,$4,$5,$6,$7,$8,$9);}
| PARSEOP_LOADTABLE
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LoadTerm
: PARSEOP_LOAD
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_LOAD);}
    NameString
    RequiredTarget
    PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LOAD
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

LocalTerm

```

```

: PARSEOP_LOCAL0      {$$ = TrCreateLeafOp (PARSEOP_LOCAL0);}
| PARSEOP_LOCAL1      {$$ = TrCreateLeafOp (PARSEOP_LOCAL1);}
| PARSEOP_LOCAL2      {$$ = TrCreateLeafOp (PARSEOP_LOCAL2);}
| PARSEOP_LOCAL3      {$$ = TrCreateLeafOp (PARSEOP_LOCAL3);}
| PARSEOP_LOCAL4
    {$$ = TrCreateLeafOp (PARSEOP_LOCAL4);}
| PARSEOP_LOCAL5      {$$ = TrCreateLeafOp (PARSEOP_LOCAL5);}
| PARSEOP_LOCAL6      {$$ = TrCreateLeafOp (PARSEOP_LOCAL6);}
| PARSEOP_LOCAL7      {$$ = TrCreateLeafOp (PARSEOP_LOCAL7);}
;

```

LORterm

```

: PARSEOP_LOR
  PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
  TermArg
  TermArgItem
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_LOR
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

MatchTerm

```

: PARSEOP_MATCH
  PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp (PARSEOP_MATCH);}
  TermArg
  ',' MatchOpKeyword
  TermArgItem
  ',' MatchOpKeyword
  TermArgItem
  TermArgItem
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$7,$9,$10,$11);}
| PARSEOP_MATCH
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

MethodTerm

```

: PARSEOP_METHOD
  PARSEOP_OPEN_PAREN  {$<n>$ = TrCreateLeafOp (PARSEOP_METHOD);}
COMMENT_CAPTURE_OFF;}
  NameString
  OptionalByteConstExpr  {UtCheckIntegerRange ($5, 0, 7);}
  OptionalSerializeRuleKeyword
  OptionalByteConstExpr
  OptionalParameterTypePackage
  OptionalParameterTypesPackage
  PARSEOP_CLOSE_PAREN '{'  {COMMENT_CAPTURE_ON;}

```

```

    TermList '}'      {$$ = TrLinkOpChildren ($<n>3,7,
                    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                    $5,$7,$8,$9,$10,$14);}
| PARSEOP_METHOD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

MidTerm
: PARSEOP_MID
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MID);}
  TermArg
  TermArgItem
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$5,$6,$7);}
| PARSEOP_MID
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ModTerm
: PARSEOP_MOD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_MOD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

MultiplyTerm
: PARSEOP_MULTIPLY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_MULTIPLY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

MutexTerm
: PARSEOP_MUTEX
  PARSEOP_OPEN_PAREN

```

```

    {<n>$ = TrCreateLeafOp (PARSEOP_MUTEX);}
NameString
OptionalSyncLevel
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,
                    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$5);}
| PARSEOP_MUTEX
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NameTerm
: PARSEOP_NAME
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_NAME);}
  NameString
  ',' DataObject
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,2,
                    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$6);}
| PARSEOP_NAME
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NAndTerm
: PARSEOP_NAND
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_NAND);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ =
TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_NAND
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NoOpTerm
: PARSEOP_NOOP          {$$ = TrCreateOp (PARSEOP_NOOP, 0);}
;

NOrTerm
: PARSEOP_NOR
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_NOR);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_NOR
  PARSEOP_OPEN_PAREN

```

```

    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NotifyTerm
: PARSEOP_NOTIFY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_NOTIFY);}
  SuperName
  TermArgItem
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_NOTIFY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

NotTerm
: PARSEOP_NOT
  PARSEOP_OPEN_PAREN
  {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_NOT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ObjectTypeTerm
: PARSEOP_OBJECTTYPE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE);}
  ObjectTypeSource
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_OBJECTTYPE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

OffsetTerm
: PARSEOP_OFFSET
  PARSEOP_OPEN_PAREN
  AmlPackageLengthTerm
  PARSEOP_CLOSE_PAREN     {$$ = TrCreateOp (PARSEOP_OFFSET,1,$3);}
| PARSEOP_OFFSET
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

OpRegionTerm
: PARSEOP_OPERATIONREGION

```



```

    PARSEOP_OPEN_PAREN    {<n>$
= TrCreateLeafOp (PARSEOP_OPERATIONREGION);}
    NameString
    ',' OpRegionSpaceIdTerm
    TermArgItem
    TermArgItem
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,4,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                                $6,$7,$8);}
| PARSEOP_OPERATIONREGION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN    {$$ = AslDoError(); yyclearin;}
;

OpRegionSpaceIdTerm
: RegionSpaceKeyword    {}
| ByteConst            {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
;

OrTerm
: PARSEOP_OR
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_OR);}
    TermArg
    TermArgItem
    Target
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_OR
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN    {$$ = AslDoError(); yyclearin;}
;

PackageTerm
: PARSEOP_PACKAGE
    {<n>$ = TrCreateLeafOp (PARSEOP_VAR_PACKAGE);}
    OptionalDataCount
    {' PackageList '}    {$$ = TrLinkOpChildren (<n>2,2,$3,$5);}

PowerResTerm
: PARSEOP_POWERRESOURCE
    PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_POWERRESOURCE);}
    NameString
    ',' ByteConstExpr
    ',' WordConstExpr
    PARSEOP_CLOSE_PAREN {'
        TermList '}'    {$$ = TrLinkOpChildren (<n>3,4,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                                $6,$8,$11);}
| PARSEOP_POWERRESOURCE

```

```

PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

PrintfTerm
: PARSEOP_PRINTF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PRINTF);}
  StringData
  PrintfArgList
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_PRINTF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

PrintfArgList
:                               {$$ = NULL;}
| TermArg                       {$$ = $1;}
| PrintfArgList ' '
  TermArg                       {$$ = TrLinkPeerOp ($1, $3);}
;

ProcessorTerm
: PARSEOP_PROCESSOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PROCESSOR);}
  NameString
  ',' ByteConstExpr
  OptionalDWordConstExpr
  OptionalByteConstExpr
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'           {$$ = TrLinkOpChildren ($<n>3,5,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),
                                $6,$7,$8,$11);}
| PARSEOP_PROCESSOR
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

RawDataBufferTerm
: PARSEOP_DATABUFFER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DATABUFFER);}
  OptionalWordConst
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_DATABUFFER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

/*
* In RefOf, the node isn't really a target, but we can't keep track of it after
* we've taken a pointer to it. (hard to tell if a local becomes initialized this way.)
*/
RefOfTerm
: PARSEOP_REFOF
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_REFOF);}
  RefOfSource
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,1,
                                TrSetOpFlags ($4, OP_IS_TARGET));}
| PARSEOP_REFOF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ReleaseTerm
: PARSEOP_RELEASE
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_RELEASE);}
  SuperName
  PARSEOP_CLOSE_PAREN
  {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_RELEASE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ResetTerm
: PARSEOP_RESET
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_RESET);}
  SuperName
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_RESET
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

ReturnTerm
: PARSEOP_RETURN
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_RETURN);}
  OptionalReturnArg
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren (<n>3,1,$4);}
| PARSEOP_RETURN      {$$ = TrLinkOpChildren (
                                TrCreateLeafOp (PARSEOP_RETURN),1,
                                TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
                                OP_IS_NULL_RETURN));}
|

```

```

PARSEOP_RETURN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ScopeTerm
: PARSEOP_SCOPE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SCOPE);}
  NameString
  PARSEOP_CLOSE_PAREN '{'
    TermList '}'          {$$ = TrLinkOpChildren ($<n>3,2,
                                TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_SCOPE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ShiftLeftTerm
: PARSEOP_SHIFLEFT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFLEFT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_SHIFLEFT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ShiftRightTerm
: PARSEOP_SHIFTRIGHT
  PARSEOP_OPEN_PAREN
    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_SHIFTRIGHT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

SignalTerm
: PARSEOP_SIGNAL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SIGNAL);}
  SuperName
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_SIGNAL

```

```

    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

SizeOfTerm
: PARSEOP_SIZEOF
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SIZEOF);}
  SuperName
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_SIZEOF
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

SleepTerm
: PARSEOP_SLEEP

  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_SLEEP);}
  TermArg
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_SLEEP
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

StallTerm
: PARSEOP_STALL
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_STALL);}
  TermArg
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_STALL
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

StoreTerm
: PARSEOP_STORE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_STORE);}
  TermArg
  ',' SuperName
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,2,$4,
                                TrSetOpFlags ($6, OP_IS_TARGET));}
| PARSEOP_STORE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

```

SubtractTerm

```
: PARSEOP_SUBTRACT
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,3,$4,$5,$6);}
| PARSEOP_SUBTRACT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

SwitchTerm

```
: PARSEOP_SWITCH
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_SWITCH);}
  TermArg
  PARSEOP_CLOSE_PAREN '{'
    CaseDefaultTermList '}' {$ = TrLinkOpChildren (<n>3,2,$4,$7);}
| PARSEOP_SWITCH
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ThermalZoneTerm

```
: PARSEOP_THERMALZONE
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_THERMALZONE);}
  NameString
  PARSEOP_CLOSE_PAREN '{'
    TermList '}' {$ = TrLinkOpChildren (<n>3,2,
    TrSetOpFlags ($4, OP_IS_NAME_DECLARATION),$7);}
| PARSEOP_THERMALZONE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

TimerTerm

```
: PARSEOP_TIMER
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TIMER);}
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,0);}
| PARSEOP_TIMER          {$ = TrLinkOpChildren (
    TrCreateLeafOp (PARSEOP_TIMER),0);}
| PARSEOP_TIMER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$ = AslDoError(); yyclearin;}
;
```

ToBCDTerm

```
: PARSEOP_TOBCD
```

```

PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOBCD);}
TermArg
Target
PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOBCD
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

```

ToBufferTerm

```

: PARSEOP_TOBUFFER
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOBUFFER);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOBUFFER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

```

ToDecimalStringTerm

```

: PARSEOP_TODECIMALSTRING
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TODECIMALSTRING);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TODECIMALSTRING
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

```

ToHexStringTerm

```

: PARSEOP_TOHEXSTRING
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOHEXSTRING);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}
| PARSEOP_TOHEXSTRING
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$ = AslDoError(); yyclearin;}
;

```

ToIntegerTerm

```

: PARSEOP_TOINTEGER
  PARSEOP_OPEN_PAREN    {<n>$ = TrCreateLeafOp (PARSEOP_TOINTEGER);}
  TermArg
  Target
  PARSEOP_CLOSE_PAREN   {$ = TrLinkOpChildren (<n>3,2,$4,$5);}

```

```

| PARSEOP_TOINTEGER
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ToPLDTerm

```

: PARSEOP_TOPLD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_TOPLD);}
  PldKeywordList
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_TOPLD
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

PldKeywordList

```

:          {$$ = NULL;}
| PldKeyword
  PARSEOP_EXP_EQUALS Integer  {$$ = TrLinkOpChildren ($1,1,$3);}
| PldKeyword
  PARSEOP_EXP_EQUALS String   {$$ = TrLinkOpChildren ($1,1,$3);}
| PldKeywordList ','          /* Allows a trailing comma at list end */
| PldKeywordList ','
  PldKeyword
  PARSEOP_EXP_EQUALS Integer  {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
| PldKeywordList ','
  PldKeyword
  PARSEOP_EXP_EQUALS String   {$$ = TrLinkPeerOp ($1,TrLinkOpChildren ($3,1,$5));}
;

```

ToStringTerm

```

: PARSEOP_TOSTRING
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_TOSTRING);}
  TermArg
  OptionalCount
  Target
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_TOSTRING
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ToUUIDTerm

```

: PARSEOP_TOUUID
  PARSEOP_OPEN_PAREN
  StringData
  PARSEOP_CLOSE_PAREN     {$$ = TrSetOpIntegerValue (PARSEOP_TOUUID, $3);}

```



```

| PARSEOP_TOUUID
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

UnicodeTerm
: PARSEOP_UNICODE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_UNICODE);}
  StringData
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,2,0,$4);}
| PARSEOP_UNICODE
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

UnloadTerm
: PARSEOP_UNLOAD
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_UNLOAD);}
  SuperName
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_UNLOAD
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

WaitTerm
: PARSEOP_WAIT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WAIT);}
  SuperName
  TermArgItem
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,2,$4,$5);}
| PARSEOP_WAIT
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

XOrTerm
: PARSEOP_XOR
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
  TermArg
  TermArgItem
  Target
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,3,$4,$5,$6);}
| PARSEOP_XOR
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}

```

;

WhileTerm

```
: PARSEOP_WHILE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WHILE);}
  TermArg
  PARSEOP_CLOSE_PAREN
  {' TermList ' }        {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_WHILE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

```
/*  
*****  
*  
* Production rules for the symbolic (c-style) operators  
*  
*****  
*/
```

```
/*
```

```
* ASL Extensions: C-style math/logical operators  
and expressions.  
* The implementation transforms these operators into the standard  
* AML opcodes and syntax.
```

```
*
```

```
* Supported operators and precedence rules (high-to-low)
```

```
*
```

```
* NOTE: The operator precedence and associativity rules are  
* implemented by the tokens in asltokens.y
```

```
*
```

```
* (left-to-right):
```

```
* 1)  ( ) expr++ expr--
```

```
*
```

```
* (right-to-left):
```

```
* 2)  ! ~
```

```
*
```

```
* (left-to-right):
```

```
* 3)  * / %
```

```
* 4)  + -
```

```
* 5)  >> <<
```

```
* 6)  < > <= >=
```

```
* 7)  == !=
```

```
* 8)  &
```

```
* 9)  ^
```

```
* 10) |
```

```
* 11) &&
```

```
* 12) ||
*
* (right-to-left):
* 13) = += -= *= /= %= <<= >>= &= ^= |=
*/
```

```
/******
*
* Basic operations for math and logical expressions.
*
*****/
```

Expression

```
/* Unary operators */
```

```
: PARSEOP_EXP_LOGICAL_NOT      {$<n>$ = TrCreateLeafOp (PARSEOP_LNOT);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>2,1,$3);}
```

```
| PARSEOP_EXP_NOT      {$<n>$ = TrCreateLeafOp (PARSEOP_NOT);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>2,2,$3,TrCreateNullTargetOp ());}
```

```
| SuperName PARSEOP_EXP_INCREMENT {$<n>$ = TrCreateLeafOp (PARSEOP_INCREMENT);}
```

```
      {$$ = TrLinkOpChildren ($<n>3,1,$1);}
```

```
| SuperName PARSEOP_EXP_DECREMENT {$<n>$ = TrCreateLeafOp (PARSEOP_DECREMENT);}
```

```
      {$$ = TrLinkOpChildren ($<n>3,1,$1);}
```

```
/* Binary operators: math and logical */
```

```
| TermArg PARSEOP_EXP_ADD      {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_DIVIDE   {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_MODULO   {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_MULTIPLY {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_SHIFT_LEFT {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLLEFT);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_SHIFT_RIGHT {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
```

```
| TermArg PARSEOP_EXP_SUBTRACT {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
```

```
TermArg      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp
());}
```

```
| TermArg PARSEOP_EXP_AND      {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
```

```

    TermArg          {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_OR          {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}
| TermArg PARSEOP_EXP_XOR          {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,TrCreateNullTargetOp ());}

| TermArg PARSEOP_EXP_GREATER      {$<n>$ = TrCreateLeafOp (PARSEOP_LGREATER);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_GREATER_EQUAL {$<n>$ = TrCreateLeafOp
(PARSEOP_LGREATEREQUAL);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LESS          {$<n>$ = TrCreateLeafOp (PARSEOP_LLESS);}

TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LESS_EQUAL    {$<n>$ = TrCreateLeafOp (PARSEOP_LLESSEQUAL);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

| TermArg PARSEOP_EXP_EQUAL          {$<n>$ = TrCreateLeafOp (PARSEOP_LEQUAL);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_NOT_EQUAL      {$<n>$ = TrCreateLeafOp (PARSEOP_LNOTEQUAL);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

| TermArg PARSEOP_EXP_LOGICAL_AND    {$<n>$ = TrCreateLeafOp (PARSEOP_LAND);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}
| TermArg PARSEOP_EXP_LOGICAL_OR     {$<n>$ = TrCreateLeafOp (PARSEOP_LOR);}
    TermArg          {$$ = TrLinkOpChildren ($<n>3,2,$1,$4);}

/* Parentheses */

| PARSEOP_OPEN_PAREN
    Expression
    PARSEOP_CLOSE_PAREN
    {$$ = $2;}

/* Index term -- "= BUF1[5]" on right-hand side of an equals (source) */

| IndexExpTerm
;

/*
* Index term -- "BUF1[5] = " or "= BUF1[5]" on either the left side
* of an equals (target) or the right side (source)
* Currently used in these terms:
*   Expression
*   ObjectTypeSource
*   DerefOfSource
*   Type6Opcode
*/

```

IndexExpTerm

```
: SuperName
  PARSEOP_EXP_INDEX_LEFT
  TermArg
  PARSEOP_EXP_INDEX_RIGHT    {$$ = TrCreateLeafOp (PARSEOP_INDEX);
                               TrLinkOpChildren ($$,3,$1,$3,TrCreateNullTargetOp ());}
;
```

```
/******
*
* All assignment-type operations -- math and logical. Includes simple
* assignment and compound assignments.
*
*****/
```

EqualsTerm

```
/* Allow parens anywhere */
```

```
: PARSEOP_OPEN_PAREN
  EqualsTerm
  PARSEOP_CLOSE_PAREN    {$$ = $2;}
```

```
/* Simple Store() operation */
```

```
| SuperName
  PARSEOP_EXP_EQUALS
  TermArg    {$$ = TrCreateAssignmentOp ($1, $3);}
```

```
/* Chained equals: (a=RefOf)=b, a=b=c=d etc. */
```

```
| PARSEOP_OPEN_PAREN
  EqualsTerm
  PARSEOP_CLOSE_PAREN
  PARSEOP_EXP_EQUALS
  TermArg    {$$ = TrCreateAssignmentOp ($2, $5);}
```

```
/* Compound assignments -- Add (operand, operand, target) */
```

```
| TermArg PARSEOP_EXP_ADD_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_ADD);}
  TermArg    {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
                                       TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}
```

```
| TermArg PARSEOP_EXP_DIV_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_DIVIDE);}
  TermArg    {$$ = TrLinkOpChildren ($<n>3,4,$1,$4,TrCreateNullTargetOp (),
```

```

TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_MOD_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_MOD);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_MUL_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_MULTIPLY);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SHL_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTLLEFT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SHR_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SHIFTRIGHT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_SUB_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_SUBTRACT);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_AND_EQ    {$<n>$ = TrCreateLeafOp (PARSEOP_AND);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_OR_EQ     {$<n>$ = TrCreateLeafOp (PARSEOP_OR);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}

| TermArg PARSEOP_EXP_XOR_EQ
  {$<n>$ = TrCreateLeafOp (PARSEOP_XOR);}
  TermArg                      {$$ = TrLinkOpChildren ($<n>3,3,$1,$4,
TrSetOpFlags (TrCreateTargetOp ($1, NULL), OP_IS_TARGET));}
;

```

```

/*****
*
* ASL Parameter Keyword Terms
*
*****/

```

```

AccessAttribKeyword
: PARSEOP_ACCESSATTRIB_BLOCK    {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK);}

```

```

| PARSEOP_ACCESSATTRIB_BLOCK_CALL    {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_BLOCK_CALL);}
| PARSEOP_ACCESSATTRIB_BYTE          {$$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_BYTE);}
| PARSEOP_ACCESSATTRIB_QUICK         {$$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_QUICK
);}
| PARSEOP_ACCESSATTRIB_SND_RCV       {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_SND_RCV);}
| PARSEOP_ACCESSATTRIB_WORD          {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_WORD);}
| PARSEOP_ACCESSATTRIB_WORD_CALL     {$$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_WORD_CALL);}
| PARSEOP_ACCESSATTRIB_BYTES
  PARSEOP_OPEN_PAREN                 {$<n>$ = TrCreateLeafOp (PARSEOP_ACCESSATTRIB_BYTES);}
  ByteConst
  PARSEOP_CLOSE_PAREN                 {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_ACCESSATTRIB_RAW_BYTES
  PARSEOP_OPEN_PAREN                 {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_BYTES);}
  ByteConst
  PARSEOP_CLOSE_PAREN                 {$$ = TrLinkOpChildren ($<n>3,1,$4);}
| PARSEOP_ACCESSATTRIB_RAW_PROCESS
  PARSEOP_OPEN_PAREN                 {$<n>$ = TrCreateLeafOp
(PARSEOP_ACCESSATTRIB_RAW_PROCESS);}
  ByteConst
  PARSEOP_CLOSE_PAREN                 {$$ = TrLinkOpChildren ($<n>3,1,$4);}
;

```

AccessTypeKeyword

```

: PARSEOP_ACCESSTYPE_ANY             {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_ANY);}
| PARSEOP_ACCESSTYPE_BYTE
  {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BYTE);}
| PARSEOP_ACCESSTYPE_WORD            {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_WORD);}
| PARSEOP_ACCESSTYPE_DWORD           {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_DWORD);}
| PARSEOP_ACCESSTYPE_QWORD           {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_QWORD);}
| PARSEOP_ACCESSTYPE_BUF             {$$ = TrCreateLeafOp (PARSEOP_ACCESSTYPE_BUF);}
;

```

AddressingModeKeyword

```

: PARSEOP_ADDRESSINGMODE_7BIT        {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_7BIT);}
| PARSEOP_ADDRESSINGMODE_10BIT       {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSINGMODE_10BIT);}
;

```

AddressKeyword

```

: PARSEOP_ADDRESSTYPE_MEMORY         {$$ = TrCreateLeafOp
(PARSEOP_ADDRESSTYPE_MEMORY);}
| PARSEOP_ADDRESSTYPE_RESERVED       {$$ = TrCreateLeafOp

```

```

(PARSEOP_ADDRESSTYPE_RESERVED);}
| PARSEOP_ADDRESSTYPE_NVLS          {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_NVLS);}
| PARSEOP_ADDRESSTYPE_ACPI
    {$$ = TrCreateLeafOp (PARSEOP_ADDRESSTYPE_ACPI);}
;

AddressSpaceKeyword
: ByteConst          {$$ = UtCheckIntegerRange ($1, ACPI_NUM_PREDEFINED_REGIONS, 0xFF);}
| RegionSpaceKeyword {}
;

BitsPerByteKeyword
: PARSEOP_BITSPERBYTE_FIVE          {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_FIVE);}
| PARSEOP_BITSPERBYTE_SIX           {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SIX);}
| PARSEOP_BITSPERBYTE_SEVEN         {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_SEVEN);}
| PARSEOP_BITSPERBYTE_EIGHT         {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_EIGHT);}
| PARSEOP_BITSPERBYTE_NINE          {$$ = TrCreateLeafOp (PARSEOP_BITSPERBYTE_NINE);}
;

ClockPhaseKeyword
: PARSEOP_CLOCKPHASE_FIRST          {$$ = TrCreateLeafOp (PARSEOP_CLOCKPHASE_FIRST);}
| PARSEOP_CLOCKPHASE_SECOND         {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPHASE_SECOND);}
;

ClockPolarityKeyword
: PARSEOP_CLOCKPOLARITY_LOW
    {$$ = TrCreateLeafOp (PARSEOP_CLOCKPOLARITY_LOW);}
| PARSEOP_CLOCKPOLARITY_HIGH        {$$ = TrCreateLeafOp
(PARSEOP_CLOCKPOLARITY_HIGH);}
;

DecodeKeyword
: PARSEOP_DECODETYPE_POS            {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_POS);}
| PARSEOP_DECODETYPE_SUB            {$$ = TrCreateLeafOp (PARSEOP_DECODETYPE_SUB);}
;

DevicePolarityKeyword
: PARSEOP_DEVICEPOLARITY_LOW        {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_LOW);}
| PARSEOP_DEVICEPOLARITY_HIGH        {$$ = TrCreateLeafOp
(PARSEOP_DEVICEPOLARITY_HIGH);}
;

DMATypeKeyword
: PARSEOP_DMATYPE_A                  {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_A);}
| PARSEOP_DMATYPE_COMPATIBILITY      {$$ = TrCreateLeafOp
(PARSEOP_DMATYPE_COMPATIBILITY);}

```



```

| PARSEOP_DMATYPE_B          {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_B);}
| PARSEOP_DMATYPE_F          {$$ = TrCreateLeafOp (PARSEOP_DMATYPE_F);}
;

EndianKeyword
: PARSEOP_ENDIAN_LITTLE      {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_LITTLE);}
| PARSEOP_ENDIAN_BIG         {$$ = TrCreateLeafOp (PARSEOP_ENDIAN_BIG);}
;

FlowControlKeyword
: PARSEOP_FLOWCONTROL_HW     {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_HW);}
| PARSEOP_FLOWCONTROL_NONE   {$$ = TrCreateLeafOp
(PARSEOP_FLOWCONTROL_NONE);}
| PARSEOP_FLOWCONTROL_SW     {$$ = TrCreateLeafOp (PARSEOP_FLOWCONTROL_SW);}
;

InterruptLevel
: PARSEOP_INTLEVEL_ACTIVEBOTH {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEBOTH);}
| PARSEOP_INTLEVEL_ACTIVEHIGH {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVEHIGH);}
| PARSEOP_INTLEVEL_ACTIVELOW  {$$ = TrCreateLeafOp
(PARSEOP_INTLEVEL_ACTIVELOW);}
;

InterruptTypeKeyword
: PARSEOP_INTTYPE_EDGE       {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_EDGE);}
| PARSEOP_INTTYPE_LEVEL      {$$ = TrCreateLeafOp (PARSEOP_INTTYPE_LEVEL);}
;

IODecodeKeyword
: PARSEOP_IODECODETYPE_16    {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_16);}
| PARSEOP_IODECODETYPE_10    {$$ = TrCreateLeafOp (PARSEOP_IODECODETYPE_10);}
;

IoRestrictionKeyword
: PARSEOP_IORESTRICT_IN      {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_IN);}
| PARSEOP_IORESTRICT_OUT     {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_OUT);}
| PARSEOP_IORESTRICT_NONE    {$$ = TrCreateLeafOp (PARSEOP_IORESTRICT_NONE);}
| PARSEOP_IORESTRICT_PRESERVE {$$ = TrCreateLeafOp
(PARSEOP_IORESTRICT_PRESERVE);}
;

LockRuleKeyword
: PARSEOP_LOCKRULE_LOCK      {$$ = TrCreateLeafOp (PARSEOP_LOCKRULE_LOCK);}
| PARSEOP_LOCKRULE_NOLOCK    {$$ = TrCreateLeafOp (PARSEOP_LOCKRULE_NOLOCK);}
;

```

MatchOpKeyword

```
: PARSEOP_MATCHTYPE_MTR          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MTR);}
| PARSEOP_MATCHTYPE_MEQ          {$$ = TrCreateLeafOp
(PARSEOP_MATCHTYPE_MEQ);}
| PARSEOP_MATCHTYPE_MLE          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLE);}
| PARSEOP_MATCHTYPE_MLT          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MLT);}
| PARSEOP_MATCHTYPE_MGE          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGE);}
| PARSEOP_MATCHTYPE_MGT          {$$ = TrCreateLeafOp (PARSEOP_MATCHTYPE_MGT);}
;
```

MaxKeyword

```
: PARSEOP_MAXTYPE_FIXED          {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_FIXED);}
| PARSEOP_MAXTYPE_NOTFIXED       {$$ = TrCreateLeafOp (PARSEOP_MAXTYPE_NOTFIXED);}
;
```

MemTypeKeyword

```
: PARSEOP_MEMTYPE_CACHEABLE      {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_CACHEABLE);}
| PARSEOP_MEMTYPE_WRITECOMBINING  {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_WRITECOMBINING);}
| PARSEOP_MEMTYPE_PREFETCHABLE    {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_PREFETCHABLE);}
| PARSEOP_MEMTYPE_NONCACHEABLE    {$$ = TrCreateLeafOp
(PARSEOP_MEMTYPE_NONCACHEABLE);}
;
```

MinKeyword

```
: PARSEOP_MINTYPE_FIXED          {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_FIXED);}
| PARSEOP_MINTYPE_NOTFIXED       {$$ = TrCreateLeafOp (PARSEOP_MINTYPE_NOTFIXED);}
;
```

ObjectTypeKeyword

```
: PARSEOP_OBJECTTYPE_UNK         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_UNK);}
| PARSEOP_OBJECTTYPE_INT         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_INT);}
| PARSEOP_OBJECTTYPE_STR         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_STR);}
| PARSEOP_OBJECTTYPE_BUF         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BUF);}
| PARSEOP_OBJECTTYPE_PKG         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PKG);}
| PARSEOP_OBJECTTYPE_FLD         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_FLD);}
| PARSEOP_OBJECTTYPE_DEV         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DEV);}
| PARSEOP_OBJECTTYPE_EVT         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_EVT);}
| PARSEOP_OBJECTTYPE_MTH         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTH);}
| PARSEOP_OBJECTTYPE_MTX         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_MTX);}
| PARSEOP_OBJECTTYPE_OPR         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_OPR);}
| PARSEOP_OBJECTTYPE_POW         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_POW);}
| PARSEOP_OBJECTTYPE_PRO         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_PRO);}
| PARSEOP_OBJECTTYPE_THZ         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_THZ);}
| PARSEOP_OBJECTTYPE_BFF         {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_BFF);}
;
```

```

| PARSEOP_OBJECTTYPE_DDB          {$$ = TrCreateLeafOp (PARSEOP_OBJECTTYPE_DDB);}
;

ParityTypeKeyword
: PARSEOP_PARITYTYPE_SPACE        {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_SPACE);}
| PARSEOP_PARITYTYPE_MARK         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_MARK);}
| PARSEOP_PARITYTYPE_ODD          {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_ODD);}
| PARSEOP_PARITYTYPE_EVEN         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_EVEN);}
| PARSEOP_PARITYTYPE_NONE         {$$ = TrCreateLeafOp (PARSEOP_PARITYTYPE_NONE);}
;

PinConfigByte
: PinConfigKeyword                {$$ = $1;}
| ByteConstExpr                   {$$ = UtCheckIntegerRange ($1, 0x80, 0xFF);}
;

PinConfigKeyword
: PARSEOP_PIN_NOPULL              {$$ = TrCreateLeafOp (PARSEOP_PIN_NOPULL);}
| PARSEOP_PIN_PULLDOWN            {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDOWN);}
| PARSEOP_PIN_PULLUP              {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLUP);}
| PARSEOP_PIN_PULLDEFAULT         {$$ = TrCreateLeafOp (PARSEOP_PIN_PULLDEFAULT);}
;

PldKeyword
: PARSEOP_PLD_REVISION            {$$ = TrCreateLeafOp (PARSEOP_PLD_REVISION);}
| PARSEOP_PLD_IGNORECOLOR         {$$ = TrCreateLeafOp (PARSEOP_PLD_IGNORECOLOR);}
| PARSEOP_PLD_RED                 {$$ = TrCreateLeafOp (PARSEOP_PLD_RED);}
| PARSEOP_PLD_GREEN               {$$ = TrCreateLeafOp (PARSEOP_PLD_GREEN);}
| PARSEOP_PLD_BLUE                {$$ = TrCreateLeafOp (PARSEOP_PLD_BLUE);}
| PARSEOP_PLD_WIDTH               {$$ = TrCreateLeafOp (PARSEOP_PLD_WIDTH);}
| PARSEOP_PLD_HEIGHT              {$$ = TrCreateLeafOp (PARSEOP_PLD_HEIGHT);}
| PARSEOP_PLD_USERVISIBLE         {$$ = TrCreateLeafOp (PARSEOP_PLD_USERVISIBLE);}
| PARSEOP_PLD_DOCK                {$$ = TrCreateLeafOp (PARSEOP_PLD_DOCK);}
| PARSEOP_PLD_LID                 {$$ = TrCreateLeafOp (PARSEOP_PLD_LID);}
| PARSEOP_PLD_PANEL               {$$ = TrCreateLeafOp (PARSEOP_PLD_PANEL);}
| PARSEOP_PLD_VERTICALPOSITION    {$$ = TrCreateLeafOp
(PARSEOP_PLD_VERTICALPOSITION);}
| PARSEOP_PLD_HORIZONTALPOSITION  {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALPOSITION);}
| PARSEOP_PLD_SHAPE               {$$ = TrCreateLeafOp
(PARSEOP_PLD_SHAPE);}
| PARSEOP_PLD_GROUPORIENTATION    {$$ = TrCreateLeafOp
(PARSEOP_PLD_GROUPORIENTATION);}
| PARSEOP_PLD_GROUPTOKEN          {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPTOKEN);}
| PARSEOP_PLD_GROUPPOSITION       {$$ = TrCreateLeafOp (PARSEOP_PLD_GROUPPOSITION);}
| PARSEOP_PLD_BAY                 {$$ = TrCreateLeafOp (PARSEOP_PLD_BAY);}
| PARSEOP_PLD_EJECTABLE           {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTABLE);}

```

```

| PARSEOP_PLD_EJECTREQUIRED      {$$ = TrCreateLeafOp (PARSEOP_PLD_EJECTREQUIRED);}
| PARSEOP_PLD_CABINETNUMBER      {$$ = TrCreateLeafOp
(PARSEOP_PLD_CABINETNUMBER);}
| PARSEOP_PLD_CARDCAGENUMBER     {$$ = TrCreateLeafOp
(PARSEOP_PLD_CARDCAGENUMBER);}
| PARSEOP_PLD_REFERENCE          {$$ = TrCreateLeafOp (PARSEOP_PLD_REFERENCE);}
| PARSEOP_PLD_ROTATION           {$$ = TrCreateLeafOp (PARSEOP_PLD_ROTATION);}
| PARSEOP_PLD_ORDER              {$$
= TrCreateLeafOp (PARSEOP_PLD_ORDER);}
| PARSEOP_PLD_RESERVED          {$$ = TrCreateLeafOp (PARSEOP_PLD_RESERVED);}
| PARSEOP_PLD_VERTICALOFFSET     {$$ = TrCreateLeafOp (PARSEOP_PLD_VERTICALOFFSET);}
| PARSEOP_PLD_HORIZONTALOFFSET   {$$ = TrCreateLeafOp
(PARSEOP_PLD_HORIZONTALOFFSET);}
;

```

RangeTypeKeyword

```

: PARSEOP_RANGETYPE_ISAONLY      {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ISAONLY);}
| PARSEOP_RANGETYPE_NONISAONLY   {$$ = TrCreateLeafOp
(PARSEOP_RANGETYPE_NONISAONLY);}
| PARSEOP_RANGETYPE_ENTIRE       {$$ = TrCreateLeafOp (PARSEOP_RANGETYPE_ENTIRE);}
;

```

RegionSpaceKeyword

```

: PARSEOP_REGIONSPACE_IO        {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IO);}
| PARSEOP_REGIONSPACE_MEM       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_MEM);}
| PARSEOP_REGIONSPACE_PCI       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCI);}
| PARSEOP_REGIONSPACE_EC        {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_EC);}
| PARSEOP_REGIONSPACE_SMBUS     {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_SMBUS);}
| PARSEOP_REGIONSPACE_CMOS      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_CMOS);}
| PARSEOP_REGIONSPACE_PCIBAR    {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_PCIBAR);}
| PARSEOP_REGIONSPACE_IPMI      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_IPMI);}
| PARSEOP_REGIONSPACE_GPIO      {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GPIO);}
| PARSEOP_REGIONSPACE_GSBUS     {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_GSBUS);}
| PARSEOP_REGIONSPACE_PCC       {$$ = TrCreateLeafOp (PARSEOP_REGIONSPACE_PCC);}
| PARSEOP_REGIONSPACE_FFIXEDHW  {$$ = TrCreateLeafOp
(PARSEOP_REGIONSPACE_FFIXEDHW);}
;

```

ResourceTypeKeyword

```

: PARSEOP_RESOURCECETYPE_CONSUMER {$$ = TrCreateLeafOp
(PARSEOP_RESOURCECETYPE_CONSUMER);}
| PARSEOP_RESOURCECETYPE_PRODUCER {$$ = TrCreateLeafOp
(PARSEOP_RESOURCECETYPE_PRODUCER);}
;

```

SerializeRuleKeyword

```

: PARSEOP_SERIALIZERULE_SERIAL      {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_SERIAL);}
| PARSEOP_SERIALIZERULE_NOTSERIAL   {$$ = TrCreateLeafOp
(PARSEOP_SERIALIZERULE_NOTSERIAL);}
;

ShareTypeKeyword
: PARSEOP_SHARETYPE_SHARED          {$$ = TrCreateLeafOp (PARSEOP_SHARETYPE_SHARED);}
| PARSEOP_SHARETYPE_EXCLUSIVE       {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_EXCLUSIVE);}
| PARSEOP_SHARETYPE_SHAREDWAKE      {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_SHAREDWAKE);}
| PARSEOP_SHARETYPE_EXCLUSIVEWAKE   {$$ = TrCreateLeafOp
(PARSEOP_SHARETYPE_EXCLUSIVEWAKE);}
;

SlaveModeKeyword
: PARSEOP_SLAVEMODE_CONTROLLERINIT  {$$ = TrCreateLeafOp
(PARSEOP_SLAVEMODE_CONTROLLERINIT);}
| PARSEOP_SLAVEMODE_DEVICEINIT      {$$ = TrCreateLeafOp
(PARSEOP_SLAVEMODE_DEVICEINIT);}
;

StopBitsKeyword
: PARSEOP_STOPBITS_TWO              {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_TWO);}
|
PARSEOP_STOPBITS_ONEPLUSHALF        {$$ = TrCreateLeafOp
(PARSEOP_STOPBITS_ONEPLUSHALF);}
| PARSEOP_STOPBITS_ONE              {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ONE);}
| PARSEOP_STOPBITS_ZERO             {$$ = TrCreateLeafOp (PARSEOP_STOPBITS_ZERO);}
;

TranslationKeyword
: PARSEOP_TRANSLATIONTYPE_SPARSE     {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_SPARSE);}
| PARSEOP_TRANSLATIONTYPE_DENSE     {$$ = TrCreateLeafOp
(PARSEOP_TRANSLATIONTYPE_DENSE);}
;

TypeKeyword
: PARSEOP_TYPE_TRANSLATION           {$$ = TrCreateLeafOp (PARSEOP_TYPE_TRANSLATION);}
| PARSEOP_TYPE_STATIC                {$$ = TrCreateLeafOp (PARSEOP_TYPE_STATIC);}
;

UpdateRuleKeyword
: PARSEOP_UPDATERULE_PRESERVE        {$$ = TrCreateLeafOp
(PARSEOP_UPDATERULE_PRESERVE);}
| PARSEOP_UPDATERULE_ONES           {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ONES);}

```

```
| PARSEOP_UPDATERULE_ZEROS      {$$ = TrCreateLeafOp (PARSEOP_UPDATERULE_ZEROS);}
;
```

WireModeKeyword

```
: PARSEOP_WIREMODE_FOUR      {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_FOUR);}
| PARSEOP_WIREMODE_THREE     {$$ = TrCreateLeafOp (PARSEOP_WIREMODE_THREE);}
;
```

XferSizeKeyword

```
: PARSEOP_XFERSIZE_8         {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_8, 0);}
| PARSEOP_XFERSIZE_16        {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_16, 1);}
| PARSEOP_XFERSIZE_32        {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_32, 2);}
| PARSEOP_XFERSIZE_64        {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_64, 3);}
| PARSEOP_XFERSIZE_128       {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_128, 4);}
| PARSEOP_XFERSIZE_256       {$$ = TrCreateValuedLeafOp (PARSEOP_XFERSIZE_256, 5);}
;
```

XferTypeKeyword

```
: PARSEOP_XFERTYPE_8         {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_8);}
| PARSEOP_XFERTYPE_8_16     {$$ = TrCreateLeafOp
(PARSEOP_XFERTYPE_8_16);}
| PARSEOP_XFERTYPE_16       {$$ = TrCreateLeafOp (PARSEOP_XFERTYPE_16);}
;
```

```
/*
*****
*
* ASL Resource Template Terms
*
*****
*/
```

```
/*
```

```
* Note: Create two default nodes to allow conversion to a Buffer AML opcode
```

```
* Also, insert the EndTag at the end of the template.
```

```
*/
```

ResourceTemplateTerm

```
: PARSEOP_RESOURCETEMPLATE   {COMMENT_CAPTURE_OFF;}
  OptionalParentheses
  '{'
  ResourceMacroList '}'      {$$ = TrCreateOp (PARSEOP_RESOURCETEMPLATE,4,
      TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
      TrCreateLeafOp (PARSEOP_DEFAULT_ARG),
      $5,
      TrCreateLeafOp (PARSEOP_ENDTAG));
  COMMENT_CAPTURE_ON;}
```

;

OptionalParentheses

```
:                {$$ = NULL;}
| PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN    {$$ = NULL;}
;
```

ResourceMacroList

```
:                {$$ = NULL;}
| ResourceMacroList
  ResourceMacroTerm    {$$ = TrLinkPeerOp ($1,$2);}
;
```

ResourceMacroTerm

```
: DMATerm        {}
| DWordIOTerm     {}
| DWordMemoryTerm {}
| DWordSpaceTerm  {}
| EndDependentFnTerm {}
| ExtendedIOTerm  {}
| ExtendedMemoryTerm {}
| ExtendedSpaceTerm {}
| FixedDmaTerm    {}
| FixedIOTerm     {}
| GpioIntTerm     {}
| GpioIoTerm      {}
| I2cSerialBusTerm {}
| I2cSerialBusTermV2 {}
| InterruptTerm   {}
| IOTerm          {}
| IRQNoFlagsTerm {}
| IRQTerm        {}
| Memory24Term    {}
| Memory32FixedTerm {}
| Memory32Term    {}
| PinConfigTerm   {}
| PinFunctionTerm {}
| PinGroupTerm    {}
| PinGroupConfigTerm {}
| PinGroupFunctionTerm {}
| QWordIOTerm     {}
| QWordMemoryTerm {}
| QWordSpaceTerm  {}
| RegisterTerm    {}
| SpiSerialBusTerm {}
| SpiSerialBusTermV2 {}
```

```

| StartDependentFnNoPriTerm  {}
| StartDependentFnTerm      {}
| UartSerialBusTerm         {}
| UartSerialBusTermV2       {}
| VendorLongTerm            {}
| VendorShortTerm           {}
| WordBusNumberTerm         {}
| WordIOTerm                {}
| WordSpaceTerm             {}
;

```

DMATerm

```

: PARSEOP_DMA
  PARSEOP_OPEN_PAREN
    {$<n>$ = TrCreateLeafOp (PARSEOP_DMA);}
  DMATypeKeyword
  OptionalBusMasterKeyword
  ',' XferTypeKeyword
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$7,$8,$11);}
| PARSEOP_DMA
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

DWordIOTerm

```

: PARSEOP_DWORDIO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  ',' DWordConstExpr
  ',' DWordConstExpr
  ',' DWordConstExpr
  ',' DWordConstExpr
  ',' DWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString
  OptionalType
  OptionalTranslationType_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren
($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_DWORDIO

```



```
PARSEOP_OPEN_PAREN
error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

DWordMemoryTerm

```
: PARSEOP_DWORDMEMORY
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  OptionalMemType
  '|' OptionalReadWriteKeyword
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString
  OptionalAddressRange
  OptionalType_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,16,
                                     $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
| PARSEOP_DWORDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;
```

DWordSpaceTerm

```
: PARSEOP_DWORDSPACE
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DWORDSPACE);}
  ByteConstExpr           {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  '|' ByteConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  '|' DWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,14,
```

```

        $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_DWORDSPACE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

EndDependentFnTerm
: PARSEOP_ENDDEPENDENTFN

  PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN    {$$ = TrCreateLeafOp (PARSEOP_ENDDEPENDENTFN);}
| PARSEOP_ENDDEPENDENTFN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

ExtendedIOTerm
: PARSEOP_EXTENDEUDIO
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEUDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  'QWordConstExpr
  'QWordConstExpr
  'QWordConstExpr
  'QWordConstExpr
  'QWordConstExpr
  OptionalQWordConstExpr
  OptionalNameString
  OptionalType
  OptionalTranslationType_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,14,
        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22);}
| PARSEOP_EXTENDEUDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN
  {$$ = AslDoError(); yyclearin;}
;

ExtendedMemoryTerm
: PARSEOP_EXTENDEDMEMORY
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_EXTENDEDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType

```

```

OptionalMemType
',' OptionalReadWriteKeyword
',' QWordConstExpr
',' QWordConstExpr
',' QWordConstExpr
',' QWordConstExpr
',' QWordConstExpr
OptionalQWordConstExpr
OptionalNameString
OptionalAddressRange
OptionalType_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24);}
| PARSEOP_EXTENDEDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

ExtendedSpaceTerm

```

: PARSEOP_EXTENDEDSPACE PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp
(PARSEOP_EXTENDEDSPACE);}
  ByteConstExpr          {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  ',' ByteConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  OptionalQWordConstExpr
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,13,
                        $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23);}
| PARSEOP_EXTENDEDSPACE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN    {$$ = AslDoError(); yyclearin;}
;

```

FixedDmaTerm

```

: PARSEOP_FIXEDDMA
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDDMA);}
  WordConstExpr          /* 04: DMA RequestLines */
  ',' WordConstExpr      /* 06: DMA Channels */
  OptionalXferSize

```

```

    /* 07: DMA TransferSize */
    OptionalNameString /* 08: DescriptorName */
    PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$7,$8);}
| PARSEOP_FIXEDDMA
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN      {$$ = AslDoError(); yyclearin;}
;

FixedIOTerm
: PARSEOP_FIXEDIO
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_FIXEDIO);}
    WordConstExpr
    ',' ByteConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN      {$$ = TrLinkOpChildren ($<n>3,3,$4,$6,$7);}
| PARSEOP_FIXEDIO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN      {$$ = AslDoError(); yyclearin;}
;

GpioIntTerm
: PARSEOP_GPIO_INT
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_INT);}
    InterruptTypeKeyword /* 04: InterruptType */
    ',' InterruptLevel /* 06: InterruptLevel
*/
    OptionalShareType /* 07: SharedType */
    ',' PinConfigByte /* 09: PinConfig */
    OptionalWordConstExpr /* 10: DebounceTimeout */
    ',' StringData /* 12: ResourceSource */
    OptionalByteConstExpr /* 13: ResourceSourceIndex */
    OptionalResourceType /* 14: ResourceType */
    OptionalNameString /* 15: DescriptorName */
    OptionalBuffer_Last /* 16: VendorData */
    PARSEOP_CLOSE_PAREN '{'
        DWordConstExpr '}' {$$ = TrLinkOpChildren ($<n>3,11,
            $4,$6,$7,$9,$10,$12,$13,$14,$15,$16,$19);}
| PARSEOP_GPIO_INT
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

GpioIoTerm
: PARSEOP_GPIO_IO
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_GPIO_IO);}
    OptionalShareType_First /* 04: SharedType */
    ',' PinConfigByte

```

```

/* 06: PinConfig */
OptionalWordConstExpr /* 07: DebounceTimeout */
OptionalWordConstExpr /* 08: DriveStrength */
OptionalIoRestriction /* 09: IoRestriction */
',' StringData /* 11: ResourceSource */
OptionalByteConstExpr /* 12: ResourceSourceIndex */
OptionalResourceType /* 13: ResourceType */
OptionalNameString /* 14: DescriptorName */
OptionalBuffer_Last /* 15: VendorData */
PARSEOP_CLOSE_PAREN '{'
    DWordList ')' {$$ = TrLinkOpChildren ($<n>3,11,
        $4,$6,$7,$8,$9,$11,$12,$13,$14,$15,$18);}
| PARSEOP_GPIO_IO
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

I2cSerialBusTerm

```

: PARSEOP_I2C_SERIALBUS
    PARSEOP_OPEN_PAREN {$<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS);}
    WordConstExpr
/* 04: SlaveAddress */
OptionalSlaveMode /* 05: SlaveMode */
',' DWordConstExpr /* 07: ConnectionSpeed */
OptionalAddressingMode /* 08: AddressingMode */
',' StringData /* 10: ResourceSource */
OptionalByteConstExpr /* 11: ResourceSourceIndex */
OptionalResourceType /* 12: ResourceType */
OptionalNameString /* 13: DescriptorName */
OptionalBuffer_Last /* 14: VendorData */
PARSEOP_CLOSE_PAREN {$$ = TrLinkOpChildren ($<n>3,10,
    $4,$5,$7,$8,$10,$11,$12,$13,
    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$14);}
| PARSEOP_I2C_SERIALBUS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

I2cSerialBusTermV2

```

: PARSEOP_I2C_SERIALBUS_V2
    PARSEOP_OPEN_PAREN {$<n>$ = TrCreateLeafOp (PARSEOP_I2C_SERIALBUS_V2);}
    WordConstExpr /* 04: SlaveAddress */
OptionalSlaveMode /* 05: SlaveMode */
',' DWordConstExpr /* 07: ConnectionSpeed */
OptionalAddressingMode /* 08: AddressingMode */
',' StringData /* 10: ResourceSource */
OptionalByteConstExpr /* 11: ResourceSourceIndex */
OptionalResourceType /* 12: ResourceType */

```

```

OptionalNameString      /* 13: DescriptorName */
OptionalShareType      /* 14: Share */
OptionalBuffer_Last    /* 15: VendorData */
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,10,
                        $4,$5,$7,$8,$10,$11,$12,$13,$14,$15);}
| PARSEOP_I2C_SERIALBUS_V2
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

InterruptTerm
: PARSEOP_INTERRUPT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_INTERRUPT);}

OptionalResourceType_First
'InterruptTypeKeyword
'InterruptLevel
OptionalShareType
OptionalByteConstExpr
OptionalStringData
OptionalNameString_Last
PARSEOP_CLOSE_PAREN '{'
  DWordList '}'          {$$ = TrLinkOpChildren ($<n>3,8,
                        $4,$6,$8,$9,$10,$11,$12,$15);}
| PARSEOP_INTERRUPT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IOTerm
: PARSEOP_IO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_IO);}
  IODecodeKeyword
  'WordConstExpr
  'WordConstExpr
  'ByteConstExpr
  'ByteConstExpr
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_IO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IRQNoFlagsTerm
: PARSEOP_IRQNOFLAGS
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_IRQNOFLAGS);}
  OptionalNameString_First

```

```

    PARSEOP_CLOSE_PAREN '{'
        ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_IRQNOFLAGS
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

IRQTerm
: PARSEOP_IRQ
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_IRQ);}
    InterruptTypeKeyword
    ',' InterruptLevel
    OptionalShareType
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN '{'
        ByteList '}'      {$$ = TrLinkOpChildren ($<n>3,5,$4,$6,$7,$8,$11);}
| PARSEOP_IRQ
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

Memory24Term
: PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY24);}
    OptionalReadWriteKeyword
    ',' WordConstExpr

    ',' WordConstExpr
    ',' WordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_MEMORY24
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

Memory32FixedTerm
: PARSEOP_MEMORY32FIXED
    PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32FIXED);}
    OptionalReadWriteKeyword
    ',' DWordConstExpr
    ',' DWordConstExpr
    OptionalNameString_Last
    PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,4,$4,$6,$8,$9);}
| PARSEOP_MEMORY32FIXED
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

;

Memory32Term
: PARSEOP_MEMORY32
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_MEMORY32);}
  OptionalReadWriteKeyword
  ';' DWordConstExpr
  ';' DWordConstExpr
  ';'
DWordConstExpr
  ';' DWordConstExpr
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$12,$13);}
| PARSEOP_MEMORY32
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

```

PinConfigTerm
: PARSEOP_PINCONFIG
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PINCONFIG);}
  OptionalShareType_First /* 04: SharedType */
  ';' ByteConstExpr      /* 06: PinConfigType */
  ';' DWordConstExpr     /* 08: PinConfigValue */
  ';' StringData         /* 10: ResourceSource */
  OptionalByteConstExpr  /* 11: ResourceSourceIndex */
  OptionalResourceType   /* 12: ResourceType */
  OptionalNameString     /* 13: DescriptorName */
  OptionalBuffer_Last    /* 14: VendorData */
  PARSEOP_CLOSE_PAREN '{'
    DWordList '}'        {$$ = TrLinkOpChildren ($<n>3,9,
                                     $4,$6,$8,$10,$11,$12,$13,$14,$17);}
| PARSEOP_PINCONFIG
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

```

PinFunctionTerm
: PARSEOP_PINFUNCTION
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_PINFUNCTION);}
  OptionalShareType_First /* 04: SharedType */
  ';' PinConfigByte       /* 06: PinConfig */
  ';' WordConstExpr      /* 08: FunctionNumber */
  ';' StringData         /* 10: ResourceSource */
  OptionalByteConstExpr  /* 11: ResourceSourceIndex */
  OptionalResourceType   /* 12: ResourceType */
  OptionalNameString     /* 13: DescriptorName */

```



```

OptionalBuffer_Last      /* 14: VendorData */
PARSEOP_CLOSE_PAREN '{'
    DWordList '}'        {$$ = TrLinkOpChildren ($<n>3,9,
                        $4,$6,$8,$10,$11,$12,$13,$14,$17);}
| PARSEOP_PINFUNCTION
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

PinGroupTerm

```

: PARSEOP_PINGROUP
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUP);}
    StringData            /* 04: ResourceLabel */
    OptionalProducerResourceType /* 05: ResourceType */
    OptionalNameString    /* 06: DescriptorName */
    OptionalBuffer_Last   /* 07: VendorData */
    PARSEOP_CLOSE_PAREN '{'
        DWordList '}'    {$$ = TrLinkOpChildren ($<n>3,5,$4,$5,$6,$7,$10);}
| PARSEOP_PINGROUP
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

PinGroupConfigTerm

```

: PARSEOP_PINGROUPCONFIG
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPCONFIG);}
    OptionalShareType_First /* 04: SharedType */
    ',' ByteConstExpr      /* 06: PinConfigType */
    ',' DWordConstExpr     /* 08:

```

PinConfigValue */

```

',' StringData          /* 10: ResourceSource */
OptionalByteConstExpr  /* 11: ResourceSourceIndex */
',' StringData         /* 13: ResourceSourceLabel */
OptionalResourceType  /* 14: ResourceType */
OptionalNameString    /* 15: DescriptorName */
OptionalBuffer_Last   /* 16: VendorData */
PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,9,
                        $4,$6,$8,$10,$11,$13,$14,$15,$16);}
| PARSEOP_PINGROUPCONFIG
    PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;

```

PinGroupFunctionTerm

```

: PARSEOP_PINGROUPFUNCTION
    PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_PINGROUPFUNCTION);}
    OptionalShareType_First /* 04: SharedType */
    ',' WordConstExpr     /* 06: FunctionNumber */

```

```

',' StringData          /* 08: ResourceSource */
OptionalByteConstExpr
/* 09: ResourceSourceIndex */
',' StringData          /* 11: ResourceSourceLabel */
OptionalResourceType    /* 12: ResourceType */
OptionalNameString      /* 13: DescriptorName */
OptionalBuffer_Last     /* 14: VendorData */
PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,8,
                        $4,$6,$8,$9,$11,$12,$13,$14);}
| PARSEOP_PINGROUPFUNCTION
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

QWordIOTerm

```

: PARSEOP_QWORDIO
  PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  ',' QWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString
  OptionalType
  OptionalTranslationType_Last
  PARSEOP_CLOSE_PAREN   {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_QWORDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

QWordMemoryTerm

```

: PARSEOP_QWORDMEMORY
  PARSEOP_OPEN_PAREN     {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDMEMORY);}
  OptionalResourceType_First
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  OptionalMemType
  ',' OptionalReadWriteKeyword

```

```

'| QWordConstExpr
'| QWordConstExpr
'| QWordConstExpr
'| QWordConstExpr
'| QWordConstExpr
OptionalByteConstExpr
OptionalStringData
OptionalNameString
OptionalAddressRange
OptionalType_Last
PARSEOP_CLOSE_PAREN    {$$ =
TrLinkOpChildren ($<n>3,16,
                    $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$20,$21,$22,$23,$24,$25);}
| PARSEOP_QWORDMEMORY
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

QWordSpaceTerm

```

: PARSEOP_QWORDSPACE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_QWORDSPACE);}
  ByteConstExpr         {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  '| ByteConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  '| QWordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,14,
                    $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_QWORDSPACE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

RegisterTerm

```

: PARSEOP_REGISTER
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_REGISTER);}
  AddressSpaceKeyword
  '| ByteConstExpr
  '| ByteConstExpr

```

```

'| QWordConstExpr
OptionalAccessSize
OptionalNameString_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,6,$4,$6,$8,$10,$11,$12);}
| PARSEOP_REGISTER
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

SpiSerialBusTerm

```

: PARSEOP_SPI_SERIALBUS
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS);}
  WordConstExpr         /* 04: DeviceSelection */
  OptionalDevicePolarity /* 05: DevicePolarity */
  OptionalWireMode      /* 06: WireMode */
  '| ByteConstExpr      /* 08: DataBitLength */
  OptionalSlaveMode
    /* 09: SlaveMode */
  '| DWordConstExpr     /* 11: ConnectionSpeed */
  '| ClockPolarityKeyword /* 13: ClockPolarity */
  '| ClockPhaseKeyword   /* 15: ClockPhase */
  '| StringData         /* 17: ResourceSource */
  OptionalByteConstExpr /* 18: ResourceSourceIndex */
  OptionalResourceType  /* 19: ResourceType */
  OptionalNameString    /* 20: DescriptorName */
  OptionalBuffer_Last   /* 21: VendorData */
  PARSEOP_CLOSE_PAREN  {$$ = TrLinkOpChildren ($<n>3,14,
    $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,
    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
| PARSEOP_SPI_SERIALBUS
  PARSEOP_OPEN_PAREN
    error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

SpiSerialBusTermV2

```

: PARSEOP_SPI_SERIALBUS_V2
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_SPI_SERIALBUS_V2);}
  WordConstExpr         /* 04: DeviceSelection */
  OptionalDevicePolarity /* 05: DevicePolarity */
  OptionalWireMode      /* 06: WireMode */
  '| ByteConstExpr      /* 08: DataBitLength */
  OptionalSlaveMode
    /* 09: SlaveMode */
  '| DWordConstExpr     /* 11: ConnectionSpeed */
  '| ClockPolarityKeyword /* 13: ClockPolarity */
  '| ClockPhaseKeyword   /* 15: ClockPhase */
  '| StringData         /* 17: ResourceSource */
  OptionalByteConstExpr /* 18: ResourceSourceIndex */
  OptionalResourceType  /* 19: ResourceType */

```

```

OptionalNameString      /* 20: DescriptorName */
OptionalShareType      /* 21: Share */
OptionalBuffer_Last    /* 22: VendorData */
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren (<n>3,14,
                    $4,$5,$6,$8,$9,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
| PARSEOP_SPI_SERIALBUS_V2
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

StartDependentFnNoPriTerm

```

: PARSEOP_STARTDEPENDENTFN_NOPRI
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN_NOPRI);}
  PARSEOP_CLOSE_PAREN  {'
  ResourceMacroList '}'  {$$ = TrLinkOpChildren (<n>3,1,$6);}
| PARSEOP_STARTDEPENDENTFN_NOPRI
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

StartDependentFnTerm

```

: PARSEOP_STARTDEPENDENTFN
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_STARTDEPENDENTFN);}
  ByteConstExpr
  ',' ByteConstExpr
  PARSEOP_CLOSE_PAREN  {'
  ResourceMacroList '}'  {$$ = TrLinkOpChildren (<n>3,3,$4,$6,$9);}
| PARSEOP_STARTDEPENDENTFN
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

UartSerialBusTerm

```

: PARSEOP_UART_SERIALBUS
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS);}
  DWordConstExpr      /* 04: ConnectionSpeed */
  OptionalBitsPerByte /* 05: BitsPerByte */
  OptionalStopBits    /* 06: StopBits */
  ',' ByteConstExpr   /* 08: LinesInUse */
  OptionalEndian      /* 09: Endianness */
  OptionalParityType  /* 10: Parity */
  OptionalFlowControl /* 11: FlowControl */
  ',' WordConstExpr   /* 13: Rx BufferSize */
  ',' WordConstExpr   /* 15: Tx BufferSize */
  ',' StringData      /* 17: ResourceSource */
  OptionalByteConstExpr /* 18: ResourceSourceIndex */
  OptionalResourceType /* 19: ResourceType */

```

```

OptionalNameString      /* 20: DescriptorName */
OptionalBuffer_Last     /* 21: VendorData */
PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,
                        TrCreateLeafOp (PARSEOP_DEFAULT_ARG),$21);}
| PARSEOP_UART_SERIALBUS
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

UartSerialBusTermV2

```

: PARSEOP_UART_SERIALBUS_V2
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_UART_SERIALBUS_V2);}
  DWordConstExpr         /* 04: ConnectionSpeed */
  OptionalBitsPerByte    /* 05: BitsPerByte */
  OptionalStopBits       /* 06: StopBits */
  ',' ByteConstExpr      /* 08: LinesInUse */
  OptionalEndian         /* 09: Endianness */
  OptionalParityType     /* 10: Parity */
  OptionalFlowControl    /* 11: FlowControl */
  ',' WordConstExpr      /* 13: Rx BufferSize */
  ',' WordConstExpr      /* 15: Tx BufferSize */
  ',' StringData
    /* 17: ResourceSource */
  OptionalByteConstExpr  /* 18: ResourceSourceIndex */
  OptionalResourceType   /* 19: ResourceType */
  OptionalNameString     /* 20: DescriptorName */
  OptionalShareType      /* 21: Share */
  OptionalBuffer_Last    /* 22: VendorData */
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$8,$9,$10,$11,$13,$15,$17,$18,$19,$20,$21,$22);}
| PARSEOP_UART_SERIALBUS_V2
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

VendorLongTerm

```

: PARSEOP_VENDORLONG
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORLONG);}
  OptionalNameString_First
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'         {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_VENDORLONG
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError();
yyclearin;}
;

```

VendorShortTerm

```
: PARSEOP_VENDORSHORT
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_VENDORSHORT);}
  OptionalNameString_First
  PARSEOP_CLOSE_PAREN '{'
    ByteList '}'          {$$ = TrLinkOpChildren ($<n>3,2,$4,$7);}
| PARSEOP_VENDORSHORT
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

WordBusNumberTerm

```
: PARSEOP_WORDBUSNUMBER
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WORDBUSNUMBER);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,12,
    $4,$5,$6,$7,$9,$11,$13,$15,$17,$18,$19,$20);}
| PARSEOP_WORDBUSNUMBER
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN {$$ = AslDoError(); yyclearin;}
;
```

WordIOTerm

```
: PARSEOP_WORDIO
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_WORDIO);}
  OptionalResourceType_First
  OptionalMinType
  OptionalMaxType
  OptionalDecodeType
  OptionalRangeType
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  OptionalByteConstExpr
  OptionalStringData
```

```

OptionalNameString
OptionalType
OptionalTranslationType_Last
PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,15,
                        $4,$5,$6,$7,$8,$10,$12,$14,$16,$18,$19,$20,$21,$22,$23);}
| PARSEOP_WORDIO
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

WordSpaceTerm

```

: PARSEOP_WORDSAPCE
  PARSEOP_OPEN_PAREN    {$<n>$ = TrCreateLeafOp (PARSEOP_WORDSAPCE);}
  ByteConstExpr        {UtCheckIntegerRange ($4, 0xC0, 0xFF);}
  OptionalResourceType
  OptionalDecodeType
  OptionalMinType
  OptionalMaxType
  ';' ByteConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  ';' WordConstExpr
  OptionalByteConstExpr
  OptionalStringData
  OptionalNameString_Last
  PARSEOP_CLOSE_PAREN    {$$ = TrLinkOpChildren ($<n>3,14,
                        $4,$6,$7,$8,$9,$11,$13,$15,$17,$19,$21,$22,$23,$24);}
| PARSEOP_WORDSAPCE
  PARSEOP_OPEN_PAREN
  error PARSEOP_CLOSE_PAREN  {$$ = AslDoError(); yyclearin;}
;

```

```

/*****
*
* ASL Helper Terms
*
*****/

```

OptionalBusMasterKeyword

```

: ';'          {$$ = TrCreateLeafOp (
                PARSEOP_BUSMASTERTYPE_MASTER);}
| ';' PARSEOP_BUSMASTERTYPE_MASTER  {$$ = TrCreateLeafOp (
                PARSEOP_BUSMASTERTYPE_MASTER);}

```



```

|' PARSEOP_BUSMASTERTYPE_NOTMASTER  {$$ = TrCreateLeafOp (
                                PARSEOP_BUSMASTERTYPE_NOTMASTER);}
;

OptionalAccessAttribTerm
:
    {$$ = NULL;}
|'
    {$$ = NULL;}
|' ByteConstExpr      {$$ = $2;}
|' AccessAttribKeyword  {$$ = $2;}
;

OptionalAccessSize
:
    {$$ = TrCreateValuedLeafOp (
                                PARSEOP_BYTECONST, 0);}
|'
    {$$ = TrCreateValuedLeafOp (
                                PARSEOP_BYTECONST, 0);}
|' ByteConstExpr
    {$$ = $2;}
;

OptionalAccessTypeKeyword /* Default: AnyAcc */
:
    {$$ = TrCreateLeafOp (
                                PARSEOP_ACCESSTYPE_ANY);}
|'
    {$$ = TrCreateLeafOp (
                                PARSEOP_ACCESSTYPE_ANY);}
|' AccessTypeKeyword    {$$ = $2;}
;

OptionalAddressingMode
: '|'
    {$$ = NULL;}
|' AddressingModeKeyword  {$$ = $2;}
;

OptionalAddressRange
:
    {$$ = NULL;}
|'
    {$$ = NULL;}
|' AddressKeyword        {$$ = $2;}
;

OptionalBitsPerByte
: '|'
    {$$ = NULL;}
|' BitsPerByteKeyword    {$$ = $2;}
;

OptionalBuffer_Last
:
    {$$ = NULL;}
|'
    {$$ = NULL;}
|' RawDataBufferTerm     {$$ = $2;}

```

```

;

OptionalByteConstExpr
:          {$$ = NULL;}
| ','     {$$ = NULL;}
| ',' ByteConstExpr    {$$ = $2;}
;

OptionalDecodeType
: ','     {$$ = NULL;}
| ',' DecodeKeyword    {$$ = $2;}
;

OptionalDevicePolarity
: ','     {$$ = NULL;}
| ',' DevicePolarityKeyword    {$$ = $2;}
;

OptionalDWordConstExpr
:          {$$ = NULL;}
| ','     {$$ = NULL;}
| ',' DWordConstExpr    {$$ = $2;}
;

OptionalEndian
: ','     {$$ = NULL;}
| ',' EndianKeyword    {$$ = $2;}
;

OptionalFlowControl
: ','     {$$ = NULL;}
| ',' FlowControlKeyword    {$$ = $2;}
;

OptionalIoRestriction
: ','     {$$ = NULL;}
| ',' IoRestrictionKeyword    {$$ = $2;}
;

OptionalListString
:
{ $$ = TrCreateValuedLeafOp (
    PARSEOP_STRING_LITERAL,
    ACPI_TO_INTEGER ("")); } /* Placeholder is a NULL string */
| ','
{ $$ = TrCreateValuedLeafOp (
    PARSEOP_STRING_LITERAL,
    ACPI_TO_INTEGER ("")); } /* Placeholder is a NULL string */
| ',' TermArg    {$$ = $2;}

```

```

;

OptionalLockRuleKeyword /* Default: NoLock */
:
    {$$ = TrCreateLeafOp (
        PARSEOP_LOCKRULE_NOLOCK);}
| ','
    {$$ = TrCreateLeafOp (
        PARSEOP_LOCKRULE_NOLOCK);}
| ',' LockRuleKeyword    {$$ = $2;}
;

```

```

OptionalMaxType
: ','
    {$$ = NULL;}
| ',' MaxKeyword        {$$ = $2;}
;

```

```

OptionalMemType
: ','
    {$$ = NULL;}
| ',' MemTypeKeyword    {$$ = $2;}
;

```

```

OptionalMinType
: ','
    {$$ = NULL;}
| ',' MinKeyword        {$$ = $2;}
;

```

```

OptionalNameString
:
    {$$ = NULL;}
| ','
    {$$ = NULL;}
| ',' NameString        {$$ = $2;}
;

```

```

OptionalNameString_Last
:
    {$$ = NULL;}
| ','
    {$$ = NULL;}
| ',' NameString        {$$ = $2;}
;

```

```

OptionalNameString_First
:
    {$$ = TrCreateLeafOp (
        PARSEOP_ZERO);}
| NameString            {$$ = $1;}
;

```

```

OptionalObjectTypeKeyword
:
    {$$ = TrCreateLeafOp (
        PARSEOP_OBJECTTYPE_UNK);}
| ',' ObjectTypeKeyword    {$$ = $2;}
;

```

```

;

OptionalParityType
: '|'          {$$ = NULL;}
| '|' ParityTypeKeyword    {$$ = $2;}
;

OptionalQWordConstExpr
:              {$$ = NULL;}
| '|'          {$$ = NULL;}
| '|' QWordConstExpr    {$$ = $2;}
;

OptionalRangeType
: '|'          {$$ = NULL;}
| '|' RangeTypeKeyword    {$$ = $2;}
;

OptionalReadWriteKeyword
:              {$$ = TrCreateLeafOp (
                PARSEOP_READWRITETYPE_BOTH);}
| PARSEOP_READWRITETYPE_BOTH    {$$ = TrCreateLeafOp (
                PARSEOP_READWRITETYPE_BOTH);}
| PARSEOP_READWRITETYPE_READONLY    {$$ = TrCreateLeafOp (
                PARSEOP_READWRITETYPE_READONLY);}
;

OptionalResourceType_First
:              {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_CONSUMER);}
| ResourceTypeKeyword    {$$
= $1;}
;

OptionalResourceType
:              {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_CONSUMER);}
| '|'          {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_CONSUMER);}
| '|' ResourceTypeKeyword    {$$ = $2;}
;

/* Same as above except default is producer */
OptionalProducerResourceType
:              {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_PRODUCER);}
| '|'          {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_PRODUCER);}

```

```

|',' ResourceTypeKeyword    {$$ = $2;}
;

OptionalSlaveMode
:','                        {$$ = NULL;}
|',' SlaveModeKeyword      {$$ = $2;}
;

OptionalShareType
:                            {$$ = NULL;}
|','                        {$$ = NULL;}
|',' ShareTypeKeyword
    {$$ = $2;}
;

OptionalShareType_First
:                            {$$ = NULL;}
| ShareTypeKeyword          {$$ = $1;}
;

OptionalStopBits
:','                        {$$ = NULL;}
|',' StopBitsKeyword       {$$ = $2;}
;

OptionalStringData
:                            {$$ = NULL;}
|','                        {$$ = NULL;}
|',' StringData            {$$ = $2;}
;

OptionalSyncLevel          /* Default: 0 */
:                            {$$ = TrCreateValuedLeafOp (
                                PARSEOP_BYTECONST, 0);}
|','                        {$$ = TrCreateValuedLeafOp (
                                PARSEOP_BYTECONST, 0);}
|',' ByteConstExpr         {$$ = $2;}
;

OptionalTranslationType_Last
:                            {$$ = NULL;}
|','                        {$$ = NULL;}
|',' TranslationKeyword    {$$ = $2;}
;

OptionalType
:                            {$$ = NULL;}
|','                        {$$ = NULL;}

```

```

|','TypeKeyword      {$$ = $2;}
;

OptionalType_Last
:                    {$$ = NULL;}
|','                {$$ = NULL;}
|','TypeKeyword      {$$ = $2;}
;

OptionalUpdateRuleKeyword /* Default: Preserve */
:                    {$$ = TrCreateLeafOp (
                        PARSEOP_UPDATERULE_PRESERVE);}
|','                {$$ = TrCreateLeafOp (
                        PARSEOP_UPDATERULE_PRESERVE);}
|','UpdateRuleKeyword    {$$ = $2;}
;

OptionalWireMode
:','                {$$ = NULL;}
|','WireModeKeyword    {$$ = $2;}
;

OptionalWordConstExpr
:','                {$$ = NULL;}
|','WordConstExpr      {$$ = $2;}
;

OptionalXferSize
:                    {$$ =
TrCreateValuedLeafOp (
                        PARSEOP_XFERSIZE_32, 2);}
|','                {$$ = TrCreateValuedLeafOp (
                        PARSEOP_XFERSIZE_32, 2);}
|','XferSizeKeyword    {$$ = $2;}
;

%%

/*! [End] no source code translation !*/

/* Local support functions in C */

/*****
*
* Local support functions
*
*****/

```

*****/

/*! [Begin] no source code translation */

int

AslCompilerwrap(void)

{

return (1);

}

/*! [End] no source code translation !*/

void *

AslLocalAllocate (

unsigned int Size)

{

void *Mem;

DbgPrint (ASL_PARSE_OUTPUT,

"\nAslLocalAllocate: Expanding Stack to %u\n\n", Size);

Mem = ACPI_ALLOCATE_ZEROED (Size);

if (!Mem)

{

AslCommonError (ASL_ERROR, ASL_MSG_MEMORY_ALLOCATION,

AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,

AslGbl_InputByteCount, AslGbl_CurrentColumn,

AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);

exit (1);

}

return (Mem);

}

ACPI_PARSE_OBJECT *

AslDoError (

void)

{

return (TrCreateLeafOp (PARSEOP_ERRORNODE));

}

*****/

*

* FUNCTION: UtGetOpName

*

```

* PARAMETERS: ParseOpcode      - Parser keyword ID
*
* RETURN:     Pointer to the opcode name
*
* DESCRIPTION: Get the ascii name of the parse opcode
*
*****/

```

```

char *
UtGetOpName (
    UINT32      ParseOpcode)
{
#ifdef ASL_YYTNAME_START
    /*
     * First entries (ASL_YYTNAME_START) in yytname are special reserved names.
     * Ignore first 8 characters of the name
     */
    return ((char *) yytname
        [(ParseOpcode - ASL_FIRST_PARSE_OPCODE) + ASL_YYTNAME_START]
        + 8);
#else
    return ("[Unknown parser generator]");
#endif
}

```

Found in path(s):

```

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-
20200110/source/compiler/aslcompiler.y

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 20200110/source/os_specific/service_layers/osgendbg.c
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* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/components/executer/exoparg6.c

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*

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*
*****/

)

```

```

/*****
*
* ASL Helper Terms
*
*****/

```

```

OptionalBusMasterKeyword
:','          { $$ = TrCreateLeafOp (
                PARSEOP_BUSMASTERTYPE_MASTER); }
|',' PARSEOP_BUSMASTERTYPE_MASTER { $$ = TrCreateLeafOp (
                PARSEOP_BUSMASTERTYPE_MASTER); }

```

```

|',' PARSEOP_BUSMASTERTYPE_NOTMASTER  {$$ = TrCreateLeafOp
(
          PARSEOP_BUSMASTERTYPE_NOTMASTER);}
;

```

OptionalAccessAttribTerm

```

:          {$$ = NULL;}
|','      {$$ = NULL;}
|',' ByteConstExpr      {$$ = $2;}
|',' AccessAttribKeyword  {$$ = $2;}
;

```

OptionalAccessSize

```

:          {$$ = TrCreateValuedLeafOp (
          PARSEOP_BYTECONST, 0);}
|','      {$$ = TrCreateValuedLeafOp (
          PARSEOP_BYTECONST, 0);}
|',' ByteConstExpr      {$$ = $2;}
;

```

OptionalAccessTypeKeyword /* Default: AnyAcc */

```

:          {$$ = TrCreateLeafOp (
          PARSEOP_ACCESSTYPE_ANY);}
|','      {$$ = TrCreateLeafOp (
          PARSEOP_ACCESSTYPE_ANY);}
|',' AccessTypeKeyword  {$$ = $2;}
;

```

OptionalAddressingMode

```

:','      {$$ = NULL;}
|',' AddressingModeKeyword  {$$ = $2;}
;

```

OptionalAddressRange

```

:          {$$ = NULL;}
|','      {$$ = NULL;}
|',' AddressKeyword      {$$ = $2;}
;

```

OptionalBitsPerByte

```

:','      {$$ = NULL;}
|',' BitsPerByteKeyword  {$$ = $2;}
;

```

OptionalBuffer_Last

```

:          {$$ = NULL;}
|','      {$$ = NULL;}
|',' RawDataBufferTerm   {$$ = $2;}

```

```

;

OptionalByteConstExpr
:          {$$ = NULL;}
| ','     {$$ = NULL;}
| ',' ByteConstExpr    {$$ = $2;}
;

OptionalDecodeType
: ','     {$$ = NULL;}
| ',' DecodeKeyword    {$$ = $2;}
;

OptionalDevicePolarity
: ','     {$$ = NULL;}
| ',' DevicePolarityKeyword
{$$ = $2;}
;

OptionalDWordConstExpr
:          {$$ = NULL;}
| ','     {$$ = NULL;}
| ',' DWordConstExpr    {$$ = $2;}
;

OptionalEndian
: ','     {$$ = NULL;}
| ',' EndianKeyword     {$$ = $2;}
;

OptionalFlowControl
: ','     {$$ = NULL;}
| ',' FlowControlKeyword {$$ = $2;}
;

OptionalIoRestriction
: ','     {$$ = NULL;}
| ',' IoRestrictionKeyword {$$ = $2;}
;

OptionalListString
:          {$$ = TrCreateValuedLeafOp (
          PARSEOP_STRING_LITERAL,
          ACPI_TO_INTEGER (""));} /* Placeholder is a NULL string */
| ','     {$$ = TrCreateValuedLeafOp (
          PARSEOP_STRING_LITERAL,
          ACPI_TO_INTEGER (""));}

```

```

/* Placeholder is a NULL string */
|',' TermArg          {$$ = $2;}
;

OptionalLockRuleKeyword /* Default: NoLock */
:
    {$$ = TrCreateLeafOp (
        PARSEOP_LOCKRULE_NOLOCK);}
|','
    {$$ = TrCreateLeafOp (
        PARSEOP_LOCKRULE_NOLOCK);}
|',' LockRuleKeyword    {$$ = $2;}
;

OptionalMaxType
:','
    {$$ = NULL;}
|',' MaxKeyword        {$$ = $2;}
;

OptionalMemType
:','
    {$$ = NULL;}
|',' MemTypeKeyword    {$$ = $2;}
;

OptionalMinType
:','
    {$$ = NULL;}
|',' MinKeyword        {$$ = $2;}
;

OptionalNameString
:
    {$$ = NULL;}
|','
    {$$ = NULL;}
|',' NameString        {$$ = $2;}
;

OptionalNameString_Last
:
    {$$ = NULL;}
|','
    {$$ = NULL;}
|',' NameString        {$$ = $2;}
;

OptionalNameString_First
:
    {$$ = TrCreateLeafOp (
        PARSEOP_ZERO);}
| NameString            {$$ = $1;}
;

OptionalObjectTypeKeyword
:
    {$$ = TrCreateLeafOp (
        PARSEOP_OBJECTTYPE_UNK);}

```

```

|','ObjectTypeKeyword    {$$ = $2;}
;

OptionalParityType
:','                    {$$ = NULL;}
|','ParityTypeKeyword    {$$ = $2;}
;

OptionalQWordConstExpr
:                        {$$ = NULL;}
|','                    {$$ = NULL;}
|','QWordConstExpr      {$$ = $2;}
;

OptionalRangeType
:','                    {$$ = NULL;}
|','RangeTypeKeyword    {$$ = $2;}
;

OptionalReadWriteKeyword
:
    {$$ = TrCreateLeafOp (
        PARSEOP_READWRITETYPE_BOTH);}
| PARSEOP_READWRITETYPE_BOTH    {$$ = TrCreateLeafOp (
        PARSEOP_READWRITETYPE_BOTH);}
| PARSEOP_READWRITETYPE_READONLY {$$ = TrCreateLeafOp (
        PARSEOP_READWRITETYPE_READONLY);}
;

OptionalResourceType_First
:                        {$$ = TrCreateLeafOp (
        PARSEOP_RESOURCECTYPE_CONSUMER);}
| ResourceTypeKeyword    {$$ = $1;}
;

OptionalResourceType
:                        {$$ = TrCreateLeafOp (
        PARSEOP_RESOURCECTYPE_CONSUMER);}
|','                    {$$ = TrCreateLeafOp (
        PARSEOP_RESOURCECTYPE_CONSUMER);}
|','ResourceTypeKeyword    {$$ = $2;}
;

/* Same as above except default
is producer */
OptionalProducerResourceType
:                        {$$ = TrCreateLeafOp (
        PARSEOP_RESOURCECTYPE_PRODUCER);}

```

```

|'          {$$ = TrCreateLeafOp (
                PARSEOP_RESOURCECTYPE_PRODUCER);}
|' ResourceTypeKeyword    {$$ = $2;}
;

```

OptionalSlaveMode

```

: '|'          {$$ = NULL;}
|' SlaveModeKeyword    {$$ = $2;}
;

```

OptionalShareType

```

:          {$$ = NULL;}
|'          {$$ = NULL;}
|' ShareTypeKeyword    {$$ = $2;}
;

```

OptionalShareType_First

```

:          {$$ = NULL;}
| ShareTypeKeyword    {$$ = $1;}
;

```

OptionalStopBits

```

: '|'          {$$ = NULL;}
|' StopBitsKeyword    {$$ = $2;}
;

```

OptionalStringData

```

:          {$$ = NULL;}
|'
    {$$ = NULL;}
|' StringData    {$$ = $2;}
;

```

OptionalSyncLevel /* Default: 0 */

```

:          {$$ = TrCreateValuedLeafOp (
                PARSEOP_BYTECONST, 0);}
|'          {$$ = TrCreateValuedLeafOp (
                PARSEOP_BYTECONST, 0);}
|' ByteConstExpr    {$$ = $2;}
;

```

OptionalTranslationType_Last

```

:          {$$ = NULL;}
|'          {$$ = NULL;}
|' TranslationKeyword    {$$ = $2;}
;

```

OptionalType

```

:                {$$ = NULL;}
| ','           {$$ = NULL;}
| ',' TypeKeyword    {$$ = $2;}
;

```

OptionalType_Last

```

:                {$$ = NULL;}
| ','           {$$ = NULL;}
| ',' TypeKeyword    {$$ = $2;}
;

```

OptionalUpdateRuleKeyword /* Default: Preserve */

```

:                {$$ = TrCreateLeafOp (
                    PARSEOP_UPDATERULE_PRESERVE);}
| ','           {$$ = TrCreateLeafOp (
                    PARSEOP_UPDATERULE_PRESERVE);}
| ',' UpdateRuleKeyword    {$$ = $2;}
;

```

OptionalWireMode

```

: ','           {$$ = NULL;}
| ',' WireModeKeyword    {$$ = $2;}
;

```

OptionalWordConstExpr

```

: ','           {$$ = NULL;}
| ',' WordConstExpr    {$$ = $2;}
;

```

OptionalXferSize

```

:                {$$ = TrCreateValuedLeafOp (
                    PARSEOP_XFERSIZE_32, 2);}
| ','           {$$ = TrCreateValuedLeafOp (
                    PARSEOP_XFERSIZE_32, 2);}
| ',' XferSizeKeyword    {$$ = $2;}
;

```

Found in path(s):

```

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslhelpers.y

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```

/*****

```

```

*

```

```

* Module Name: aslrules.y - Main Bison/Yacc production rules

```

```

* - Keep this file synched with the

```



```

*           CvParseOpBlockType function in cvcompiler.c
*
*****/

/*****
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*

*****/

)

/**

*
* ASL Root and Secondary Terms
*

*****/

/*

* Root term. Allow multiple #line directives before the definition block
* to handle output from preprocessors
*/

AslCode

: DefinitionBlockList { \$<n>\$ = TrLinkOpChildren (

TrCreateLeafOp (PARSEOP_ASL_CODE),1, \$1);}

| error {YYABORT; \$\$ = NULL;}

;

/*

* Note concerning support for "module-level code".

*

* ACPI 1.0 allowed Type1 and Type2 executable opcodes outside of control
* methods (the so-called module-level code.) This support was explicitly
* removed in ACPI 2.0, but this type of code continues to be created by
* BIOS vendors. In order to support the disassembly and recompilation of
* such code (and the porting of ASL code to iASL), iASL supports this
* code in violation of the current ACPI specification.

*

* The grammar change to support module-level code is to revert the
* {ObjectList} portion of the DefinitionBlockTerm in ACPI 2.0 to the
* original use of {TermList} instead (see below.) This allows the use
* of Type1 and Type2 opcodes at module level.

*

* 04/2016: The module-level code is now allowed in the following terms:

* DeviceTerm, PowerResTerm, ProcessorTerm, ScopeTerm, ThermalZoneTerm.

*

The ObjectList term is obsolete and has been removed.

*/

DefinitionBlockTerm

```
: PARSEOP_DEFINITION_BLOCK
  PARSEOP_OPEN_PAREN      {$<n>$ = TrCreateLeafOp (PARSEOP_DEFINITION_BLOCK);
COMMENT_CAPTURE_OFF;}
  String ','
  String ','
  ByteConst ','
  String ','
  String ','
  DWordConst
  PARSEOP_CLOSE_PAREN     {TrSetOpIntegerWidth ($6,$8);
                          TrSetOpEndLineNumber ($<n>3); COMMENT_CAPTURE_ON;}
  {' TermList '}'        {$$ = TrLinkOpChildren ($<n>3,7,
                          $4,$6,$8,$10,$12,$14,$18);}
;

```

DefinitionBlockList

```
: DefinitionBlockTerm
| DefinitionBlockTerm
  DefinitionBlockList     {$$ = TrLinkPeerOps (2, $1,$2);}
;

```

/****** Basic ASCII identifiers *****/

/* Allow IO, DMA, IRQ Resource macro and FOR macro names to also be used as identifiers */

NameString

```
: NameSeg
  {}
  | PARSEOP_NAMESTRING     {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING,
(ACPI_NATIVE_INT) $1);}
  | PARSEOP_IO             {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IO");}
  | PARSEOP_DMA            {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING,
(ACPI_NATIVE_INT) "DMA");}
  | PARSEOP_IRQ           {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"IRQ");}
  | PARSEOP_FOR           {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESTRING, (ACPI_NATIVE_INT)
"FOR");}
;
/*
NameSeg

```

```

: PARSEOP_NAMESEG          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,
(ACPI_NATIVE_INT)
                          TrNormalizeNameSeg ($1));}
;
*/

```

NameSeg

```

: PARSEOP_NAMESEG          {$$ = TrCreateValuedLeafOp (PARSEOP_NAMESEG,
(ACPI_NATIVE_INT) AslCompilerIval.s);}
;

```

/****** Fundamental argument/statement types *****/

Term

```

: Object                    {}
| Type1Opcode               {}
| Type2Opcode               {}
| Type2IntegerOpcode        {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2StringOpcode         {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOpcode         {}
| Type2BufferOrStringOpcode {}
| error                     {$$ = AslDoError(); yyclearin;}
;

```

SuperName

```

: SimpleName                {}
| DebugTerm                 {}
| Type6Opcode               {}
;

```

Target

```

:                          {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
| ','                      {$$ = TrCreateNullTargetOp ();} /* Placeholder is a ZeroOp object */
| ',' SuperName           {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
;

```

RequiredTarget

```

: ',' SuperName           {$$ = TrSetOpFlags ($2, OP_IS_TARGET);}
;

```

TermArg

```

: SimpleName                {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2Opcode               {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| DataObject                {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| PARSEOP_OPEN_PAREN
  TermArg
  PARSEOP_CLOSE_PAREN      {$$ = TrSetOpFlags ($2, OP_IS_TERM_ARG);}

```

```

;

/*
NOTE: Removed from TermArg due to reduce/reduce conflicts:
| Type2IntegerOpcode      {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2StringOpcode       {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2BufferOpcode       {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}
| Type2BufferOrStringOpcode {$$ = TrSetOpFlags ($1, OP_IS_TERM_ARG);}

*/

MethodInvocationTerm
: NameString
  PARSEOP_OPEN_PAREN      {TrSetOpIntegerValue (PARSEOP_METHODCALL, $1);
COMMENT_CAPTURE_OFF;}
  ArgList
  PARSEOP_CLOSE_PAREN     {$$ = TrLinkChildOp ($1,$4); COMMENT_CAPTURE_ON;}
;

/* OptionalCount
must appear before ByteList or an incorrect reduction will result */

OptionalCount
:                {$$ = TrCreateLeafOp (PARSEOP_ONES);}      /* Placeholder is a OnesOp object */
| ','           {$$ = TrCreateLeafOp (PARSEOP_ONES);}      /* Placeholder is a OnesOp object */
| ',' TermArg   {$$ = $2;}
;

/*
* Data count for buffers and packages (byte count for buffers,
* element count for packages).
*/

OptionalDataCount

  /* Legacy ASL */
:                {$$ = NULL;}
| PARSEOP_OPEN_PAREN
  TermArg
  PARSEOP_CLOSE_PAREN   {$$ = $2;}
| PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN   {$$ = NULL;}

  /* C-style (ASL+) -- adds equals term */

| PARSEOP_EXP_EQUALS    {$$ = NULL;}

| PARSEOP_OPEN_PAREN
  TermArg

```

```

    PARSEOP_CLOSE_PAREN
    PARSEOP_EXP_EQUALS      {$$ = $2;}

| PARSEOP_OPEN_PAREN
  PARSEOP_CLOSE_PAREN
  String
  PARSEOP_EXP_EQUALS      {$$ = NULL;}
;

/***** List Terms *****/

/* ACPI 3.0 -- allow semicolons between terms */

TermList
:
  {$$ = NULL;}
| TermList Term          {$$ = TrLinkPeerOp (
                          TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
| TermList Term ';'     {$$ = TrLinkPeerOp (
                          TrSetOpFlags ($1, OP_RESULT_NOT_USED),$2);}
| TermList ';' Term     {$$ = TrLinkPeerOp (
                          TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
| TermList ';' Term ';' {$$ = TrLinkPeerOp (
                          TrSetOpFlags ($1, OP_RESULT_NOT_USED),$3);}
;

ArgList
:
  {$$ = NULL;}
| TermArg
| ArgList ','           /* Allows a trailing comma at list end */
| ArgList
';
  TermArg                {$$ = TrLinkPeerOp ($1,$3);}
;

ByteList
:
  {$$ = NULL;}
| ByteConstExpr
| ByteList ','         /* Allows a trailing comma at list end */
| ByteList ';'
  ByteConstExpr        {$$ = TrLinkPeerOp ($1,$3);}
;

DWordList
:
  {$$ = NULL;}
| DWordConstExpr
| DWordList ','       /* Allows a trailing comma at list end */
| DWordList ';'

```



```

    DWordConstExpr      {$$ = TrLinkPeerOp ($1,$3);}
;

FieldUnitList
:                       {$$ = NULL;}
| FieldUnit
| FieldUnitList ','    /* Allows a trailing comma at list end */
| FieldUnitList ','
    FieldUnit          {$$ = TrLinkPeerOp ($1,$3);}
;

FieldUnit
: FieldUnitEntry      {}
| OffsetTerm          {}
| AccessAsTerm        {}
| ConnectionTerm      {}
;

FieldUnitEntry
: ',' AmlPackageLengthTerm  {$$ = TrCreateOp (PARSEOP_RESERVED_BYTES,1,$2);}
| NameSeg ','
    AmlPackageLengthTerm    {$$ = TrLinkChildOp ($1,$3);}
;

Object
: CompilerDirective    {}
| NamedObject          {}
| NameSpaceModifier    {}
/* | StructureTerm      {} */
;

PackageList
:                       {$$ = NULL;}
| PackageElement
| PackageList ','      /* Allows a trailing comma at list end */
| PackageList ','
    PackageElement      {$$ = TrLinkPeerOp ($1,$3);}
;

PackageElement
: DataObject           {}
| NameString           {}
;

/* Rules for specifying the type of one method argument or return value */

ParameterTypePackage

```

```

:                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| ParameterTypePackage '
    ObjectTypeKeyword    {$$ = TrLinkPeerOps
(2,$1,$3);}
;

ParameterTypePackageList
:                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| '{ ParameterTypePackage ' {$$ = $2;}
;

OptionalParameterTypePackage
:                {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
| ',' ParameterTypePackageList {$$ = TrLinkOpChildren (
    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
;

/* Rules for specifying the types for method arguments */

ParameterTypesPackage
: ParameterTypePackageList    {$$ = $1;}
| ParameterTypesPackage '
    ParameterTypePackageList    {$$ = TrLinkPeerOps (2,$1,$3);}
;

ParameterTypesPackageList
:                {$$ = NULL;}
| ObjectTypeKeyword    {$$ = $1;}
| '{ ParameterTypesPackage ' {$$ = $2;}
;

OptionalParameterTypesPackage
:                {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
| ','
ParameterTypesPackageList {$$ = TrLinkOpChildren (
    TrCreateLeafOp (PARSEOP_DEFAULT_ARG),1,$2);}
;

/*
* Case-Default list; allow only one Default term and unlimited Case terms
*/
CaseDefaultTermList
:                {$$ = NULL;}
| CaseTerm        {}
| DefaultTerm        {}
| CaseDefaultTermList

```

```

    CaseTerm          {$$ = TrLinkPeerOp ($1,$2);}
| CaseDefaultTermList
    DefaultTerm      {$$ = TrLinkPeerOp ($1,$2);}

/* Original - attempts to force zero or one default term within the switch */

/*
CaseDefaultTermList
:          {$$ = NULL;}
| CaseTermList
    DefaultTerm
    CaseTermList    {$$ = TrLinkPeerOp ($1,TrLinkPeerOp ($2, $3));}
| CaseTermList
    CaseTerm        {$$ = TrLinkPeerOp ($1,$2);}
;

CaseTermList
:          {$$ = NULL;}
| CaseTerm
    {}
| CaseTermList
    CaseTerm        {$$ = TrLinkPeerOp ($1,$2);}
;
*/

/*****
*
* ASL Data and Constant Terms
*
*****/

DataObject
: BufferData        {}
| PackageData      {}
| IntegerData      {}
| StringData       {}
;

BufferData
: Type5Opcode      {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOrStringOpcode {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type2BufferOpcode {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| BufferTerm        {}
;

PackageData
: PackageTerm      {}

```

```

;

IntegerData
: Type2IntegerOpcode      {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| Type3Opcode             {$$ = TrSetOpFlags
($1, OP_COMPILE_TIME_CONST);}
| Integer                 {}
| ConstTerm               {}
;

```

```

StringData
: Type2StringOpcode      {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| String                  {}
;

```

```

ByteConst
: Integer                 {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
;

```

```

WordConst
: Integer                 {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
;

```

```

DWordConst
: Integer                 {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
;

```

```

QWordConst
: Integer                 {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
;

```

```

/*
* The OP_COMPILE_TIME_CONST flag in the following constant expressions
* enables compile-time constant folding to reduce the Type3Opcodes/Type2IntegerOpcodes
* to simple integers. It is an error if these types of expressions cannot be
* reduced, since the AML grammar for ****ConstExpr requires a simple
* constant.
* Note: The required byte length of the constant is passed through to the
* constant folding code in the node AmlLength field.
*/

```

```

ByteConstExpr
: Type3Opcode             {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 1);}
| Type2IntegerOpcode      {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                          TrSetOpAmlLength ($1, 1);}
| ConstExprTerm           {$$ = TrSetOpIntegerValue (PARSEOP_BYTECONST, $1);}
| ByteConst               {}
;

```

```

WordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 2);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 2);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_WORDCONST, $1);}
| WordConst            {}
;

```

```

DWordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 4);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 4);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_DWORDCONST, $1);}
| DWordConst           {}
;

```

```

QWordConstExpr
: Type3Opcode          {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 8);}
| Type2IntegerOpcode   {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);
                        TrSetOpAmlLength ($1, 8);}
| ConstExprTerm        {$$ = TrSetOpIntegerValue (PARSEOP_QWORDCONST, $1);}
| QWordConst           {}
;

```

```

ConstTerm
: ConstExprTerm        {}
| PARSEOP_REVISION     {$$ = TrCreateLeafOp (PARSEOP_REVISION);}
;

```

```

ConstExprTerm
: PARSEOP_ZERO         {$$ = TrCreateValuedLeafOp (PARSEOP_ZERO, 0);}
| PARSEOP_ONE          {$$ = TrCreateValuedLeafOp (PARSEOP_ONE, 1);}
| PARSEOP_ONES         {$$ = TrCreateValuedLeafOp (PARSEOP_ONES, ACPI_UINT64_MAX);}
| PARSEOP__DATE__     {$$ = TrCreateConstantLeafOp (PARSEOP__DATE__);}
| PARSEOP__FILE__     {$$ = TrCreateConstantLeafOp (PARSEOP__FILE__);}
| PARSEOP__LINE__     {$$ = TrCreateConstantLeafOp (PARSEOP__LINE__);}
| PARSEOP__PATH__     {$$ = TrCreateConstantLeafOp (PARSEOP__PATH__);}
| PARSEOP__METHOD__   {$$ = TrCreateConstantLeafOp (PARSEOP__METHOD__);}
;

```

```

Integer
: PARSEOP_INTEGER      {$$ = TrCreateValuedLeafOp (PARSEOP_INTEGER,
                                                    AslCompilerIval.i);}
;

```

String

```
: PARSEOP_STRING_LITERAL
{ $$ = TrCreateValuedLeafOp (PARSEOP_STRING_LITERAL,
                             (ACPI_NATIVE_INT) AslCompilerIval.s); }
;
```

```
/*
 *
 * ASL Opcode Terms
 *
 */
```

CompilerDirective

```
: IncludeTerm      {}
| IncludeEndTerm   {}
| ExternalTerm     {}
;
```

NamedObject

```
: BankFieldTerm    {}
| CreateBitFieldTerm {}
| CreateByteFieldTerm {}
| CreateDWordFieldTerm {}
| CreateFieldTerm   {}
| CreateQWordFieldTerm {}
| CreateWordFieldTerm {}
| DataRegionTerm    {}
| DeviceTerm        {}
| EventTerm         {}
| FieldTerm         {}
| FunctionTerm      {}
| IndexFieldTerm    {}
| MethodTerm        {}
| MutexTerm         {}
| OpRegionTerm      {}
| PowerResTerm      {}
| ProcessorTerm     {}
| ThermalZoneTerm   {}
;
```

NameSpaceModifier

```
: AliasTerm        {}
| NameTerm         {}
/* | NameTermAsIPlus {} */
| ScopeTerm        {}
```

```

;

SimpleName
: NameString      {}
| LocalTerm       {}
| ArgTerm         {}
;

/* For ObjectType(), SuperName except for MethodInvocationTerm */

```

```

ObjectTypeSource
: SimpleName      {}
| DebugTerm       {}
| RefOfTerm       {}
| DerefOfTerm     {}
| IndexTerm       {}
| IndexExpTerm    {}
;

```

```

/* For DeRefOf(), SuperName except for DerefOf and Debug */

```

```

DerefOfSource
: SimpleName      {}
| RefOfTerm       {}
| DerefOfTerm     {}
| IndexTerm       {}
| IndexExpTerm    {}
| StoreTerm       {}
| EqualsTerm      {}
| MethodInvocationTerm {}
;

```

```

/* For RefOf(), SuperName except for RefOf and MethodInvocationTerm */

```

```

RefOfSource
: SimpleName      {}
| DebugTerm       {}
| DerefOfTerm     {}
| IndexTerm       {}
| IndexExpTerm    {}
;

```

```

/* For CondRefOf(), SuperName except for RefOf and MethodInvocationTerm */

```

```

CondRefOfSource
: SimpleName      {}
| DebugTerm       {}
;

```

```

| DerefOfTerm      {}
| IndexTerm        {}
| IndexExpTerm     {}
;

/*
* Opcode types, as defined in the ACPI specification
*/
Type1Opcode
: BreakTerm        {}
| BreakPointTerm   {}
| ContinueTerm     {}
| FatalTerm        {}
| ForTerm          {}
| ElseIfTerm       {}
| LoadTerm         {}
| NoOpTerm         {}
| NotifyTerm       {}
| ReleaseTerm      {}
| ResetTerm        {}
| ReturnTerm       {}
| SignalTerm       {}
| SleepTerm        {}
| StallTerm        {}
| SwitchTerm       {}
| UnloadTerm       {}
| WhileTerm        {}
;

Type2Opcode
: AcquireTerm      {}
| CondRefOfTerm    {}
| CopyObjectTerm   {}
| DerefOfTerm      {}
| ObjectTypeTerm   {}
| RefOfTerm        {}
| SizeOfTerm       {}
| StoreTerm        {}
| EqualsTerm       {}
|
TimerTerm          {}
| WaitTerm         {}
| MethodInvocationTerm {}
;

/*
* Type 3/4/5 opcodes
*/

```



```

Type2IntegerOpcode      /* "Type3" opcodes */
: Expression            { $$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST); }
| AddTerm               {}
| AndTerm               {}
| DecTerm               {}
| DivideTerm           {}
| FindSetLeftBitTerm   {}
| FindSetRightBitTerm  {}
| FromBCDTerm          {}
| IncTerm              {}
| IndexTerm            {}
/* | StructureIndexTerm    {} */
/* | StructurePointerTerm  {} */
| LAndTerm             {}
| LEqualTerm           {}
| LGreaterTerm         {}
| LGreaterEqualTerm    {}
| LLessTerm            {}
| LLessEqualTerm       {}
| LNotTerm             {}
{}
| LNotEqualTerm        {}
| LoadTableTerm        {}
| LOrTerm              {}
| MatchTerm            {}
| ModTerm              {}
| MultiplyTerm         {}
| NAndTerm             {}
| NOrTerm              {}
| NotTerm              {}
| OrTerm               {}
| ShiftLeftTerm        {}
| ShiftRightTerm       {}
| SubtractTerm         {}
| ToBCDTerm            {}
| ToIntegerTerm        {}
| XOrTerm              {}
;

```

```

Type2StringOpcode      /* "Type4" Opcodes */
: ToDecimalStringTerm  {}
| ToHexStringTerm     {}
| ToStringTerm         {}
;

```

```

Type2BufferOpcode      /* "Type5" Opcodes */
: ToBufferTerm         {}
| ConcatResTerm        {}

```

```

;

Type2BufferOrStringOpcode
: ConcatTerm
    {$$ = TrSetOpFlags ($1, OP_COMPILE_TIME_CONST);}
| PrintfTerm      {}
| FprintfTerm     {}
| MidTerm         {}
;

/*
* A type 3 opcode evaluates to an Integer and cannot have a destination operand
*/
Type3Opcode
: EISAIDTerm      {}
;

/* Obsolete
Type4Opcode
: ConcatTerm      {}
| ToDecimalStringTerm {}
| ToHexStringTerm {}
| MidTerm         {}
| ToStringTerm    {}
;
*/

/* Type 5 opcodes are a subset of Type2 opcodes, and return a constant */
Type5Opcode
: ResourceTemplateTerm {}
| UnicodeTerm         {}
| ToPLDTerm           {}
| ToUUIDTerm          {}
;

Type6Opcode
: RefOfTerm         {}
| DerefOfTerm       {}
| IndexTerm         {}
| IndexExpTerm      {}
/* | StructureIndexTerm
    {} */
/* | StructurePointerTerm    {} */
| MethodInvocationTerm {}
;

```

```

/*****
*
* ASL Helper Terms
*
*****/

```

AmlPackageLengthTerm

```

: Integer          {$$ = TrSetOpIntegerValue (PARSEOP_PACKAGE_LENGTH,
                                     (ACPI_PARSE_OBJECT *) $1);}
;

```

NameStringItem

```

: '|' NameString   {$$ = $2;}
| '|' error        {$$ = AslDoError (); yyclearin;}
;

```

TermArgItem

```

: '|' TermArg      {$$ = $2;}
| '|' error        {$$ = AslDoError (); yyclearin;}
;

```

OptionalReference

```

:                {$$ = TrCreateLeafOp (PARSEOP_ZERO);} /* Placeholder is a ZeroOp object */
| '|'           {$$ = TrCreateLeafOp (PARSEOP_ZERO);} /* Placeholder is
a ZeroOp object */
| '|' TermArg    {$$ = $2;}
;

```

OptionalReturnArg

```

:                {$$ = TrSetOpFlags (TrCreateLeafOp (PARSEOP_ZERO),
                                     OP_IS_NULL_RETURN);} /* Placeholder is a ZeroOp object */
| TermArg        {$$ = $1;}
;

```

OptionalSerializeRuleKeyword

```

:                {$$ = NULL;}
| '|'           {$$ = NULL;}
| '|' SerializeRuleKeyword {$$ = $2;}
;

```

OptionalTermArg

```

:                {$$ = TrCreateLeafOp (PARSEOP_DEFAULT_ARG);}
| TermArg        {$$ = $1;}
;

```

OptionalWordConst

```

:                {$$ = NULL;}
| WordConst      {$$ = $1;}

```

;

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslrules.y

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NoEcho('

/*

*/

*

* Module Name: asltokens.y - Bison/Yacc token types

*

/

/*

*/

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*/

')

/*

* Token types: These are returned by the lexer

* NOTE: This list MUST match the AslKeywordMapping table found
* in aslmap.c EXACTLY! Double check any changes!

*/

/*

* Most tokens are defined to return <i>, which is a UINT64.

* These tokens return <s>, a pointer to the associated lexed string:

- * PARSEOP_NAMESEG
- * PARSEOP_NAMESTRING
- * PARSEOP_STRING_LITERAL
- * PARSEOP_STRUCTURE_NAMESTRING

*/

- %token <i> PARSEOP_ACCESSAS
- %token <i> PARSEOP_ACCESSATTRIB_BLOCK
- %token <i> PARSEOP_ACCESSATTRIB_BLOCK_CALL
- %token <i> PARSEOP_ACCESSATTRIB_BYTE
- %token <i> PARSEOP_ACCESSATTRIB_BYTES

%token <i> PARSEOP_ACCESSATTRIB_QUICK
%token <i> PARSEOP_ACCESSATTRIB_RAW_BYTES
%token <i> PARSEOP_ACCESSATTRIB_RAW_PROCESS
%token <i> PARSEOP_ACCESSATTRIB_SND_RCV
%token <i> PARSEOP_ACCESSATTRIB_WORD
%token <i> PARSEOP_ACCESSATTRIB_WORD_CALL
%token <i> PARSEOP_ACCESSTYPE_ANY
%token <i> PARSEOP_ACCESSTYPE_BUF
%token <i> PARSEOP_ACCESSTYPE_BYTE
%token <i> PARSEOP_ACCESSTYPE_DWORD
%token <i> PARSEOP_ACCESSTYPE_QWORD
%token <i> PARSEOP_ACCESSTYPE_WORD
%token <i> PARSEOP_ACQUIRE
%token <i> PARSEOP_ADD
%token <i> PARSEOP_ADDRESSINGMODE_7BIT
%token <i> PARSEOP_ADDRESSINGMODE_10BIT
%token <i> PARSEOP_ADDRESSTYPE ACPI
%token <i> PARSEOP_ADDRESSTYPE_MEMORY
%token <i> PARSEOP_ADDRESSTYPE_NVS
%token <i> PARSEOP_ADDRESSTYPE_RESERVED
%token <i> PARSEOP_ALIAS
%token <i> PARSEOP_AND
%token <i> PARSEOP_ARG0
%token
<i> PARSEOP_ARG1
%token <i> PARSEOP_ARG2
%token <i> PARSEOP_ARG3
%token <i> PARSEOP_ARG4
%token <i> PARSEOP_ARG5
%token <i> PARSEOP_ARG6
%token <i> PARSEOP_BANKFIELD
%token <i> PARSEOP_BITSPERBYTE_EIGHT
%token <i> PARSEOP_BITSPERBYTE_FIVE
%token <i> PARSEOP_BITSPERBYTE_NINE
%token <i> PARSEOP_BITSPERBYTE_SEVEN
%token <i> PARSEOP_BITSPERBYTE_SIX
%token <i> PARSEOP_BREAK
%token <i> PARSEOP_BREAKPOINT
%token <i> PARSEOP_BUFFER
%token <i> PARSEOP_BUSMASTERTYPE_MASTER
%token <i> PARSEOP_BUSMASTERTYPE_NOTMASTER
%token <i> PARSEOP_BYTECONST
%token <i> PARSEOP_CASE
%token <i> PARSEOP_CLOCKPHASE_FIRST
%token <i> PARSEOP_CLOCKPHASE_SECOND
%token <i> PARSEOP_CLOCKPOLARITY_HIGH
%token <i> PARSEOP_CLOCKPOLARITY_LOW
%token <i> PARSEOP_CONCATENATE

%token <i> PARSEOP_CONCATENATERESTEMPLATE
%token <i> PARSEOP_CONDREFOF
%token <i> PARSEOP_CONNECTION
%token <i> PARSEOP_CONTINUE
%token <i> PARSEOP_COPYOBJECT
%token <i> PARSEOP_CREATEBITFIELD
%token <i> PARSEOP_CREATEBYTEFIELD
%token <i> PARSEOP_CREATEDWORDFIELD
%token
<i> PARSEOP_CREATEFIELD
%token <i> PARSEOP_CREATEQWORDFIELD
%token <i> PARSEOP_CREATEWORDFIELD
%token <i> PARSEOP_DATABUFFER
%token <i> PARSEOP_DATATABLEREGION
%token <i> PARSEOP_DEBUG
%token <i> PARSEOP_DECODETYPE_POS
%token <i> PARSEOP_DECODETYPE_SUB
%token <i> PARSEOP_DECREMENT
%token <i> PARSEOP_DEFAULT
%token <i> PARSEOP_DEFAULT_ARG
%token <i> PARSEOP_DEFINITION_BLOCK
%token <i> PARSEOP_DEREOF
%token <i> PARSEOP_DEVICE
%token <i> PARSEOP_DEVICEPOLARITY_HIGH
%token <i> PARSEOP_DEVICEPOLARITY_LOW
%token <i> PARSEOP_DIVIDE
%token <i> PARSEOP_DMA
%token <i> PARSEOP_DMATYPE_A
%token <i> PARSEOP_DMATYPE_COMPATIBILITY
%token <i> PARSEOP_DMATYPE_B
%token <i> PARSEOP_DMATYPE_F
%token <i> PARSEOP_DWORDCONST
%token <i> PARSEOP_DWORDIO
%token <i> PARSEOP_DWORDMEMORY
%token <i> PARSEOP_DWORDSPACE
%token <i> PARSEOP_EISAID
%token <i> PARSEOP_ELSE
%token <i> PARSEOP_ELSEIF
%token <i> PARSEOP_ENDDEPENDENTFN
%token <i> PARSEOP_ENDIAN_BIG
%token <i> PARSEOP_ENDIAN_LITTLE
%token
<i> PARSEOP_ENDTAG
%token <i> PARSEOP_ERRORNODE
%token <i> PARSEOP_EVENT
%token <i> PARSEOP_EXTENDEDIO
%token <i> PARSEOP_EXTENDEDMEMORY
%token <i> PARSEOP_EXTENDEDSPACE

%token <i> PARSEOP_EXTERNAL
%token <i> PARSEOP_FATAL
%token <i> PARSEOP_FIELD
%token <i> PARSEOP_FINDSETLEFTBIT
%token <i> PARSEOP_FINDSETRIGHTBIT
%token <i> PARSEOP_FIXEDDMA
%token <i> PARSEOP_FIXEDIO
%token <i> PARSEOP_FLOWCONTROL_HW
%token <i> PARSEOP_FLOWCONTROL_NONE
%token <i> PARSEOP_FLOWCONTROL_SW
%token <i> PARSEOP_FROMBCD
%token <i> PARSEOP_FUNCTION
%token <i> PARSEOP_GPIO_INT
%token <i> PARSEOP_GPIO_IO
%token <i> PARSEOP_I2C_SERIALBUS
%token <i> PARSEOP_I2C_SERIALBUS_V2
%token <i> PARSEOP_IF
%token <i> PARSEOP_INCLUDE
%token <i> PARSEOP_INCLUDE_END
%token <i> PARSEOP_INCREMENT
%token <i> PARSEOP_INDEX
%token <i> PARSEOP_INDEXFIELD
%token <i> PARSEOP_INTEGER
%token <i> PARSEOP_INTERRUPT
%token <i> PARSEOP_INTLEVEL_ACTIVEBOTH
%token <i> PARSEOP_INTLEVEL_ACTIVEHIGH
%token <i> PARSEOP_INTLEVEL_ACTIVELOW
%token <i>
PARSEOP_INTTYPE_EDGE
%token <i> PARSEOP_INTTYPE_LEVEL
%token <i> PARSEOP_IO
%token <i> PARSEOP_IODECODETYPE_10
%token <i> PARSEOP_IODECODETYPE_16
%token <i> PARSEOP_IORESTRICT_IN
%token <i> PARSEOP_IORESTRICT_NONE
%token <i> PARSEOP_IORESTRICT_OUT
%token <i> PARSEOP_IORESTRICT_PRESERVE
%token <i> PARSEOP_IRQ
%token <i> PARSEOP_IRQNOFLAGS
%token <i> PARSEOP_LAND
%token <i> PARSEOP_LEQUAL
%token <i> PARSEOP_LGREATER
%token <i> PARSEOP_LGREATEREQUAL
%token <i> PARSEOP_LLESS
%token <i> PARSEOP_LLESSEQUAL
%token <i> PARSEOP_LNOT
%token <i> PARSEOP_LNOTEQUAL
%token <i> PARSEOP_LOAD

%token <i> PARSEOP_LOADTABLE
%token <i> PARSEOP_LOCAL0
%token <i> PARSEOP_LOCAL1
%token <i> PARSEOP_LOCAL2
%token <i> PARSEOP_LOCAL3
%token <i> PARSEOP_LOCAL4
%token <i> PARSEOP_LOCAL5
%token <i> PARSEOP_LOCAL6
%token <i> PARSEOP_LOCAL7
%token <i> PARSEOP_LOCKRULE_LOCK
%token <i> PARSEOP_LOCKRULE_NOLOCK
%token <i> PARSEOP_LOR
%token <i> PARSEOP_MATCH
%token <i> PARSEOP_MATCHTYPE_MEQ
%token <i> PARSEOP_MATCHTYPE_MGE
%token
 <i> PARSEOP_MATCHTYPE_MGT
%token <i> PARSEOP_MATCHTYPE_MLE
%token <i> PARSEOP_MATCHTYPE_MLT
%token <i> PARSEOP_MATCHTYPE_MTR
%token <i> PARSEOP_MAXTYPE_FIXED
%token <i> PARSEOP_MAXTYPE_NOTFIXED
%token <i> PARSEOP_MEMORY24
%token <i> PARSEOP_MEMORY32
%token <i> PARSEOP_MEMORY32FIXED
%token <i> PARSEOP_MEMTYPE_CACHEABLE
%token <i> PARSEOP_MEMTYPE_NONCACHEABLE
%token <i> PARSEOP_MEMTYPE_PREFETCHABLE
%token <i> PARSEOP_MEMTYPE_WRITECOMBINING
%token <i> PARSEOP_METHOD
%token <i> PARSEOP_METHODCALL
%token <i> PARSEOP_MID
%token <i> PARSEOP_MINTYPE_FIXED
%token <i> PARSEOP_MINTYPE_NOTFIXED
%token <i> PARSEOP_MOD
%token <i> PARSEOP_MULTIPLY
%token <i> PARSEOP_MUTEX
%token <i> PARSEOP_NAME
%token <s> PARSEOP_NAMESEG
%token <s> PARSEOP_NAMESTRING
%token <i> PARSEOP_NAND
%token <i> PARSEOP_NOOP
%token <i> PARSEOP_NOR
%token <i> PARSEOP_NOT
%token <i> PARSEOP_NOTIFY
%token <i> PARSEOP_OBJECTTYPE
%token <i> PARSEOP_OBJECTTYPE_BFF
%token <i> PARSEOP_OBJECTTYPE_BUF

%token <i> PARSEOP_OBJECTTYPE_DDB
%token
<i> PARSEOP_OBJECTTYPE_DEV
%token <i> PARSEOP_OBJECTTYPE_EVT
%token <i> PARSEOP_OBJECTTYPE_FLD
%token <i> PARSEOP_OBJECTTYPE_INT
%token <i> PARSEOP_OBJECTTYPE_MTH
%token <i> PARSEOP_OBJECTTYPE_MTX
%token <i> PARSEOP_OBJECTTYPE_OPR
%token <i> PARSEOP_OBJECTTYPE_PKG
%token <i> PARSEOP_OBJECTTYPE_POW
%token <i> PARSEOP_OBJECTTYPE_PRO
%token <i> PARSEOP_OBJECTTYPE_STR
%token <i> PARSEOP_OBJECTTYPE_THZ
%token <i> PARSEOP_OBJECTTYPE_UNK
%token <i> PARSEOP_OFFSET
%token <i> PARSEOP_ONE
%token <i> PARSEOP_ONES
%token <i> PARSEOP_OPERATIONREGION
%token <i> PARSEOP_OR
%token <i> PARSEOP_PACKAGE
%token <i> PARSEOP_PACKAGE_LENGTH
%token <i> PARSEOP_PARITYTYPE_EVEN
%token <i> PARSEOP_PARITYTYPE_MARK
%token <i> PARSEOP_PARITYTYPE_NONE
%token <i> PARSEOP_PARITYTYPE_ODD
%token <i> PARSEOP_PARITYTYPE_SPACE
%token <i> PARSEOP_PINCONFIG
%token <i> PARSEOP_PINFUNCTION
%token <i> PARSEOP_PINGROUP
%token <i> PARSEOP_PINGROUPCONFIG
%token <i> PARSEOP_PINGROUPFUNCTION
%token <i> PARSEOP_PIN_NOPULL
%token
<i> PARSEOP_PIN_PULLDEFAULT
%token <i> PARSEOP_PIN_PULLDOWN
%token <i> PARSEOP_PIN_PULLUP
%token <i> PARSEOP_POWERRESOURCE
%token <i> PARSEOP_PROCESSOR
%token <i> PARSEOP_QWORDCONST
%token <i> PARSEOP_QWORDIO
%token <i> PARSEOP_QWORDMEMORY
%token <i> PARSEOP_QWORDSPACE
%token <i> PARSEOP_RANGETYPE_ENTIRE
%token <i> PARSEOP_RANGETYPE_ISAONLY
%token <i> PARSEOP_RANGETYPE_NONISAONLY
%token <i> PARSEOP_RAW_DATA
%token <i> PARSEOP_READWRITETYPE_BOTH

%token <i> PARSEOP_READWRITETYPE_READONLY
%token <i> PARSEOP_REFOF
%token <i> PARSEOP_REGIONSPACE_CMOS
%token <i> PARSEOP_REGIONSPACE_EC
%token <i> PARSEOP_REGIONSPACE_FFIXEDHW
%token <i> PARSEOP_REGIONSPACE_GPIO
%token <i> PARSEOP_REGIONSPACE_GSBUS
%token <i> PARSEOP_REGIONSPACE_IO
%token <i> PARSEOP_REGIONSPACE_IPMI
%token <i> PARSEOP_REGIONSPACE_MEM
%token <i> PARSEOP_REGIONSPACE_PCC
%token <i> PARSEOP_REGIONSPACE_PCI
%token <i> PARSEOP_REGIONSPACE_PCIBAR
%token <i> PARSEOP_REGIONSPACE_SMBUS
%token <i> PARSEOP_REGISTER
%token <i>
PARSEOP_RELEASE
%token <i> PARSEOP_RESERVED_BYTES
%token <i> PARSEOP_RESET
%token <i> PARSEOP_RESOURCETEMPLATE
%token <i> PARSEOP_RESOURCETYPE_CONSUMER
%token <i> PARSEOP_RESOURCETYPE_PRODUCER
%token <i> PARSEOP_RETURN
%token <i> PARSEOP_REVISION
%token <i> PARSEOP_SCOPE
%token <i> PARSEOP_SERIALIZERULE_NOTSERIAL
%token <i> PARSEOP_SERIALIZERULE_SERIAL
%token <i> PARSEOP_SHARETYPE_EXCLUSIVE
%token <i> PARSEOP_SHARETYPE_EXCLUSIVEWAKE
%token <i> PARSEOP_SHARETYPE_SHARED
%token <i> PARSEOP_SHARETYPE_SHAREDWAKE
%token <i> PARSEOP_SHIFTLEFT
%token <i> PARSEOP_SHIFTRIGHT
%token <i> PARSEOP_SIGNAL
%token <i> PARSEOP_SIZEOF
%token <i> PARSEOP_SLAVEMODE_CONTROLLERINIT
%token <i> PARSEOP_SLAVEMODE_DEVICEINIT
%token <i> PARSEOP_SLEEP
%token <i> PARSEOP_SPI_SERIALBUS
%token <i> PARSEOP_SPI_SERIALBUS_V2
%token <i> PARSEOP_STALL
%token <i> PARSEOP_STARTDEPENDENTFN
%token <i> PARSEOP_STARTDEPENDENTFN_NOPRI
%token <i> PARSEOP_STOPBITS_ONE
%token <i> PARSEOP_STOPBITS_ONEPLUSHALF
%token <i> PARSEOP_STOPBITS_TWO
%token

<i> PARSEOP_STOPBITS_ZERO
%token <i> PARSEOP_STORE
%token <s> PARSEOP_STRING_LITERAL
%token <i> PARSEOP_SUBTRACT
%token <i> PARSEOP_SWITCH
%token <i> PARSEOP_THERMALZONE
%token <i> PARSEOP_TIMER
%token <i> PARSEOP_TOBCD
%token <i> PARSEOP_TOBUFFER
%token <i> PARSEOP_TODECIMALSTRING
%token <i> PARSEOP_TOHEXSTRING
%token <i> PARSEOP_TOINTEGER
%token <i> PARSEOP_TOSTRING
%token <i> PARSEOP_TOUUID
%token <i> PARSEOP_TRANSLATIONTYPE_DENSE
%token <i> PARSEOP_TRANSLATIONTYPE_SPARSE
%token <i> PARSEOP_TYPE_STATIC
%token <i> PARSEOP_TYPE_TRANSLATION
%token <i> PARSEOP_UART_SERIALBUS
%token <i> PARSEOP_UART_SERIALBUS_V2
%token <i> PARSEOP_UNICODE
%token <i> PARSEOP_UNLOAD
%token <i> PARSEOP_UPDATERULE_ONES
%token <i> PARSEOP_UPDATERULE_PRESERVE
%token <i> PARSEOP_UPDATERULE_ZEROS
%token <i> PARSEOP_VAR_PACKAGE
%token <i> PARSEOP_VENDORLONG
%token <i> PARSEOP_VENDORSHORT
%token <i> PARSEOP_WAIT
%token <i> PARSEOP_WHILE
%token <i> PARSEOP_WIREMODE_FOUR
%token <i> PARSEOP_WIREMODE_THREE
%token
<i> PARSEOP_WORDBUSNUMBER
%token <i> PARSEOP_WORDCONST
%token <i> PARSEOP_WORDIO
%token <i> PARSEOP_WORDSPLACE
%token <i> PARSEOP_XFERSIZE_8
%token <i> PARSEOP_XFERSIZE_16
%token <i> PARSEOP_XFERSIZE_32
%token <i> PARSEOP_XFERSIZE_64
%token <i> PARSEOP_XFERSIZE_128
%token <i> PARSEOP_XFERSIZE_256
%token <i> PARSEOP_XFERTYPE_8
%token <i> PARSEOP_XFERTYPE_8_16
%token <i> PARSEOP_XFERTYPE_16
%token <i> PARSEOP_XOR
%token <i> PARSEOP_ZERO

/* ToPld macro */

%token <i> PARSEOP_TOPLD
%token <i> PARSEOP_PLD_REVISION
%token <i> PARSEOP_PLD_IGNORECOLOR
%token <i> PARSEOP_PLD_RED
%token <i> PARSEOP_PLD_GREEN
%token <i> PARSEOP_PLD_BLUE
%token <i> PARSEOP_PLD_WIDTH
%token <i> PARSEOP_PLD_HEIGHT
%token <i> PARSEOP_PLD_USERVISIBLE
%token <i> PARSEOP_PLD_DOCK
%token <i> PARSEOP_PLD_LID
%token <i> PARSEOP_PLD_PANEL
%token <i> PARSEOP_PLD_VERTICALPOSITION
%token <i> PARSEOP_PLD_HORIZONTALPOSITION
%token <i> PARSEOP_PLD_SHAPE
%token <i> PARSEOP_PLD_GROUPORIENTATION
%token <i> PARSEOP_PLD_GROUPTOKEN
%token
<i> PARSEOP_PLD_GROUPPOSITION
%token <i> PARSEOP_PLD_BAY
%token <i> PARSEOP_PLD_EJECTABLE
%token <i> PARSEOP_PLD_EJECTREQUIRED
%token <i> PARSEOP_PLD_CABINETNUMBER
%token <i> PARSEOP_PLD_CARDCAGENUMBER
%token <i> PARSEOP_PLD_REFERENCE
%token <i> PARSEOP_PLD_ROTATION
%token <i> PARSEOP_PLD_ORDER
%token <i> PARSEOP_PLD_RESERVED
%token <i> PARSEOP_PLD_VERTICALOFFSET
%token <i> PARSEOP_PLD_HORIZONTALOFFSET

/*

* C-style expression parser. These must appear after all of the

* standard ASL operators and keywords.

*

* Note: The order of these tokens implements the precedence rules

* (low precedence to high). See asrules.y for an exhaustive list.

*/

%right <i> PARSEOP_EXP_EQUALS
 PARSEOP_EXP_ADD_EQ
 PARSEOP_EXP_SUB_EQ
 PARSEOP_EXP_MUL_EQ
 PARSEOP_EXP_DIV_EQ
 PARSEOP_EXP_MOD_EQ
 PARSEOP_EXP_SHL_EQ

```

    PARSEOP_EXP_SHR_EQ
    PARSEOP_EXP_AND_EQ
    PARSEOP_EXP_XOR_EQ
    PARSEOP_EXP_OR_EQ

%left
<i> PARSEOP_EXP_LOGICAL_OR
%left <i> PARSEOP_EXP_LOGICAL_AND
%left <i> PARSEOP_EXP_OR
%left <i> PARSEOP_EXP_XOR
%left <i> PARSEOP_EXP_AND
%left <i> PARSEOP_EXP_EQUAL
    PARSEOP_EXP_NOT_EQUAL
%left <i> PARSEOP_EXP_GREATER
    PARSEOP_EXP_LESS
    PARSEOP_EXP_GREATER_EQUAL
    PARSEOP_EXP_LESS_EQUAL
%left <i> PARSEOP_EXP_SHIFT_RIGHT
    PARSEOP_EXP_SHIFT_LEFT
%left <i> PARSEOP_EXP_ADD
    PARSEOP_EXP_SUBTRACT
%left <i> PARSEOP_EXP_MULTIPLY
    PARSEOP_EXP_DIVIDE
    PARSEOP_EXP_MODULO

%right <i> PARSEOP_EXP_NOT
    PARSEOP_EXP_LOGICAL_NOT

%left <i> PARSEOP_EXP_INCREMENT
    PARSEOP_EXP_DECREMENT

%left <i> PARSEOP_OPEN_PAREN
    PARSEOP_CLOSE_PAREN

/* Brackets for Index() support */

%left <i> PARSEOP_EXP_INDEX_LEFT
%right <i> PARSEOP_EXP_INDEX_RIGHT

/* Macros */

%token <i> PARSEOP_PRINTF
%token <i> PARSEOP_FPRINTF
%token <i> PARSEOP_FOR

/* Structures */

%token <i> PARSEOP_STRUCTURE

```



```

%token
<s> PARSEOP_STRUCTURE_NAMESTRING
%token <i> PARSEOP_STRUCTURE_TAG
%token <i> PARSEOP_STRUCTURE_ELEMENT
%token <i> PARSEOP_STRUCTURE_INSTANCE
%token <i> PARSEOP_STRUCTURE_REFERENCE
%token <i> PARSEOP_STRUCTURE_POINTER

/* Top level */

%token <i> PARSEOP_ASL_CODE

/*****
*
* Tokens below are not in the aslmap.c file
*
*****/

/* Tokens below this are not in the aslmap.c file */

/* Specific parentheses tokens are not used at this time */
/* PARSEOP_EXP_PAREN_OPEN */
/* PARSEOP_EXP_PAREN_CLOSE */

/* ASL+ variable creation */

%token <i> PARSEOP_INTEGER_TYPE
%token <i> PARSEOP_STRING_TYPE
%token <i> PARSEOP_BUFFER_TYPE
%token <i> PARSEOP_PACKAGE_TYPE
%token <i> PARSEOP_REFERENCE_TYPE

/*
* Special functions. These should probably stay at the end of this
* table.
*/
%token <i> PARSEOP___DATE__
%token <i>
PARSEOP___FILE__
%token <i> PARSEOP___LINE__
%token <i> PARSEOP___PATH__
%token <i> PARSEOP___METHOD__

Found in path(s):
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-

```

20200110/source/compiler/asltokens.y

No license file was found, but licenses were detected in source scan.

NoEcho('

/*

*/

*

* Module Name: aslsupport.y - Bison/Yacc C support functions

*

/

/*

*/

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```

```

*****/

```

```

')

```

```

/*****

```

```

* Local support functions

```

```

*****/

```

```

/*! [Begin] no source code translation */

```

```

int
AslCompilerwrap(void)
{
  return (1);
}

```

```

/*! [End] no source code translation !*/

```

```

void *
AslLocalAllocate (
  unsigned int    Size)
{
  void            *Mem;

```

```

  DbgPrint (ASL_PARSE_OUTPUT,
    "\nAslLocalAllocate: Expanding Stack to %u\n\n", Size);

```

```

  Mem = ACPI_ALLOCATE_ZEROED (Size);

```

```

if (!Mem)

{
    AslCommonError (ASL_ERROR, ASL_MSG_MEMORY_ALLOCATION,
        AslGbl_CurrentLineNumber, AslGbl_LogicalLineNumber,
        AslGbl_InputByteCount, AslGbl_CurrentColumn,
        AslGbl_Files[ASL_FILE_INPUT].Filename, NULL);
    exit (1);
}

return (Mem);
}

ACPI_PARSE_OBJECT *
AslDoError (
    void)
{
    return (TrCreateLeafOp (PARSEOP_ERRORNODE));
}

/*****
*
* FUNCTION:  UtGetOpName
*
* PARAMETERS: ParseOpcode      - Parser keyword ID
*
* RETURN:    Pointer to the opcode name
*
* DESCRIPTION: Get the ascii name of the parse opcode
*
*****/

char *
UtGetOpName (
    UINT32      ParseOpcode)
{
#ifdef ASL_YYTNAME_START
    /*
     * First entries (ASL_YYTNAME_START) in yytname are special reserved names.
     * Ignore first 8 characters of the name
     */
    return ((char *) yytname
        [(ParseOpcode - ASL_FIRST_PARSE_OPCODE) + ASL_YYTNAME_START] + 8);
#else
    return ("[Unknown parser generator]");
#endif
}

```

}

Found in path(s):

* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-20200110/source/compiler/aslsupport.y

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NoEcho('

/*****

*

* Module Name: asltypes.y - Bison/Yacc production types/names

*

*****/

/*****

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```

```

/*****

```

```

')
```

```

/*****

```

```

* Production names

```

```

/*****

```

```

%type <n> ArgList
%type <n> AslCode
%type <n> BufferData
%type <n> BufferTermData
%type <n> CompilerDirective
%type <n> DataObject
%type <n> DefinitionBlockTerm
%type <n> DefinitionBlockList
%type <n> IntegerData
%type <n> NamedObject
%type <n> NameSpaceModifier
%type <n> Object
%type <n> PackageData
%type <n> ParameterTypePackage
%type <n> ParameterTypePackageList
%type <n>
  ParameterTypesPackage
%type <n> ParameterTypesPackageList

```

```
%type <n> RequiredTarget
%type <n> SimpleName
%type <n> StringData
%type <n> Target
%type <n> Term
%type <n> TermArg
%type <n> TermList
%type <n> MethodInvocationTerm

/* Type4Opcode is obsolete */

%type <n> Type1Opcode
%type <n> Type2BufferOpcode
%type <n> Type2BufferOrStringOpcode
%type <n> Type2IntegerOpcode
%type <n> Type2Opcode
%type <n> Type2StringOpcode
%type <n> Type3Opcode
%type <n> Type5Opcode
%type <n> Type6Opcode

%type <n> AccessAsTerm
%type <n> ExternalTerm
%type <n> FieldUnit
%type <n> FieldUnitEntry
%type <n> FieldUnitList
%type <n> IncludeTerm
%type <n> OffsetTerm
%type <n> OptionalAccessAttribTerm

/* Named Objects */

%type <n> BankFieldTerm
%type <n> CreateBitFieldTerm
%type <n> CreateByteFieldTerm
%type <n> CreateDWordFieldTerm
%type <n> CreateFieldTerm
%type <n> CreateQWordFieldTerm
%type <n> CreateWordFieldTerm
%type <n> DataRegionTerm
%type <n> DeviceTerm
%type <n> EventTerm
%type <n> FieldTerm
%type <n>
FunctionTerm
%type <n> IndexFieldTerm
%type <n> MethodTerm
%type <n> MutexTerm
```

%type <n> OpRegionTerm
%type <n> OpRegionSpaceIdTerm
%type <n> PowerResTerm
%type <n> ProcessorTerm
%type <n> ThermalZoneTerm

/* Namespace modifiers */

%type <n> AliasTerm
%type <n> NameTerm
%type <n> ScopeTerm

/* Type 1 opcodes */

%type <n> BreakPointTerm
%type <n> BreakTerm
%type <n> CaseDefaultTermList
%type <n> CaseTerm
%type <n> ContinueTerm
%type <n> DefaultTerm
%type <n> ElseTerm
%type <n> FatalTerm
%type <n> ElseIfTerm
%type <n> IfTerm
%type <n> LoadTerm
%type <n> NoOpTerm
%type <n> NotifyTerm
%type <n> ReleaseTerm
%type <n> ResetTerm
%type <n> ReturnTerm
%type <n> SignalTerm
%type <n> SleepTerm
%type <n> StallTerm
%type <n> SwitchTerm
%type <n> UnloadTerm
%type <n> WhileTerm

/* %type <n> CaseTermList */

/* Type 2 opcodes */

%type <n> AcquireTerm
%type <n> AddTerm
%type <n> AndTerm
%type <n> ConcatResTerm
%type <n> ConcatTerm
%type <n> CondRefOfTerm
%type <n> CopyObjectTerm
%type <n> DecTerm

%type
<n> DerefOfTerm
%type <n> DivideTerm
%type <n> FindSetLeftBitTerm
%type <n> FindSetRightBitTerm
%type <n> FromBCDTerm
%type <n> IncTerm
%type <n> IndexTerm
%type <n> LAndTerm
%type <n> LEqualTerm
%type <n> LGreaterEqualTerm
%type <n> LGreaterTerm
%type <n> LLessEqualTerm
%type <n> LLessTerm
%type <n> LNotEqualTerm
%type <n> LNotTerm
%type <n> LoadTableTerm
%type <n> LOrTerm
%type <n> MatchTerm
%type <n> MidTerm
%type <n> ModTerm
%type <n> MultiplyTerm
%type <n> NAndTerm
%type <n> NOrTerm
%type <n> NotTerm
%type <n> ObjectTypeTerm
%type <n> OrTerm
%type <n> RawDataBufferTerm
%type <n> RefOfTerm
%type <n> ShiftLeftTerm
%type <n> ShiftRightTerm
%type <n> SizeOfTerm
%type <n> StoreTerm
%type <n> SubtractTerm
%type <n> TimerTerm
%type <n> ToBCDTerm
%type <n> ToBufferTerm
%type <n> ToDecimalStringTerm
%type <n> ToHexStringTerm
%type <n> ToIntegerTerm
%type <n> ToStringTerm
%type <n> WaitTerm
%type <n> XOrTerm

/* Keywords */

%type <n> AccessAttribKeyword
%type <n> AccessTypeKeyword

```
%type
<n> AddressingModeKeyword
%type <n> AddressKeyword
%type <n> AddressSpaceKeyword
%type <n> BitsPerByteKeyword
%type <n> ClockPhaseKeyword
%type <n> ClockPolarityKeyword
%type <n> DecodeKeyword
%type <n> DevicePolarityKeyword
%type <n> DMATypeKeyword
%type <n> EndianKeyword
%type <n> FlowControlKeyword
%type <n> InterruptLevel
%type <n> InterruptTypeKeyword
%type <n> IODecodeKeyword
%type <n> IoRestrictionKeyword
%type <n> LockRuleKeyword
%type <n> MatchOpKeyword
%type <n> MaxKeyword
%type <n> MemTypeKeyword
%type <n> MinKeyword
%type <n> ObjectTypeKeyword
%type <n> OptionalBusMasterKeyword
%type <n> OptionalReadWriteKeyword
%type <n> ParityTypeKeyword
%type <n> PinConfigByte
%type <n> PinConfigKeyword
%type <n> RangeTypeKeyword
%type <n> RegionSpaceKeyword
%type <n> ResourceTypeKeyword
%type <n> SerializeRuleKeyword
%type <n> ShareTypeKeyword
%type <n> SlaveModeKeyword
%type <n> StopBitsKeyword
%type <n> TranslationKeyword
%type <n> TypeKeyword
%type <n> UpdateRuleKeyword
%type <n>
WireModeKeyword
%type <n> XferSizeKeyword
%type <n> XferTypeKeyword
```

```
/* Types */
```

```
%type <n> SuperName
%type <n> ObjectTypeSource
%type <n> DerefOfSource
%type <n> RefOfSource
```

%type <n> CondRefOfSource
%type <n> ArgTerm
%type <n> LocalTerm
%type <n> DebugTerm

%type <n> Integer
%type <n> ByteConst
%type <n> WordConst
%type <n> DWordConst
%type <n> QWordConst
%type <n> String

%type <n> ConstTerm
%type <n> ConstExprTerm
%type <n> ByteConstExpr
%type <n> WordConstExpr
%type <n> DWordConstExpr
%type <n> QWordConstExpr

%type <n> DWordList
%type <n> BufferTerm
%type <n> ByteList

%type <n> PackageElement
%type <n> PackageList
%type <n> PackageTerm

/* Macros */

%type <n> EISAIDTerm
%type <n> ResourceMacroList
%type <n> ResourceMacroTerm
%type <n> ResourceTemplateTerm
%type <n> PldKeyword
%type <n> PldKeywordList
%type <n> ToPLDTerm
%type <n> ToUUIDTerm
%type <n> UnicodeTerm
%type <n> PrintfArgList
%type <n> PrintfTerm
%type <n> FprintfTerm
%type <n> ForTerm

/* Resource Descriptors */

%type
<n> ConnectionTerm
%type <n> DMATerm

%type <n> DWordIOTerm
%type <n> DWordMemoryTerm
%type <n> DWordSpaceTerm
%type <n> EndDependentFnTerm
%type <n> ExtendedIOTerm
%type <n> ExtendedMemoryTerm
%type <n> ExtendedSpaceTerm
%type <n> FixedDmaTerm
%type <n> FixedIOTerm
%type <n> GpioIntTerm
%type <n> GpioIoTerm
%type <n> I2cSerialBusTerm
%type <n> I2cSerialBusTermV2
%type <n> InterruptTerm
%type <n> IOTerm
%type <n> IRQNoFlagsTerm
%type <n> IRQTerm
%type <n> Memory24Term
%type <n> Memory32FixedTerm
%type <n> Memory32Term
%type <n> NameSeg
%type <n> NameString
%type <n> PinConfigTerm
%type <n> PinFunctionTerm
%type <n> PinGroupTerm
%type <n> PinGroupConfigTerm
%type <n> PinGroupFunctionTerm
%type <n> QWordIOTerm
%type <n> QWordMemoryTerm
%type <n> QWordSpaceTerm
%type <n> RegisterTerm
%type <n> SpiSerialBusTerm
%type <n> SpiSerialBusTermV2
%type <n> StartDependentFnNoPriTerm
%type <n> StartDependentFnTerm
%type <n> UartSerialBusTerm
%type <n> UartSerialBusTermV2
%type <n> VendorLongTerm
%type
 <n> VendorShortTerm
%type <n> WordBusNumberTerm
%type <n> WordIOTerm
%type <n> WordSpaceTerm

/* Local types that help construct the AML, not in ACPI spec */

%type <n> AmlPackageLengthTerm
%type <n> IncludeEndTerm

%type <n> NameStringItem
%type <n> TermArgItem

%type <n> OptionalAccessSize
%type <n> OptionalAccessTypeKeyword
%type <n> OptionalAddressingMode
%type <n> OptionalAddressRange
%type <n> OptionalBitsPerByte
%type <n> OptionalBuffer_Last
%type <n> OptionalByteConstExpr
%type <n> OptionalCount
%type <n> OptionalDataCount
%type <n> OptionalDecodeType
%type <n> OptionalDevicePolarity
%type <n> OptionalDWordConstExpr
%type <n> OptionalEndian
%type <n> OptionalFlowControl
%type <n> OptionalIoRestriction
%type <n> OptionalListString
%type <n> OptionalLockRuleKeyword
%type <n> OptionalMaxType
%type <n> OptionalMemType
%type <n> OptionalMinType
%type <n> OptionalNameString
%type <n> OptionalNameString_First
%type <n> OptionalNameString_Last
%type <n> OptionalObjectTypeKeyword
%type
 <n> OptionalParameterTypePackage
%type <n> OptionalParameterTypesPackage
%type <n> OptionalParentheses
%type <n> OptionalParityType
%type <n> OptionalPredicate
%type <n> OptionalQWordConstExpr
%type <n> OptionalRangeType
%type <n> OptionalReference
%type <n> OptionalResourceType
%type <n> OptionalResourceType_First
%type <n> OptionalProducerResourceType
%type <n> OptionalReturnArg
%type <n> OptionalSerializeRuleKeyword
%type <n> OptionalShareType
%type <n> OptionalShareType_First
%type <n> OptionalSlaveMode
%type <n> OptionalStopBits
%type <n> OptionalStringData
%type <n> OptionalSyncLevel
%type <n> OptionalTermArg

```

%type <n> OptionalTranslationType_Last
%type <n> OptionalType
%type <n> OptionalType_Last
%type <n> OptionalUpdateRuleKeyword
%type <n> OptionalWireMode
%type <n> OptionalWordConst
%type <n> OptionalWordConstExpr
%type <n> OptionalXferSize

/*
* ASL+ (C-style) parser
*/

/* Expressions and symbolic operators */

%type <n> Expression
%type <n> EqualsTerm
%type <n> IndexExpTerm

/*
  ASL+ Named object declaration support */
/*
%type <n> NameTermAslPlus

%type <n> BufferBegin
%type <n> BufferEnd
%type <n> PackageBegin
%type <n> PackageEnd
%type <n> OptionalLength
*/
/* ASL+ Structure declarations */
/*
%type <n> StructureTerm
%type <n> StructureTermBegin
%type <n> StructureType
%type <n> StructureTag
%type <n> StructureElementList
%type <n> StructureElement
%type <n> StructureElementType
%type <n> OptionalStructureElementType
%type <n> StructureId
*/
/* Structure instantiation */
/*
%type <n> StructureInstanceTerm
%type <n> StructureTagReference
%type <n> StructureInstanceEnd
*/

```

```
/* Pseudo-instantiation for method Args/Locals */  
/*  
%type <n> MethodStructureTerm  
%type <n> LocalStructureName  
*/  
/* Direct structure references via the Index operator */  
/*  
%type <n> StructureReference  
%type <n> StructureIndexTerm  
%type <n> StructurePointerTerm  
%type <n> StructurePointerReference  
%type <n> OptionalDefinePointer  
*/
```

Found in path(s):

```
* /opt/cola/permits/1903772041_1707290856.8208587/0/acpica-unix-20200110-tar-gz/acpica-unix-  
20200110/source/compiler/asltypes.y
```

1.374 libxfont 2-2.0.3-2.el8

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/* lib/font/fontfile/gunzip.c

written by Mark Eichin <eichin@kitten.gen.ma.us> September 1996.

intended for inclusion in X11 public releases. */

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1.375 tftp-hpa hpa-0.49

1.375.1 Available under license :

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```
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*
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*
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* http://www.openbsd.org/.
*
* ----- */
```

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/tftpd.h

No license file was found, but licenses were detected in source scan.

```
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.\" without specific prior written permission.
```

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp/tftp.1.in

No license file was found, but licenses were detected in source scan.

Summary: The client for the Trivial File Transfer Protocol (TFTP).

Name: tftp
Version: @@VERSION@@
Release: 1
License: BSD
Group: Applications/Internet
Source0: <http://www.kernel.org/pub/software/network/tftp/tftp-hpa-%{version}.tar.gz>
BuildPreReq: tcp_wrappers
BuildRoot: %{_tmppath}/%{name}-root

%description

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp package provides the user interface for TFTP, which allows users to transfer files to and from a remote machine. This program and TFTP provide very little security, and should not be enabled unless it is expressly needed.

%package server

Group: System Environment/Daemons
Summary: The server for the Trivial File Transfer Protocol (TFTP).
Requires: xinetd

%description server

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp-server package provides the server for TFTP, which allows users to transfer files to and from a remote machine. TFTP provides very little security, and should not be enabled unless it is expressly needed. The TFTP server is run from /etc/xinetd.d/tftp, and is disabled by default on Red Hat Linux systems.

%prep

%setup -q -n tftp-hpa-%{version}

%build

%configure

make %{?_smp_mflags}

%install

```
rm -rf ${RPM_BUILD_ROOT}
mkdir -p ${RPM_BUILD_ROOT}%{_bindir}
mkdir -p ${RPM_BUILD_ROOT}%{_mandir}/man{1,8}
mkdir -p ${RPM_BUILD_ROOT}%{_sbindir}
```

```
make INSTALLROOT=${RPM_BUILD_ROOT} \
  SBINDIR=%{_sbindir} MANDIR=%{_mandir} \
```

install

```
install -m755 -d ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/ ${RPM_BUILD_ROOT}/tftpboot
```

```
install -m644 tftp-xinetd ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/tftp
```

```
%post server
```

```
/sbin/service xinetd reload > /dev/null 2>&1 || :
```

```
%postun server
```

```
if [ $1 = 0 ]; then
```

```
  /sbin/service xinetd reload > /dev/null 2>&1 || :
```

```
fi
```

```
%clean
```

```
rm -rf ${RPM_BUILD_ROOT}
```

```
%files
```

```
%defattr(-,root,root)
```

```
%{_bindir}/tftp
```

```
%{_mandir}/man1/*
```

```
%files
```

```
server
```

```
%defattr(-,root,root)
```

```
%config(noreplace) %{_sysconfdir}/xinetd.d/tftp
```

```
%dir /tftpboot
```

```
%{_sbindir}/in.tftpd
```

```
%{_mandir}/man8/*
```

```
%changelog
```

```
* Tue Sep 14 2004 H. Peter Anvin <hpa@zytor.com>
```

```
- removed completely broken "Malta" patch.
```

```
- integrated into build machinery so rpm -ta works.
```

```
* Fri Feb 13 2004 Elliot Lee <sopwith@redhat.com>
```

```
- rebuilt
```

```
* Wed Jun 04 2003 Elliot Lee <sopwith@redhat.com>
```

```
- rebuilt
```

```
* Fri Apr 11 2003 Elliot Lee <sopwith@redhat.com>
```

```
- 0.33
```

```
- Add /tftpboot directory (#88204)
```

```
* Mon Feb 24 2003 Elliot Lee <sopwith@redhat.com>
```

```
- rebuilt
```

```
* Sun Feb 23 2003 Tim Powers <timp@redhat.com>
```

```
- add BuildPreReq on tcp_wrappers
```

```
* Wed Jan 22 2003 Tim Powers <timp@redhat.com>
```

- rebuilt

- * Mon Nov 11 2002 Elliot Lee <sopwith@redhat.com> 0.32-1
 - Update to 0.32

- * Wed Oct 23 2002 Elliot Lee <sopwith@redhat.com> 0.30-1
 - Fix #55789
 - Update to 0.30

- * Thu Jun 27 2002 Elliot Lee <sopwith@redhat.com>
 - Try applying HJ's patch from #65476

- * Fri Jun 21 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Mon Jun 17 2002 Elliot Lee <sopwith@redhat.com>
 - Update to 0.29

- * Thu May 23 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Wed Jan 09 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Tue Dec 18 2001 Elliot Lee <sopwith@redhat.com> 0.17-15
 - Add patch4: netkit-tftp-0.17-defaultport.patch for bug #57562
 - Update to tftp-hpa-0.28 (bug #56131)
 - Remove include/arpa/tftp.h to fix #57259
 - Add resource limits in tftp-xinetd (#56722)

- * Sun Jun 24 2001 Elliot Lee <sopwith@redhat.com>
 - Bump release + rebuild.

- * Tue Jun 12 2001 Helge Deller <hdeller@redhat.de> (0.17-13)
 - updated tftp-hpa source to tftp-hpa-0.17
 - tweaked specfile with different defines for tftp-netkit and tftp-hpa version
 - use hpa's tftpd.8 man page instead of the netkits one

- * Mon May 07 2001 Helge Deller <hdeller@redhat.de>
 - rebuilt in 7.1.x

- * Wed Apr 18 2001 Helge Deller <hdeller@redhat.de>
 - fix tftp client's put problems (#29529)
 - update
 - to tftp-hpa-0.16

- * Wed Apr 4 2001 Jakub Jelinek <jakub@redhat.com>

- don't let configure to guess compiler, it can pick up egcs

* Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>

- changed "wait" in xinetd file to "yes" (hpa-tftpd forks and exits) (#26467)
- fixed hpa-tftpd to handle files greater than 32MB (#23725)
- added "-l" flag to hpa-tftpd for file-logging (#26467)
- added description for "-l" to the man-page

* Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>

- updated tftp client to 0.17 stable (#19640),
- drop dependency on xinetd for tftp client (#25051),

* Wed Jan 17 2001 Jeff Johnson <jbj@redhat.com>

- xinetd shouldn't wait on tftp (which forks) (#23923).

* Sat Jan 6 2001 Jeff Johnson <jbj@redhat.com>

- fix to permit tftp put's (#18128).
- startup as root with chroot to /tftpboot with early reversion to nobody is preferable to starting as nobody w/o ability to chroot.
- %%post is needed by server, not client. Add %%postun for erasure as well.

* Wed Aug 23 2000

Nalin Dahyabhai <nalin@redhat.com>

- default to being disabled

* Thu Aug 17 2000 Jeff Johnson <jbj@redhat.com>

- correct group.

* Tue Jul 25 2000 Nalin Dahyabhai <nalin@redhat.com>

- change user from root to nobody

* Sat Jul 22 2000 Jeff Johnson <jbj@redhat.com>

- update to tftp-hpa-0.14 (#14003).
- add server_args (#14003).
- remove -D_BSD_SOURCE (#14003).

* Fri Jul 21 2000 Nalin Dahyabhai <nalin@redhat.com>

- cook up an xinetd config file for tftpd

* Wed Jul 12 2000 Prospector <bugzilla@redhat.com>

- automatic rebuild

* Sun Jun 18 2000 Jeff Johnson <jbj@redhat.com>

- FHS packaging.
- update to 0.17.

* Fri May 5 2000 Matt Wilson <maw@redhat.com>

- use _BSD_SOURCE for hpa's tftpd so we get BSD signal semantics.

* Fri Feb 11 2000 Bill Nottingham <notting@redhat.com>

- fix description

* Wed Feb 9 2000 Jeff Johnson <jbj@redhat.com>

- compress man pages (again).

* Wed Feb 02 2000 Cristian Gafton <gafton@redhat.com>

- man pages are compressed

- fix description and summary

* Tue

Jan 4 2000 Bill Nottingham <notting@redhat.com>

- split client and server

* Tue Dec 21 1999 Jeff Johnson <jbj@redhat.com>

- update to 0.16.

* Sat Aug 28 1999 Jeff Johnson <jbj@redhat.com>

- update to 0.15.

* Wed Apr 7 1999 Jeff Johnson <jbj@redhat.com>

- tftpd should truncate file when overwriting (#412)

* Sun Mar 21 1999 Cristian Gafton <gafton@redhat.com>

- auto rebuild in the new build environment (release 22)

* Mon Mar 15 1999 Jeff Johnson <jbj@redhat.com>

- compile for 6.0.

* Fri Aug 7 1998 Jeff Johnson <jbj@redhat.com>

- build root

* Mon Apr 27 1998 Prospector System <bugs@redhat.com>

- translations modified for de, fr, tr

* Mon Sep 22 1997 Erik Troan <ewt@redhat.com>

- added check for getpwnam() failure

* Tue Jul 15 1997 Erik Troan <ewt@redhat.com>

- initial build

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp.spec.in

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Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/tftpd.8.in
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```
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```

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/MCONFIG.in
No license file was found, but licenses were detected in source scan.

```
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*  
* Copyright 2001-2006 H. Peter Anvin - All Rights Reserved  
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* http://www.openbsd.org/.  
*  
* ----- */
```

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/config.h
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*/

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp/extern.h
 *

/opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/common/tftpsubs.h

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Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/tftpd.c
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*/

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp/tftp.c
*

/opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/common/tftpsubs.c

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp/main.c

No license file was found, but licenses were detected in source scan.

Summary: The client for the Trivial File Transfer Protocol (TFTP).

Name: tftp

Version: 0.49

Release: 1

License: BSD

Group: Applications/Internet

Source0: <http://www.kernel.org/pub/software/network/tftp/tftp-hpa-%{version}.tar.gz>

BuildPreReq: tcp_wrappers

BuildRoot: %{_tmppath}/%{name}-root

%description

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp package provides the user interface for TFTP, which allows users to transfer files to and from a remote machine. This program and TFTP provide very little security, and should not be enabled unless it is expressly needed.

%package server

Group: System Environment/Daemons

Summary: The server for the Trivial File Transfer Protocol (TFTP).

Requires: xinetd

%description server

The Trivial File Transfer Protocol (TFTP) is normally used only for booting diskless workstations. The tftp-server package provides the server for TFTP, which allows users to transfer files to and from a remote machine. TFTP provides very little security, and should not be enabled unless it is expressly needed. The TFTP server is run from /etc/xinetd.d/tftp, and is disabled by default on Red Hat Linux systems.

%prep

%setup -q -n tftp-hpa-%{version}

%build

%configure

```

make %{?_smp_mflags}

%install
rm -rf ${RPM_BUILD_ROOT}
mkdir -p ${RPM_BUILD_ROOT}%{_bindir}
mkdir -p ${RPM_BUILD_ROOT}%{_mandir}/man{1,8}
mkdir -p ${RPM_BUILD_ROOT}%{_sbindir}

make INSTALLROOT=${RPM_BUILD_ROOT} \
  SBINDIR=%{_sbindir} MANDIR=%{_mandir} \
  install
install -m755 -d ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/ ${RPM_BUILD_ROOT}/tftpboot
install -m644 tftp-xinetd ${RPM_BUILD_ROOT}%{_sysconfdir}/xinetd.d/tftp

%post server
/sbin/service xinetd reload > /dev/null 2>&1 || :

%postun server
if [ $1 = 0 ]; then
  /sbin/service xinetd reload > /dev/null 2>&1 || :
fi

%clean
rm -rf ${RPM_BUILD_ROOT}

%files
%defattr(-,root,root)
%{_bindir}/tftp
%{_mandir}/man1/*

%files
server
%defattr(-,root,root)
%config(noreplace) % {_sysconfdir}/xinetd.d/tftp
%dir /tftpboot
%{_sbindir}/in.tftpd
%{_mandir}/man8/*

%changelog
* Tue Sep 14 2004 H. Peter Anvin <hpa@zytor.com>
- removed completely broken "Malta" patch.
- integrated into build machinery so rpm -ta works.

* Fri Feb 13 2004 Elliot Lee <sopwith@redhat.com>
- rebuilt

* Wed Jun 04 2003 Elliot Lee <sopwith@redhat.com>
- rebuilt

```

- * Fri Apr 11 2003 Elliot Lee <sopwith@redhat.com>
 - 0.33
 - Add /tftpboot directory (#88204)

- * Mon Feb 24 2003 Elliot Lee <sopwith@redhat.com>
 - rebuilt

- * Sun Feb 23 2003 Tim Powers <timp@redhat.com>
 - add BuildPreReq on tcp_wrappers

- * Wed Jan 22 2003 Tim Powers <timp@redhat.com>
 - rebuilt

- * Mon Nov 11 2002 Elliot Lee <sopwith@redhat.com> 0.32-1
 - Update to 0.32

- * Wed Oct 23 2002 Elliot Lee <sopwith@redhat.com> 0.30-1
 - Fix #55789
 - Update to 0.30

- * Thu Jun 27 2002 Elliot Lee <sopwith@redhat.com>
 - Try applying HJ's patch from #65476

- * Fri Jun 21 2002
Tim Powers <timp@redhat.com>
 - automated rebuild

- * Mon Jun 17 2002 Elliot Lee <sopwith@redhat.com>
 - Update to 0.29

- * Thu May 23 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Wed Jan 09 2002 Tim Powers <timp@redhat.com>
 - automated rebuild

- * Tue Dec 18 2001 Elliot Lee <sopwith@redhat.com> 0.17-15
 - Add patch4: netkit-tftp-0.17-defaultport.patch for bug #57562
 - Update to tftp-hpa-0.28 (bug #56131)
 - Remove include/arpa/tftp.h to fix #57259
 - Add resource limits in tftp-xinetd (#56722)

- * Sun Jun 24 2001 Elliot Lee <sopwith@redhat.com>
 - Bump release + rebuild.

- * Tue Jun 12 2001 Helge Deller <hdeller@redhat.de> (0.17-13)
 - updated tftp-hpa source to tftp-hpa-0.17

- tweaked specfile with different defines for tftp-netkit and tftp-hpa version
- use hpa's tftpd.8 man page instead of the netkits one

- * Mon May 07 2001 Helge Deller <hdeller@redhat.de>
- rebuilt in 7.1.x

- * Wed Apr 18 2001 Helge Deller <hdeller@redhat.de>
- fix tftp client's put problems (#29529)
- update to
tftp-hpa-0.16

- * Wed Apr 4 2001 Jakub Jelinek <jakub@redhat.com>
- don't let configure to guess compiler, it can pick up egcs

- * Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
- changed "wait" in xinetd file to "yes" (hpa-tftpd forks and exits) (#26467)
- fixed hpa-tftpd to handle files greater than 32MB (#23725)
- added "-l" flag to hpa-tftpd for file-logging (#26467)
- added description for "-l" to the man-page

- * Thu Feb 08 2001 Helge Deller <hdeller@redhat.de>
- updated tftp client to 0.17 stable (#19640),
- drop dependency on xinetd for tftp client (#25051),

- * Wed Jan 17 2001 Jeff Johnson <jbj@redhat.com>
- xinetd shouldn't wait on tftp (which forks) (#23923).

- * Sat Jan 6 2001 Jeff Johnson <jbj@redhat.com>
- fix to permit tftp put's (#18128).
- startup as root with chroot to /tftpboot with early reversion to nobody is preferable to starting as nobody w/o ability to chroot.
- %%post is needed by server, not client. Add %%postun for erasure as well.

- * Wed Aug 23 2000 Nalin Dahyabhai <nalin@redhat.com>
- default to being disabled

- * Thu Aug 17 2000 Jeff Johnson <jbj@redhat.com>
- correct group.

- * Tue Jul 25 2000 Nalin Dahyabhai <nalin@redhat.com>
- change user from root to nobody

- * Sat Jul 22 2000 Jeff Johnson <jbj@redhat.com>
- update to tftp-hpa-0.14 (#14003).
- add server_args (#14003).
- remove -D_BSD_SOURCE (#14003).

- * Fri Jul 21 2000 Nalin Dahyabhai <nalin@redhat.com>
 - cook up an xinetd config file for tftpd
- * Wed Jul 12 2000 Prospector <bugzilla@redhat.com>
 - automatic rebuild
- * Sun Jun 18 2000 Jeff Johnson <jbj@redhat.com>
 - FHS packaging.
 - update to 0.17.
- * Fri May 5 2000 Matt Wilson <msw@redhat.com>
 - use `_BSD_SOURCE` for hpa's tftpd so we get BSD signal semantics.
- * Fri Feb 11 2000 Bill Nottingham <notting@redhat.com>
 - fix description
- * Wed Feb 9 2000 Jeff Johnson <jbj@redhat.com>
 - compress man pages (again).
- * Wed Feb 02 2000 Cristian Gafton <gafton@redhat.com>
 - man pages are compressed
 - fix description and summary
- * Tue Jan 4 2000 Bill Nottingham <notting@redhat.com>
 - split client and server
- * Tue Dec 21 1999 Jeff Johnson <jbj@redhat.com>
 - update to 0.16.
- * Sat Aug 28 1999 Jeff Johnson <jbj@redhat.com>
 - update to 0.15.
- * Wed Apr 7 1999 Jeff Johnson <jbj@redhat.com>
 - tftpd should truncate file when overwriting (#412)
- * Sun Mar 21 1999 Cristian Gafton <gafton@redhat.com>
 - auto rebuild in the new build environment (release 22)
- * Mon Mar 15 1999 Jeff Johnson <jbj@redhat.com>
 - compile for 6.0.
- * Fri Aug 7 1998 Jeff Johnson <jbj@redhat.com>
 - build root
- * Mon Apr 27 1998 Prospector System <bugs@redhat.com>
 - translations modified for de, fr, tr

* Mon Sep 22 1997 Erik Troan <ewt@redhat.com>

- added check for getpwnam() failure

* Tue Jul 15 1997 Erik Troan <ewt@redhat.com>

- initial build

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftp.spec

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*

* ----- */

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/remap.h

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/misc.c

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/remap.c

No license file was found, but licenses were detected in source scan.

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*

* ----- */

Found in path(s):

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/recvfrom.h

* /opt/cola/permits/1903882833_1715062003.3775778/0/tftp-hpa-0-49-6-tar-bz2/tftp-hpa-0.49/tftpd/recvfrom.c

1.376 d-conf 0.40.0-6.el9.x86_64

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Version 2.1, February 1999

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1.377 brotli 1.0.9-6.el9.x86_64

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1.378 gvfs 1.48.1-4.el9.x86_64

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The reason we have a separate public license for some libraries is that they blur the distinction we usually make between modifying or adding to a program and simply using it. Linking a program with a library, without changing the library, is in some sense simply using the library, and is analogous to running a utility program or application program. However, in a textual and legal sense, the linked executable is a combined work, a derivative of the original library, and the ordinary General Public License treats it as such.

Because of this blurred distinction, using the ordinary General Public License for libraries did not effectively promote software sharing, because most developers did not use the libraries. We concluded that weaker conditions might promote sharing better.

However, unrestricted linking of non-free programs would deprive the users of those programs of all benefit from the free status of the libraries themselves. This Library General Public License is intended to permit developers of non-free programs to use free libraries, while preserving your freedom as a user of such programs to change the free libraries that are incorporated in them. (We have not seen how to achieve this as regards changes in header files, but we have achieved it as regards changes in the actual functions of the Library.) The hope is that this will lead to faster development of free libraries.

The precise terms and conditions for copying, distribution and modification follow. Pay close attention to the difference between a "work based on the library" and a "work that uses the library". The former contains code derived from the library, while the latter only works together with the library.

Note that it is possible for a library to be covered by the ordinary General Public License rather than by this special one.

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General Public License (also called "this License"). Each licensee is addressed as "you".

A "library" means a collection of software functions and/or data prepared so as to be conveniently linked with application programs (which use some of those functions and data) to form executables.

The "Library", below, refers to any such software library or work which has been distributed under these terms. A "work based on the Library" means either the Library or any derivative work under copyright law: that is to say, a work containing the Library or a portion of it, either verbatim or with modifications and/or translated straightforwardly into another language. (Hereinafter, translation is included without limitation in the term "modification".)

"Source code" for a work means the preferred form of the work for making modifications to it. For a library, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the library.

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running a program using the Library is not restricted, and output from such a program is covered only if its contents constitute a work based on the Library (independent of the use of the Library in a tool for writing it). Whether that is true depends on what the Library does and what the program that uses the Library does.

1. You may copy and distribute verbatim copies of the Library's complete source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Library or any portion of it, thus forming a work based on the Library, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:

- a) The modified work must itself be a software library.
- b) You must cause the files modified to carry prominent notices stating that you changed the files and the date of any change.
- c) You must cause the whole of the work to be licensed at no charge to all third parties under the terms of this License.
- d) If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Library, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Library, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Library.

In addition, mere aggregation of another work not based on the Library with the Library (or with a work based on the Library) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

3. You may opt to apply the terms of the ordinary GNU General Public

License instead of this License to a given copy of the Library. To do this, you must alter all the notices that refer to this License, so that they refer to the ordinary GNU General Public License, version 2, instead of to this License. (If a newer version than version 2 of the ordinary GNU General Public License has appeared, then you can specify that version instead if you wish.) Do not make any other change in these notices.

Once this change is made in a given copy, it is irreversible for that copy, so the ordinary GNU General Public License applies to all subsequent copies and derivative works made from that copy.

This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

4. You may copy and distribute the Library (or a portion or derivative of it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange.

If distribution of object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place satisfies the requirement to distribute the source code, even though third parties are not compelled to copy the source along with the object code.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being compiled or linked with it, is called a "work that uses the Library". Such a work, in isolation, is not a derivative work of the Library, and therefore falls outside the scope of this License.

However, linking a "work that uses the Library" with the Library creates an executable that is a derivative of the Library (because it contains portions of the Library), rather than a "work that uses the library". The executable is therefore covered by this License. Section 6 states terms for distribution of such executables.

When a "work that uses the Library" uses material from a header file that is part of the Library, the object code for the work may be a derivative work of the Library even though the source code is not. Whether this is true is especially significant if the work can be linked without the Library, or if the work is itself a library. The threshold for this to be true is not precisely defined by law.

If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

6. As an exception to the Sections above, you may also compile or link a "work that uses the Library" with the Library to produce a work containing portions of the Library, and distribute that work under terms of your choice, provided that the terms permit modification of the work for the customer's own use and reverse engineering for debugging such modifications.

You must give prominent notice with each copy of the work that the Library is used in it and that the Library and its use are covered by this License. You must supply a copy of this License. If the work during execution displays copyright notices, you must include the copyright notice for the Library among them, as well as a reference directing the user to the copy of this License. Also, you must do one of these things:

a) Accompany the work with the complete corresponding machine-readable source code for the Library including whatever changes were used in the work (which must be distributed under Sections 1 and 2 above); and, if the work is an executable linked with the Library, with the complete machine-readable "work that uses the Library", as object code and/or source code, so that the user can modify the Library and then relink to produce a modified executable containing the modified Library. (It is understood that the user who changes the contents of definitions files in the Library will not necessarily be able to recompile the application to use the modified definitions.)

b) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

c) If distribution of the work is made by offering access to copy from a designated place, offer equivalent access to copy the above specified materials from the same place.

d) Verify that the user has already received a copy of these materials or that you have already sent this user a copy.

For an executable, the required form of the "work that uses the Library" must include any data and utility programs needed for reproducing the executable from it. However, as a special exception, the source code distributed need not include anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

It may happen that this requirement contradicts the license restrictions of other proprietary libraries that do not normally accompany the operating system. Such a contradiction means you cannot use both them and the Library together in an executable that you distribute.

7. You may place library facilities that are a work based on the Library side-by-side in a single library together with other library facilities not covered by this License, and distribute such a combined library, provided that the separate distribution of the work based on the Library and of the other library facilities is otherwise permitted, and provided that you do these two things:

a) Accompany the combined library with a copy of the same work based on the Library, uncombined with any other library facilities. This must be distributed under the terms of the Sections above.

b) Give prominent notice with the combined library of the fact that part of it is a work based on the Library, and explaining where to find the accompanying uncombined form of the same work.

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<one line to give the library's name and a brief idea of what it does.>

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<signature of Ty Coon>, 1 April 1990

Ty Coon, President of Vice

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Version 3, 29 June 2007

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Some devices are designed to deny users access to install or run modified versions of the software inside them, although the manufacturer can do so. This is fundamentally incompatible with the aim of protecting users' freedom to change the software. The systematic pattern of such abuse occurs in the area of products for individuals to use, which is precisely where it is most unacceptable. Therefore, we have designed this version of the GPL to prohibit the practice for those products. If such problems arise substantially in other domains, we stand

ready to extend this provision to those domains in future versions of the GPL, as needed to protect the freedom of users.

Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

TERMS AND CONDITIONS

0. Definitions.

"This License" refers to version 3 of the GNU General Public License.

"Copyright" also means copyright-like laws that apply to other kinds of works, such as semiconductor masks.

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and

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To "modify" a work means to copy from or adapt all or part of the work in a fashion requiring copyright permission, other than the making of an exact copy. The resulting work is called a "modified version" of the earlier work or a work "based on" the earlier work.

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1. Source Code.

The "source code" for a work means the preferred form of the work for making modifications to it. "Object code" means any non-source form of a work.

A "Standard Interface" means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The

"System Libraries" of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that

Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A "Major Component", in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The "Corresponding Source" for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work's System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

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7. This requirement modifies the requirement in section 4 to

"keep intact all notices".

c) You must license the entire work, as a whole, under this License to anyone who comes into possession of a copy. This License will therefore apply, along with any applicable section 7 additional terms, to the whole of the work, and all its parts, regardless of how they are packaged. This License gives no permission to license the work in any other way, but it does not invalidate such permission if you have separately received it.

d) If the work has interactive user interfaces, each must display Appropriate Legal Notices; however, if the Program has interactive interfaces that do not display Appropriate Legal Notices, your work need not make them do so.

A compilation of a covered work with other separate and independent works, which are not by their nature extensions of the covered work, and which are not combined with it such as to form a larger program, in or on a volume of a storage or distribution medium, is called an "aggregate" if the compilation and its resulting copyright are not used to limit the access or legal rights of the compilation's users beyond what the individual works permit. Inclusion of a covered work in an aggregate does not cause this License to apply to the other parts of the aggregate.

6. Conveying Non-Source Forms.

You may convey a covered work in object code form under the terms of sections 4 and 5, provided that you also convey the machine-readable Corresponding Source under the terms of this License, in one of these ways:

a) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by the Corresponding Source fixed on a durable physical medium customarily used for software interchange.

b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical

medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.

c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.

d) Convey the object code by offering access from a designated place (gratis or for a charge), and offer equivalent access to the Corresponding Source in the same way through the same place at no further charge. You need not require recipients to copy the Corresponding Source along with the object code. If the place to copy the object code is a network server, the Corresponding Source may be on a different server (operated by you or a third party) that supports equivalent copying facilities, provided you maintain clear directions next to the object code saying where to find the Corresponding Source. Regardless of what server hosts the Corresponding Source, you remain obligated to ensure that it is available for as long as needed to satisfy these requirements.

e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

A separable portion of the object code, whose source code is excluded from the Corresponding Source as a System Library, need not be included in conveying the object code work.

A "User Product" is either (1) a "consumer product", which means any tangible personal property which is normally used for personal, family, or household purposes, or (2) anything designed or sold for incorporation into a dwelling. In determining whether a product is a consumer product, doubtful cases shall be resolved in favor of coverage. For a particular product received by a particular user, "normally used" refers to a typical or common use of that class of product, regardless of the status of the particular user or of the way in which the particular user actually uses, or expects or is expected to use, the product. A product is a consumer product regardless of whether the product has substantial commercial, industrial or non-consumer uses, unless such uses represent the only significant mode of use of the product.

"Installation Information" for a User Product means any methods, procedures, authorization keys, or other information required to install and execute modified versions of a covered work in that User Product from a modified version of its Corresponding Source. The information must suffice to ensure that the continued functioning of the modified object code is in no case prevented or interfered with solely because modification has been made.

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1.381 libcap-ng 2.48-8.el9.x86_64

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- * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/modetest/buffers.c
- * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/modetest/buffers.h

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- * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/hotunplug_tests.c

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/exynos/exynos_fimg2d.c
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/exynos/exynos_fimg2d_test.c
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/exynos/exynos_fimg2d.h
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The release criteria for libdrm is essentially "if you need a release, make one". There is no designated release engineer or maintainer. Anybody is free to make a release if there's a certain feature or bug fix they need in a released version of libdrm.

When new ioctl definitions are merged into drm-next, we will add support to libdrm, at which point we typically create a new release. However, this is up to whoever is driving the feature in question.

Follow these steps to release a new version of libdrm:

1) Bump the version number in meson.build. We seem to have settled for 2.4.x as the versioning scheme for libdrm, so just bump the micro version.

2) Run `ninja -C builddir/ dist` to generate the tarballs. Make sure that the version number of the tarball name in builddir/meson-dist/ matches the number you bumped to. Move that tarball to the libdrm repo root for the release script to pick up.

3) Push the updated main branch with the bumped version number:

```
git push origin main
```

assuming the remote for the upstream libdrm repo is called origin.

4) Use the release.sh script from the xorg/util/modular repo to upload the tarballs to the freedesktop.org download area and create an announce email template. The script takes one argument: the path to the libdrm checkout. So, if a checkout of modular is at the same level than the libdrm repo:

```
./modular/release.sh libdrm
```

This copies the two tarballs to freedesktop.org and creates libdrm-2.4.16.announce which has a detailed summary of the changes, links to the tarballs, MD5 and SHA1 sums and pre-filled

out email headers. Fill out the blank between the email headers and the list of changes with a brief message of what changed or what prompted this release. Send out the email and you're done!

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 * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/shader_code_gfx9.h
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/* xf86drmHash.c -- Small hash table support for integer -> integer mapping

* Created: Sun Apr 18 09:35:45 1999 by faith@precisioninsight.com

*

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*

* Authors: Rickard E. (Rik) Faith <faith@valinux.com>

*

* DESCRIPTION

*

* This file contains a straightforward implementation of a fixed-sized
* hash table using self-organizing linked lists [Knuth73, pp. 398-399] for
* collision resolution. There are two potentially interesting things
* about this implementation:

*

* 1) The table is power-of-two sized. Prime sized tables are more
* traditional, but do not have a significant advantage over power-of-two
* sized table, especially when double hashing is not used for collision
* resolution.

*

* 2) The hash computation
uses a table of random integers [Hanson97,
* pp. 39-41].

*

* FUTURE ENHANCEMENTS

*

* With a table size of 512, the current implementation is sufficient for a
* few hundred keys. Since this is well above the expected size of the
* tables for which this implementation was designed, the implementation of
* dynamic hash tables was postponed until the need arises. A common (and
* naive) approach to dynamic hash table implementation simply creates a
* new hash table when necessary, rehashes all the data into the new table,

* and destroys the old table. The approach in [Larson88] is superior in
* two ways: 1) only a portion of the table is expanded when needed,
* distributing the expansion cost over several insertions, and 2) portions
* of the table can be locked, enabling a scalable thread-safe
* implementation.

*

* REFERENCES

*

* [Hanson97] David R. Hanson. C Interfaces and Implementations:
* Techniques for Creating Reusable Software. Reading, Massachusetts:
* Addison-Wesley, 1997.

*

* [Knuth73] Donald E. Knuth. The Art of Computer Programming. Volume 3:
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* [Larson88] Per-Ake Larson. "Dynamic Hash Tables". CACM 31(4), April
* 1988, pp. 446-457.

*

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/nouveau/bufctx.c
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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/deadlock_tests.c
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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/jpeg_tests.c
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/amdgpu/amdgpu_vm.c
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* Authors:

* Eric Anholt <eric@anholt.net>

*

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* Authors: Rickard E. (Rik) Faith <faith@valinux.com>

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/amdgpu/amdgpu_cs.c

* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/amdgpu/amdgpu_device.c

* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/amdgpu/amdgpu_vamgr.c

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/exynos/exynos_fimg2d_event.c

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tegra/pushbuf.c
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* Jerome Glisse <j.glisse@gmail.com>

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* Gareth Hughes <gareth@valinux.com>
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 * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/amdgpu_test.h
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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/etnaviv/state.xml.h

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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/xf86drm.c

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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/intel/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/nouveau/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
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*
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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/modetest/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/vc4/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/radeon/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/radeon/meson.build
*
/opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/exynos/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tegra/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/omap/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/freedreno/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
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*
/opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/proptest/meson.build
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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/etnaviv/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/meson.build
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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/meson.build
*
/opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/man/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/modeprint/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/amdgpu/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/tegra/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/etnaviv/meson.build
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/opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/meson_options.txt
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/exynos/meson.build
* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/nouveau/meson.build
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/* amdgpu_drm.h -- Public header for the amdgpu driver -*- linux-c -*-

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* Authors:

* Kevin E. Martin <martin@valinux.com>

* Gareth Hughes <gareth@valinux.com>

* Keith Whitwell <keith@tungstengraphics.com>

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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/include/drm/amdgpu_drm.h

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/* savage_drm.h -- Public header for the savage driver

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/frame.h

* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/amdgpu/vce_ib.h

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/* xf86drmSL.c -- Skip list support

* Created: Mon May 10 09:28:13 1999 by faith@precisioninsight.com

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*
* Authors: Rickard E. (Rik) Faith <faith@valinux.com>
*
* DESCRIPTION
*
* This file contains a straightforward skip list implementation.n
*
* FUTURE ENHANCEMENTS
*
* REFERENCES
*
* [Pugh90] William Pugh. Skip Lists: A Probabilistic Alternative to
* Balanced Trees. CACM 33(6), June 1990, pp. 668-676.
*
*/

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/etnaviv/etnaviv_device.c

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* Rob Clark <rob@ti.com>

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/exynos/exynos_drm.c
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Contributing to libdrm

=====

Submitting Patches

Patches should be sent to dri-devel@lists.freedesktop.org, using git send-email. For patches only touching driver specific code one of the driver mailing lists (like amd-gfx@lists.freedesktop.org) is also appropriate. See git documentation for help:

<http://git-scm.com/documentation>

Since dri-devel is a very busy mailing list please use `--subject-prefix="PATCH libdrm"` to make it easier to find libdrm patches. This is best done by running

```
git config --local format.subjectprefix "PATCH libdrm"
```

The first line of a commit message should contain a prefix indicating what part is affected by the patch followed by one sentence that describes the change. For examples:

```
amdgpu: Use uint32_t i in amdgpu_find_bo_by_cpu_mapping
```

The body of the commit message should describe what the patch changes and why, and also note any particular side effects. For a recommended reading on writing commit messages, see:

<http://who-t.blogspot.de/2009/12/on-commit-messages.html>

Your patches should also include a Signed-off-by line with your name and email address. If you're not the patch's original author, you should also gather S-o-b's by them (and/or whomever gave the patch to you.) The significance of this is that it certifies that you created the patch, that it was created under

an appropriate open source license, or provided to you under those terms. This lets us indicate a chain of responsibility for the copyright status of the code.

For more details:

<https://developercertificate.org/>

We won't reject patches that lack S-o-b, but it is strongly recommended.

Review and Merging

Patches should have at least one positive review (Reviewed-by: tag) or indication of approval (Acked-by: tag) before merging. For any code shared between drivers this is mandatory.

Please note that kernel/userspace API header files have special rules, see <include/drm/README>.

Coding style in the project loosely follows the CodingStyle of the linux kernel:

<https://www.kernel.org/doc/html/latest/process/coding-style.html?highlight=coding%20style>

Commit Rights

Commit rights will be granted to anyone who requests them and fulfills the below criteria:

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- Are actively participating on discussions about their work (on the mailing list or IRC). This should not be interpreted as a requirement to review other peoples patches but just make sure that patch submission isn't one-way communication. Cross-review is still highly encouraged.
- Will be regularly contributing further patches. This includes regular contributors to other parts of the open source graphics stack who only do the oddball rare patch within libdrm itself.
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To apply for commit rights ("Developer" role in gitlab) send a mail to dri-devel@lists.freedesktop.org and please ping the maintainers if your request is stuck.

Committers are encouraged to request their commit rights get removed when they no longer contribute to the project. Commit rights will be reinstated when they come back to the project.

Maintainers and committers should encourage contributors to request commit rights, as especially junior contributors tend to underestimate their skills.

Code of Conduct

Please be aware the fd.o Code of Conduct also applies to libdrm:

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Happy hacking!

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* Created: Mon May 10 09:28:13 1999 by faith@precisioninsight.com

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*

* DESCRIPTION

*

* This file contains a straightforward skip list implementation.n

*

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*

* REFERENCES

*

* [Pugh90] William Pugh. Skip Lists: A Probabilistic Alternative to
* Balanced Trees. CACM 33(6), June 1990, pp. 668-676.
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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/xf86drmMode.h

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/*

* Arm Framebuffer Compression (AFBC) modifiers

*

* AFBC is a proprietary lossless image compression protocol and format.

* It provides fine-grained random access and minimizes the amount of data

* transferred between IP blocks.

*

* AFBC has several features which may be supported and/or used, which are

* represented using bits in the modifier. Not all combinations are valid,

* and different devices or use-cases may support different combinations.

*

* Further information on the use of AFBC modifiers can be found in

* Documentation/gpu/afbc.rst

*/

/*

* Arm Fixed-Rate Compression (AFRC) modifiers

*

* AFRC is a proprietary fixed rate image compression protocol and format,

* designed to provide guaranteed bandwidth and memory footprint

* reductions

in graphics and media use-cases.

*

* AFRC buffers consist of one or more planes, with the same components

* and meaning as an uncompressed buffer using the same pixel format.

*

* Within each plane, the pixel/luma/chroma values are grouped into

* "coding unit" blocks which are individually compressed to a

* fixed size (in bytes). All coding units within a given plane of a buffer

* store the same number of values, and have the same compressed size.

*

* The coding unit size is configurable, allowing different rates of compression.

*

* The start of each AFRC buffer plane must be aligned to an alignment granule which depends on the coding unit size.

*

* Coding Unit Size Plane Alignment

* -----	-----
* 16 bytes	1024 bytes
* 24 bytes	512 bytes
* 32 bytes	2048 bytes

*

* Coding units are grouped into paging tiles. AFRC buffer dimensions must be aligned to a multiple of the paging tile dimensions.

* The dimensions of each paging tile depend on whether the buffer is optimised for scanline (SCAN layout) or rotated (ROT layout) access.

*

* Layout	Paging Tile Width	Paging Tile Height
* -----	-----	-----
* SCAN	16 coding units	4 coding units
* ROT	8 coding units	8 coding units

*

* The dimensions of each coding unit depend on the number of components in the compressed plane and whether the buffer is optimised for scanline (SCAN layout) or rotated (ROT layout) access.

*

* Number of Components in Plane	Layout	Coding Unit Width	Coding Unit Height
* -----	-----	-----	-----
* 1	SCAN	16 samples	4 samples

* Example: 16x4 luma samples in a 'Y' plane

* 16x4 chroma 'V' values, in the 'V' plane of a fully-planar YUV buffer

*

* 1	ROT	8 samples	8 samples
-----	-----	-----------	-----------

* Example: 8x8 luma samples in a 'Y' plane

* 8x8 chroma 'V' values, in the 'V' plane of a fully-planar YUV buffer

*

* 2	DONT CARE	8 samples	4 samples
-----	-----------	-----------	-----------

* Example: 8x4 chroma pairs in the 'UV' plane of a semi-planar YUV buffer

*

* 3	DONT CARE	4 samples	4 samples
-----	-----------	-----------	-----------

* Example: 4x4 pixels in an RGB buffer without alpha

*

* 4	DONT CARE	4 samples	4 samples
-----	-----------	-----------	-----------

* Example: 4x4 pixels in an RGB buffer with alpha

*/

/*

* Amlogic Video Framebuffer Compression modifiers

```

*
* Amlogic uses a proprietary lossless image compression protocol and format
* for their hardware video codec accelerators, either video decoders or
* video input encoders.
*
* It considerably reduces memory bandwidth while writing and reading
* frames in memory.
*
* The underlying storage is considered to be 3 components, 8bit or 10-bit
* per component YCbCr 420, single plane :
* - DRM_FORMAT_YUV420_8BIT
* - DRM_FORMAT_YUV420_10BIT
*
* The first 8 bits of the mode defines the layout, then the following 8 bits
* defines the options changing the layout.
*
* Not all combinations are valid, and different SoCs may support different
* combinations of layout and options.
*/
/*
* 64K_S is the same for GFX9/GFX10/GFX10_RBPLUS and hence has GFX9 as canonical
* version.
*/

```

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```

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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/include/drm/drm_fourcc.h
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```

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* DRM based mode setting test program
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* sync abstraction

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*

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 * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/etnaviv/etnaviv_priv.h
 * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/etnaviv/etnaviv_pipe.c
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 *
 * /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/etnaviv/etnaviv_2d_test.c

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Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/intel/intel_bufmgr.h
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* Authors:

* Paulo Zandoni <paulo.r.zandoni@intel.com>

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/* xf86drmRandom.c -- "Minimal Standard" PRNG Implementation

* Created: Mon Apr 19 08:28:13 1999 by faith@precisioninsight.com

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* Authors: Rickard E. (Rik) Faith <faith@valinux.com>

*

* DESCRIPTION

*

* This file contains a simple, straightforward implementation of the Park
* & Miller "Minimal Standard" PRNG [PM88, PMS93], which is a Lehmer
* multiplicative linear congruential generator (MLCG) with a period of
* $2^{31}-1$.

*

* This implementation is intended to provide a reliable, portable PRNG
* that is suitable for testing a hash table implementation and for

* implementing skip lists.

*

* FUTURE ENHANCEMENTS

*

* If initial seeds are not selected randomly, two instances of the PRNG
* can be correlated.

[Knuth81, pp. 32-33] describes a shuffling technique

* that can eliminate this problem.

*

* If PRNGs are used for simulation, the period of the current
* implementation may be too short. [LE88] discusses methods of combining
* MLCGs to produce much longer periods, and suggests some alternative
* values for A and M. [LE90 and Sch92] also provide information on
* long-period PRNGs.

*

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-
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* Authors:
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* Authors:

* Chris Wilson <chris@chris-wilson.co.uk>

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*

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* Created: Tue Jan 25 01:50:01 1999 by jhartmann@precisioninsight.com

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* Authors:

* Jeff Hartmann <jhartmann@valinux.com>

* Keith Whitwell <keith@tungstengraphics.com>

*

* Rewritten by:

* Gareth Hughes <gareth@valinux.com>

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- */

Found in path(s):

* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tests/nouveau/threaded.c
No license file was found, but licenses were detected in source scan.

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* /opt/cola/permits/1904109256_1714647970.6606264/0/libdrm-2.4.114-1.el9-1.src.rpm-cosi-expand-archive-Ta0Ck2Tj/libdrm-2.4.114.tar.xz-cosi-expand-archive-fn8eSbVr/libdrm-2.4.114/tegra/syncpt.c

1.384 libffi 3.4.2-7.el9.x86_64

1.384.1 Available under license :

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Ty Coon, President of Vice
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1.385 libmnl 1.0.4-15.el9.x86_64

1.385.1 Available under license :

No license file was found, but licenses were detected in source scan.

Name: libmnl
Version: 1.0.4
Release: 6%{?dist}
Summary: A minimalistic Netlink library

Group: System Environment/Libraries
License: LGPLv2+
URL: <http://netfilter.org/projects/libmnl>
Source0: <http://netfilter.org/projects/libmnl/files/%{name}-%{version}.tar.bz2>

%description

libmnl is a minimalistic user-space library oriented to Netlink developers. There are a lot of common tasks in parsing, validating, constructing of both the Netlink header and TLVs that are repetitive and easy to get wrong. This library aims to provide simple helpers that allows you to re-use code and to avoid re-inventing the wheel.

%package devel
Summary: Development files for %{name}
Group: Development/Libraries
Requires: %{name}%{_isa} = %{version}-%{release}

%package static
Summary: Static development files for %{name}
Group: Development/Libraries
Requires:
%{name} = %{version}-%{release}

%description devel
The %{name}-devel package contains libraries and header files for developing applications that use %{name}.

%description static
The %{name}-static package contains static libraries for developing applications that use %{name}.

%prep

%setup -q

%build

%configure --enable-static

make CFLAGS="%{optflags}" %{?_smp_mflags}

%install

make install DESTDIR=\$RPM_BUILD_ROOT

find \$RPM_BUILD_ROOT -name '*.la' -exec rm -f {} ';'

find examples '(' -name 'Makefile.am' -o -name 'Makefile.in' ')' -exec rm -f {} ';'

find examples -type d -name '.deps' -prune -exec rm -rf {} ';'

mv examples examples-%{_arch}

%post -p /sbin/ldconfig

%postun -p /sbin/ldconfig

%files

%{!?!_licensedir:%global license %%doc}

%license COPYING

%doc README

%{_libdir}/*.so.*

%files devel

%{!?!_licensedir:%global license %%doc}

%license COPYING

%doc examples-%{_arch}

%{_includedir}/*

%{_libdir}/pkgconfig/*.pc

%{_libdir}/*.so

%files static

%{_libdir}/*.a

%changelog

*

Fri Feb 09 2018 Igor Gnatenko <ignatenkobrain@fedoraproject.org> - 1.0.4-6

- Escape macros in %%changelog

* Wed Feb 07 2018 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.4-5

- Rebuilt for https://fedoraproject.org/wiki/Fedora_28_Mass_Rebuild

* Thu Aug 03 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.4-4

- Rebuilt for https://fedoraproject.org/wiki/Fedora_27_Binutils_Mass_Rebuild

- * Wed Jul 26 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.4-3
- Rebuilt for https://fedoraproject.org/wiki/Fedora_27_Mass_Rebuild
- * Fri Feb 10 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.4-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_26_Mass_Rebuild
- * Fri Jul 15 2016 Hushan Jia <hushan.jia@gmail.com> 1.0.4-1
- Update to 1.0.4.
- * Thu Feb 04 2016 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.3-11
- Rebuilt for https://fedoraproject.org/wiki/Fedora_24_Mass_Rebuild
- * Wed Jun 17 2015
Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-10
- Rebuilt for https://fedoraproject.org/wiki/Fedora_23_Mass_Rebuild
- * Sun Aug 17 2014 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-9
- Rebuilt for https://fedoraproject.org/wiki/Fedora_21_22_Mass_Rebuild
- * Fri Jul 18 2014 Tom Callaway <spot@fedoraproject.org> - 1.0.3-8
- fix license handling
- * Sat Jun 07 2014 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-7
- Rebuilt for https://fedoraproject.org/wiki/Fedora_21_Mass_Rebuild
- * Sat Aug 03 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-6
- Rebuilt for https://fedoraproject.org/wiki/Fedora_20_Mass_Rebuild
- * Thu Feb 14 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-5
- Rebuilt for https://fedoraproject.org/wiki/Fedora_19_Mass_Rebuild
- * Sun Aug 12 2012 Hushan Jia <hushan.jia@gmail.com> - 1.0.3-4
- use %%doc for each arch to avoid multilib conflict (rhbz 831413)
- * Sat
Aug 04 2012 Philip Prindle <philipp@fedoraproject.org> - 1.0.3-3
- Add .a to devel package (rhbz 845793)
- * Thu Jul 19 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.3-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_18_Mass_Rebuild
- * Mon Jun 11 2012 Hushan Jia <hushan.jia@gmail.com> 1.0.3-1
- Update to 1.0.3.
- * Sat Feb 04 2012 Hushan Jia <hushan.jia@gmail.com> 1.0.2-1
- Update to 1.0.2.

* Fri Jan 13 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-5

- Rebuilt for https://fedoraproject.org/wiki/Fedora_17_Mass_Rebuild

* Wed Aug 24 2011 Hushan Jia <hushan.jia@gmail.com> 1.0.1-4

- fix require of devel package

- add example source files to docs

* Wed Aug 24 2011 Hushan Jia <hushan.jia@gmail.com> 1.0.1-3

- remove unnecessary buildroot and defattr tags

- remove unnecessary build requires

* Sat Aug 20 2011 Hushan Jia <hushan.jia@gmail.com> 1.0.1-2

- use upstream released source tarball

* Sat Aug 20 2011 Hushan Jia <hushan.jia@gmail.com>

1.0.1-1

- initial packaging

Found in path(s):

* /opt/cola/permits/1904109254_1713367897.3556314/0/libmnl-c8-zip/libmnl/SPECS/libmnl.spec

1.386 libnl3 3.7.0-1.el9.x86_64

1.386.1 Available under license :

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Version 2.1, February 1999

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This option is useful when you wish to copy part of the code of the Library into a program that is not a library.

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Section 6 states terms for distribution of such executables.

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If such an object file uses only numerical parameters, data structure layouts and accessors, and small macros and small inline functions (ten lines or less in length), then the use of the object file is unrestricted, regardless of whether it is legally a derivative work. (Executables containing this object code plus portions of the Library will still fall under Section 6.)

Otherwise, if the work is a derivative of the Library, you may distribute the object code for the work under the terms of Section 6. Any executables containing that work also fall under Section 6, whether or not they are linked directly with the Library itself.

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The

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```

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```
<program> Copyright (C) <year> <name of author>  
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under certain conditions; type `show c' for details.
```

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1.387 libnetfilter-contrack 1.0.9-1.el9.x86_64

1.387.1 Available under license :

No license file was found, but licenses were detected in source scan.

License: GPLv2+

Found in path(s):

* /opt/cola/permits/1904110154_1713351875.9091353/0/libnetfilter-contrack-c8s-tar-gz/libnetfilter_contrack/SPECS/libnetfilter_contrack.spec

1.388 libnfnetlink 1.0.1-21.el9.x86_64

1.388.1 Available under license :

No license file was found, but licenses were detected in source scan.

Name: libnfnetlink

Version: 1.0.1

Release: 13%{?dist}

Summary: Netfilter netlink userspace library

Group: System Environment/Libraries

License: GPLv2+

URL: <http://netfilter.org>

Source0: <http://netfilter.org/projects/libnfnetlink/files/{name}-{version}.tar.bz2>

BuildRoot: %(mktemp -ud %[_tmppath]/{name}-{version}-{release}-XXXXXX)

BuildRequires: kernel-headers

BuildRequires: automake autoconf libtool pkgconfig

%description

libnfnetlink is a userspace library that provides some low-level

nfnetlink handling functions. It is used as a foundation for other, netfilter subsystem specific libraries such as libnfnetlink_contrack, libnfnetlink_log and libnfnetlink_queue.

```
%package    devel
Summary:    Netfilter netlink userspace library
Group:      Development/Libraries
Requires:   %{name} = %{version}-%{release}
Requires:   kernel-headers
```

```
%description
    devel
libnfnetlink is a userspace library that provides some low-level
nfnetlink handling functions. It is used as a foundation for other, netfilter
subsystem specific libraries such as libnfnetlink_contrack, libnfnetlink_log
and libnfnetlink_queue.
```

```
%prep
%setup -q
```

```
%build
%configure --disable-static
make %{?_smp_mflags}
```

```
%install
rm -rf $RPM_BUILD_ROOT
make install DESTDIR=$RPM_BUILD_ROOT
find $RPM_BUILD_ROOT -type f -name "*.la" -exec rm -f {} \;
```

```
%clean
rm -rf $RPM_BUILD_ROOT
```

```
%post -p /sbin/ldconfig
%postun -p /sbin/ldconfig
```

```
%files
%defattr(-,root,root,-)
%{!?_licensedir:%global license %%doc}
%license COPYING
%doc README
%{_libdir}/*.so.*
```

```
%files devel
%defattr(-,root,root,-)
%{_libdir}/*.so
%{_libdir}/pkgconfig/*.pc
%dir %{_includedir}/libnfnetlink
```

%{_includedir}/libnfnetlink/*.h

%changelog

* Fri Feb 09 2018 Igor Gnatenko <ignatenkobrain@fedoraproject.org> - 1.0.1-13
- Escape macros in %%changelog

* Wed Feb 07 2018 Fedora Release Engineering <releng@fedoraproject.org>
- 1.0.1-12
- Rebuilt for https://fedoraproject.org/wiki/Fedora_28_Mass_Rebuild

* Thu Aug 03 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.1-11
- Rebuilt for https://fedoraproject.org/wiki/Fedora_27_Binutils_Mass_Rebuild

* Wed Jul 26 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.1-10
- Rebuilt for https://fedoraproject.org/wiki/Fedora_27_Mass_Rebuild

* Fri Feb 10 2017 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.1-9
- Rebuilt for https://fedoraproject.org/wiki/Fedora_26_Mass_Rebuild

* Thu Feb 04 2016 Fedora Release Engineering <releng@fedoraproject.org> - 1.0.1-8
- Rebuilt for https://fedoraproject.org/wiki/Fedora_24_Mass_Rebuild

* Wed Jun 17 2015 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-7
- Rebuilt for https://fedoraproject.org/wiki/Fedora_23_Mass_Rebuild

* Sun Aug 17 2014 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-6
- Rebuilt for https://fedoraproject.org/wiki/Fedora_21_22_Mass_Rebuild

*

Fri Jul 18 2014 Tom Callaway <spot@fedoraproject.org> - 1.0.1-5
- fix license handling

* Sat Jun 07 2014 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-4
- Rebuilt for https://fedoraproject.org/wiki/Fedora_21_Mass_Rebuild

* Sat Aug 03 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-3
- Rebuilt for https://fedoraproject.org/wiki/Fedora_20_Mass_Rebuild

* Thu Feb 14 2013 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.1-2
- Rebuilt for https://fedoraproject.org/wiki/Fedora_19_Mass_Rebuild

* Fri Nov 30 2012 Paul Komkoff <i@stingr.net> - 1.0.1-1
- new upstream version

* Thu Jul 19 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.0-5
- Rebuilt for https://fedoraproject.org/wiki/Fedora_18_Mass_Rebuild

* Fri Jan 13 2012 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.0-4

- Rebuilt for https://fedoraproject.org/wiki/Fedora_17_Mass_Rebuild

- * Mon Nov
28 2011 Paul P. Komkoff Jr <i@stingr.net> - 1.0.0-3
 - post-1.0 build fixes
 - switch to gplv2+
 - use packaged COPYING for license

- * Tue Feb 08 2011 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 1.0.0-2
 - Rebuilt for https://fedoraproject.org/wiki/Fedora_15_Mass_Rebuild

- * Mon Sep 28 2009 Paul P. Komkoff Jr <i@stingr.net> - 1.0.0-1
 - upstream release

- * Fri Jul 24 2009 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 0.0.41-2
 - Rebuilt for https://fedoraproject.org/wiki/Fedora_12_Mass_Rebuild

- * Fri Mar 6 2009 Paul P. Komkoff Jr <i@stingr.net> - 0.0.41-1
 - upstream release

- * Wed Feb 25 2009 Fedora Release Engineering <rel-eng@lists.fedoraproject.org> - 0.0.40-2
 - Rebuilt for https://fedoraproject.org/wiki/Fedora_11_Mass_Rebuild

- * Mon Jan 19 2009 Paul P. Komkoff Jr <i@stingr.net> - 0.0.40-1
 - upstream release

- * Tue Jan 13 2009 Caolán McNamara <caolanm@redhat.com> - 0.0.39-4
 - rebuild to get provides pkgconfig(libnfnetwork)

- * Sun Sep 21 2008 Ville Skyttä
<ville.skytta@iki.fi> - 0.0.39-3
 - Fix Patch0:/% patch mismatch.

- * Thu Aug 7 2008 Tom "spot" Callaway <tcallawa@redhat.com> - 0.0.39-2
 - fix license tag

- * Fri Jul 4 2008 Paul P. Komkoff Jr <i@stingr.net> - 0.0.39
 - grab latest upstream release

- * Fri Feb 22 2008 Paul P. Komkoff Jr <i@stingr.net> - 0.0.33-0.1.svn7211
 - grab latest upstream changes and fixes, along with new version number
 - do not mess with bundled nfnetwork.h, use <linux/netfilter/nfnetwork.h>

- * Tue Feb 19 2008 Fedora Release Engineering <rel-eng@fedoraproject.org> - 0.0.30-2
 - Autorebuild for GCC 4.3

- * Thu Aug 30 2007 Paul P. Komkoff Jr <i@stingr.net> - 0.0.30-1
 - new upstream version

- * Sun Mar 25 2007 Paul P. Komkoff Jr <i@stingr.net> - 0.0.25-2
- grab ownership of some directories
- * Fri Feb 9 2007 Paul P. Komkoff Jr <i@stingr.net> - 0.0.25-1
- upstream version 0.0.25
- * Sun Sep 10 2006 Paul P. Komkoff Jr <i@stingr.net>
- rebuilt
- * Wed Jul 12 2006 Felipe Kellermann <stdfk@terra.com.br> - 0.0.16-1
- Adds
pkgconfig to devel files.
- Version 0.0.16.
- * Mon May 8 2006 Paul P Komkoff Jr <i@stingr.net> - 0.0.14-3
- Include borrowed gpl.txt as LICENSE in %%doc
- * Sun Mar 26 2006 Paul P Komkoff Jr <i@stingr.net> - 0.0.14-1
- Preparing for submission to fedora extras

Found in path(s):

* /opt/cola/permits/1904110149_1713368029.170384/0/libnfnetlink-zip/libnfnetlink/SPECS/libnfnetlink.spec

1.389 libpwquality 1.4.4-8.el9.x86_64

1.389.1 Available under license :

No license file was found, but licenses were detected in source scan.

The package is BSD licensed with option to relicense as GPLv2+
- this option is redundant as the BSD license allows that anyway.

Found in path(s):

* /opt/cola/permits/1904110228_1713351641.1054761/0/libpwquality-c8-tar-gz/libpwquality/SPECS/libpwquality.spec

1.390 libpkit 0.24.1-2.el9.x86_64

1.390.1 Available under license :

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1.391 libthai 0.1.28-8.el9.x86_64

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1.400 libxi 1.7.10-8.el9.x86_64

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Upstream-Name: rdma-core

Upstream-Contact: Doug Ledford <dledford@redhat.com>,
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Source: <https://github.com/linux-rdma/rdma-core>

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1.409 hwloc 2.9.2

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```
max
usage_usec 13481
user_usec 6740
system_usec 6740
some avg10=0.00 avg60=0.00 avg300=0.00 total=0
full avg10=0.00 avg60=0.00 avg300=0.00 total=0
populated 1
frozen 0
nr_descendants 0
nr_dying_descendants 0
1338
1339
1341
some avg10=0.00 avg60=0.00 avg300=0.00 total=1101
full avg10=0.00 avg60=0.00 avg300=0.00 total=1101
0
1734
1338
1734
1735
1737
```

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domain

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usage_usec 11616

user_usec 5808

system_usec 5808

some avg10=0.00 avg60=0.00 avg300=0.00 total=0

1.410 hwloc 2.9.3

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max

usage_usec 13481

user_usec 6740

system_usec 6740

some avg10=0.00 avg60=0.00 avg300=0.00 total=0

full avg10=0.00 avg60=0.00 avg300=0.00 total=0

populated 1

frozen 0

nr_descendants 0

nr_dying_descendants 0

1338

1339

1341

some avg10=0.00 avg60=0.00 avg300=0.00 total=1101

full avg10=0.00 avg60=0.00 avg300=0.00 total=1101

0

1734

1338

1734

1735

1737

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user_usec 5808

system_usec 5808

some avg10=0.00 avg60=0.00 avg300=0.00 total=0

1.411 c-ares 1.56.2

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If a facility in the modified Library refers to a function or a table of data to be supplied by an application program that uses the facility, other than as an argument passed when the facility is invoked, then you must make a good faith effort to ensure that, in the event an application does not supply such function or table, the facility still operates, and performs whatever part of its purpose remains meaningful.

(For example, a function in a library to compute square roots has a purpose that is entirely well-defined independent of the application. Therefore, Subsection 2d requires that any application-supplied function or table used by this function must be optional: if the application does not supply it, the square root function must still compute square roots.)

@end enumerate

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@enumerate a

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@end enumerate

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@subheading END OF TERMS AND CONDITIONS

@page

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Ty Coon, President of Vice
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```
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```

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```
<program> Copyright (C) <year> <name of author>  
This program comes with ABSOLUTELY NO WARRANTY; for details type `show w'.  
This is free software, and you are welcome to redistribute it  
under certain conditions; type `show c' for details.
```

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- * Keep the copyright and release the program yourself under the GNU GPL. (This alternative is too impractical for contributions to a preexisting FSF-copyrighted GNU program.)

- * Put the code in the public domain. Then there is nothing to stop hoarding of modified versions, but we can still use the program in GNU.

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<signature of Mo Ghoul>, 1 April 1987
Mo Ghoul, President of Vice, Digital Simulation Corp.

The description of what the program does is just to make it clearer
what the disclaimer covers.

If
what you did was change an existing program, it should say this:

...in the changes and enhancements made by Hugh Hacker to the
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* Did anyone else contribute?

If someone else contributed more than a few lines here or there to the
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Description:

realpath, canonicalize_file_name: Provide canonical absolute file name

Files:

lib/canonicalize-lgpl.c

m4/canonicalize.m4

m4/double-slash-root.m4

m4/lstat.m4

Depends-on:

extensions

stdlib

nocrash

double-slash-root [test \$HAVE_CANONICALIZE_FILE_NAME = 0 || test \$REPLACE_CANONICALIZE_FILE_NAME = 1]

eloop-threshold [test \$HAVE_CANONICALIZE_FILE_NAME = 0 || test \$REPLACE_CANONICALIZE_FILE_NAME = 1]

errno [test \$HAVE_CANONICALIZE_FILE_NAME = 0 || test

```

$REPLACE_CANONICALIZE_FILE_NAME = 1]
fcntl-h      [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
filename     [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
idx          [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
intprops     [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
libc-config  [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME
= 1]
memmove      [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
memcpy       [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
pathmax      [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
rawmemchr    [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
readlink     [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
scratch_buffer [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
stat         [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
stdbool      [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
sys_stat     [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test
$REPLACE_CANONICALIZE_FILE_NAME = 1]
unistd       [test $HAVE_CANONICALIZE_FILE_NAME = 0
|| test $REPLACE_CANONICALIZE_FILE_NAME = 1]

configure.ac:
gl_CANONICALIZE_LGPL
gl_CONDITIONAL([GL_COND_OBJ_CANONICALIZE_LGPL],
    [test $HAVE_CANONICALIZE_FILE_NAME = 0 || test $REPLACE_CANONICALIZE_FILE_NAME =
1])
gl_MODULE_INDICATOR([canonicalize-lgpl])
gl_STDLIB_MODULE_INDICATOR([canonicalize_file_name])
gl_STDLIB_MODULE_INDICATOR([realpath])

Makefile.am:
if GL_COND_OBJ_CANONICALIZE_LGPL
lib_SOURCES += canonicalize-lgpl.c
endif

Include:

```

<stdlib.h>

License:

GPLv2+

Maintainer:

all

Description:

Concatenate two arbitrary file names.

Files:

lib/concat.h

lib/concat-lGPL.c

m4/concat.m4

Depends-on:

c99

basename-lGPL

filename

malloc-posix

configure.ac:

gl_FILE_NAME_CONCAT_LGPL

Makefile.am:

lib_SOURCES += concat-lGPL.c

Include:

"concat.h"

License:

GPLv2+

Maintainer:

Jim Meyering

Files:

tests/test-update-copyright.sh

Depends-on:

configure.ac:

abs_aux_dir=`cd "\$ac_aux_dir"; pwd`

AC_SUBST([abs_aux_dir])

Makefile.am:

TESTS += test-update-copyright.sh

TESTS_ENVIRONMENT += abs_aux_dir='\$(abs_aux_dir)'

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@page

@heading Appendix: How to Apply These Terms to Your New Programs

If you develop a new program, and you want it to be of the greatest possible use to the public, the best way to achieve this is to make it free software which everyone can redistribute and change under these terms.

To do so, attach the following notices to the program. It is safest to attach them to the start of each source file to most effectively convey the exclusion of warranty; and each file should have at least the ``copyright" line and a pointer to where the full notice is found.

@smallexample

@var{one line to give the program's name
and a brief idea of what it does.}

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Foundation, Inc., 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.
@end smallexample

Also add information on how to contact you by electronic and paper mail.

If the program is interactive, make it output a short notice like this
when it starts in an interactive mode:

```
@smallexample
Gnomovision version
69, Copyright (C) @var{year} @var{name of author}
Gnomovision comes with ABSOLUTELY NO WARRANTY; for details type `show w'.
This is free software, and you are welcome to redistribute it
under certain conditions; type `show c' for details.
@end smallexample
```

The hypothetical commands @samp{show w} and @samp{show c} should show
the appropriate parts of the General Public License. Of course, the
commands you use may be called something other than @samp{show w} and
@samp{show c}; they could even be mouse-clicks or menu items---whatever
suits your program.

You should also get your employer (if you work as a programmer) or your
school, if any, to sign a ``copyright disclaimer" for the program, if
necessary. Here is a sample; alter the names:

```
@example
Yoyodyne, Inc., hereby disclaims all copyright interest in the program
`Gnomovision' (which makes passes at compilers) written by James Hacker.
```

```
@var{signature of Ty Coon}, 1 April 1989
Ty Coon, President of Vice
@end example
```

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Public License instead of this License.

Description:

Provide the GNU Free Documentation License in Texinfo format.

Notice:

Don't use this module! Instead, copy the referenced license file into your version control repository.

Files:

doc/fdl.texi

Depends-on:

configure.ac:

Makefile.am:

Include:

License:

unmodifiable license text

Maintainer:

all

Description:

Help make libraries relocatable, that is, to allow them to function properly when copied to an arbitrary directory.

Files:

doc/relocatable.texi

lib/relocatable.h

lib/relocatable.c

lib/relocatable.valgrind

m4/relocatable-lib.m4

Depends-on:

strdup

configure.ac:

```
gl_RELOCATABLE_LIBRARY
```

```
if test $RELOCATABLE = yes; then
```

```
  AC_LIBOBJ([relocatable])
```

```
fi
```

Makefile.am:

```
DEFS += -DNO_XMALLOC
```

Include:

```
"relocatable.h"
```

License:
LGPLv2+

Maintainer:
Ben Pfaff
Description:
Extract specific portions of filenames.

Files:
lib/dirname.h
lib/dirname-lgpl.c
lib/stripslash.c

Depends-on:
basename-lgpl
double-slash-root
filename
malloc-posix
stdbool

configure.ac:

Makefile.am:
lib_SOURCES += dirname-lgpl.c stripslash.c

Include:
"dirname.h"

License:
LGPLv2+

Maintainer:
Jim Meyering, Eric Blake

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Version 2.1, February 1999

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Files:

tests/test-canonicalize-lgpl.c

tests/signature.h

tests/null-ptr.h

tests/macros.h

Depends-on:

ignore-value

same-inode

symlink

configure.ac:

Makefile.am:

TESTS += test-canonicalize-lgpl

check_PROGRAMS += test-canonicalize-lgpl

test_canonicalize_lgpl_LDADD = \$(LDADD) \$(LIBINTL)

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Description:

Extract the last component (base name) of a file name.

Files:

lib/basename-lgpl.h

lib/basename-lgpl.c

Depends-on:

double-slash-root

filename

stdbool

configure.ac:

Makefile.am:
lib_SOURCES += basename-lgpl.c

Include:
"basename-lgpl.h"

License:
LGPLv2+

Maintainer:
all

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Files:

tests/test-getcwd-lgpl.c
tests/signature.h
tests/macros.h

Depends-on:

configure.ac:

Makefile.am:

TESTS += test-getcwd-lgpl
check_PROGRAMS += test-getcwd-lgpl
test_getcwd-lgpl_LDADD = \$(LDADD) \$(LIBINTL)

Description:

Ensure getcwd(NULL, 0) returns a buffer allocated by the malloc() function.

Files:

lib/getcwd-lgpl.c
m4/getcwd.m4

Depends-on:

unistd
free-posix [test \$REPLACE_GETCWD = 1]
strdup [test \$REPLACE_GETCWD = 1]

configure.ac:

gl_FUNC_GETCWD_LGPL
gl_CONDITIONAL([GL_COND_OBJ_GETCWD_LGPL], [test \$REPLACE_GETCWD = 1])
gl_UNISTD_MODULE_INDICATOR([getcwd])

Makefile.am:

if GL_COND_OBJ_GETCWD_LGPL
lib_SOURCES += getcwd-lgpl.c
endif

Include:

<unistd.h>

License:

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Maintainer:

Eric Blake

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Description:

Locating a program in PATH (LGPLed version).

Files:

lib/findprog.h

lib/findprog.c

lib/findprog-lgpl.c

m4/findprog.m4

m4/eaccess.m4

Depends-on:

stdbool

sys_stat

strdup

concat-filename

access

stat

unistd

configure.ac:

gl_FINDPROG

gl_MODULE_INDICATOR([findprog-lgpl])

Makefile.am:

lib_SOURCES += findprog.h findprog-lgpl.c

Include:

"findprog.h"

License:

LGPLv2+

Maintainer:

all

1.416 ipmiutil 1.8.19

1.416.1 Available under license :

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1.417 safestring libsafec-3.3.so.3

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1.418 importlib-metadata 4.11.1

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1.419 clang 14.0.5

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Ajay Joshi <jaj@google.com>

Balzs Dn <balazs.dan@gmail.com>
Benoit Sigoure <tsuna@google.com>
Bharat Mediratta <bharat@menalto.com>
Bogdan Pilocca <boo@google.com>
Chandler Carruth <chandlerc@google.com>
Chris Prince <cprince@google.com>
Chris Taylor <taylorc@google.com>
Dan Egnor <egnor@google.com>
Dave MacLachlan <dmaclach@gmail.com>
David Anderson <danderson@google.com>
Dean Sturtevant
Eric Roman <eroman@chromium.org>
Gene Volovich <gv@cite.com>
Hady Zalek <hady.zalek@gmail.com>
Hal Burch <gmock@hburch.com>
Jeffrey Yasskin <jyasskin@google.com>
Jim Keller <jimkeller@google.com>
Joe Walnes <joe@truemesh.com>
Jon Wray <jwray@google.com>
Ji Sigursson <joi@google.com>
Keir Mierle <mierle@gmail.com>
Keith Ray <keith.ray@gmail.com>
Kenton Varda
<kenton@google.com>
Kostya Serebryany <kcc@google.com>
Krystian Kuzniarek <krystian.kuzniarek@gmail.com>
Lev Makhlis
Manuel Klimek <klimek@google.com>
Mario Tanev <radix@google.com>
Mark Paskin
Markus Heule <markus.heule@gmail.com>
Martijn Vels <mvels@google.com>
Matthew Simmons <simmonmt@acm.org>
Mika Raento <mikie@iki.fi>
Mike Bland <mbland@google.com>
Mikls Fazekas <mfazekas@szemafor.com>
Neal Norwitz <nnorwitz@gmail.com>
Nermin Ozkiranartli <nermin@google.com>
Owen Carlsen <ocarlsen@google.com>
Paneendra Ba <paneendra@google.com>
Pasi Valminen <pasi.valminen@gmail.com>
Patrick Hanna <phanna@google.com>
Patrick Riley <pfr@google.com>
Paul Menage <menage@google.com>
Peter Kaminski <piotr@google.com>
Piotr Kaminski <piotr@google.com>
Preston Jackson <preston.a.jackson@gmail.com>
Rainer Klaffenboeck <rainer.klaffenboeck@dynatrace.com>

Russ Cox <rsc@google.com>
Russ Rufer <russ@pentad.com>
Sean McAfee <eefacm@gmail.com>
Sigurur sgeirsson <siggi@google.com>
Sverre Sundsdal <sundsdal@gmail.com>
Szymon
Sobik <sobik.szymon@gmail.com>
Takeshi Yoshino <tyoshino@google.com>
Tracy Bialik <tracy@pentad.com>
Vadim Berman <vadimb@google.com>
Vlad Losev <vladl@google.com>
Wolfgang Klier <wklier@google.com>
Zhanyong Wan <wan@google.com>

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