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Rocky Enterprise Linux 9.2 Manual Pages on command 'perltoc.1'

\$ man perltoc.1

PERLTOC(1) Perl Programmers Reference Guide PERLTOC(1)

NAME

perltoc - perl documentation table of contents

DESCRIPTION

This page provides a brief table of contents for the rest of the Perl documentation set.

It is meant to be scanned quickly or grepped through to locate the proper section you're looking for.

BASIC DOCUMENTATION

perl - The Perl 5 language interpreter

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Reference Manual

Internals and C Language Interface

History

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Language-Specific

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perlintro - a brief introduction and overview of Perl

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Running Perl programs

Safety net

Basic syntax overview

Perl variable types

Scalars, Arrays, Hashes

Variable scoping

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Builtin operators and functions

Arithmetic, Numeric comparison, String comparison, Boolean logic, Miscellaneous

Files and I/O

Regular expressions

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Parentheses for capturing, Other regexp features

Writing subroutines

OO Perl

Using Perl modules

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perlrun - how to execute the Perl interpreter

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#! and quoting on non-Unix systems

OS/2, MS-DOS, Win95/NT, VMS

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-O[octal/hexadecimal] , -a , -C [number/list] , -c , -d , -dt, -d:MOD[=bar,baz]
 , -dt:MOD[=bar,baz], -Dletters , -Dnumber, -e commandline , -E commandline , -f
 , -Fpattern , -h , -i[extension] , -ldirectory , -l[octnum] , -m[-]module ,
 -M[-]module, -M[-]'module ...', -[mM][-]module=arg[,arg]..., -n , -p , -s , -S ,
 -t , -T , -u , -U , -v , -V , -V:configvar, -w , -W , -X , -x , -xdirectory

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 to the Win32 port) , PERL_ALLOW_NON_IFS_LSP (specific to the Win32 port) ,
 PERL_DEBUG_MSTATS , PERL_DESTRUCT_LEVEL , PERL_DL_NONLAZY , PERL_ENCODING ,
 PERL_HASH_SEED , PERL_PERTURB_KEYS , PERL_HASH_SEED_DEBUG , PERL_MEM_LOG , PERL_ROOT
 (specific to the VMS port) , PERL_SIGNALS , PERL_UNICODE , PERL_USE_UNSAFE_INC ,
 SYS\$LOGIN (specific to the VMS port) , PERL_INTERNAL_RAND_SEED

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-I, -M, the PERL5LIB environment variable, combinations of -I, -M and PERL5LIB, the
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perlreftut - Mark's very short tutorial about references

DESCRIPTION

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ARRAYS OF HASHES

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perlrequick - Perl regular expressions quick start

DESCRIPTION

The Guide

Simple word matching

Using character classes

Matching this or that

Grouping things and hierarchical matching

Extracting matches

Matching repetitions

More matching

Search and replace

The split operator

"use re 'strict'"

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perlretut - Perl regular expressions tutorial

DESCRIPTION

Part 1: The basics

Simple word matching

Using character classes

Matching this or that

Grouping things and hierarchical matching

0. Start with the first letter in the string 'a', 1. Try the first alternative in

the first group 'abd', 2. Match 'a' followed by 'b'. So far so good, 3. 'd' in

the regexp doesn't match 'c' in the string - a dead end. So backtrack two characters and pick the second alternative in the first group 'abc', 4. Match 'a' followed by 'b' followed by 'c'. We are on a roll and have satisfied the first group. Set \$1 to 'abc', 5 Move on to the second group and pick the first alternative 'df', 6 Match the 'd', 7. 'f' in the regexp doesn't match 'e' in the string, so a dead end. Backtrack one character and pick the second alternative in the second group 'd', 8.

'd' matches. The second grouping is satisfied, so set \$2 to 'd', 9. We are at the end of the regexp, so we are done! We have matched 'abcd' out of the string "abcde"

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Named backreferences

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perloutut - Object-Oriented Programming in Perl Tutorial

DATE

DESCRIPTION

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perlstyle - Perl style guide

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The sheet

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perldebtut - Perl debugging tutorial

DESCRIPTION

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perlfaq - Frequently asked questions about Perl

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DESCRIPTION

Where to find the perlfaq

How to use the perlfaq

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THE QUESTIONS

perlfaq1: General Questions About Perl
perlfaq2: Obtaining and Learning about Perl
perlfaq3: Programming Tools
perlfaq4: Data Manipulation
perlfaq5: Files and Formats
perlfaq6: Regular Expressions
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perlfaq1 - General Questions About Perl

VERSION

DESCRIPTION

What is Perl?

Who supports Perl? Who develops it? Why is it free?

Which version of Perl should I use?

What are Perl 4, Perl 5, or Raku (Perl 6)?

What is Raku (Perl 6)?

How stable is Perl?

How often are new versions of Perl released?

Is Perl difficult to learn?

How does Perl compare with other languages like Java, Python, REXX, Scheme, or Tcl?

Can I do [task] in Perl?

When shouldn't I program in Perl?

What's the difference between "perl" and "Perl"?

What is a JAPH?

How can I convince others to use Perl?

<<http://www.perl.org/about.html>>, <<http://perltraining.com.au/whyperl.html>>

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perlfaq2 - Obtaining and Learning about Perl

VERSION

DESCRIPTION

What machines support Perl? Where do I get it?

How can I get a binary version of Perl?

I don't have a C compiler. How can I build my own Perl interpreter?

I copied the Perl binary from one machine to another, but scripts don't work.

I grabbed the sources and tried to compile but gdbm/dynamic loading/malloc/linking/... failed. How do I make it work?

What modules and extensions are available for Perl? What is CPAN?

Where can I get information on Perl?

<<http://www.perl.org/>>, <<http://perldoc.perl.org/>>, <<http://learn.perl.org/>>

What is perl.com? Perl Mongers? pm.org? perl.org? cpan.org?

<<http://www.perl.org/>>, <<http://learn.perl.org/>>, <<http://jobs.perl.org/>>,

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Where can I post questions?

Perl Books

Which magazines have Perl content?

Which Perl blogs should I read?

What mailing lists are there for Perl?

Where can I buy a commercial version of Perl?

Where do I send bug reports?

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perlfaq3 - Programming Tools

VERSION

DESCRIPTION

How do I do (anything)?

Basics, perldata - Perl data types, perlvar - Perl pre-defined variables, perlsyn

- Perl syntax, perlop - Perl operators and precedence, perlsyn - Perl syntax, Execution, perlrun - how to execute the Perl interpreter, perldebug - Perl debugging, Functions, perlfunc - Perl builtin functions, Objects, perlref - Perl references and nested data structures, perlmod - Perl modules (packages and symbol tables), perlobj - Perl objects, perltie - how to hide an object class in a simple variable, Data Structures, perlref - Perl references and nested data structures, perllo - Manipulating arrays of arrays in Perl, perldsc - Perl Data Structures Cookbook, Modules, perlmod - Perl modules (packages and symbol tables), perlmodlib - constructing new Perl modules and finding existing ones, Regexp, perlre - Perl regular expressions, perlfunc - Perl builtin functions>, perlop - Perl operators and precedence, perllocale - Perl locale handling (internationalization and localization), Moving to perl5, perltrap - Perl traps for the unwary, perl, Linking with C, perlxs - Tutorial for writing XSUBs, perlxs - XS language reference manual, perlc - Perl calling conventions from C, perlapi - Introduction to the Perl API, perlapi - how to embed perl in your C program, Various

How can I use Perl interactively?

How do I find which modules are installed on my system?

How do I debug my Perl programs?

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How do I cross-reference my Perl programs?

Is there a pretty-printer (formatter) for Perl?

Is there an IDE or Windows Perl Editor?

Eclipse, Enginsite, IntelliJ IDEA, Kephra, Komodo, Notepad++, Open Perl IDE, OptiPerl, Padre, PerlBuilder, visiPerl+, Visual Perl, Zeus, GNU Emacs, MicroEMACS, XEmacs, Jed, Vim, Vile, MultiEdit, SlickEdit, ConTEXT, bash, zsh, BBEdit and TextWrangler

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How can I make my Perl program take less memory?

Don't slurp!, Use map and grep selectively, Avoid unnecessary quotes and stringification, Pass by reference, Tie large variables to disk

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How can I compile my Perl program into byte code or C?

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Can I write useful Perl programs on the command line?

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Where can I learn about object-oriented Perl programming?

Where can I learn about linking C with Perl?

I've read perlembed, perlguits, etc., but I can't embed perl in my C program; what am I doing wrong?

When I tried to run my script, I got this message. What does it mean?

What's MakeMaker?

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perlfaq4 - Data Manipulation

VERSION

DESCRIPTION

Data: Numbers

Why am I getting long decimals (eg, 19.9499999999999) instead of the numbers I should be getting (eg, 19.95)?

Why is int() broken?

Why isn't my octal data interpreted correctly?

Does Perl have a round() function? What about ceil() and floor()? Trig functions?

How do I convert between numeric representations/bases/radixes?

How do I convert hexadecimal into decimal, How do I convert from decimal to hexadecimal, How do I convert from octal to decimal, How do I convert from decimal to octal, How do I convert from binary to decimal, How do I convert from decimal to binary

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How do I find the current century or millennium?

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How can I take a string and turn it into epoch seconds?

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How can I expand variables in text strings?

Does Perl have anything like Ruby's `#{}` or Python's `f` string?

What's wrong with always quoting `"$vars"`?

Why don't my `<<HERE` documents work?

There must be no space after the `<<` part, There (probably) should be a semicolon

at the end of the opening token, You can't (easily) have any space in front of the

tag, There needs to be at least a line separator after the end token

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What is the difference between `$array[1]` and `@array[1]` ?

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How do I verify a credit card checksum?

How do I pack arrays of doubles or floats for XS code?

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perlfaq5 - Files and Formats

VERSION

DESCRIPTION

How do I flush/unbuffer an output filehandle? Why must I do this?

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How do I delete the last N lines from a file?

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How can I output my numbers with commas added?

How can I translate tildes (~) in a filename?

How come when I open a file read-write it wipes it out?

Why do I sometimes get an "Argument list too long" when I use <*>?

How can I open a file named with a leading ">" or trailing blanks?

How can I reliably rename a file?

How can I lock a file?

Why can't I just open(FH, ">file.lock")?

I still don't get locking. I just want to increment the number in the file. How can I do this?

All I want to do is append a small amount of text to the end of a file. Do I still have to use locking?

How do I randomly update a binary file?

How do I get a file's timestamp in perl?

How do I set a file's timestamp in perl?

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How can I read in an entire file all at once?

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Why can't I use "C:\temp\foo" in DOS paths? Why doesn't `C:\temp\foo.exe` work?

Why doesn't glob("*.") get all the files?

Why does Perl let me delete read-only files? Why does "-i" clobber protected files?

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How do I traverse a directory tree?

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perlfaq6 - Regular Expressions

VERSION

DESCRIPTION

How can I hope to use regular expressions without creating illegible and unmaintainable code?

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I'm having trouble matching over more than one line. What's wrong?

How can I pull out lines between two patterns that are themselves on different lines?

How do I match XML, HTML, or other nasty, ugly things with a regex?

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How do I substitute case-insensitively on the LHS while preserving case on the RHS?

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How can I match a locale-smart version of `"[a-zA-Z]"`?

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How do I use a regular expression to strip C-style comments from a file?

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What does it mean that regexes are greedy? How can I get around it?

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How can I do approximate matching?

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Why don't word-boundary searches with `"\b"` work for me?

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What's wrong with using `grep` in a void context?

How can I match strings with multibyte characters?

How do I match a regular expression that's in a variable?

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perlfaq7 - General Perl Language Issues

VERSION

DESCRIPTION

Can I get a BNF/yacc/RE for the Perl language?

What are all these \$@%&* punctuation signs, and how do I know when to use them?

Do I always/never have to quote my strings or use semicolons and commas?

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How do I temporarily block warnings?

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How do I create a module?

How do I adopt or take over a module already on CPAN?

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How can I tell if a variable is tainted?

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What is variable suicide and how can I prevent it?

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Passing Variables and Functions, Passing Filehandles, Passing Regexes, Passing
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How do I create a static variable?

What's the difference between dynamic and lexical (static) scoping? Between local()
and my()?

How can I access a dynamic variable while a similarly named lexical is in scope?

What's the difference between deep and shallow binding?

Why doesn't "my(\$foo) = <\$fh>," work right?

How do I redefine a builtin function, operator, or method?

What's the difference between calling a function as &foo and foo()?

How do I create a switch or case statement?

How can I catch accesses to undefined variables, functions, or methods?

Why can't a method included in this same file be found?

How can I find out my current or calling package?

How can I comment out a large block of Perl code?

How do I clear a package?

How can I use a variable as a variable name?

What does "bad interpreter" mean?

Do I need to recompile XS modules when there is a change in the C library?

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perlfaq8 - System Interaction

VERSION

DESCRIPTION

How do I find out which operating system I'm running under?

How come `exec()` doesn't return?

How do I do fancy stuff with the keyboard/screen/mouse?

Keyboard, Screen, Mouse

How do I print something out in color?

How do I read just one key without waiting for a return key?

How do I check whether input is ready on the keyboard?

How do I clear the screen?

How do I get the screen size?

How do I ask the user for a password?

How do I read and write the serial port?

lockfiles, open mode, end of line, flushing output, non-blocking input

How do I decode encrypted password files?

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How do I trap control characters/signals?

How do I modify the shadow password file on a Unix system?

How do I set the time and date?

How can I `sleep()` or `alarm()` for under a second?

How can I measure time under a second?

How can I do an `atexit()` or `setjmp()/longjmp()`? (Exception handling)

Why doesn't my sockets program work under System V (Solaris)? What does the error message "Protocol not supported" mean?

How can I call my system's unique C functions from Perl?

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Why do `setuid` perl scripts complain about kernel problems?

How can I open a pipe both to and from a command?

Why can't I get the output of a command with `system()`?

How can I capture `STDERR` from an external command?

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How can I call backticks without shell processing?

Why can't my script read from `STDIN` after I gave it EOF (^D on Unix, ^Z on MS-DOS)?

How can I convert my shell script to perl?

Can I use perl to run a telnet or ftp session?

How can I write expect in Perl?

Is there a way to hide perl's command line from programs such as "ps"?

I {changed directory, modified my environment} in a perl script. How come the change disappeared when I exited the script? How do I get my changes to be visible?

Unix

How do I close a process's filehandle without waiting for it to complete?

How do I fork a daemon process?

How do I find out if I'm running interactively or not?

How do I timeout a slow event?

How do I set CPU limits?

How do I avoid zombies on a Unix system?

How do I use an SQL database?

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How do I open a file without blocking?

How do I tell the difference between errors from the shell and perl?

How do I install a module from CPAN?

What's the difference between `require` and `use`?

How do I keep my own module/library directory?

How do I add the directory my program lives in to the module/library search path?

How do I add a directory to my include path (@INC) at runtime?

-ldir" command line flag, the "lib" pragma:, the local::lib module:

Where are modules installed?

What is socket.ph and where do I get it?

AUTHOR AND COPYRIGHT

perlfac9 - Web, Email and Networking

VERSION

DESCRIPTION

Should I use a web framework?

Which web framework should I use?

Catalyst, Dancer2, Mojolicious, Web::Simple

What is Plack and PSGI?

How do I remove HTML from a string?

How do I extract URLs?

How do I fetch an HTML file?

How do I automate an HTML form submission?

How do I decode or create those %-encodings on the web?

How do I redirect to another page?

How do I put a password on my web pages?

How do I make sure users can't enter values into a form that causes my CGI script to do bad things?

How do I parse a mail header?

How do I check a valid mail address?

How do I decode a MIME/BASE64 string?

How do I find the user's mail address?

How do I send email?

Email::Sender::Transport::Sendmail, Email::Sender::Transport::SMTP

How do I use MIME to make an attachment to a mail message?

How do I read email?

How do I find out my hostname, domainname, or IP address?

How do I fetch/put an (S)FTP file?

How can I do RPC in Perl?

AUTHOR AND COPYRIGHT

perlsyn - Perl syntax

DESCRIPTION

Declarations

Comments

Simple Statements

Statement Modifiers

Compound Statements

Loop Control

For Loops

Foreach Loops

Try Catch Exception Handling

Basic BLOCKs

Switch Statements

Goto

The Ellipsis Statement

PODs: Embedded Documentation

Plain Old Comments (Not!)

Experimental Details on given and when

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

perldata - Perl data types

DESCRIPTION

Variable names

Identifier parsing

Context

Scalar values

Scalar value constructors

List value constructors

Subscripts

Multi-dimensional array emulation

Slices

Typeglobs and Filehandles

SEE ALSO

perlop - Perl operators and precedence

DESCRIPTION

Operator Precedence and Associativity

Terms and List Operators (Leftward)

The Arrow Operator

Auto-increment and Auto-decrement

Exponentiation

Symbolic Unary Operators

Binding Operators

Multiplicative Operators

Additive Operators

Shift Operators

Named Unary Operators

Relational Operators

Equality Operators

Class Instance Operator

Smartmatch Operator

1. Empty hashes or arrays match,
2. That is, each element smartmatches the element of the same index in the other array.[3],
3. If a circular reference is found, fall back to referential equality,
4. Either an actual number, or a string that looks like one

Bitwise And

Bitwise Or and Exclusive Or

C-style Logical And

C-style Logical Or

Logical Defined-Or

Range Operators

Conditional Operator

Assignment Operators

Comma Operator

List Operators (Rightward)

Logical Not

Logical And

Logical or and Exclusive Or

C Operators Missing From Perl

unary &, unary *, (TYPE)

Quote and Quote-like Operators

[1], [2], [3], [4], [5], [6], [7], [8]

Regexp Quote-Like Operators

"qr/STRING/msixpodualn" , "m/PATTERN/msixpodualngc"
 , "/PATTERN/msixpodualngc", The empty pattern "/", Matching in list context, "\G
assertion", "m?PATTERN?msixpodualngc"
 , "s/PATTERN/REPLACEMENT/msixpodualngcer"

Quote-Like Operators

"q/STRING/" , 'STRING', "qq/STRING/" , "STRING", "qx/STRING/" ,
"``STRING`", "qw/STRING/" , "tr/SEARCHLIST/REPLACEMENTLIST/cdsr"
 , "y/SEARCHLIST/REPLACEMENTLIST/cdsr", "<<EOF" , Double Quotes, Single
Quotes, Backticks, Indented Here-docs

Gory details of parsing quoted constructs

Finding the end, Interpolation , "<<'EOF'", "m'", the pattern of "s'", "
"q/'", "tr'", "y'", the replacement of "s'", "tr/'", "y/'", "", "``",
"qq/'", "qx/'", "<file*glob>", "<<'EOF'", the replacement of "s/'", "RE" in
"m?RE?", "/RE/", "m/RE/", "s/RE/foo/", , parsing regular expressions , Optimization
of regular expressions

I/O Operators

Constant Folding

No-ops

Bitwise String Operators

Integer Arithmetic

Floating-point Arithmetic

Bigger Numbers

perlsub - Perl subroutines

SYNOPSIS

DESCRIPTION

documented later in this document, documented in perlmod, documented in perlobj,
documented in perltie, documented in PerlIO::via, documented in perlfunc, documented
in UNIVERSAL, documented in perldebbugs, undocumented, used internally by the overload
feature

Signatures

Private Variables via my()

Persistent Private Variables

Temporary Values via local()

Lvalue subroutines

Lexical Subroutines

Passing Symbol Table Entries (typeglobs)

When to Still Use local()

Pass by Reference

Prototypes

Constant Functions

Overriding Built-in Functions

Autoloading

Subroutine Attributes

SEE ALSO

perlfunc - Perl builtin functions

DESCRIPTION

Perl Functions by Category

Functions for SCALARs or strings , Regular expressions and pattern matching ,

Numeric functions , Functions for real @ARRAYs , Functions for list data ,

Functions for real %HASHes , Input and output functions

, Functions for fixed-length data or records, Functions for filehandles, files,

or directories

, Keywords related to the control flow of your Perl program , Keywords related

to scoping, Miscellaneous functions, Functions for processes and process groups

, Keywords related to Perl modules , Keywords related to classes and object-

orientation

, Low-level socket functions , System V interprocess communication functions

, Fetching user and group info

, Fetching network info , Time-related functions , Non-function keywords

Portability

Alphabetical Listing of Perl Functions

-X FILEHANDLE

, -X EXPR, -X DIRHANDLE, -X, abs VALUE , abs, accept NEWSOCKET,GENERICSOCKET ,
 alarm SECONDS , alarm, atan2 Y,X , bind SOCKET,NAME , binmode FILEHANDLE, LAYER
 , binmode FILEHANDLE, bless REF,CLASSNAME , bless REF, break, caller EXPR ,
 caller, chdir EXPR , chdir FILEHANDLE, chdir DIRHANDLE, chdir, chmod LIST ,
 chomp VARIABLE , chomp(LIST), chomp, chop VARIABLE , chop(LIST), chop,
 chown LIST
 , chr NUMBER , chr, chroot FILENAME , chroot, close FILEHANDLE , close,
 closedir DIRHANDLE , connect SOCKET,NAME , continue BLOCK , continue, cos EXPR
 , cos, crypt PLAINTEXT,SALT
 , dbmclose HASH , dbmopen HASH,DBNAME,MASK , defined EXPR
 , defined, delete EXPR , die LIST
 , do BLOCK , do EXPR , dump LABEL , dump EXPR, dump, each HASH , each
 ARRAY , eof FILEHANDLE , eof (), eof, eval EXPR
 , eval BLOCK, eval, String eval, Under the "unicode_eval" feature, Outside the
 "unicode_eval" feature, Block eval, evalbytes EXPR , evalbytes, exec LIST , exec
 PROGRAM LIST, exists EXPR , exit EXPR
 , exit, exp EXPR
 , exp, fc EXPR
 , fc, fcntl FILEHANDLE,FUNCTION,SCALAR , __FILE__ , fileno FILEHANDLE , fileno
 DIRHANDLE, flock FILEHANDLE,OPERATION , fork , format , formline PICTURE,LIST ,
 getc FILEHANDLE , getc, getlogin
 , getpeername SOCKET , getpgrp PID , getppid , getpriority WHICH,WHO ,
 getpwnam NAME
 , getgrnam NAME, gethostbyname NAME, getnetbyname NAME, getprotobyname NAME,
 getpwuid UID, getgrgid GID, getservbyname NAME,PROTO, gethostbyaddr ADDR,ADDRTYPE,
 getnetbyaddr ADDR,ADDRTYPE, getprotobyname NUMBER, getservbyport PORT,PROTO,
 getpwent, getgrent, gethostent, getnetent, getprotoent, getservent, setpwent,
 setgrent, sethostent STAYOPEN, setnetent STAYOPEN, setprotoent STAYOPEN,
 setservent STAYOPEN, endpwent, endgrent, endhostent, endnetent, endprotoent,
 endservent, getsockname SOCKET , getsockopt SOCKET,LEVEL,OPTNAME , glob EXPR
 , glob, gmtime EXPR
 , gmtime, goto LABEL , goto EXPR, goto &NAME, grep BLOCK LIST , grep
 EXPR,LIST, hex EXPR

, hex, import LIST , index STR,SUBSTR,POSITION , index STR,SUBSTR, int EXPR
 , int, ioctl FILEHANDLE,FUNCTION,SCALAR , join EXPR,LIST , keys HASH
 , keys ARRAY, kill SIGNAL, LIST, kill SIGNAL , last LABEL , last EXPR, last, lc
 EXPR , lc, If "use bytes" is in effect:, Otherwise, if "use locale" for "LC_CTYPE"
 is in effect:, Otherwise, If EXPR has the UTF8 flag set:, Otherwise, if "use
 feature 'unicode_strings'" or "use locale ':not_characters'" is in effect:,
 Otherwise:, lcfirst EXPR , lcfirst, length EXPR , length, __LINE__ , link
 OLDFILE,NEWFILE , listen SOCKET,QUEUESIZE , local EXPR , localtime EXPR ,
 localtime, lock THING , log EXPR , log, lstat FILEHANDLE , lstat EXPR, lstat
 DIRHANDLE, lstat, m//, map BLOCK LIST , map EXPR,LIST, mkdir FILENAME,MODE
 , mkdir FILENAME, mkdir, msgctl ID,CMD,ARG , msgget KEY,FLAGS , msgrcv
 ID,VAR,SIZE,TYPE,FLAGS , msgsnd ID,MSG,FLAGS , my VARLIST , my TYPE VARLIST, my
 VARLIST : ATTRS, my TYPE VARLIST : ATTRS, next LABEL , next EXPR, next, no MODULE
 VERSION LIST , no MODULE VERSION, no MODULE LIST, no MODULE, no VERSION, oct EXPR
 , oct, open FILEHANDLE,MODE,EXPR , open FILEHANDLE,MODE,EXPR,LIST, open
 FILEHANDLE,MODE,REFERENCE, open FILEHANDLE,EXPR, open FILEHANDLE, Working with
 files, Simple examples, About filehandles, About modes, Checking the return value,
 Specifying I/O layers in MODE, Using "undef" for temporary files, Opening a
 filehandle into an in-memory scalar, Opening a filehandle into a command, Duping
 filehandles, Legacy usage, Specifying mode and filename as a single argument,
 Calling "open" with one argument via global variables, Assigning a filehandle to a
 bareword, Other considerations, Automatic filehandle closure, Automatic pipe
 flushing, Direct versus by-reference assignment of filehandles, Whitespace and
 special characters in the filename argument, Invoking C-style "open", Portability
 issues, opendir DIRHANDLE,EXPR , ord EXPR , ord, our VARLIST , our TYPE VARLIST,
 our VARLIST : ATTRS, our TYPE VARLIST : ATTRS, pack TEMPLATE,LIST , package
 NAMESPACE, package NAMESPACE VERSION
 , package NAMESPACE BLOCK, package NAMESPACE VERSION BLOCK , __PACKAGE__ , pipe
 READHANDLE,WRITEHANDLE , pop ARRAY , pop, pos SCALAR , pos, print FILEHANDLE
 LIST , print FILEHANDLE, print LIST, print, printf FILEHANDLE FORMAT, LIST ,
 printf FILEHANDLE, printf FORMAT, LIST, printf, prototype FUNCTION , prototype,
 push ARRAY,LIST , q/STRING/, qq/STRING/, qw/STRING/, qx/STRING/, qr/STRING/,
 quotemeta EXPR , quotemeta, rand EXPR , rand, read

FILEHANDLE,SCALAR,LENGTH,OFFSET , read FILEHANDLE,SCALAR,LENGTH, readdir
 DIRHANDLE , readline EXPR, readline , readlink EXPR , readlink, readpipe EXPR,
 readpipe , recv SOCKET,SCALAR,LENGTH,FLAGS , redo LABEL , redo EXPR, redo, ref
 EXPR , ref, rename OLDNAME,NEWNAME , require VERSION , require EXPR, require,
 reset EXPR , reset, return EXPR , return, reverse LIST , rewinddir DIRHANDLE ,
 rindex STR,SUBSTR,POSITION , rindex STR,SUBSTR, rmdir FILENAME , rmdir, s///,
 say FILEHANDLE LIST , say FILEHANDLE, say LIST, say, scalar EXPR , seek
 FILEHANDLE,POSITION,WHENCE , seekdir DIRHANDLE,POS , select FILEHANDLE , select,
 select RBITS,WBITS,EBITS,TIMEOUT , semctl ID,SEMNUM,CMD,ARG , semget
 KEY,NSEMS,FLAGS , semop KEY,OPSTRING , send SOCKET,MSG,FLAGS,TO , send
 SOCKET,MSG,FLAGS, setpgrp PID,PGRP
 , setpriority WHICH,WHO,PRIORITY
 , setsockopt SOCKET,LEVEL,OPTNAME,OPTVAL , shift ARRAY , shift, shmctl
 ID,CMD,ARG , shmget KEY,SIZE,FLAGS , shmread ID,VAR,POS,SIZE , shmwrite
 ID,STRING,POS,SIZE, shutdown SOCKET,HOW , sin EXPR , sin, sleep EXPR , sleep,
 socket SOCKET,DOMAIN,TYPE,PROTOCOL , socketpair
 SOCKET1,SOCKET2,DOMAIN,TYPE,PROTOCOL , sort SUBNAME LIST , sort BLOCK LIST, sort
 LIST, splice ARRAY,OFFSET,LENGTH,LIST , splice ARRAY,OFFSET,LENGTH, splice
 ARRAY,OFFSET, splice ARRAY, split /PATTERN/,EXPR,LIMIT , split /PATTERN/,EXPR,
 split /PATTERN/, split, sprintf FORMAT, LIST , format parameter index, flags,
 vector flag, (minimum) width, precision, or maximum width , size, order of
 arguments, sqrt EXPR , sqrt, srand EXPR , srand, stat FILEHANDLE
 , stat EXPR, stat DIRHANDLE, stat, state VARLIST , state TYPE VARLIST, state
 VARLIST : ATTRS, state TYPE VARLIST : ATTRS, study SCALAR , study, sub NAME BLOCK
 , sub NAME (PROTO) BLOCK, sub NAME : ATTRS BLOCK, sub NAME (PROTO) : ATTRS BLOCK,
 __SUB__ , substr EXPR,OFFSET,LENGTH,REPLACEMENT
 , substr EXPR,OFFSET,LENGTH, substr EXPR,OFFSET, symlink OLDFILE,NEWFILE ,
 syscall NUMBER, LIST , sysopen FILEHANDLE,FILENAME,MODE , sysopen
 FILEHANDLE,FILENAME,MODE,PERMS, sysread FILEHANDLE,SCALAR,LENGTH,OFFSET , sysread
 FILEHANDLE,SCALAR,LENGTH, sysseek FILEHANDLE,POSITION,WHENCE , system LIST ,
 system PROGRAM LIST, syswrite FILEHANDLE,SCALAR,LENGTH,OFFSET , syswrite
 FILEHANDLE,SCALAR,LENGTH, syswrite FILEHANDLE,SCALAR, tell FILEHANDLE , tell,
 telldir DIRHANDLE , tie VARIABLE,CLASSNAME,LIST , tied VARIABLE , time , times ,

tr///, truncate FILEHANDLE,LENGTH , truncate EXPR,LENGTH, uc EXPR , uc, ucfirst
EXPR , ucfirst, umask EXPR , umask, undef EXPR , undef, unlink LIST
, unlink, unpack TEMPLATE,EXPR , unpack TEMPLATE, unshift ARRAY,LIST , untie
VARIABLE , use Module VERSION LIST , use Module VERSION, use Module LIST, use
Module, use VERSION, utime LIST , values HASH , values ARRAY, vec EXPR,OFFSET,BITS
, wait , waitpid PID,FLAGS , wantarray , warn LIST
, write FILEHANDLE , write EXPR, write, y///

Non-function Keywords by Cross-reference

__DATA__, __END__, BEGIN, CHECK, END, INIT, UNITCHECK, DESTROY, and, cmp, eq, ge,
gt, le, lt, ne, not, or, x, xor, AUTOLOAD, else, elsif, for, foreach, if, unless,
until, while, elsif, default, given, when

perlopenutut - simple recipes for opening files and pipes in Perl

DESCRIPTION

OK, HANDLE, MODE, PATHNAME

Opening Text Files

Opening Text Files for Reading

Opening Text Files for Writing

Opening Binary Files

Opening Pipes

Opening a pipe for reading

Opening a pipe for writing

Expressing the command as a list

SEE ALSO

AUTHOR and COPYRIGHT

perlpacktut - tutorial on "pack" and "unpack"

DESCRIPTION

The Basic Principle

Packing Text

Packing Numbers

Integers

Unpacking a Stack Frame

How to Eat an Egg on a Net

Byte-order modifiers

Floating point Numbers

Exotic Templates

Bit Strings

Uuencoding

Doing Sums

Unicode

Another Portable Binary Encoding

Template Grouping

Lengths and Widths

String Lengths

Dynamic Templates

Counting Repetitions

Intel HEX

Packing and Unpacking C Structures

The Alignment Pit

Dealing with Endian-ness

Alignment, Take 2

Alignment, Take 3

Pointers for How to Use Them

Pack Recipes

Funnies Section

Authors

perlpod - the Plain Old Documentation format

DESCRIPTION

Ordinary Paragraph

Verbatim Paragraph

Command Paragraph

"=head1 Heading Text"

, "=head2 Heading Text", "=head3 Heading Text", "=head4 Heading Text", "=over

indentlevel"

, "=item stuff...", "=back", "=cut" , "=pod" , "=begin formatname"

, "=end formatname", "=for formatname text...", "=encoding encodingname"

Formatting Codes

"I<text>" -- italic text , "B<text>" -- bold text

, "C<code>" -- code text

, "L<name>" -- a hyperlink , "E<escape>" -- a character escape

, "F<filename>" -- used for filenames , "S<text>" -- text contains non-breaking spaces

, "X<topic name>" -- an index entry

, "Z<>" -- a null (zero-effect) formatting code

The Intent

Embedding Pods in Perl Modules

Hints for Writing Pod

SEE ALSO

AUTHOR

perlpodspec - Plain Old Documentation: format specification and notes

DESCRIPTION

Pod Definitions

Pod Commands

"=head1", "=head2", "=head3", "=head4", "=pod", "=cut", "=over", "=item", "=back",

"=begin formatname", "=begin formatname parameter", "=end formatname", "=for
formatname text...", "=encoding encodingname"

Pod Formatting Codes

"I<text>" -- italic text, "B<text>" -- bold text, "C<code>" -- code text,

"F<filename>" -- style for filenames, "X<topic name>" -- an index entry, "Z<>" -- a
null (zero-effect) formatting code, "L<name>" -- a hyperlink, "E<escape>" -- a
character escape, "S<text>" -- text contains non-breaking spaces

Notes on Implementing Pod Processors

About L<...> Codes

First:, Second:, Third:, Fourth:, Fifth:, Sixth:

About =over...=back Regions

About Data Paragraphs and "=begin/=end" Regions

SEE ALSO

AUTHOR

perldocstyle - A style guide for writing Perl's documentation

DESCRIPTION

Purpose of this guide

Intended audience

Status of this document

FUNDAMENTALS

Choice of markup: Pod

Choice of language: American English

Choice of encoding: UTF-8

Choice of underlying style guide: CMOS

Contributing to Perl's documentation

FORMATTING AND STRUCTURE

Document structure

Formatting rules

Adding comments

Perlfunc has special rules

TONE AND STYLE

Apply one of the four documentation modes

Assume readers' intelligence, but not their knowledge

Use meaningful variable and symbol names in examples

Write in English, but not just for English-speakers

Omit placeholder text or commentary

Apply section-breaks and examples generously

Lead with common cases and best practices

Document Perl's present

The documentation speaks with one voice

INDEX OF PREFERRED TERMS

built-in function, Darwin, macOS, man page, Perl; perl, Perl 5, Perl 6, Perl 5

Porters, the; porters, the; p5p, program, Raku, script, semicolon, Unix

SEE ALSO

AUTHOR

perlpodstyle - Perl POD style guide

DESCRIPTION

NAME, SYNOPSIS, DESCRIPTION, OPTIONS, RETURN VALUE, ERRORS, DIAGNOSTICS, EXAMPLES,

ENVIRONMENT, FILES, CAVEATS, BUGS, RESTRICTIONS, NOTES, AUTHOR, HISTORY, COPYRIGHT AND

LICENSE, SEE ALSO

AUTHOR

COPYRIGHT AND LICENSE

SEE ALSO

perldiag - various Perl diagnostics

DESCRIPTION

SEE ALSO

perldeprecation - list Perl deprecations

DESCRIPTION

Perl 5.34

Perl 5.32

Perl 5.30

Perl 5.28

Perl 5.26

Perl 5.24

Perl 5.16

SEE ALSO

perllexwarn - Perl Lexical Warnings

DESCRIPTION

perldebug - Perl debugging

DESCRIPTION

The Perl Debugger

Calling the Debugger

perl -d program_name, perl -d -e 0, perl -d:ptkdb program_name, perl -dt
threaded_program_name

Debugger Commands

h , h [command], h h, p expr , x [maxdepth] expr , V [pkg [vars]] , X [vars] , y
[level [vars]] , T , s [expr] , n [expr] , r , <CR> , c [line|sub] , l , l
min+incr, l min-max, l line, l subname, - , v [line] , . , f filename , /pattern/,
?pattern?, L [abw] , S [[!]regex] , t [n] , t [n] expr , b , b [line] [condition]
, b [file]:[line] [condition] , b subname [condition] , b postpone subname
[condition] , b load filename
, b compile subname , B line , B *

, disable [file]:[line]
 , disable [line]
 , enable [file]:[line]
 , enable [line]
 , a [line] command , A line , A * , w expr , W expr , W * , o , o booption ...
 , o anyoption? ... , o option=value ... , < ? , < [command] , < * , << command ,
 > ? , > command , > * , >> command , { ? , { [command] , { * , {{ command , !
 number , ! -number , ! pattern , !! cmd , source file , H -number , q or ^D , R ,
 |dbcmd , ||dbcmd , command, m expr , M , man [manpage]

Configurable Options

"recallCommand", "ShellBang" , "pager" , "tkRunning" , "signalLevel",
 "warnLevel", "dieLevel"
 , "AutoTrace" , "LineInfo" , "inhibit_exit" , "PrintRet" , "ornaments" , "frame"
 , "maxTraceLen" , "windowSize" , "arrayDepth" , "hashDepth" , "dumpDepth" ,
 "compactDump", "veryCompact" , "globPrint" , "DumpDBFiles" , "DumpPackages" ,
 "DumpReused" , "quote", "HighBit", "undefPrint"
 , "UsageOnly" , "HistFile" , "HistSize" , "TTY" , "noTTY" , "ReadLine" ,
 "NonStop"

Debugger Input/Output

Prompt, Multiline commands, Stack backtrace , Line Listing Format, Frame listing

Debugging Compile-Time Statements

Debugger Customization

Readline Support / History in the Debugger

Editor Support for Debugging

The Perl Profiler

Debugging Regular Expressions

Debugging Memory Usage

SEE ALSO

BUGS

perlvar - Perl predefined variables

DESCRIPTION

The Syntax of Variable Names

SPECIAL VARIABLES

General Variables

\$ARG, \$_ , @ARG, @_ , \$LIST_SEPARATOR, \$" , \$PROCESS_ID, \$PID, \$\$,
\$PROGRAM_NAME, \$0 , \$REAL_GROUP_ID, \$GID, \$(
 , \$EFFECTIVE_GROUP_ID, \$EGID, \$) , \$REAL_USER_ID, \$UID, \$< , \$EFFECTIVE_USER_ID,
\$EUID, \$> , \$SUBSCRIPT_SEPARATOR, \$SUBSEP, \$; , \$a, \$b , %ENV ,
\$OLD_PERL_VERSION, \$] , \$SYSTEM_FD_MAX, \$^F
 , @F , @INC , %INC , \$INPLACE_EDIT, \$^I , @ISA , \$^M , \$OSNAME, \$^O , %SIG ,
\$BASETIME, \$^T , \$PERL_VERSION, \$^V , \${^WIN32_SLOPPY_STAT} , \$EXECUTABLE_NAME,
\$^X

Variables related to regular expressions

\$<digits> (\$1, \$2, ...) , @{^CAPTURE}
 , \$MATCH, \$& , \${^MATCH} , \$PREMATCH, \$` , \${^PREMATCH} , \$POSTMATCH, \$'
 , \${^POSTMATCH} , \$LAST_PAREN_MATCH, \$+ , \$LAST_SUBMATCH_RESULT, \$^N ,
@LAST_MATCH_END, @+ , %{^CAPTURE}, %LAST_PAREN_MATCH, %+
 , @LAST_MATCH_START, @- , "\$" is the same as "substr(\$var, 0, \$-[0])", \$& is the
same as "substr(\$var, \$-[0], \$+[0] - \$-[0])", "\$" is the same as "substr(\$var,
\$+[0])", \$1 is the same as "substr(\$var, \$-[1], \$+[1] - \$-[1])", \$2 is the same as
"substr(\$var, \$-[2], \$+[2] - \$-[2])", \$3 is the same as "substr(\$var, \$-[3], \$+[3]
- \$-[3])", %{^CAPTURE_ALL} , %- , \$LAST_REGEXP_CODE_RESULT, \$^R ,
\${^RE_COMPILE_RECURSION_LIMIT} , \${^RE_DEBUG_FLAGS} , \${^RE_TRIE_MAXBUF}

Variables related to filehandles

\$ARGV , @ARGV , ARGV , ARGVOUT , IO::Handle->output_field_separator(EXPR),
\$OUTPUT_FIELD_SEPARATOR, \$OFS, \$, HANDLE->input_line_number(EXPR),
\$INPUT_LINE_NUMBER, \$NR, \$. , IO::Handle->input_record_separator(EXPR),
\$INPUT_RECORD_SEPARATOR, \$RS, \$/ , IO::Handle->output_record_separator(EXPR),
\$OUTPUT_RECORD_SEPARATOR, \$ORS, \$\ , HANDLE->autoflush(EXPR),
\$OUTPUT_AUTOFLUSH, \$| , \${^LAST_FH} , \$ACCUMULATOR, \$^A ,
IO::Handle->format_formfeed(EXPR), \$FORMAT_FORMFEED, \$^L ,
HANDLE->format_page_number(EXPR), \$FORMAT_PAGE_NUMBER, \$% ,
HANDLE->format_lines_left(EXPR), \$FORMAT_LINES_LEFT, \$- ,
IO::Handle->format_line_break_characters EXPR, \$FORMAT_LINE_BREAK_CHARACTERS, \$:
 , HANDLE->format_lines_per_page(EXPR), \$FORMAT_LINES_PER_PAGE, \$= ,
HANDLE->format_top_name(EXPR), \$FORMAT_TOP_NAME, \$^ , HANDLE->format_name(EXPR), *Page 36/487*

\$FORMAT_NAME, \$~

Error Variables

`\${^CHILD\_ERROR\_NATIVE}`, \$EXTENDED_OS_ERROR, \$^E
, \$EXCEPTIONS_BEING_CAUGHT, \$^S, \$WARNING, \$^W, `\${^WARNING\_BITS}`, \$OS_ERROR,
\$ERRNO, \$! , %OS_ERROR, %ERRNO, %! , \$CHILD_ERROR, \$? , \$EVAL_ERROR, \$@

Variables related to the interpreter state

\$COMPILING, \$^C , \$DEBUGGING, \$^D , `\${^ENCODING}`, `\${^GLOBAL\_PHASE}`, CONSTRUCT,
START, CHECK, INIT, RUN, END, DESTRUCT, \$^H , %^H , `\${^OPEN}`, \$PERLDB, \$^P ,
0x01, 0x02, 0x04, 0x08, 0x10, 0x20, 0x40, 0x80, 0x100, 0x200, 0x400, 0x800,
0x1000, `\${^TAINT}`, `\${^SAFE\_LOCALES}`, `\${^UNICODE}`, `\${^UTF8CACHE}`,
`\${^UTF8LOCALE}

Deprecated and removed variables

\$# , \$* , \$[

perlre - Perl regular expressions

DESCRIPTION

The Basics

Modifiers

"m" , "s" , "i" , "x" and "xx" , "p" , "a" , "d" , "l" , and "u"
, "n" , Other Modifiers

Regular Expressions

[1], [2], [3], [4], [5], [6], [7], [8]

Quoting metacharacters

Extended Patterns

"(?:#text)" , "(?adlupimnsx-imnsx)" , "(?^alupimnsx)" , "(?:pattern)" ,
"(?adluimnsx-imnsx:pattern)" , "(?^aluiimnsx:pattern)" , "(?:|pattern)" , Lookaround
Assertions , "(?=pattern)" , "(*pla:pattern)" , "(*positive_lookahead:pattern)"
, "(?!pattern)" , "(*nla:pattern)" , "(*negative_lookahead:pattern)"
, "(?<=pattern)" , "\K" , "(*plb:pattern)" , "(*positive_lookbehind:pattern)"
, "(?<!=pattern)" , "(*nlb:pattern)" , "(*negative_lookbehind:pattern)"
, "(?<NAME>pattern)" , "(?'NAME'pattern)"
, "\k<NAME>" , "\k'NAME'" , "\k{NAME}" , "(? { code })" , "(? ? { code })" ,
"(?PARNO)" "(?-PARNO)" "(?+PARNO)" "(?R)" "(?0)"
, "(?&NAME)" , "(?(condition)yes-pattern|no-pattern)" ,

"(?<condition>yes-pattern)", an integer in parentheses, a
 lookahead/lookbehind/evaluate zero-width assertion;, a name in angle brackets or
 single quotes, the special symbol "(R)", "(1)" "(2)" .., "<NAME>" "('NAME')",
 "(?=...)" "(?!...)" "(?<=...)" "(?<!...)", "(?<{ CODE })", "(R)", "(R1)" "(R2)"
 .., "(R&NAME)", "(DEFINE)", "(?>pattern)", "(*atomic:pattern)"
 , "(?[])"

Backtracking

Script Runs

Special Backtracking Control Verbs

Verbs, "(*PRUNE)" "(*PRUNE:NAME)" , "(*SKIP)" "(*SKIP:NAME)" , "(*MARK:NAME)"
 "(*:NAME)"
 , "(*THEN)" "(*THEN:NAME)" , "(*COMMIT)" "(*COMMIT:arg)" , "(*FAIL)" "(*F)"
 "(*FAIL:arg)" , "(*ACCEPT)" "(*ACCEPT:arg)"

Warning on "\1" Instead of \$1

Repeated Patterns Matching a Zero-length Substring

Combining RE Pieces

"ST", "S|T", "S{REPEAT_COUNT}", "S{min,max}", "S{min,max}?", "S?", "S*", "S+",
 "S???", "S*?", "S+?", "(?>S)", "(?=S)", "(?<=S)", "(?!S)", "(?<!S)", "(?<{ EXPR
 })", "(?PARNO)", "(?<condition>yes-pattern|no-pattern)"

Creating Custom RE Engines

Embedded Code Execution Frequency

PCRE/Python Support

"(?P<NAME>pattern)", "(?P=NAME)", "(?P>NAME)"

BUGS

SEE ALSO

perlrebackslash - Perl Regular Expression Backslash Sequences and Escapes

DESCRIPTION

The backslash

[1]

All the sequences and escapes

Character Escapes

[1], [2]

Modifiers

Character classes

Referencing

Assertions

`\A, \z, \Z, \G, \b, \B, "\b{gcb}" or "\b{g}", "\b{lb}", "\b{sb}",
"\b{wb}"`

Misc

`\K, \N, \R, \X`

perlrecharclass - Perl Regular Expression Character Classes

DESCRIPTION

The dot

Backslash sequences

If the `/a` modifier is in effect ..., otherwise ..., For code points above 255 ...,
For code points below 256 ..., if locale rules are in effect ..., if, instead,
Unicode rules are in effect ..., otherwise ..., If the `/a` modifier is in effect
..., otherwise ..., For code points above 255 ..., For code points below 256 ..., if
locale rules are in effect ..., if, instead, Unicode rules are in effect ...,
otherwise ..., [1], [2]

Bracketed Character Classes

[1], [2], [3], [4], [5], [6], [7], If the `/a` modifier, is in effect ...,
otherwise ..., For code points above 255 ..., For code points below 256 ..., if
locale rules are in effect ..., "word", "ascii", "blank", if, instead, Unicode
rules are in effect ..., otherwise ..

perlref - Perl Regular Expressions Reference

DESCRIPTION

OPERATORS

SYNTAX

ESCAPE SEQUENCES

CHARACTER CLASSES

ANCHORS

QUANTIFIERS

EXTENDED CONSTRUCTS

VARIABLES

FUNCTIONS

TERMINOLOGY

AUTHOR

SEE ALSO

THANKS

perlref - Perl references and nested data structures

NOTE

DESCRIPTION

Making References

Using References

Circular References

Symbolic references

Not-so-symbolic references

Pseudo-hashes: Using an array as a hash

Function Templates

Postfix Dereference Syntax

Postfix Reference Slicing

Assigning to References

Declaring a Reference to a Variable

WARNING: Don't use references as hash keys

SEE ALSO

perlform - Perl formats

DESCRIPTION

Text Fields

Numeric Fields

The Field @* for Variable-Width Multi-Line Text

The Field ^* for Variable-Width One-line-at-a-time Text

Specifying Values

Using Fill Mode

Suppressing Lines Where All Fields Are Void

Repeating Format Lines

Top of Form Processing

Format Variables

NOTES

Footers

Accessing Formatting Internals

WARNINGS

perlobj - Perl object reference

DESCRIPTION

An Object is Simply a Data Structure

A Class is Simply a Package

A Method is Simply a Subroutine

Method Invocation

Inheritance

Writing Constructors

Attributes

An Aside About Smarter and Safer Code

Method Call Variations

Invoking Class Methods

"bless", "blessed", and "ref"

The UNIVERSAL Class

isa(\$class) , DOES(\$role) , can(\$method) , VERSION(\$need)

AUTOLOAD

Destructors

Non-Hash Objects

Inside-Out objects

Pseudo-hashes

SEE ALSO

perlite - how to hide an object class in a simple variable

SYNOPSIS

DESCRIPTION

Tying Scalars

TIESCALAR classname, LIST , FETCH this , STORE this, value , UNTIE this , DESTROY
this

Tying Arrays

TIEARRAY classname, LIST , FETCH this, index , STORE this, index, value ,
FETCHSIZE this , STORESIZE this, count , EXTEND this, count , EXISTS this, key ,

DELETE this, key , CLEAR this , PUSH this, LIST

, POP this , SHIFT this , UNSHIFT this, LIST , SPLICE this, offset, length, LIST

, UNTIE this , DESTROY this

Tying Hashes

USER, HOME, CLOBBER, LIST, TIEHASH classname, LIST , FETCH this, key , STORE this,

key, value , DELETE this, key , CLEAR this , EXISTS this, key , FIRSTKEY this ,

NEXTKEY this, lastkey , SCALAR this , UNTIE this , DESTROY this

Tying FileHandles

TIEHANDLE classname, LIST , WRITE this, LIST , PRINT this, LIST , PRINTF this,

LIST , READ this, LIST , READLINE this , GETC this , EOF this , CLOSE this , UNTIE

this , DESTROY this

UNTIE this

The "untie" Gotcha

SEE ALSO

BUGS

AUTHOR

perldbfilter - Perl DBM Filters

SYNOPSIS

DESCRIPTION

filter_store_key, filter_store_value, filter_fetch_key, filter_fetch_value

The Filter

An Example: the NULL termination problem.

Another Example: Key is a C int.

SEE ALSO

AUTHOR

perlipc - Perl interprocess communication (signals, fifos, pipes, safe subprocesses, sockets, and semaphores)

DESCRIPTION

Signals

Handling the SIGHUP Signal in Daemons

Deferred Signals (Safe Signals)

Long-running opcodes, Interrupting IO, Restartable system calls, Signals as

"faults", Signals triggered by operating system state

Named Pipes

Using open() for IPC

Filehandles

Background Processes

Complete Dissociation of Child from Parent

Safe Pipe Opens

Avoiding Pipe Deadlocks

Bidirectional Communication with Another Process

Bidirectional Communication with Yourself

Sockets: Client/Server Communication

Internet Line Terminators

Internet TCP Clients and Servers

Unix-Domain TCP Clients and Servers

TCP Clients with IO::Socket

A Simple Client

"Proto", "PeerAddr", "PeerPort"

A Webget Client

Interactive Client with IO::Socket

TCP Servers with IO::Socket

Proto, LocalPort, Listen, Reuse

UDP: Message Passing

SysV IPC

NOTES

BUGS

AUTHOR

SEE ALSO

perlfork - Perl's fork() emulation

SYNOPSIS

DESCRIPTION

Behavior of other Perl features in forked pseudo-processes

\$\$ or \$PROCESS_ID, %ENV, chdir() and all other builtins that accept filenames,

wait() and waitpid(), kill(), exec(), exit(), Open handles to files, directories

and network sockets

Resource limits

Killing the parent process

Lifetime of the parent process and pseudo-processes

CAVEATS AND LIMITATIONS

BEGIN blocks, Open filehandles, Open directory handles, Forking pipe open() not yet implemented, Global state maintained by XSUBs, Interpreter embedded in larger application, Thread-safety of extensions

PORTABILITY CAVEATS

BUGS

AUTHOR

SEE ALSO

perlnumber - semantics of numbers and numeric operations in Perl

SYNOPSIS

DESCRIPTION

Storing numbers

Numeric operators and numeric conversions

Flavors of Perl numeric operations

Arithmetic operators, ++, Arithmetic operators during "use integer", Other mathematical operators, Bitwise operators, Bitwise operators during "use integer", Operators which expect an integer, Operators which expect a string

AUTHOR

SEE ALSO

perlthrtut - Tutorial on threads in Perl

DESCRIPTION

What Is A Thread Anyway?

Threaded Program Models

Boss/Worker

Work Crew

Pipeline

What kind of threads are Perl threads?

Thread-Safe Modules

Thread Basics

Basic Thread Support

A Note about the Examples

Creating Threads

Waiting For A Thread To Exit

Ignoring A Thread

Process and Thread Termination

Threads And Data

Shared And Unshared Data

Thread Pitfalls: Races

Synchronization and control

Controlling access: lock()

A Thread Pitfall: Deadlocks

Queues: Passing Data Around

Semaphores: Synchronizing Data Access

Basic semaphores

Advanced Semaphores

Waiting for a Condition

Giving up control

General Thread Utility Routines

What Thread Am I In?

Thread IDs

Are These Threads The Same?

What Threads Are Running?

A Complete Example

Different implementations of threads

Performance considerations

Process-scope Changes

Thread-Safety of System Libraries

Conclusion

SEE ALSO

Bibliography

Introductory Texts

OS-Related References

Other References

Acknowledgements

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perlport - Writing portable Perl

DESCRIPTION

Not all Perl programs have to be portable, Nearly all of Perl already is portable

ISSUES

Newlines

Numbers endianness and Width

Files and Filesystems

System Interaction

Command names versus file pathnames

Networking

Interprocess Communication (IPC)

External Subroutines (XS)

Standard Modules

Time and Date

Character sets and character encoding

Internationalisation

System Resources

Security

Style

CPAN Testers

PLATFORMS

Unix

DOS and Derivatives

VMS

VOS

EBCDIC Platforms

Acorn RISC OS

Other perls

FUNCTION IMPLEMENTATIONS

Alphabetical Listing of Perl Functions

-X, alarm, atan2, binmode, chdir, chmod, chown, chroot, crypt, dbmclose, dbmopen, dump, exec, exit, fcntl, flock, fork, getlogin, getpgrp, getppid, getpriority, getpwnam, getgrnam, getnetbyname, getpwuid, getgrgid, getnetbyaddr, getprotobyname, getpwent, getgrent, gethostbyname, gethostent, getnetent, getprotoent, getservent, seekdir, sethostent, setnetent, setprotoent, setservent, endpwent, endgrent, endhostent, endnetent, endprotoent, endservent, getsockopt, glob, gmtime, ioctl, kill, link, localtime, lstat, msgctl, msgget, msgsnd, msgrcv, open, readlink, rename, rewinddir, select, semctl, semget, semop, setgrent, setpgrp, setpriority, setpwent, setsockopt, shmctl, shmget, shmread, shmwrite, sleep, socketpair, stat, symlink, syscall, sysopen, system, telldir, times, truncate, umask, utime, wait, waitpid

Supported Platforms

Linux (x86, ARM, IA64), HP-UX, AIX, Win32, Windows 2000, Windows XP, Windows Server 2003, Windows Vista, Windows Server 2008, Windows 7, Cygwin, Solaris (x86, SPARC), OpenVMS, Alpha (7.2 and later), I64 (8.2 and later), NetBSD, FreeBSD, Debian GNU/kFreeBSD, Haiku, Irix (6.5. What else?), OpenBSD, Dragonfly BSD, Midnight BSD, QNX Neutrino RTOS (6.5.0), MirOS BSD, Stratus OpenVOS (17.0 or later), time_t issues that may or may not be fixed, Stratus VOS / OpenVOS, AIX, Android, FreeMINT

EOL Platforms

(Perl 5.20)

AT&T 3b1

(Perl 5.14)

Windows 95, Windows 98, Windows ME, Windows NT4

(Perl 5.12)

Atari MiNT, Apollo Domain/OS, Apple Mac OS 8/9, Tenon Machten

Supported Platforms (Perl 5.8)

SEE ALSO

AUTHORS / CONTRIBUTORS

perllocale - Perl locale handling (internationalization and localization)

DESCRIPTION

WHAT IS A LOCALE

Category "LC_NUMERIC": Numeric formatting, Category "LC_MONETARY": Formatting of monetary amounts, Category "LC_TIME": Date/Time formatting, Category "LC_MESSAGES":

Error and other messages, Category "LC_COLLATE": Collation, Category "LC_CTYPE":

Character Types, Other categories

PREPARING TO USE LOCALES

USING LOCALES

The "use locale" pragma

Not within the scope of "use locale", Lingering effects of "use?locale", Under

""use locale";"

The setlocale function

Multi-threaded operation

Finding locales

LOCALE PROBLEMS

Testing for broken locales

Temporarily fixing locale problems

Permanently fixing locale problems

Permanently fixing your system's locale configuration

Fixing system locale configuration

The localeconv function

l18N::Langinfo

LOCALE CATEGORIES

Category "LC_COLLATE": Collation: Text Comparisons and Sorting

Category "LC_CTYPE": Character Types

Category "LC_NUMERIC": Numeric Formatting

Category "LC_MONETARY": Formatting of monetary amounts

Category "LC_TIME": Representation of time

Other categories

SECURITY

ENVIRONMENT

PERL_SKIP_LOCALE_INIT, PERL_BADLANG, DPKG_RUNNING_VERSION, "LC_ALL", "LANGUAGE",
"LC_CTYPE", "LC_COLLATE", "LC_MONETARY", "LC_NUMERIC", "LC_TIME", "LANG"

Examples

NOTES

String "eval" and "LC_NUMERIC"

Backward compatibility

I18N:Collate obsolete

Sort speed and memory use impacts

Freely available locale definitions

I18n and I10n

An imperfect standard

Unicode and UTF-8

BUGS

Collation of strings containing embedded "NUL" characters

Multi-threaded

Broken systems

SEE ALSO

HISTORY

perluniintro - Perl Unicode introduction

DESCRIPTION

Unicode

Perl's Unicode Support

Perl's Unicode Model

Unicode and EBCDIC

Creating Unicode

Handling Unicode

Legacy Encodings

Unicode I/O

Displaying Unicode As Text

Special Cases

Advanced Topics

Miscellaneous

Questions With Answers

Hexadecimal Notation

Further Resources

UNICODE IN OLDER PERLS

SEE ALSO

ACKNOWLEDGMENTS

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DESCRIPTION

Important Caveats

Safest if you "use feature 'unicode_strings'", Input and Output Layers, You must convert your non-ASCII, non-UTF-8 Perl scripts to be UTF-8, "use utf8" still needed to enable UTF-8 in scripts, UTF-16 scripts autodetected

Byte and Character Semantics

ASCII Rules versus Unicode Rules

When the string has been upgraded to UTF-8, There are additional methods for regular expression patterns

Extended Grapheme Clusters (Logical characters)

Unicode Character Properties

"\p{All}", "\p{Alnum}", "\p{Any}", "\p{ASCII}", "\p{Assigned}", "\p{Blank}",
"\p{Decomposition_Type: Non_Canonical}" (Short: "\p{Dt=NonCanon}"),
"\p{Graph}", "\p{HorizSpace}", "\p{In=*}", "\p{PerlSpace}", "\p{PerlWord}",
"\p{Posix...}", "\p{Present_In: *}" (Short: "\p{In=*}"), "\p{Print}",
"\p{SpacePerl}", "\p{Title}" and "\p{Titlecase}", "\p{Unicode}", "\p{VertSpace}",
"\p{Word}", "\p{XPosix...}"

Comparison of "\N{...}" and "\p{name=...}"

[1], [2], [3], [4], [5]

Wildcards in Property Values

User-Defined Character Properties

User-Defined Case Mappings (for serious hackers only)

Character Encodings for Input and Output

Unicode Regular Expression Support Level

[1] "\N{U+...}" and "\x{...}", [2] "\p{...}" "\P{...}". This requirement is for a minimal list of properties. Perl supports these. See R2.7 for other properties,
[3] Perl has "\d" "\D" "\s" "\S" "\w" "\W" "\X" "[[:prop:]]" "[[:^prop:]]", plus all the properties specified by
<https://www.unicode.org/reports/tr18/#Compatibility_Properties>. These are described above in "Other Properties", [4], Regular expression lookahead, [5] "\b" "\B" meet most, but not all, the details of this requirement, but "\b{wb}" and "\B{wb}" do, as well as the stricter R2.3, [6], [7], [8] UTF-8/UTF-EBDDIC used in

Perl allows not only "U+10000" to "U+10FFFF" but also beyond "U+10FFFF", [9]
Unicode has rewritten this portion of UTS#18 to say that getting canonical
equivalence (see UAX#15 "Unicode Normalization Forms"
<<https://www.unicode.org/reports/tr15>>) is basically to be done at the programmer
level. Use NFD to write both your regular expressions and text to match them
against (you can use `Unicode::Normalize`), [10] Perl has "\X" and "\b{gcb}".
Unicode has retracted their "Grapheme Cluster Mode", and recently added string
properties, which Perl does not yet support, [11] see UAX#29 "Unicode Text
Segmentation" <<https://www.unicode.org/reports/tr29>>,, [12] see "Wildcards in
Property Values" above, [13] Perl supports all the properties in the Unicode
Character Database (UCD). It does not yet support the listed properties that come
from other Unicode sources, [14] The only optional property that Perl supports is
Named Sequence. None of these properties are in the UCD

Unicode Encodings

Noncharacter code points

Beyond Unicode code points

Security Implications of Unicode

Unicode in Perl on EBCDIC

Locales

When Unicode Does Not Happen

The "Unicode Bug"

Forcing Unicode in Perl (Or Unforcing Unicode in Perl)

Using Unicode in XS

Hacking Perl to work on earlier Unicode versions (for very serious hackers only)

Porting code from perl-5.6.X

BUGS

Interaction with Extensions

Speed

SEE ALSO

perlunicook - cookbookish examples of handling Unicode in Perl

DESCRIPTION

EXAMPLES

? 0: Standard preamble

- ? 1: Generic Unicode-savvy filter
- ? 2: Fine-tuning Unicode warnings
- ? 3: Declare source in utf8 for identifiers and literals
- ? 4: Characters and their numbers
- ? 5: Unicode literals by character number
- ? 6: Get character name by number
- ? 7: Get character number by name
- ? 8: Unicode named characters
- ? 9: Unicode named sequences
- ? 10: Custom named characters
- ? 11: Names of CJK codepoints
- ? 12: Explicit encode/decode
- ? 13: Decode program arguments as utf8
- ? 14: Decode program arguments as locale encoding
- ? 15: Declare STD{IN,OUT,ERR} to be utf8
- ? 16: Declare STD{IN,OUT,ERR} to be in locale encoding
- ? 17: Make file I/O default to utf8
- ? 18: Make all I/O and args default to utf8
- ? 19: Open file with specific encoding
- ? 20: Unicode casing
- ? 21: Unicode case-insensitive comparisons
- ? 22: Match Unicode linebreak sequence in regex
- ? 23: Get character category
- ? 24: Disabling Unicode-awareness in builtin charclasses
- ? 25: Match Unicode properties in regex with \p, \P
- ? 26: Custom character properties
- ? 27: Unicode normalization
- ? 28: Convert non-ASCII Unicode numerics
- ? 29: Match Unicode grapheme cluster in regex
- ? 30: Extract by grapheme instead of by codepoint (regex)
- ? 31: Extract by grapheme instead of by codepoint (substr)
- ? 32: Reverse string by grapheme
- ? 33: String length in graphemes

- ? 34: Unicode column-width for printing
- ? 35: Unicode collation
- ? 36: Case- and accent-insensitive Unicode sort
- ? 37: Unicode locale collation
- ? 38: Making "cmp" work on text instead of codepoints
- ? 39: Case- and accent-insensitive comparisons
- ? 40: Case- and accent-insensitive locale comparisons
- ? 41: Unicode linebreaking
- ? 42: Unicode text in DBM hashes, the tedious way
- ? 43: Unicode text in DBM hashes, the easy way
- ? 44: PROGRAM: Demo of Unicode collation and printing

SEE ALSO

?3.13 Default Case Algorithms, page 113; ?4.2 Case, pages 120?122; Case Mappings, page 166?172, especially Caseless Matching starting on page 170, UAX #44: Unicode Character Database, UTS #18: Unicode Regular Expressions, UAX #15: Unicode Normalization Forms, UTS #10: Unicode Collation Algorithm, UAX #29: Unicode Text Segmentation, UAX #14: Unicode Line Breaking Algorithm, UAX #11: East Asian Width

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REVISION HISTORY

perlunifaq - Perl Unicode FAQ

Q and A

perlunitut isn't really a Unicode tutorial, is it?

What character encodings does Perl support?

Which version of perl should I use?

What about binary data, like images?

When should I decode or encode?

What if I don't decode?

What if I don't encode?

If the string's characters are all code point 255 or lower, Perl outputs bytes that match those code points. This is what happens with encoded strings. It can also, though, happen with unencoded strings that happen to be all code point 255 or lower. Otherwise, Perl outputs the string encoded as UTF-8. This only happens

with strings you neglected to encode. Since that should not happen, Perl also throws a "wide character" warning in this case

Is there a way to automatically decode or encode?

What if I don't know which encoding was used?

Can I use Unicode in my Perl sources?

Data::Dumper doesn't restore the UTF8 flag; is it broken?

Why do regex character classes sometimes match only in the ASCII range?

Why do some characters not uppercase or lowercase correctly?

How can I determine if a string is a text string or a binary string?

How do I convert from encoding FOO to encoding BAR?

What are "decode_utf8" and "encode_utf8"?

What is a "wide character"?

INTERNALS

What is "the UTF8 flag"?

What about the "use bytes" pragma?

What about the "use encoding" pragma?

What is the difference between ":encoding" and ":utf8"?

What's the difference between "UTF-8" and "utf8"?

I lost track; what encoding is the internal format really?

AUTHOR

SEE ALSO

perluniprops - Index of Unicode Version 13.0.0 character properties in Perl

DESCRIPTION

Properties accessible through "\p{}" and "\P{}"

Single form ("\p{name}") tighter rules:, white space adjacent to a non-word character, underscores separating digits in numbers, Compound form ("\p{name=value}" or "\p{name:value}") tighter rules:, Stabilized, Deprecated, Obsolete, Discouraged, * is a wild-card, (d+) in the info column gives the number of Unicode code points matched by this property, D means this is deprecated, O means this is obsolete, S means this is stabilized, T means tighter (stricter) name matching applies, X means use of this form is discouraged, and may not be stable

Legal "\p{}" and "\P{}" constructs that match no characters

\p{Canonical_Combining_Class=Attached_Below_Left},

`\p{Canonical_Combining_Class=CCC133}`, `\p{Grapheme_Cluster_Break=E_Base}`,
`\p{Grapheme_Cluster_Break=E_Base_GAZ}`, `\p{Grapheme_Cluster_Break=E_Modifier}`,
`\p{Grapheme_Cluster_Break=Glue_After_Zwj}`, `\p{Word_Break=E_Base}`,
`\p{Word_Break=E_Base_GAZ}`, `\p{Word_Break=E_Modifier}`,
`\p{Word_Break=Glue_After_Zwj}`

Properties accessible through Unicode::UCD

Properties accessible through other means

Unicode character properties that are NOT accepted by Perl

`Expands_On_NFC (XO_NFC)`, `Expands_On_NFD (XO_NFD)`, `Expands_On_NFKC (XO_NFKC)`,
`Expands_On_NFKD (XO_NFKD)`, `Grapheme_Link (Gr_Link)`, `Jamo_Short_Name (JSN)`,
`Other_Alphabetic (OAlpha)`, `Other_Default_Ignorable_Code_Point (ODI)`,
`Other_Grapheme_Extend (OGr_Ext)`, `Other_ID_Continue (OIDC)`, `Other_ID_Start (IDS)`,
`Other_Lowercase (OLower)`, `Other_Math (OMath)`, `Other_Uppercase (OUpper)`,
`Script=Katakana_Or_Hiragana (sc=Hrkt)`, `Script_Extensions=Katakana_Or_Hiragana`
`(scx=Hrkt)`

Other information in the Unicode data base

`auxiliary/GraphemeBreakTest.html`, `auxiliary/LineBreakTest.html`,
`auxiliary/SentenceBreakTest.html`, `auxiliary/WordBreakTest.html`, `BidiCharacterTest.txt`,
`BidiTest.txt`, `NormTest.txt`, `CJKRadicals.txt`, `emoji/ReadMe.txt`, `ReadMe.txt`,
`EmojiSources.txt`, `extracted/DName.txt`, `Index.txt`, `NamedSqProv.txt`, `NamesList.html`,
`NamesList.txt`, `NormalizationCorrections.txt`, `NushuSources.txt`,
`StandardizedVariants.html`, `StandardizedVariants.txt`, `TangutSources.txt`,
`USourceData.txt`, `USourceGlyphs.pdf`

SEE ALSO

`perlunitut` - Perl Unicode Tutorial

DESCRIPTION

Definitions

Your new toolkit

I/O flow (the actual 5 minute tutorial)

SUMMARY

Q and A (or FAQ)

ACKNOWLEDGEMENTS

AUTHOR

SEE ALSO

perlebcdic - Considerations for running Perl on EBCDIC platforms

DESCRIPTION

COMMON CHARACTER CODE SETS

ASCII

ISO 8859

Latin 1 (ISO 8859-1)

EBCDIC

0037, 1047, POSIX-BC

Unicode code points versus EBCDIC code points

Unicode and UTF

Using Encode

SINGLE OCTET TABLES

recipe 0, recipe 1, recipe 2, recipe 3, recipe 4, recipe 5, recipe 6

Table in hex, sorted in 1047 order

IDENTIFYING CHARACTER CODE SETS

CONVERSIONS

"utf8::unicode_to_native()" and "utf8::native_to_unicode()"

tr//

iconv

C RTL

OPERATOR DIFFERENCES

FUNCTION DIFFERENCES

"chr()", "ord()", "pack()", "print()", "printf()", "sort()", "sprintf()", "unpack()"

REGULAR EXPRESSION DIFFERENCES

SOCKETS

SORTING

Ignore ASCII vs. EBCDIC sort differences.

Use a sort helper function

MONO CASE then sort data (for non-digits, non-underscore)

Perform sorting on one type of platform only.

TRANSFORMATION FORMATS

URL decoding and encoding

uu encoding and decoding

Quoted-Printable encoding and decoding

Caesarean ciphers

Hashing order and checksums

I18N AND L10N

MULTI-OCTET CHARACTER SETS

OS ISSUES

OS/400

PASE, IFS access

OS/390, z/OS

"sigaction", "chcp", dataset access, "iconv", locales

POSIX-BC?

BUGS

SEE ALSO

REFERENCES

HISTORY

AUTHOR

perlsec - Perl security

DESCRIPTION

SECURITY VULNERABILITY CONTACT INFORMATION

SECURITY MECHANISMS AND CONCERNS

Taint mode

Laundering and Detecting Tainted Data

Switches On the "#!" Line

Taint mode and @INC

Cleaning Up Your Path

Shebang Race Condition

Protecting Your Programs

Unicode

Algorithmic Complexity Attacks

Hash Seed Randomization, Hash Traversal Randomization, Bucket Order Perturbance,

New Default Hash Function, Alternative Hash Functions

Using Sudo

SEE ALSO

perlsecpolicy - Perl security report handling policy

DESCRIPTION

REPORTING SECURITY ISSUES IN PERL

WHAT ARE SECURITY ISSUES

Software covered by the Perl security team

Bugs that may qualify as security issues in Perl

Bugs that do not qualify as security issues in Perl

Bugs that require special categorization

HOW WE DEAL WITH SECURITY ISSUES

Perl's vulnerability remediation workflow

Publicly known and zero-day security issues

Vulnerability credit and bounties

perlmod - Perl modules (packages and symbol tables)

DESCRIPTION

Is this the document you were after?

This doc, perlnewmod, perlmodstyle

Packages

Symbol Tables

BEGIN, UNITCHECK, CHECK, INIT and END

Perl Classes

Perl Modules

Making your module threadsafe

SEE ALSO

perlmodlib - constructing new Perl modules and finding existing ones

THE PERL MODULE LIBRARY

Pragmatic Modules

attributes, autodie, autodie::exception, autodie::exception::system,
autodie::hints, autodie::skip, autouse, base, bigint, bignum, bigrat, blib, bytes,
chardnames, constant, deprecate, diagnostics, encoding, encoding::warnings,
experimental, feature, fields, filetest, if, integer, less, lib, locale, mro, ok,
open, ops, overload, overloading, parent, re, sigtrap, sort, strict, subs,
threads, threads::shared, utf8, vars, version, vmsish, warnings,

warnings::register

Standard Modules

Amiga::ARexx, Amiga::Exec, AnyDBM_File, App::Cpan, App::Prove, App::Prove::State, App::Prove::State::Result, App::Prove::State::Result::Test, Archive::Tar, Archive::Tar::File, Attribute::Handlers, AutoLoader, AutoSplit, B, B::Concise, B::Deparse, B::Op_private, B::Showlex, B::Terse, B::Xref, Benchmark, "IO::Socket::IP", "Socket", CORE, CPAN, CPAN::API::HOWTO, CPAN::Debug, CPAN::Distroprefs, CPAN::FirstTime, CPAN::HandleConfig, CPAN::Kwalify, CPAN::Meta, CPAN::Meta::Converter, CPAN::Meta::Feature, CPAN::Meta::History, CPAN::Meta::History::Meta_1_0, CPAN::Meta::History::Meta_1_1, CPAN::Meta::History::Meta_1_2, CPAN::Meta::History::Meta_1_3, CPAN::Meta::History::Meta_1_4, CPAN::Meta::Merge, CPAN::Meta::Prereqs, CPAN::Meta::Requirements, CPAN::Meta::Spec, CPAN::Meta::Validator, CPAN::Meta::YAML, CPAN::Nox, CPAN::Plugin, CPAN::Plugin::Specfile, CPAN::Queue, CPAN::Tarzip, CPAN::Version, Carp, Class::Struct, Compress::Raw::Bzip2, Compress::Raw::Zlib, Compress::Zlib, Config, Config::Extensions, Config::Perl::V, Cwd, DB, DBM_Filter, DBM_Filter::compress, DBM_Filter::encode, DBM_Filter::int32, DBM_Filter::null, DBM_Filter::utf8, DB_File, Data::Dumper, Devel::PPPort, Devel::Peek, Devel::SelfStubber, Digest, Digest::MD5, Digest::SHA, Digest::base, Digest::file, DirHandle, Dumpvalue, DynaLoader, Encode, Encode::Alias, Encode::Byte, Encode::CJKConstants, Encode::CN, Encode::CN::HZ, Encode::Config, Encode::EBCDIC, Encode::Encoder, Encode::Encoding, Encode::GSM0338, Encode::Guess, Encode::JP, Encode::JP::H2Z, Encode::JP::JIS7, Encode::KR, Encode::KR::2022_KR, Encode::MIME::Header, Encode::MIME::Name, Encode::PerlIO, Encode::Supported, Encode::Symbol, Encode::TW, Encode::Unicode, Encode::Unicode::UTF7, English, Env, Errno, Exporter, Exporter::Heavy, ExtUtils::CBuilder, ExtUtils::CBuilder::Platform::Windows, ExtUtils::Command, ExtUtils::Command::MM, ExtUtils::Constant, ExtUtils::Constant::Base, ExtUtils::Constant::Utils, ExtUtils::Constant::XS, ExtUtils::Embed, ExtUtils::Install, ExtUtils::Installed, ExtUtils::Liblist, ExtUtils::MM, ExtUtils::MM_AIX, ExtUtils::MM_Any, ExtUtils::MM_BeOS, ExtUtils::MM_Cygwin, ExtUtils::MM_DOS, ExtUtils::MM_Darwin, ExtUtils::MM_MacOS, ExtUtils::MM_NW5, ExtUtils::MM_OS2, ExtUtils::MM_OS390, ExtUtils::MM_QNX, ExtUtils::MM_UWIN, ExtUtils::MM_Unix, ExtUtils::MM_VMS,

ExtUtils::MM_VOS, ExtUtils::MM_Win32, ExtUtils::MM_Win95, ExtUtils::MY,
ExtUtils::MakeMaker, ExtUtils::MakeMaker::Config, ExtUtils::MakeMaker::FAQ,
ExtUtils::MakeMaker::Locale, ExtUtils::MakeMaker::Tutorial, ExtUtils::Manifest,
ExtUtils::Miniperl, ExtUtils::Mkbootstrap, ExtUtils::Mksymlists, ExtUtils::PL2Bat,
ExtUtils::Packlist, ExtUtils::ParseXS, ExtUtils::ParseXS::Constants,
ExtUtils::ParseXS::Eval, ExtUtils::ParseXS::Utilities, ExtUtils::Typemaps,
ExtUtils::Typemaps::Cmd, ExtUtils::Typemaps::InputMap,
ExtUtils::Typemaps::OutputMap, ExtUtils::Typemaps::Type, ExtUtils::XSSymSet,
ExtUtils::testlib, Fatal, Fcntl, File::Basename, File::Compare, File::Copy,
File::DosGlob, File::Fetch, File::Find, File::Glob, File::GlobMapper, File::Path,
File::Spec, File::Spec::AmigaOS, File::Spec::Cygwin, File::Spec::Epoc,
File::Spec::Functions, File::Spec::Mac, File::Spec::OS2, File::Spec::Unix,
File::Spec::VMS, File::Spec::Win32, File::Temp, File::stat, FileCache, FileHandle,
Filter::Simple, Filter::Util::Call, FindBin, GDBM_File, Getopt::Long, Getopt::Std,
HTTP::Tiny, Hash::Util, Hash::Util::FieldHash, I18N::Collate, I18N::LangTags,
I18N::LangTags::Detect, I18N::LangTags::List, I18N::Langinfo, IO,
IO::Compress::Base, IO::Compress::Bzip2, IO::Compress::Deflate, IO::Compress::FAQ,
IO::Compress::Gzip, IO::Compress::RawDeflate, IO::Compress::Zip, IO::Dir,
IO::File, IO::Handle, IO::Pipe, IO::Poll, IO::Seekable, IO::Select, IO::Socket,
IO::Socket::INET, IO::Socket::UNIX, IO::Uncompress::AnyInflate,
IO::Uncompress::AnyUncompress, IO::Uncompress::Base, IO::Uncompress::Bunzip2,
IO::Uncompress::Gunzip, IO::Uncompress::Inflate, IO::Uncompress::RawInflate,
IO::Uncompress::Unzip, IO::Zlib, IPC::Cmd, IPC::Msg, IPC::Open2, IPC::Open3,
IPC::Semaphore, IPC::SharedMem, IPC::SysV, Internals, JSON::PP, JSON::PP::Boolean,
List::Util, List::Util::XS, Locale::Maketext, Locale::Maketext::Cookbook,
Locale::Maketext::Guts, Locale::Maketext::GutsLoader, Locale::Maketext::Simple,
Locale::Maketext::TPJ13, MIME::Base64, MIME::QuotedPrint, Math::BigFloat,
Math::BigInt, Math::BigInt::Calc, Math::BigInt::FastCalc, Math::BigInt::Lib,
Math::BigRat, Math::Complex, Math::Trig, Memoize, Memoize::AnyDBM_File,
Memoize::Expire, Memoize::ExpireFile, Memoize::ExpireTest, Memoize::NDBM_File,
Memoize::SDBM_File, Memoize::Storable, Module::CoreList, Module::CoreList::Utils,
Module::Load, Module::Load::Conditional, Module::Loaded, Module::Metadata,
NDBM_File, NEXT, Net::Cmd, Net::Config, Net::Domain, Net::FTP, Net::FTP::dataconn,

Net::NNTP, Net::Netrc, Net::POP3, Net::Ping, Net::SMTP, Net::Time, Net::hostent,
Net::libnetFAQ, Net::netent, Net::protoent, Net::servent, O, ODBM_File, Opcode,
POSIX, Params::Check, Parse::CPAN::Meta, Perl::OSType, PerlIO, PerlIO::encoding,
PerlIO::mmap, PerlIO::scalar, PerlIO::via, PerlIO::via::QuotedPrint, Pod::Checker,
Pod::Escapes, Pod::Functions, Pod::Html, Pod::Man, Pod::ParseLink, Pod::Perldoc,
Pod::Perldoc::BaseTo, Pod::Perldoc::GetOptsOO, Pod::Perldoc::ToANSI,
Pod::Perldoc::ToChecker, Pod::Perldoc::ToMan, Pod::Perldoc::ToNroff,
Pod::Perldoc::ToPod, Pod::Perldoc::ToRtf, Pod::Perldoc::ToTerm,
Pod::Perldoc::ToText, Pod::Perldoc::ToTk, Pod::Perldoc::ToXml, Pod::Simple,
Pod::Simple::Checker, Pod::Simple::Debug, Pod::Simple::DumpAsText,
Pod::Simple::DumpAsXML, Pod::Simple::HTML, Pod::Simple::HTMLBatch,
Pod::Simple::JustPod, Pod::Simple::LinkSection, Pod::Simple::Methody,
Pod::Simple::PullParser, Pod::Simple::PullParserEndToken,
Pod::Simple::PullParserStartToken, Pod::Simple::PullParserTextToken,
Pod::Simple::PullParserToken, Pod::Simple::RTF, Pod::Simple::Search,
Pod::Simple::SimpleTree, Pod::Simple::Subclassing, Pod::Simple::Text,
Pod::Simple::TextContent, Pod::Simple::XHTML, Pod::Simple::XMLOutputStream,
Pod::Text, Pod::Text::Color, Pod::Text::Overstrike, Pod::Text::Termcap,
Pod::Usage, SDBM_File, Safe, Scalar::Util, Search::Dict, SelectSaver, SelfLoader,
Storable, Sub::Util, Symbol, Sys::Hostname, Sys::Syslog, Sys::Syslog::Win32,
TAP::Base, TAP::Formatter::Base, TAP::Formatter::Color, TAP::Formatter::Console,
TAP::Formatter::Console::ParallelSession, TAP::Formatter::Console::Session,
TAP::Formatter::File, TAP::Formatter::File::Session, TAP::Formatter::Session,
TAP::Harness, TAP::Harness::Env, TAP::Object, TAP::Parser,
TAP::Parser::Aggregator, TAP::Parser::Grammar, TAP::Parser::Iterator,
TAP::Parser::Iterator::Array, TAP::Parser::Iterator::Process,
TAP::Parser::Iterator::Stream, TAP::Parser::IteratorFactory,
TAP::Parser::Multiplexer, TAP::Parser::Result, TAP::Parser::Result::Bailout,
TAP::Parser::Result::Comment, TAP::Parser::Result::Plan,
TAP::Parser::Result::Pragma, TAP::Parser::Result::Test,
TAP::Parser::Result::Unknown, TAP::Parser::Result::Version,
TAP::Parser::Result::YAML, TAP::Parser::ResultFactory, TAP::Parser::Scheduler,
TAP::Parser::Scheduler::Job, TAP::Parser::Scheduler::Spinner, TAP::Parser::Source,

TAP::Parser::SourceHandler, TAP::Parser::SourceHandler::Executable,
TAP::Parser::SourceHandler::File, TAP::Parser::SourceHandler::Handle,
TAP::Parser::SourceHandler::Perl, TAP::Parser::SourceHandler::RawTAP,
TAP::Parser::YAMLish::Reader, TAP::Parser::YAMLish::Writer, Term::ANSIColor,
Term::Cap, Term::Complete, Term::ReadLine, Test, Test2, Test2::API,
Test2::API::Breakage, Test2::API::Context, Test2::API::Instance,
Test2::API::InterceptResult, Test2::API::InterceptResult::Event,
Test2::API::InterceptResult::Hub, Test2::API::InterceptResult::Squasher,
Test2::API::Stack, Test2::Event, Test2::Event::Bail, Test2::Event::Diag,
Test2::Event::Encoding, Test2::Event::Exception, Test2::Event::Fail,
Test2::Event::Generic, Test2::Event::Note, Test2::Event::Ok, Test2::Event::Pass,
Test2::Event::Plan, Test2::Event::Skip, Test2::Event::Subtest,
Test2::Event::TAP::Version, Test2::Event::V2, Test2::Event::Waiting,
Test2::EventFacet, Test2::EventFacet::About, Test2::EventFacet::Amnesty,
Test2::EventFacet::Assert, Test2::EventFacet::Control, Test2::EventFacet::Error,
Test2::EventFacet::Hub, Test2::EventFacet::Info, Test2::EventFacet::Info::Table,
Test2::EventFacet::Meta, Test2::EventFacet::Parent, Test2::EventFacet::Plan,
Test2::EventFacet::Render, Test2::EventFacet::Trace, Test2::Formatter,
Test2::Formatter::TAP, Test2::Hub, Test2::Hub::Interceptor,
Test2::Hub::Interceptor::Terminator, Test2::Hub::Subtest, Test2::IPC,
Test2::IPC::Driver, Test2::IPC::Driver::Files, Test2::Tools::Tiny,
Test2::Transition, Test2::Util, Test2::Util::ExternalMeta,
Test2::Util::Facets2Legacy, Test2::Util::HashBase, Test2::Util::Trace,
Test::Builder, Test::Builder::Formatter, Test::Builder::IO::Scalar,
Test::Builder::Module, Test::Builder::Tester, Test::Builder::Tester::Color,
Test::Builder::TodoDiag, Test::Harness, Test::Harness::Beyond, Test::More,
Test::Simple, Test::Tester, Test::Tester::Capture, Test::Tester::CaptureRunner,
Test::Tutorial, Test::use::ok, Text::Abbrev, Text::Balanced, Text::ParseWords,
Text::Tabs, Text::Wrap, Thread, Thread::Queue, Thread::Semaphore, Tie::Array,
Tie::File, Tie::Handle, Tie::Hash, Tie::Hash::NamedCapture, Tie::Memoize,
Tie::RefHash, Tie::Scalar, Tie::StdHandle, Tie::SubstrHash, Time::HiRes,
Time::Local, Time::Piece, Time::Seconds, Time::gmtime, Time::localtime, Time::tm,
UNIVERSAL, Unicode::Collate, Unicode::Collate::CJK::Big5,

Unicode::Collate::CJK::GB2312, Unicode::Collate::CJK::JISX0208,
Unicode::Collate::CJK::Korean, Unicode::Collate::CJK::Pinyin,
Unicode::Collate::CJK::Stroke, Unicode::Collate::CJK::Zhuyin,
Unicode::Collate::Locale, Unicode::Normalize, Unicode::UCD, User::grent,
User::pwent, VMS::DCLsym, VMS::Filespec, VMS::Stdio, Win32, Win32API::File,
Win32CORE, XS::APITest, XS::Typemap, XSLoader, autodie::Scope::Guard,
autodie::Scope::GuardStack, autodie::Util, version::Internals

Extension Modules

CPAN

Africa

South Africa, Uganda, Zimbabwe

Asia

Bangladesh, China, India, Indonesia, Iran, Israel, Japan, Kazakhstan, Philippines,
Qatar, Republic of Korea, Singapore, Taiwan, Turkey, Viet Nam

Europe

Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech
Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy,
Latvia, Lithuania, Moldova, Netherlands, Norway, Poland, Portugal, Romania,
Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland,
Ukraine, United Kingdom

North America

Canada, Costa Rica, Mexico, United States, Alabama, Arizona, California, Idaho,
Illinois, Indiana, Kansas, Massachusetts, Michigan, New Hampshire, New Jersey, New
York, North Carolina, Oregon, Pennsylvania, South Carolina, Texas, Utah, Virginia,
Washington, Wisconsin

Oceania

Australia, New Caledonia, New Zealand

South America

Argentina, Brazil, Chile

RSYNC Mirrors

Modules: Creation, Use, and Abuse

Guidelines for Module Creation

Guidelines for Converting Perl 4 Library Scripts into Modules

NOTE

perlmodstyle - Perl module style guide

INTRODUCTION

QUICK CHECKLIST

Before you start

The API

Stability

Documentation

Release considerations

BEFORE YOU START WRITING A MODULE

Has it been done before?

Do one thing and do it well

What's in a name?

Get feedback before publishing

DESIGNING AND WRITING YOUR MODULE

To OO or not to OO?

Designing your API

Write simple routines to do simple things, Separate functionality from output,

Provide sensible shortcuts and defaults, Naming conventions, Parameter passing

Strictness and warnings

Backwards compatibility

Error handling and messages

DOCUMENTING YOUR MODULE

POD

README, INSTALL, release notes, changelogs

perl Makefile.PL, make, make test, make install, perl Build.PL, perl Build, perl

Build test, perl Build install

RELEASE CONSIDERATIONS

Version numbering

Pre-requisites

Testing

Packaging

Licensing

COMMON PITFALLS

Reinventing the wheel

Trying to do too much

Inappropriate documentation

SEE ALSO

perlstyle, perlnewmod, perlpod, podchecker, Packaging Tools, Testing tools,

<<https://pause.perl.org/>>, Any good book on software engineering

AUTHOR

perlmodinstall - Installing CPAN Modules

DESCRIPTION

PREAMBLE

DECOMPRESS the file, UNPACK the file into a directory, BUILD the module (sometimes unnecessary), INSTALL the module

PORTABILITY

HEY

AUTHOR

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perlnewmod - preparing a new module for distribution

DESCRIPTION

Warning

What should I make into a module?

Step-by-step: Preparing the ground

Look around, Check it's new, Discuss the need, Choose a name, Check again

Step-by-step: Making the module

Start with module-starter or h2xs, Use strict and warnings, Use Carp, Use Exporter

- wisely!, Use plain old documentation, Write tests, Write the README, Write

Changes

Step-by-step: Distributing your module

Get a CPAN user ID, "perl Makefile.PL; make test; make distcheck; make dist",

Upload the tarball, Fix bugs!

AUTHOR

SEE ALSO

perlpragma - how to write a user pragma

DESCRIPTION

A basic example

Key naming

Implementation details

perlutil - utilities packaged with the Perl distribution

DESCRIPTION

LIST OF UTILITIES

Documentation

perldoc, pod2man, pod2text, pod2html, pod2usage, podchecker, splain, roffitall

Converters

pl2pm

Administration

libnetcfg, perlivp

Development

perlbug, perlthanks, h2ph, h2xs, enc2xs, xsubpp, prove, corelist

General tools

encguess, json_pp, piconv, ptar, ptardiff, ptargrep, shasum, streamzip, zipdetails

Installation

cpan, instmodsh

SEE ALSO

perlfiler - Source Filters

DESCRIPTION

CONCEPTS

USING FILTERS

WRITING A SOURCE FILTER

WRITING A SOURCE FILTER IN C

Decryption Filters

CREATING A SOURCE FILTER AS A SEPARATE EXECUTABLE

WRITING A SOURCE FILTER IN PERL

USING CONTEXT: THE DEBUG FILTER

CONCLUSION

LIMITATIONS

THINGS TO LOOK OUT FOR

Some Filters Clobber the "DATA" Handle

REQUIREMENTS

AUTHOR

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perltrace - Perl's support for DTrace

SYNOPSIS

DESCRIPTION

HISTORY

PROBES

sub-entry(SUBNAME, FILE, LINE, PACKAGE), sub-return(SUBNAME, FILE, LINE, PACKAGE),
phase-change(NEWPHASE, OLDPHASE), op-entry(OPNAME), loading-file(FILENAME),
loaded-file(FILENAME)

EXAMPLES

Most frequently called functions, Trace function calls, Function calls during
interpreter cleanup, System calls at compile time, Perl functions that execute the
most opcodes

REFERENCES

DTrace Dynamic Tracing Guide, DTrace: Dynamic Tracing in Oracle Solaris, Mac OS X and
FreeBSD

SEE ALSO

Devel::DTrace::Provider

AUTHORS

perlglossary - Perl Glossary

VERSION

DESCRIPTION

A accessor methods, actual arguments, address operator, algorithm, alias,
alphabetic, alternatives, anonymous, application, architecture, argument, ARGV,
arithmetical operator, array, array context, Artistic License, ASCII, assertion,
assignment, assignment operator, associative array, associativity, asynchronous,
atom, atomic operation, attribute, autogeneration, autoincrement, autoloading,
autosplit, autovivification, AV, awk

B backreference, backtracking, backward compatibility, bareword, base class, big-

endian, binary, binary operator, bind, bit, bit shift, bit string, bless, block,
BLOCK, block buffering, Boolean, Boolean context, breakpoint, broadcast, BSD,
bucket, buffer, built-in, bundle, byte, bytecode

C C, cache, callback, call by reference, call by value, canonical, capture
variables, capturing, cargo cult, case, casefolding, casemapping, character,
character class, character property, circumfix operator, class, class method,
client, closure, cluster, CODE, code generator, codepoint, code subpattern,
collating sequence, co-maintainer, combining character, command, command
buffering, command-line arguments, command name, comment, compilation unit,
compile, compile phase, compiler, compile time, composer, concatenation,
conditional, connection, construct, constructor, context, continuation, core dump,
CPAN, C preprocessor, cracker, currently selected output channel, current package,
current working directory, CV

D dangling statement, datagram, data structure, data type, DBM, declaration,
declarator, decrement, default, defined, delimiter, dereference, derived class,
descriptor, destroy, destructor, device, directive, directory, directory handle,
discipline, dispatch, distribution, dual-lived, dweomer, dwimmer, dynamic scoping

E eclectic, element, embedding, empty subclass test, encapsulation, endian, en
passant, environment, environment variable, EOF, errno, error, escape sequence,
exception, exception handling, exec, executable file, execute, execute bit, exit
status, exploit, export, expression, extension

F false, FAQ, fatal error, feeping creaturism, field, FIFO, file, file descriptor,
fileglob, filehandle, filename, filesystem, file test operator, filter, first-
come, flag, floating point, flush, FMTEYEWTK, foldcase, fork, formal arguments,
format, freely available, freely redistributable, freeware, function, funny
character

G garbage collection, GID, glob, global, global destruction, glue language,
granularity, grapheme, greedy, grep, group, GV

H hacker, handler, hard reference, hash, hash table, header file, here document,
hexadecimal, home directory, host, hubris, HV

I identifier, impatience, implementation, import, increment, indexing, indirect
filehandle, indirection, indirect object, indirect object slot, infix,
inheritance, instance, instance data, instance method, instance variable, integer,

interface, interpolation, interpreter, invocant, invocation, I/O, IO, I/O layer,

IPA, IP, IPC, is-a, iteration, iterator, IV

J JAPH

K key, keyword

L label, laziness, leftmost longest, left shift, lexeme, lexer, lexical analysis,
lexical scoping, lexical variable, library, LIFO, line, linebreak, line buffering,
line number, link, LIST, list, list context, list operator, list value, literal,
little-endian, local, logical operator, lookahead, lookbehind, loop, loop control
statement, loop label, lowercase, lvaluable, lvalue, lvalue modifier

M magic, magical increment, magical variables, Makefile, man, manpage, matching,
member data, memory, metacharacter, metasymbol, method, method resolution order,
minicpan, minimalism, mode, modifier, module, modulus, mojibake, monger, mortal,
mro, multidimensional array, multiple inheritance

N named pipe, namespace, NaN, network address, newline, NFS, normalization, null
character, null list, null string, numeric context, numification, NV, nybble

O object, octal, offset, one-liner, open source software, operand, operating system,
operator, operator overloading, options, ordinal, overloading, overriding, owner

P package, pad, parameter, parent class, parse tree, parsing, patch, PATH, pathname,
pattern, pattern matching, PAUSE, Perl mongers, permission bits, Pern, pipe,
pipeline, platform, pod, pod command, pointer, polymorphism, port, portable,
porter, possessive, POSIX, postfix, pp, pragma, precedence, prefix, preprocessing,
primary maintainer, procedure, process, program, program generator, progressive
matching, property, protocol, prototype, pseudofunction, pseudohash,
pseudoliteral, public domain, pumpkin, pumpking, PV

Q qualified, quantifier

R race condition, readable, reaping, record, recursion, reference, referent, regex,
regular expression, regular expression modifier, regular file, relational
operator, reserved words, return value, RFC, right shift, role, root, RTFM, run
phase, runtime, runtime pattern, RV, rvalue

S sandbox, scalar, scalar context, scalar literal, scalar value, scalar variable,
scope, scratchpad, script, script kiddie, sed, semaphore, separator,
serialization, server, service, setgid, setuid, shared memory, shebang, shell,
side effects, sigil, signal, signal handler, single inheritance, slice, slurp,

socket, soft reference, source filter, stack, standard, standard error, standard input, standard I/O, Standard Library, standard output, statement, statement modifier, static, static method, static scoping, static variable, stat structure, status, STDERR, STDIN, STDIO, STDOUT, stream, string, string context, stringification, struct, structure, subclass, subpattern, subroutine, subscript, substitution, substring, superclass, superuser, SV, switch, switch cluster, switch statement, symbol, symbolic debugger, symbolic link, symbolic reference, symbol table, synchronous, syntactic sugar, syntax, syntax tree, syscall

T taint checks, tainted, taint mode, TCP, term, terminator, ternary, text, thread, tie, titlecase, TMTOWTDI, token, tokenener, tokenizing, toolbox approach, topic, transliterate, trigger, trinary, troff, true, truncating, type, type casting, typedef, typed lexical, typeglob, typemap

U UDP, UID, umask, unary operator, Unicode, Unix, uppercase

V value, variable, variable interpolation, variadic, vector, virtual, void context, v-string

W warning, watch expression, weak reference, whitespace, word, working directory, wrapper, WYSIWYG

X XS, XSUB

Y yacc

Z zero width, zombie

AUTHOR AND COPYRIGHT

perlembed - how to embed perl in your C program

DESCRIPTION

PREAMBLE

Use C from Perl?, Use a Unix program from Perl?, Use Perl from Perl?, Use C from C?, Use Perl from C?

ROADMAP

Compiling your C program

Adding a Perl interpreter to your C program

Calling a Perl subroutine from your C program

Evaluating a Perl statement from your C program

Performing Perl pattern matches and substitutions from your C program

Fiddling with the Perl stack from your C program

Maintaining a persistent interpreter

Execution of END blocks

\$0 assignments

Maintaining multiple interpreter instances

Using Perl modules, which themselves use C libraries, from your C program

Using embedded Perl with POSIX locales

Hiding Perl_

MORAL

AUTHOR

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perldebguts - Guts of Perl debugging

DESCRIPTION

Debugger Internals

Writing Your Own Debugger

Frame Listing Output Examples

Debugging Regular Expressions

Compile-time Output

"anchored" STRING "at" POS, "floating" STRING "at" POS1..POS2, "matching
floating/anchored", "minlen", "stclass" TYPE, "noscan", "isall", "GPOS", "plus",
"implicit", "with eval", "anchored(TYPE)"

Types of Nodes

Run-time Output

Debugging Perl Memory Usage

Using \$ENV{PERL_DEBUG_MSTATS}

"buckets SMALLEST(APPROX)..GREATEST(APPROX)", Free/Used, "Total sbrk():
SBRKed/SBRKs:CONTINUOUS", "pad: 0", "heads: 2192", "chain: 0", "tail: 6144"

SEE ALSO

perlxsut - Tutorial for writing XSUBS

DESCRIPTION

SPECIAL NOTES

make

Version caveat

Dynamic Loading versus Static Loading

TUTORIAL

EXAMPLE 1

EXAMPLE 2

What has gone on?

Writing good test scripts

EXAMPLE 3

What's new here?

Input and Output Parameters

The XSUBPP Program

The TYPEMAP file

Warning about Output Arguments

EXAMPLE 4

What has happened here?

Anatomy of .xs file

Getting the fat out of XSUBs

More about XSUB arguments

The Argument Stack

Extending your Extension

Documenting your Extension

Installing your Extension

EXAMPLE 5

New Things in this Example

EXAMPLE 6

New Things in this Example

EXAMPLE 7 (Coming Soon)

EXAMPLE 8 (Coming Soon)

EXAMPLE 9 Passing open files to XSes

Troubleshooting these Examples

See also

Author

Last Changed

DESCRIPTION

Introduction

On The Road

The Anatomy of an XSUB

The Argument Stack

The RETVAL Variable

Returning SVs, AVs and HVs through RETVAL

The MODULE Keyword

The PACKAGE Keyword

The PREFIX Keyword

The OUTPUT: Keyword

The NO_OUTPUT Keyword

The CODE: Keyword

The INIT: Keyword

The NO_INIT Keyword

The TYPEMAP: Keyword

Initializing Function Parameters

Default Parameter Values

The PREINIT: Keyword

The SCOPE: Keyword

The INPUT: Keyword

The IN/OUTLIST/IN_OUTLIST/OUT/IN_OUT Keywords

The "length(NAME)" Keyword

Variable-length Parameter Lists

The C_ARGS: Keyword

The PPCODE: Keyword

Returning Undef And Empty Lists

The REQUIRE: Keyword

The CLEANUP: Keyword

The POSTCALL: Keyword

The BOOT: Keyword

The VERSIONCHECK: Keyword

The PROTOTYPES: Keyword

The PROTOTYPE: Keyword

The ALIAS: Keyword

The OVERLOAD: Keyword

The FALLBACK: Keyword

The INTERFACE: Keyword

The INTERFACE_MACRO: Keyword

The INCLUDE: Keyword

The INCLUDE_COMMAND: Keyword

The CASE: Keyword

The EXPORT_XSUB_SYMBOLS: Keyword

The & Unary Operator

Inserting POD, Comments and C Preprocessor Directives

Using XS With C++

Interface Strategy

Perl Objects And C Structures

Safely Storing Static Data in XS

```
MY_CXT_KEY, typedef my_cxt_t, START_MY_CXT, MY_CXT_INIT, dMY_CXT, MY_CXT,  
aMY_CXT/pMY_CXT, MY_CXT_CLONE, MY_CXT_INIT_INTERP(my_perl),  
dMY_CXT_INTERP(my_perl)
```

Thread-aware system interfaces

EXAMPLES

CAVEATS

Non-locale-aware XS code, Locale-aware XS code

XS VERSION

AUTHOR

perlxsypemap - Perl XS C/Perl type mapping

DESCRIPTION

Anatomy of a typemap

The Role of the typemap File in Your Distribution

Sharing typemaps Between CPAN Distributions

Writing typemap Entries

Full Listing of Core Typemaps

```
T_SV, T_SVREF, T_SVREF_FIXED, T_AVREF, T_AVREF_REFCOUNT_FIXED, T_HVREF,
```

T_HVREF_REFCOUNT_FIXED, T_CVREF, T_CVREF_REFCOUNT_FIXED, T_SYSRET, T_UV, T_IV,
T_INT, T_ENUM, T_BOOL, T_U_INT, T_SHORT, T_U_SHORT, T_LONG, T_U_LONG, T_CHAR,
T_U_CHAR, T_FLOAT, T_NV, T_DOUBLE, T_PV, T_PTR, T_PTRREF, T_PTROBJ, T_REF_IV_REF,
T_REF_IV_PTR, T_PTRDESC, T_REFREF, T_REFOBJ, T_OPAQUEPTR, T_OPAQUE, Implicit
array, T_PACKED, T_PACKEDARRAY, T_DATAUNIT, T_CALLBACK, T_ARRAY, T_STDIO, T_INOUT,
T_IN, T_OUT

perlclib - Internal replacements for standard C library functions

DESCRIPTION

Conventions

"t", "p", "n", "s"

File Operations

File Input and Output

File Positioning

Memory Management and String Handling

Character Class Tests

stdlib.h functions

Miscellaneous functions

SEE ALSO

perl guts - Introduction to the Perl API

DESCRIPTION

Variables

Datatypes

What is an "IV"?

Working with SVs

"SvIV(SV*)" ("IV") and "SvUV(SV*)" ("UV"), "SvNV(SV*)" ("double"), Strings are a
bit complicated:, Byte string: "SvPVbyte(SV*, STRLEN len)" or
"SvPVbyte_nolen(SV*)", UTF-8 string: "SvPVutf8(SV*, STRLEN len)" or
"SvPVutf8_nolen(SV*)", You can also use "SvPV(SV*, STRLEN len)" or
"SvPV_nolen(SV*)" to fetch the SV's raw internal buffer. This is tricky, though;
if your Perl string is "\xff\xff", then depending on the SV's internal encoding
you might get back a 2-byte OR a 4-byte "char*". Moreover, if it's the 4-byte
string, that could come from either Perl "\xff\xff" stored UTF-8 encoded, or Perl
"\xc3\xbf\xc3\xbf" stored as raw octets. To differentiate between these you MUST

look up the SV's UTF8 bit (cf. "SvUTF8") to know whether the source Perl string is
2 characters ("SvUTF8" would be on) or 4 characters ("SvUTF8" would be off)

Offsets

What's Really Stored in an SV?

Working with AVs

Working with HVs

Hash API Extensions

AVs, HVs and undefined values

References

Blessed References and Class Objects

Creating New Variables

GV_ADDMULTI, GV_ADDWARN

Reference Counts and Mortality

Stashes and Globs

I/O Handles

Double-Typed SVs

Read-Only Values

Copy on Write

Magic Variables

Assigning Magic

Magic Virtual Tables

Finding Magic

Understanding the Magic of Tied Hashes and Arrays

Localizing changes

"SAVEINT(int i)", "SAVEIV(IV i)", "SAVEI32(I32 i)", "SAVELONG(long i)", "SAVEI8(I8
i)", "SAVEI16(I16 i)", "SAVEBOOL(int i)", SAVESPTR(s), SAVEPPTR(p), "SAVEFREESV(SV
*sv)", "SAVEMORTALIZESV(SV *sv)", "SAVEFREEOP(OP *op)", SAVEFREEPV(p),
"SAVECLEARSV(SV *sv)", "SAVEDELETE(HV *hv, char *key, I32 length)",
"SAVEDESTRUCTOR(DESTRUCTORFUNC_NOCONTEXT_t f, void *p)",
"SAVEDESTRUCTOR_X(DESTRUCTORFUNC_t f, void *p)", "SAVESTACK_POS()", "SV*
save_scalar(GV *gv)", "AV* save_ary(GV *gv)", "HV* save_hash(GV *gv)", "void
save_item(SV *item)", "void save_list(SV **sarg, I32 maxsarg)", "SV* save_svref(SV
**sptr)", "void save_aptr(AV **aptr)", "void save_hptr(HV **hptr)"

Subroutines

XSUBs and the Argument Stack

Autoloading with XSUBs

Calling Perl Routines from within C Programs

Putting a C value on Perl stack

Scratchpads

Scratchpads and recursion

Memory Allocation

Allocation

Reallocation

Moving

PerlIO

Compiled code

Code tree

Examining the tree

Compile pass 1: check routines

Compile pass 1a: constant folding

Compile pass 2: context propagation

Compile pass 3: peephole optimization

Pluggable runops

Compile-time scope hooks

```
"void bhk_start(pTHX_ int full)", "void bhk_pre_end(pTHX_ OP **o)", "void  
bhk_post_end(pTHX_ OP **o)", "void bhk_eval(pTHX_ OP *const o)"
```

Examining internal data structures with the "dump" functions

How multiple interpreters and concurrency are supported

Background and PERL_IMPLICIT_CONTEXT

So what happened to dTHR?

How do I use all this in extensions?

Should I do anything special if I call perl from multiple threads?

Future Plans and PERL_IMPLICIT_SYS

Internal Functions

Formatted Printing of IVs, UVs, and NVs

Formatted Printing of SVs

Formatted Printing of Strings

Formatted Printing of "Size_t" and "SSize_t"

Formatted Printing of "Ptrdiff_t", "intmax_t", "short" and other special sizes

Pointer-To-Integer and Integer-To-Pointer

Exception Handling

Source Documentation

Backwards compatibility

Unicode Support

What is Unicode, anyway?

How can I recognise a UTF-8 string?

How does UTF-8 represent Unicode characters?

How does Perl store UTF-8 strings?

How do I pass a Perl string to a C library?

bytes: 0x64 0x78 0x8c, UTF-8: 0x64 0x78 0xc2 0x8c

How do I convert a string to UTF-8?

How do I compare strings?

Is there anything else I need to know?

Custom Operators

xop_name, xop_desc, xop_class, OA_BASEOP, OA_UNOP, OA_BINOP, OA_LOGOP, OA_LISTOP,
OA_PMOP, OA_SVOP, OA_PADOP, OA_PVOP_OR_SVOP, OA_LOOP, OA_COP, xop_peep

Stacks

Value Stack

Mark Stack

Temporaries Stack

Save Stack

Scope Stack

Dynamic Scope and the Context Stack

Introduction to the context stack

Pushing contexts

Popping contexts

Redoing contexts

Slab-based operator allocation

AUTHORS

SEE ALSO

perlcall - Perl calling conventions from C

DESCRIPTION

An Error Handler, An Event-Driven Program

THE CALL_ FUNCTIONS

call_sv, call_pv, call_method, call_argv

FLAG VALUES

G_VOID

G_SCALAR

G_ARRAY

G_DISCARD

G_NOARGS

G_EVAL

G_KEEPPERR

Determining the Context

EXAMPLES

No Parameters, Nothing Returned

Passing Parameters

Returning a Scalar

Returning a List of Values

Returning a List in Scalar Context

Returning Data from Perl via the Parameter List

Using G_EVAL

Using G_KEEPPERR

Using call_sv

Using call_argv

Using call_method

Using GIMME_V

Using Perl to Dispose of Temporaries

Strategies for Storing Callback Context Information

1. Ignore the problem - Allow only 1 callback, 2. Create a sequence of callbacks -

hard wired limit, 3. Use a parameter to map to the Perl callback

Alternate Stack Manipulation

Creating and Calling an Anonymous Subroutine in C

LIGHTWEIGHT CALLBACKS

SEE ALSO

AUTHOR

DATE

perlroapi - Perl method resolution plugin interface

DESCRIPTION

resolve, name, length, kflags, hash

Callbacks

Caching

Examples

AUTHORS

perlreapi - Perl regular expression plugin interface

DESCRIPTION

Callbacks

comp

"/m" - RXf_PMf_MULTILINE, "/s" - RXf_PMf_SINGLELINE, "/i" - RXf_PMf_FOLD, "/x" -

RXf_PMf_EXTENDED, "/p" - RXf_PMf_KEEPCOPY, Character set, RXf_SPLIT,

RXf_SKIPWHITE, RXf_START_ONLY, RXf_WHITE, RXf_NULL, RXf_NO_INPLACE_SUBST

exec

rx, sv, strbeg, strend, stringarg, minend, data, flags

intuit

checkstr

free

Numbered capture callbacks

Named capture callbacks

qr_package

dupe

op_comp

The REGEXP structure

"engine"

"mother_re"

"extflags"

"minlen" "minlenret"

"gofs"

"substrs"

"nparens", "lastparen", and "lastcloseparen"

"intflags"

"pprivate"

"offs"

"precomp" "prelen"

"paren_names"

"substrs"

"subbeg" "sublen" "saved_copy" "suboffset" "subcoffset"

"wrapped" "wraplen"

"seen_evals"

"refcnt"

HISTORY

AUTHORS

LICENSE

perlreguts - Description of the Perl regular expression engine.

DESCRIPTION

OVERVIEW

A quick note on terms

What is a regular expression engine?

Structure of a Regexp Program

"regnode_1", "regnode_2", "regnode_string", "regnode_charclass",

"regnode_charclass_posixl"

Process Overview

A. Compilation, 1. Parsing, 2. Peep-hole optimisation and analysis, B. Execution, 3.

Start position and no-match optimisations, 4. Program execution

Compilation

anchored fixed strings, floating fixed strings, minimum and maximum length

requirements, start class, Beginning/End of line positions

Execution

MISCELLANEOUS

Unicode and Localisation Support

Base Structures

"offsets", "regstclass", "data", "program"

SEE ALSO

AUTHOR

LICENCE

REFERENCES

perlapi - autogenerated documentation for the perl public API

DESCRIPTION

"AV Handling", "Callback Functions", "Casting", "Character case changing", "Character classification", "Compiler and Preprocessor information", "Compiler directives", "Compile-time scope hooks", "Concurrency", "COP Hint Hashes", "Custom Operators", "CV Handling", "Debugging", "Display functions", "Embedding and Interpreter Cloning", "Errno", "Exception Handling (simple) Macros", "Filesystem configuration values", "Floating point configuration values", "Formats", "General Configuration", "Global Variables", "GV Handling", "Hook manipulation", "HV Handling", "Input/Output", "Integer configuration values", "Lexer interface", "Locales", "Magic", "Memory Management", "MRO", "Multicall Functions", "Numeric Functions", "Optree construction", "Optree Manipulation Functions", "Pack and Unpack", "Pad Data Structures", "Password and Group access", "Paths to system commands", "Prototype information", "REGEXP Functions", "Signals", "Site configuration", "Sockets configuration values", "Source Filters", "Stack Manipulation Macros", "String Handling", "SV Flags", "SV Handling", "Time", "Typedef names", "Unicode Support", "Utility Functions", "Versioning", "Warning and Dieing", "XS", "Undocumented elements"

AV Handling

"AV", "AvARRAY", "av_clear", "av_count", "av_create_and_push", "av_create_and_unshift_one", "av_delete", "av_exists", "av_extend", "av_fetch", "AvFILL", "av_fill", "av_len", "av_make", "av_pop", "av_push", "av_shift", "av_store", "av_tindex", "av_top_index", "av_undef", "av_unshift", "get_av", "newAV", "Nullav"

Callback Functions

"call_argv", "call_method", "call_pv", "call_sv", "ENTER", "ENTER_with_name", "eval_pv", "eval_sv", "FREEMPS", "G_ARRAY", "G_DISCARD", "G_EVAL", "GIMME",

"GIMME_V" , "G_KEEPPERR" , "G_NOARGS" , "G_SCALAR" , "G_VOID" , "LEAVE" , "LEAVE_with_name"
 , "PL_errgv" , "SAVETMPS"

Casting

"cBOOL" , "I_32" , "INT2PTR" , "I_V" , "Perl_cpeek_t" , "PTR2IV" , "PTR2nat" , "PTR2NV"
 , "PTR2ul" , "PTR2UV" , "PTRV" , "U_32" , "U_V" , "XOP"

Character case changing

"toFOLD" , "toFOLD_utf8" , "toFOLD_utf8_safe" , "toFOLD_uvchr" , "toLOWER"
 , "toLOWER_A" , "toLOWER_L1" , "toLOWER_LATIN1" , "toLOWER_LC" , "toLOWER_uvchr"
 , "toLOWER_utf8" , "toLOWER_utf8_safe" , "toTITLE" , "toTITLE_utf8" , "toTITLE_utf8_safe"
 , "toTITLE_uvchr" , "toUPPER" , "toUPPER_utf8" , "toUPPER_utf8_safe" , "toUPPER_uvchr"

Character classification

"isALPHA" , "isALPHA_A" , "isALPHA_L1" , "isALPHA_uvchr" , "isALPHA_utf8_safe"
 , "isALPHA_utf8" , "isALPHA_LC" , "isALPHA_LC_uvchr" , "isALPHA_LC_utf8_safe" ,
 , "isALPHANUMERIC" , "isALPHANUMERIC_A" , "isALPHANUMERIC_L1" , "isALPHANUMERIC_uvchr"
 , "isALPHANUMERIC_utf8_safe" , "isALPHANUMERIC_utf8" , "isALPHANUMERIC_LC"
 , "isALPHANUMERIC_LC_uvchr" , "isALPHANUMERIC_LC_utf8_safe" , "isALNUMC" , "isALNUMC_A"
 , "isALNUMC_L1" , "isALNUMC_LC" , "isALNUMC_LC_uvchr" , "isASCII" , "isASCII_A"
 , "isASCII_L1" , "isASCII_uvchr" , "isASCII_utf8_safe" , "isASCII_utf8" , "isASCII_LC"
 , "isASCII_LC_uvchr" , "isASCII_LC_utf8_safe" , "isBLANK" , "isBLANK_A" , "isBLANK_L1"
 , "isBLANK_uvchr" , "isBLANK_utf8_safe" , "isBLANK_utf8" , "isBLANK_LC"
 , "isBLANK_LC_uvchr" , "isBLANK_LC_utf8_safe" , "isCNTRL" , "isCNTRL_A" , "isCNTRL_L1"
 , "isCNTRL_uvchr" , "isCNTRL_utf8_safe" , "isCNTRL_utf8" , "isCNTRL_LC"
 , "isCNTRL_LC_uvchr" , "isCNTRL_LC_utf8_safe" , "isDIGIT" , "isDIGIT_A" , "isDIGIT_L1"
 , "isDIGIT_uvchr" , "isDIGIT_utf8_safe" , "isDIGIT_utf8" , "isDIGIT_LC"
 , "isDIGIT_LC_uvchr" , "isDIGIT_LC_utf8_safe" , "isGRAPH" , "isGRAPH_A" , "isGRAPH_L1"
 , "isGRAPH_uvchr" , "isGRAPH_utf8_safe" , "isGRAPH_utf8" , "isGRAPH_LC"
 , "isGRAPH_LC_uvchr" , "isGRAPH_LC_utf8_safe" , "isIDCONT" , "isIDCONT_A" , "isIDCONT_L1"
 , "isIDCONT_uvchr" , "isIDCONT_utf8_safe" , "isIDCONT_utf8" , "isIDCONT_LC"
 , "isIDCONT_LC_uvchr" , "isIDCONT_LC_utf8_safe"
 , "isIDFIRST" , "isIDFIRST_A" , "isIDFIRST_L1" , "isIDFIRST_uvchr"
 , "isIDFIRST_utf8_safe" , "isIDFIRST_utf8" , "isIDFIRST_LC" , "isIDFIRST_LC_uvchr"
 , "isIDFIRST_LC_utf8_safe" , "isLOWER" , "isLOWER_A" , "isLOWER_L1" , "isLOWER_uvchr"
 , "isLOWER_utf8_safe" , "isLOWER_utf8" , "isLOWER_LC" , "isLOWER_LC_uvchr" ,

"isLOWER_LC_utf8_safe" , "isOCTAL", "isOCTAL_A", "isOCTAL_L1" , "isPRINT",
"isPRINT_A", "isPRINT_L1", "isPRINT_uvchr", "isPRINT_utf8_safe", "isPRINT_utf8",
"isPRINT_LC", "isPRINT_LC_uvchr", "isPRINT_LC_utf8_safe" , "isPSXSPC", "isPSXSPC_A",
"isPSXSPC_L1", "isPSXSPC_uvchr", "isPSXSPC_utf8_safe", "isPSXSPC_utf8", "isPSXSPC_LC",
"isPSXSPC_LC_uvchr", "isPSXSPC_LC_utf8_safe"
, "isPUNCT", "isPUNCT_A", "isPUNCT_L1", "isPUNCT_uvchr", "isPUNCT_utf8_safe",
"isPUNCT_utf8", "isPUNCT_LC", "isPUNCT_LC_uvchr", "isPUNCT_LC_utf8_safe" , "isSPACE",
"isSPACE_A", "isSPACE_L1", "isSPACE_uvchr", "isSPACE_utf8_safe", "isSPACE_utf8",
"isSPACE_LC", "isSPACE_LC_uvchr", "isSPACE_LC_utf8_safe" , "isUPPER", "isUPPER_A",
"isUPPER_L1", "isUPPER_uvchr", "isUPPER_utf8_safe", "isUPPER_utf8", "isUPPER_LC",
"isUPPER_LC_uvchr", "isUPPER_LC_utf8_safe" , "isWORDCHAR", "isWORDCHAR_A",
"isWORDCHAR_L1", "isWORDCHAR_uvchr", "isWORDCHAR_utf8_safe", "isWORDCHAR_utf8",
"isWORDCHAR_LC", "isWORDCHAR_LC_uvchr", "isWORDCHAR_LC_utf8_safe", "isALNUM",
"isALNUM_A", "isALNUM_LC", "isALNUM_LC_uvchr" , "isXDIGIT", "isXDIGIT_A",
"isXDIGIT_L1", "isXDIGIT_uvchr", "isXDIGIT_utf8_safe", "isXDIGIT_utf8", "isXDIGIT_LC",
"isXDIGIT_LC_uvchr", "isXDIGIT_LC_utf8_safe"

Compiler and Preprocessor information

"CPPLAST" , "CPPMINUS" , "CPPRUN" , "CPPSTDIN" , "HASATTRIBUTE_ALWAYS_INLINE" ,
"HASATTRIBUTE_DEPRECATED" , "HASATTRIBUTE_FORMAT" , "HASATTRIBUTE_NONNULL" ,
"HASATTRIBUTE_NORETURN" , "HASATTRIBUTE_PURE" , "HASATTRIBUTE_UNUSED" ,
"HASATTRIBUTE_WARN_UNUSED_RESULT" , "HAS_BUILTIN_ADD_OVERFLOW" ,
"HAS_BUILTIN_CHOOSE_EXPR" , "HAS_BUILTIN_EXPECT" , "HAS_BUILTIN_MUL_OVERFLOW" ,
"HAS_BUILTIN_SUB_OVERFLOW" , "HAS_C99_VARIADIC_MACROS" , "HAS_STATIC_INLINE" ,
"MEM_ALIGNBYTES" , "PERL_STATIC_INLINE" , "U32_ALIGNMENT_REQUIRED"

Compiler directives

"ASSUME" , "dNOOP" , "END_EXTERN_C" , "EXTERN_C" , "LIKELY" , "NOOP" ,
"PERL_UNUSED_ARG" , "PERL_UNUSED_CONTEXT" , "PERL_UNUSED_DECL" , "PERL_UNUSED_RESULT"
 , "PERL_UNUSED_VAR" , "PERL_USE_GCC_BRACE_GROUPS" , "START_EXTERN_C" , "STATIC",
"STMT_START", "STMT_END" , "UNLIKELY" , "__ASSERT_"

Compile-time scope hooks

"BhkDISABLE" , "BhkENABLE" , "BhkENTRY_set" , "blockhook_register"

Concurrency

"aTHX", "aTHX_" , "CPERLscope" , "dTHR", "dTHX", "dTHXa", "dTHXoa" , "dVAR" ,

"GETENV_PRESERVES_OTHER_THREAD" , "HAS_PTHREAD_ATFORK" , "HAS_PTHREAD_ATTR_SETSCOPE"

"HAS_PTHREAD_YIELD" , "HAS_SCHED_YIELD" , "I_MACH_CTHREADS" , "I_PTHREAD" ,
"MULTIPLICITY" , "OLD_PTHREADS_API" , "OLD_PTHREAD_CREATE_JOINABLE" , "pTHX" , "pTHX_" ,
"SCHED_YIELD" , "SVf" , "SVfARG"

COP Hint Hashes

"cop_fetch_label" , "CopFILE" , "CopFILEAV" , "CopFILEGV" , "CopFILEGV_set" ,
"CopFILE_set" , "CopFILESV" , "cophh_2hv" , "cophh_copy" , "cophh_delete_pv" ,
"cophh_delete_pvn" , "cophh_delete_pvs" , "cophh_delete_sv" , "cophh_exists_pv" ,
"cophh_exists_pvn" , "cophh_exists_pvs" , "cophh_exists_sv" , "cophh_fetch_pv" ,
"cophh_fetch_pvn" , "cophh_fetch_pvs" , "cophh_fetch_sv" , "cophh_free" ,
"cophh_new_empty" , "cophh_store_pv" , "cophh_store_pvn" , "cophh_store_pvs" ,
"cophh_store_sv" , "cop_hints_2hv" , "cop_hints_exists_pv" , "cop_hints_exists_pvn" ,
"cop_hints_exists_pvs" , "cop_hints_exists_sv" , "cop_hints_fetch_pv" ,
"cop_hints_fetch_pvn" , "cop_hints_fetch_pvs" , "cop_hints_fetch_sv" , "CopLABEL" ,
"CopLABEL_len" , "CopLABEL_len_flags" , "CopLINE" , "CopSTASH" , "CopSTASH_eq" ,
"CopSTASHPV" , "CopSTASHPV_set" , "CopSTASH_set" , "cop_store_label" , "PERL_SI"

Custom Operators

"custom_op_desc" , "custom_op_name" , "custom_op_register" , "Perl_custom_op_xop" ,
"XopDISABLE" , "XopENABLE" , "XopENTRY" , "XopENTRYCUSTOM" , "XopENTRY_set" ,
"XopFLAGS"

CV Handling

"caller_cx" , "CvGV" , "CvSTASH" , "find_runcv" , "get_cv" , "get_cvs" , "get_cvn_flags"
 , "Nullcv"

Debugging

"dump_all" , "dump_c_backtrace" , "dump_packsubs" , "get_c_backtrace_dump" ,
"HAS_BACKTRACE" , "op_class" , "op_dump" , "sv_dump"

Display functions

"form" , "form_nocontext" , "mess" , "mess_nocontext" , "mess_sv" , "pv_display" ,
"pv_escape" , "pv_pretty" , "vform" , "vmess"

Embedding and Interpreter Cloning

"cv_clone" , "cv_name" , "cv_undef" , "find_rundefsv" , "find_rundefsvoffset" ,
"intro_my" , "load_module" , "load_module_nocontext" , "my_exit" , "newPADNAMELIST" ,

"newPADNAMEouter", "newPADNAMEpvn", "nothreadhook", "pad_add_anon",
"pad_add_name_pv", "pad_add_name_pvn", "pad_add_name_sv", "pad_alloc",
"pad_findmy_pv", "pad_findmy_pvn", "pad_findmy_sv", "padnamelist_fetch",
"padnamelist_store", "pad_tidy", "perl_alloc", "PERL_ASYNC_CHECK", "perl_clone",
"perl_construct", "perl_destruct", "perl_free", "perl_parse", "perl_run",
"PERL_SYS_INIT", "PERL_SYS_INIT3", "PERL_SYS_TERM", "PL_exit_flags",
"PERL_EXIT_DESTRUCT_END", "PERL_EXIT_ABORT", "PERL_EXIT_WARN", "PERL_EXIT_EXPECTED",
"PL_perl_destruct_level", 0 - none, 1 - full, 2 or greater - full with checks,
"require_pv", "UVf", "vload_module"

Errno

"sv_string_from_errnum"

Exception Handling (simple) Macros

"dXCPT", "JMPENV_JUMP", "JMPENV_PUSH", "PL_restartop", "XCPT_CATCH", "XCPT_RETHROW",
"XCPT_TRY_END", "XCPT_TRY_START"

Filesystem configuration values

"DIRNAMLEN", "DOSUID", "EOF_NONBLOCK", "FCNTL_CAN_LOCK", "FFLUSH_ALL",
"FFLUSH_NULL", "FILE_base", "FILE_bufsiz", "FILE_cnt", "FILE_ptr",
"FLEXFILENAMES", "HAS_DIR_DD_FD", "HAS_DUP2", "HAS_DUP3", "HAS_FAST_STDIO",
"HAS_FCHDIR", "HAS_FCNTL", "HAS_FDCLOSE", "HAS_FPATHCONF", "HAS_FPOS64_T",
"HAS_FSTATFS", "HAS_FSTATVFS", "HAS_GETFSSTAT", "HAS_GETMNT", "HAS_GETMNTENT",
"HAS_HASMNTOPT", "HAS_LSEEK_PROTO", "HAS_MKDIR", "HAS_OFF64_T", "HAS_OPEN3",
"HAS_OPENAT", "HAS_POLL", "HAS_READDIR", "HAS_READDIR64_R", "HAS_REWINDDIR",
"HAS_RMDIR", "HAS_SEEKDIR", "HAS_SELECT", "HAS_SETVBUF", "HAS_STDIO_STREAM_ARRAY",
"HAS_STRUCT_FS_DATA", "HAS_STRUCT_STATFS", "HAS_STRUCT_STATFS_F_FLAGS",
"HAS_TELLDIR", "HAS_USTAT", "I_FCNTL", "I_SYS_DIR", "I_SYS_FILE", "I_SYS_NDIR",
"I_SYS_STATFS", "LSEEKSIZE", "RD_NODATA", "READDIR64_R_PROTO", "STDCHAR",
"STDIO_CNT_LVALUE", "STDIO_PTR_LVALUE", "STDIO_PTR_LVAL_NOCHANGE_CNT",
"STDIO_PTR_LVAL_SETS_CNT", "STDIO_STREAM_ARRAY", "ST_INO_SIGN", "ST_INO_SIZE",
"VAL_EAGAIN", "VAL_O_NONBLOCK", "VOID_CLOSEDIR"

Floating point configuration values

"CASTFLAGS", "CASTNEGFLOAT", "DOUBLE_HAS_INF", "DOUBLE_HAS_NAN",
"DOUBLE_HAS_NEGATIVE_ZERO", "DOUBLE_HAS_SUBNORMALS", "DOUBLEINFBYTES", "DOUBLEKIND",
"DOUBLEMANTBITS", "DOUBLENANBYTES", "DOUBLESIZE", "DOUBLE_STYLE_CRAY",

"DOUBLE_STYLE_IBM", "DOUBLE_STYLE_IEEE", "DOUBLE_STYLE_VAX", "HAS_ATOLF",
"HAS_CLASS", "HAS_FINITE", "HAS_FINITEL", "HAS_FPCLASS", "HAS_FPCLASSIFY",
"HAS_FPCLASSL", "HAS_FPGETROUND", "HAS_FP_CLASS", "HAS_FP_CLASSIFY",
"HAS_FP_CLASSL", "HAS_FREXPL", "HAS_ILOGB", "HAS_ISFINITE", "HAS_ISFINITEL",
"HAS_ISINF", "HAS_ISINFL", "HAS_ISNAN", "HAS_ISNANL", "HAS_ISNORMAL", "HAS_J0",
"HAS_J0L", "HAS_LDBL_DIG", "HAS_LDEXPL", "HAS_LLRINT", "HAS_LLRINTL",
"HAS_LLROUNDL", "HAS_LONG_DOUBLE", "HAS_LRINT", "HAS_LRINTL", "HAS_LROUNDL",
"HAS_MODFL", "HAS_NAN", "HAS_NEXTTOWARD", "HAS_REMAINDER", "HAS_SCALBN",
"HAS_SIGNBIT", "HAS_SQRTL", "HAS_STRTOD_L", "HAS_STRTOLD", "HAS_STRTOLD_L",
"HAS_TRUNC", "HAS_UNORDERED", "I_FENV", "I_QUADMATH", "LONGDBLINFBYTES",
"LONGDBLMANTBITS", "LONGDBLNANBYTES", "LONG_DOUBLEKIND", "LONG_DOUBLESIZE",
"LONG_DOUBLE_STYLE_IEEE", "LONG_DOUBLE_STYLE_IEEE_DOUBLEDDOUBLE",
"LONG_DOUBLE_STYLE_IEEE_EXTENDED", "LONG_DOUBLE_STYLE_IEEE_STD",
"LONG_DOUBLE_STYLE_VAX", "NVMANTBITS", "NV_OVERFLOWES_INTEGERS_AT",
"NV_PRESERVES_UV", "NV_PRESERVES_UV_BITS", "NVSIZE", "NVTYPE",
"NV_ZERO_IS_ALLBITS_ZERO"

Formats

"Ivdf", "NVef", "NVff", "NVgf", "PERL_PRIldbl", "PERL_PRIfldbl",
"PERL_PRIgldbl", "PERL_SCNfldbl", "PRINTF_FORMAT_NULL_OK", "UTF8f", "UTF8fARG",
"UVof", "UVuf", "UVXf", "UVxf"

General Configuration

"BYTEORDER", "CHARBITS", "DB_VERSION_MAJOR_CFG", "DB_VERSION_MINOR_CFG",
"DB_VERSION_PATCH_CFG", "DEFAULT_INC_EXCLUDES_DOT", "DLSYM_NEEDS_UNDERSCORE",
"EBCDIC", "HAS_CSH", "HAS_GETHOSTNAME", "HAS_GNULIBC", "HAS_LGAMMA",
"HAS_LGAMMA_R", "HAS_PRCTL_SET_NAME", "HAS_PROCSSELFEXE", "HAS_PSEUDOFORK",
"HAS_REGCOMP", "HAS_SETPGID", "HAS_SIGSETJMP", "HAS_STRUCT_CMSGHDR",
"HAS_STRUCT_MSGHDR", "HAS_TGAMMA", "HAS_UNAME", "HAS_UNION_SEMUN", "I_DIRENT",
"I_POLL", "I_SYS_RESOURCE", "LIBM_LIB_VERSION", "NEED_VA_COPY", "OSNAME",
"OSVERS", "PHOSTNAME", "PROCSSELFEXE_PATH", "PTRSIZE", "RANDBITS",
"SELECT_MIN_BITS", "SETUID_SCRIPTS_ARE_SECURE_NOW"

List of capability "HAS_foo" symbols

List of "#include" needed symbols

"PL_check" , "PL_keyword_plugin" , "PL_phase"

GV Handling

"gv_autoload4" , "GvAV" , "gv_const_sv" , "GvCV" , "gv_fetchfile" ,
"gv_fetchfile_flags" , "gv_fetchmeth" , "gv_fetchmethod" , "gv_fetchmethod_autoload" ,
"gv_fetchmeth_autoload" , "gv_fetchmeth_pv" , "gv_fetchmeth_pvn" ,
"gv_fetchmeth_pvn_autoload" , "gv_fetchmeth_pv_autoload" , "gv_fetchmeth_sv" ,
"gv_fetchmeth_sv_autoload" , "gv_fetchpv" , "gv_fetchpvn" , "gv_fetchpvn_flags" ,
"gv_fetchpvs" , "gv_fetchsv" , "gv_fetchsv_nomg" X <gv_fetchsv_nomg> , "GvHV" , "gv_init"
 , "gv_init_pv" , "gv_init_pvn" , "gv_init_sv" , "gv_stashpv" , "gv_stashpvn" ,
"gv_stashpvs" , "gv_stashsv" , "GvSV" , "GvSVn" , "save_gp" , "setdefout"

Hook manipulation

"wrap_op_checker"

HV Handling

"get_hv" , "HEf_SVKEY" , "HeHASH" , "HeKEY" , "HeKLEN" , "HePV" , "HeSVKEY" ,
"HeSVKEY_force" , "HeSVKEY_set" , "HeUTF8" , "HeVAL" , "HV" , "hv_assert" ,
"hv_bucket_ratio" , "hv_clear" , "hv_clear_placeholders" , "hv_copy_hints_hv" ,
"hv_delete" , "hv_delete_ent" , "HvENAME" , "HvENAMELEN" , "HvENAMEUTF8" , "hv_exists"
 , "hv_exists_ent" , "hv_fetch" , "hv_fetchs" , "hv_fetch_ent" , "HvFILL" , "hv_fill" ,
"hv_iterinit" , "hv_iterkey" , "hv_iterkeysv" , "hv_itternext" , "hv_itternextsv" ,
"hv_itternext_flags" , "hv_interval" , "hv_magic" , "HvNAME" , "HvNAMELEN" ,
"HvNAMEUTF8" , "hv_scalar" , "hv_store" , "hv_stores" , "hv_store_ent" , "hv_undef" ,
"MGVTBL" , "newHV" , "Nullhv" , "PERL_HASH" , "PERL_MAGIC_arylen"
 , "PERL_MAGIC_arylen_p" , "PERL_MAGIC_backref" , "PERL_MAGIC_bm" , "PERL_MAGIC_checkcall"
 , "PERL_MAGIC_collxfrm" , "PERL_MAGIC_dbfile" , "PERL_MAGIC_dbline"
 , "PERL_MAGIC_debugvar" , "PERL_MAGIC_defelem" , "PERL_MAGIC_env" , "PERL_MAGIC_envelem"
 , "PERL_MAGIC_ext" , "PERL_MAGIC_fm" , "PERL_MAGIC_hints" , "PERL_MAGIC_hintselem"
 , "PERL_MAGIC_isa" , "PERL_MAGIC_isaelem" , "PERL_MAGIC_lvref" , "PERL_MAGIC_nkeys"
 , "PERL_MAGIC_nonelem" , "PERL_MAGIC_overload_table" , "PERL_MAGIC_pos" , "PERL_MAGIC_qr"
 , "PERL_MAGIC_regdata" , "PERL_MAGIC_regdatum" , "PERL_MAGIC_regex_global"
 , "PERL_MAGIC_rhash" , "PERL_MAGIC_shared" , "PERL_MAGIC_shared_scalar" , "PERL_MAGIC_sig"
 , "PERL_MAGIC_sigelem" , "PERL_MAGIC_substr" , "PERL_MAGIC_sv" , "PERL_MAGIC_symtab"
 , "PERL_MAGIC_taint" , "PERL_MAGIC_tied" , "PERL_MAGIC_tieelem" , "PERL_MAGIC_tiedscalar"
 , "PERL_MAGIC_utf8" , "PERL_MAGIC_uvar" , "PERL_MAGIC_uvar_elem" , "PERL_MAGIC_vec" ,

"PERL_MAGIC_vstring", "PL_modglobal"

Input/Output

"PerlIO_apply_layers", "PerlIO_binmode", "PerlIO_canset_cnt", "PerlIO_clearerr",
"PerlIO_close", "PerlIO_debug", "PerlIO_eof", "PerlIO_error", "PerlIO_exportFILE",
"PerlIO_fast_gets", "PerlIO_fdopen", "PerlIO_fileno", "PerlIO_findFILE",
"PerlIO_flush", "PERLIO_F_APPEND", "PERLIO_F_CANREAD", "PERLIO_F_CANWRITE",
"PERLIO_F_CRLF", "PERLIO_F_EOF", "PERLIO_F_ERROR", "PERLIO_F_FASTGETS",
"PERLIO_F_LINEBUF", "PERLIO_F_OPEN", "PERLIO_F_RDBUF", "PERLIO_F_TEMP",
"PERLIO_F_TRUNCATE", "PERLIO_F_UNBUF", "PERLIO_F_UTF8", "PERLIO_F_WRBUF",
"PerlIO_getc", "PerlIO_getpos", "PerlIO_get_base", "PerlIO_get_bufsiz",
"PerlIO_get_cnt", "PerlIO_get_ptr", "PerlIO_has_base", "PerlIO_has_cntptr",
"PerlIO_importFILE", "PERLIO_K_BUFFERED", "PERLIO_K CancRLF", "PERLIO_K_FASTGETS",
"PERLIO_K_MULTIARG", "PERLIO_K_RAW", "PerlIO_open", "PerlIO_printf", "PerlIO_putc",
"PerlIO_puts", "PerlIO_read", "PerlIO_releaseFILE", "PerlIO_reopen", "PerlIO_rewind",
"PerlIO_seek", "PerlIO_setlinebuf", "PerlIO_setpos", "PerlIO_set_cnt",
"PerlIO_set_ptrcnt", "PerlIO_stderr", "PerlIO_stdin", "PerlIO_stdout",
"PerlIO_stdoutf", "PerlIO_tell", "PerlIO_ungetc", "PerlIO_vprintf", "PerlIO_write",
"PL_maxsysfd"

Integer configuration values

"CASTI32", "HAS_INT64_T", "HAS_LONG_LONG", "HAS_QUAD", "HE", "I8", "I16", "I32",
"I64", "IV", "I32SIZE", "I32TYPE", "I64SIZE", "I64TYPE", "I16SIZE", "I16TYPE",
"INT16_C", "INT32_C", "INT64_C", "INTMAX_C", "INTSIZE", "I8SIZE", "I8TYPE",
"IV_MAX", "IV_MIN", "IVSIZE", "IVTYPE", "line_t", "LONGLONGSIZE", "LONGSIZE",
"memzero", "NV", "PERL_INT_FAST8_T", "PERL_INT_FAST16_T", "PERL_UINT_FAST8_T",
"PERL_UINT_FAST16_T", "PERL_INT_MAX", "PERL_INT_MIN", "PERL_LONG_MAX",
"PERL_LONG_MIN", "PERL_SHORT_MAX", "PERL_SHORT_MIN", "PERL_UCHAR_MAX",
"PERL_UCHAR_MIN", "PERL_UINT_MAX", "PERL_UINT_MIN", "PERL_ULONG_MAX",
"PERL_ULONG_MIN", "PERL_USHORT_MAX", "PERL_USHORT_MIN", "PERL_QUAD_MAX",
"PERL_QUAD_MIN", "PERL_UQUAD_MAX", "PERL_UQUAD_MIN", "SHORTSIZE", "STRLEN", "U8",
"U16", "U32", "U64", "UV", "U32SIZE", "U32TYPE", "U64SIZE", "U64TYPE", "U16SIZE",
"U16TYPE", "UINT16_C", "UINT32_C", "UINT64_C", "UINTMAX_C", "U8SIZE", "U8TYPE",
"UV_MAX", "UV_MIN", "UVSIZE", "UVTYPE", "WIDEST_UTYPE"

"lex_bufutf8" , "lex_discard_to" , "lex_grow_linestr" , "lex_next_chunk" ,
"lex_peek_unichar" , "lex_read_space" , "lex_read_to" , "lex_read_unichar" ,
"lex_start" , "lex_stuff_pv" , "lex_stuff_pvn" , "lex_stuff_pvs" , "lex_stuff_sv" ,
"lex_unstuff" , "parse_arithexpr" , "parse_barestmt" , "parse_block" ,
"parse_fullexpr" , "parse_fullstmt" , "parse_label" , "parse_listexpr" ,
"parse_stmtseq" , "parse_subsignature" , "parse_termexpr" , "PL_parser" ,
"PL_parser->bufend" , "PL_parser->bufptr" , "PL_parser->linestart" ,
"PL_parser->linestr" , "wrap_keyword_plugin"

Locales

"DECLARATION_FOR_LC_NUMERIC_MANIPULATION" , "foldEQ_locale" , "HAS_DUPLOCALE" ,
"HAS_FREELOCALE" , "HAS_LC_MONETARY_2008" , "HAS_LOCALECONV" , "HAS_LOCALECONV_L" ,
"HAS_NEWLOCALE" , "HAS_NL_LANGINFO" , "HAS_QUERYLOCALE" , "HAS_SETLOCALE" ,
"HAS_SETLOCALE_R" , "HAS_THREAD_SAFE_NL_LANGINFO_L" , "HAS_USELOCALE" , "I_LANGINFO" ,
"I_LOCALE" , "IN_LOCALE" , "IN_LOCALE_COMPILETIME" , "IN_LOCALE_RUNTIME" , "I_XLOCALE"
 , "Perl_langinfo" , "Perl_setlocale" , "RESTORE_LC_NUMERIC" ,
"SETLOCALE_ACCEPTS_ANY_LOCALE_NAME" , "STORE_LC_NUMERIC_FORCE_TO_UNDERLYING" ,
"STORE_LC_NUMERIC_SET_TO_NEEDED" , "STORE_LC_NUMERIC_SET_TO_NEEDED_IN" ,
"switch_to_global_locale" , POSIX::localeconv, I18N::Langinfo, items "CRNCYSTR" and
"THOUSEP" , "Perl_langinfo" in perlapi, items "CRNCYSTR" and "THOUSEP" , "sync_locale" ,
"WITH_LC_NUMERIC_SET_TO_NEEDED" , "WITH_LC_NUMERIC_SET_TO_NEEDED_IN"

Magic

"mg_clear" , "mg_copy" , "mg_find" , "mg_findext" , "mg_free" , "mg_freeext" ,
"mg_free_type" , "mg_get" , "mg_length" , "mg_magical" , "mg_set" , "SvTIED_obj"

Memory Management

"HASATTRIBUTE_MALLOC" , "HAS_MALLOC_GOOD_SIZE" , "HAS_MALLOC_SIZE" , "I_MALLOCMALLOC"
 , "MYMALLOC" , "Newx" , "Newxc" , "Newxz" , "PERL_MALLOC_WRAP" , "Renew" , "Renewc" ,
"Safefree" , "safesyscalloc" , "safesysfree" , "safesysmalloc" , "safesysrealloc"

MRO "HvMROMETA" , "mro_get_linear_isa" , "MRO_GET_PRIVATE_DATA" , "mro_method_changed_in" ,
"mro_register" , "mro_set_private_data"

Multicall Functions

"dMULTICALL" , "MULTICALL" , "POP_MULTICALL" , "PUSH_MULTICALL"

Numeric Functions

"Drand01" , "Gconvert" , "grok_bin" , "grok_hex" , "grok_infnan" , "grok_number" ,

"grok_number_flags" , "GROK_NUMERIC_RADIX" , "grok_numeric_radix" , "grok_oct" ,
"isinfnan" , "my_atof" , "my_strtod" , "PERL_ABS" , "Perl_acos" , "Perl_asin" ,
"Perl_atan" , "Perl_atan2" , "Perl_ceil" , "Perl_cos" , "Perl_cosh" , "Perl_exp" ,
"Perl_floor" , "Perl_fmod" , "Perl_frexp" , "Perl_isfinite" , "Perl_isinf" , "Perl_isnan" ,
"Perl_ldexp" , "Perl_log" , "Perl_log10" , "Perl_modf" , "Perl_pow" , "Perl_sin" ,
"Perl_sinh" , "Perl_sqrt" , "Perl_tan" , "Perl_tanh" X <Perl_isinf>X <Perl_pow> ,
"Perl_signbit" , "PL_hexdigit" , "READ_XDIGIT" , "scan_bin" , "scan_hex" , "scan_oct"
 , "seedDrand01" , "Strtod" , "Strtol" , "Strtoul"

Optree construction

"newASSIGNOP" , "newBINOP" , "newCONDOP" , "newDEFSVOP" , "newFOROP" , "newGIVENOP" ,
"newGVOP" , "newLISTOP" , "newLOGOP" , "newLOOPEX" , "newLOOPOP" , "newMETHOP" ,
"newMETHOP_named" , "newNULLLIST" , "newOP" , "newPADOP" , "newPMOP" , "newPVOP" ,
"newRANGE" , "newSLICEOP" , "newSTATEOP" , "newSVOP" , "newTRYCATCHOP" , "newUNOP" ,
"newUNOP_AUX" , "newWHENOP" , "newWHILEOP" , "PL_opfreehook" , "PL_peekp" ,
"PL_rpeekp"

Optree Manipulation Functions

"allocaopstash" , "block_end" , "block_start" , "ck_entersub_args_list" ,
"ck_entersub_args_proto" , "ck_entersub_args_proto_or_list" , "cv_const_sv" ,
"cv_get_call_checker" , "cv_get_call_checker_flags" , "cv_set_call_checker" ,
"cv_set_call_checker_flags" , "LINKLIST" , "newATTRSUB" , "newCONSTSUB" ,
"newCONSTSUB_flags" , "newSUB" , "newXS" , "op_append_elem" , "op_append_list" ,
"OP_CLASS" , "op_contextualize" , "op_convert_list" , "OP_DESC" , "op_free" ,
"OpHAS_SIBLING" , "OpLASTSIB_set" , "op_linklist" , "op_lvalue" , "OpMAYBESIB_set" ,
"OpMORESIB_set" , "OP_NAME" , "op_null" , "op_parent" , "op_prepend_elem" , "op_scope"
 , "OpSIBLING" , "op_sibling_splice" , "OP_TYPE_IS" , "OP_TYPE_IS_OR_WAS" ,
"rv2cv_op_cv"

Pack and Unpack

"pack_cat" , "packlist" , "unpack_str" , "unpackstring"

Pad Data Structures

"CvPADLIST" , "pad_add_name_pvs" , "PadARRAY" , "pad_findmy_pvs" , "PadlistARRAY" ,
"PadlistMAX" , "PadlistNAMES" , "PadlistNAMESARRAY" , "PadlistNAMESMAX" ,
"PadlistREFCNT" , "PadMAX" , "PadnameLEN" , "PadnamelistARRAY" , "PadnamelistMAX" ,
"PadnamelistREFCNT" , "PadnamelistREFCNT_dec" , "PadnamePV" , "PadnameREFCNT" ,

"PadnameREFCNT_dec" , "PadnameSV" , "PadnameUTF8" , "pad_new" , "PL_comppad" ,
"PL_comppad_name" , "PL_curpad"

Password and Group access

"GRPASSWD" , "HAS_ENDGRENT" , "HAS_ENDGRENT_R" , "HAS_ENDPWENT" , "HAS_ENDPWENT_R" ,
"HAS_GETGRENT" , "HAS_GETGRENT_R" , "HAS_GETPWENT" , "HAS_GETPWENT_R" , "HAS_SETGRENT"
 , "HAS_SETGRENT_R" , "HAS_SETPWENT" , "HAS_SETPWENT_R" , "PWAGE" , "PWCHANGE" ,
"PWCLASS" , "PWCOMMENT" , "PWEXPIRE" , "PWGECOS" , "PWPASSWD" , "PWQUOTA"

Paths to system commands

"CSH" , "LOC_SED" , "SH_PATH"

Prototype information

"CRYPT_R_PROTO" , "CTERMID_R_PROTO" , "DRAND48_R_PROTO" , "ENDGRENT_R_PROTO" ,
"ENDHOSTENT_R_PROTO" , "ENDNETENT_R_PROTO" , "ENDPROTOENT_R_PROTO" ,
"ENDPWENT_R_PROTO" , "ENDSERVENT_R_PROTO" , "GDBMNDBM_H_USES_PROTOTYPES" ,
"GDBM_NDBM_H_USES_PROTOTYPES" , "GETGRENT_R_PROTO" , "GETGRGID_R_PROTO" ,
"GETGRNAM_R_PROTO" , "GETHOSTBYADDR_R_PROTO" , "GETHOSTBYNAME_R_PROTO" ,
"GETHOSTENT_R_PROTO" , "GETLOGIN_R_PROTO" , "GETNETBYADDR_R_PROTO" ,
"GETNETBYNAME_R_PROTO" , "GETNETENT_R_PROTO" , "GETPROTOBYNAME_R_PROTO" ,
"GETPROTOBYNUMBER_R_PROTO" , "GETPROTOENT_R_PROTO" , "GETPWENT_R_PROTO" ,
"GETPWNAM_R_PROTO" , "GETPWUID_R_PROTO" , "GETSERVBYNAME_R_PROTO" ,
"GETSERVBYPORTR_PROTO" , "GETSERVENT_R_PROTO" , "GETSPNAM_R_PROTO" ,
"HAS_DBM_INIT_PROTO" , "HAS_DRAND48_PROTO" , "HAS_FLOCK_PROTO" , "HAS_GETHOST_PROTOS" ,
"HAS_GETNET_PROTOS" , "HAS_GETPROTO_PROTOS" , "HAS_GETSERV_PROTOS" ,
"HAS_MODFL_PROTO"
 , "HAS_SBRK_PROTO" , "HAS_SETRESGID_PROTO" , "HAS_SETRESUID_PROTO" ,
"HAS_SHMAT_PROTOTYPE" , "HAS_SOCKETATMARK_PROTO" , "HAS_SYSCALL_PROTO" ,
"HAS_TELLDIR_PROTO" , "NDBM_H_USES_PROTOTYPES" , "RANDOM_R_PROTO" , "REaddir_PROTO"
 , "SETGRENT_R_PROTO" , "SETHOSTENT_R_PROTO" , "SETLOCALE_R_PROTO" ,
"SETNETENT_R_PROTO" , "SETPROTOENT_R_PROTO" , "SETPWENT_R_PROTO" ,
"SETSERVENT_R_PROTO" , "SRAND48_R_PROTO" , "SRANDOM_R_PROTO" , "STRERROR_R_PROTO" ,
"TMPNAM_R_PROTO" , "TTYNAME_R_PROTO"

REGEXP Functions

"pregcomp" , "pregexec" , "re_dup_guts" , "regmatch_info" , "SvRX" , "SvRXOK"

Signals

"HAS_SIGINFO_SI_ADDR" , "HAS_SIGINFO_SI_BAND" , "HAS_SIGINFO_SI_ERRNO" ,
"HAS_SIGINFO_SI_PID" , "HAS_SIGINFO_SI_STATUS" , "HAS_SIGINFO_SI_UID" ,
"HAS_SIGINFO_SI_VALUE" , "PERL_SIGNALS_UNSAFE_FLAG" , "rsignal" , "Sigjmp_buf" ,
"Siglongjmp" , "SIG_NAME" , "SIG_NUM" , "Sigsetjmp" , "SIG_SIZE" , "whichsig",
"whichsig_pv" , "whichsig_pvn" , "whichsig_sv"

Site configuration

"ARCHLIB" , "ARCHLIB_EXP" , "ARCHNAME" , "BIN" , "BIN_EXP" , "INSTALL_USR_BIN_PERL" ,
"MULTIARCH" , "PERL_INC_VERSION_LIST" , "PERL_OTHERLIBDIRS" , "PERL_RELOCATABLE_INC" ,
"PERL_TARGETARCH" , "PERL_USE_DEVEL" , "PERL_VENDORARCH" , "PERL_VENDORARCH_EXP" ,
"PERL_VENDORLIB_EXP" , "PERL_VENDORLIB_STEM" , "PRIVLIB" , "PRIVLIB_EXP" , "SITEARCH"
 , "SITEARCH_EXP" , "SITELIB" , "SITELIB_EXP" , "SITELIB_STEM" , "STARTPERL" ,
"USE_64_BIT_ALL" , "USE_64_BIT_INT" , "USE_BSD_GETPGRP" , "USE_BSD_SETPGRP" ,
"USE_CPLUSPLUS" , "USE_CROSS_COMPILE" , "USE_C_BACKTRACE" , "USE_DTRACE" ,
"USE_DYNAMIC_LOADING" , "USE_FAST_STDIO" , "USE_ITHREADS" , "USE_KERN_PROC_PATHNAME" ,
"USE_LARGE_FILES" , "USE_LONG_DOUBLE" , "USE_MORE_BITS" , "USE_NSGETEXECUTABLEPATH" ,
"USE_PERLIO" , "USE_QUADMATH" , "USE_REENTRANT_API" , "USE_SEMCTL_SEMID_DS" ,
"USE_SEMCTL_SEMUN" , "USE_SITECUSTOMIZE" , "USE_SOCKS" , "USE_STAT_BLOCKS" ,
"USE_STDIO_BASE" , "USE_STDIO_PTR" , "USE_STRICT_BY_DEFAULT" , "USE_THREADS"

Sockets configuration values

"HAS_SOCKADDR_IN6" , "HAS_SOCKADDR_SA_LEN" , "HAS_SOCKADDR_STORAGE" , "HAS_SOCKATMARK"
 , "HAS_SOCKET" , "HAS_SOCKETPAIR" , "HAS_SOCKS5_INIT" , "I_SOCKS" , "I_SYS_SOCKIO"

Source Filters

"filter_add" , "filter_read"

Stack Manipulation Macros

"BHK" , "BINOP" , "DESTRUCTORFUNC_NOCONTEXT_t" , "DESTRUCTORFUNC_t" , "dMARK" ,
"dORIGMARK" , "dSP" , "dTARGET" , "EXTEND" , "LISTOP" , "LOGOP" , "LOOP" , "MARK" ,
"mPUSHi" , "mPUSHn" , "mPUSHp" , "mPUSHs" , "mPUSHu" , "mXPUSHi" , "mXPUSHn" ,
"mXPUSHp" , "mXPUSHs" , "mXPUSHu" , "newXSproto" , "OP" , "ORIGMARK" , "peep_t" ,
"PL_runops" , "PMOP" , "POPi" , "POPl" , "POPn" , "POPp" , "POPpbytex" , "POPpx" ,
"POPs" , "POPu" , "POPul" , "PUSHi" , "PUSHMARK" , "PUSHmortal" , "PUSHn" , "PUSHp" ,
"PUSHs" , "PUSHu" , "PUTBACK" , "save_aptr" , "save_ary" , "SAVEBOOL" , "SAVEDELETE" ,
"SAVEDSTRUCTOR" , "SAVEDSTRUCTOR_X" , "SAVEFREEOP" , "SAVEFREEPV" , "SAVEFREESV" ,
"save_hash" , "save_hptr" , "SAVEI8" , "SAVEI32" , "SAVEI16" , "SAVEINT" , "save_item" ,

"SAVEIV", "save_list", "SAVELONG", "SAVEMORTALIZESV", "SAVEPPTR", "save_scalar",
"SAVESPTR", "SAVESTACK_POS", "save_svref", "SP", "SPAGAIN", "TARG", "UNOP",
"XPUSHi", "XPUSHmortal", "XPUSHn", "XPUSHp", "XPUSHs", "XPUSHu",
"XS_APIVERSION_BOOTCHECK", "XSRETURN", "XSRETURN_EMPTY", "XSRETURN_IV",
"XSRETURN_NO", "XSRETURN_NV", "XSRETURN_PV", "XSRETURN_UNDEF", "XSRETURN_UV",
"XSRETURN_YES", "XST_mIV", "XST_mNO", "XST_mNV", "XST_mPV", "XST_mUNDEF",
"XST_mUV", "XST_mYES", "XS_VERSION", "XS_VERSION_BOOTCHECK"

String Handling

"CAT2", "Copy", "CopyD", "delimcpy", "fbm_compile", "fbm_instr", "foldEQ",
"ibcmp", "ibcmp_locale", "ibcmp_utf8", "instr", "memCHRS", "memEQ", "memEQs",
"memNE", "memNEs", "Move", "MoveD", "my_snprintf", "my_sprintf", "my_strlcat",
"my_strlcpy", "my_strnlen", "my_vsnprintf", "ninstr", "Nullch", "rninstr",
"savepv", "savepvn", "savepvs", "savessharedpv", "savessharedpvn", "savessharedpvs",
"savessharedsvpv", "savesvpv", "strEQ", "strGE", "strGT", "STRINGIFY", "strLE",
"strLT", "strNE", "strnEQ", "strnNE", "STR_WITH_LEN", "Zero", "ZeroD"

SV Flags

"SVt_IV", "SVt_NULL", "SVt_NV", "SVt_PV", "SVt_PVAV", "SVt_PVCV", "SVt_PVFM",
"SVt_PVGV", "SVt_PVHV", "SVt_PVIO", "SVt_PVIV", "SVt_PVLV", "SVt_PVMG",
"SVt_PVNV", "SVt_REGEX", "svtype"

SV Handling

Arena allocator API Summary

"boolSV", "croak_xs_usage", "DEFSV", "DEFSV_set", "get_sv", "isGV_with_GP",
"looks_like_number", "MUTABLE_PTR", "MUTABLE_AV", "MUTABLE_CV", "MUTABLE_GV",
"MUTABLE_HV", "MUTABLE_IO", "MUTABLE_SV", "newRV", "newRV_inc", "newRV_noinc",
"newSV", "newSVhek", "newSViv", "newSVnv", "newSVpadname", "newSVpv",
"newSVpvf", "newSVpvf_nocontext", "newSVpvn", "newSVpvn_flags",
"newSVpvn_share", "newSVpvn_utf8", "newSVpvs", "newSVpvs_flags",
"newSVpv_share", "newSVpvs_share", "newSVrv", "newSVsv", "newSVsv_nomg",
"newSVsv_flags", "newSV_type", "newSVuv", "Nullsv", "PL_na", "PL_sv_no",
"PL_sv_undef", "PL_sv_yes", "PL_sv_zero", "SAVE_DEFSV", "sortsv",
"sortsv_flags", "SV", "sv_2cv", "sv_2io", "sv_2iv_flags", "sv_2mortal",
"sv_2nv_flags", "sv_2pvbyte", "sv_2pvutf8", "sv_2uv_flags", "sv_backoff",
"sv_bless", "sv_catpv", "sv_catpv_flags", "sv_catpv_mg", "sv_catpv_nomg",

"sv_catpvf", "sv_catpvf_nocontext", "sv_catpvf_mg", "sv_catpvf_mg_nocontext",
 "sv_catpvn", "sv_catpvn_flags", "sv_catpvn_mg", "sv_catpvn_nomg", "sv_catpvs",
 "sv_catpvs_flags", "sv_catpvs_mg", "sv_catpvs_nomg", "sv_catsv",
 "sv_catsv_flags", "sv_catsv_mg", "sv_catsv_nomg", "sv_chop", "sv_clear",
 "sv_cmp", "sv_cmp_flags", "sv_cmp_locale", "sv_cmp_locale_flags",
 "sv_collxfrm", "sv_collxfrm_flags", "sv_copypv", "sv_copypv_nomg",
 "sv_copypv_flags", "SvCUR", "SvCUR_set", "sv_dec", "sv_dec_nomg",
 "sv_derived_from", "sv_derived_from_pv", "sv_derived_from_pvn",
 "sv_derived_from_sv", "sv_does", "sv_does_pv", "sv_does_pvn", "sv_does_sv",
 "SvEND", "sv_eq", "sv_eq_flags", "sv_force_normal", "sv_force_normal_flags",
 "sv_free", "SvGAMAGIC", "SvGETMAGIC", "sv_gets", "sv_get_backrefs", "SvGROW",
 "sv_inc", "sv_inc_nomg", "sv_insert", "sv_insert_flags", "SvIOK",
 "SvIOK_notUV", "SvIOK_off", "SvIOK_on", "SvIOK_only", "SvIOK_only_UV",
 "SvIOKp", "SvIOK_UV", "sv_isa", "sv_isa_sv", "SvIsCOW", "SvIsCOW_shared_hash",
 "sv_isobject", "SvIV", "SvIVx", "SvIV_nomg", "SvIV_set", "SvIVX", "SvLEN",
 "sv_len", "SvLEN_set", "sv_len_utf8", "SvLOCK", "sv_magic", "sv_magicext",
 "SvMAGIC_set", "sv_mortalcopy", "sv_mortalcopy_flags", "sv_newmortal",
 "SvNIOK", "SvNIOK_off", "SvNIOKp", "SvNOK", "SvNOK_off", "SvNOK_on",
 "SvNOK_only", "SvNOKp", "sv_nolocking", "sv_nounlocking", "SvNV", "SvNVx",
 "SvNV_nomg", "SvNV_set", "SvNVX", "SvOK", "SvOOK", "SvOOK_off",
 "SvOOK_offset", "SvPOK", "SvPOK_off", "SvPOK_on", "SvPOK_only",
 "SvPOK_only_UTF8", "SvPOKp", "sv_pos_b2u", "sv_pos_b2u_flags", "sv_pos_u2b",
 "sv_pos_u2b_flags", "SvPV", "SvPVx", "SvPV_nomg", "SvPV_nolen", "SvPVx_nolen",
 "SvPV_nomg_nolen", "SvPV_mutable", "SvPV_const", "SvPVx_const",
 "SvPV_nolen_const", "SvPVx_nolen_const", "SvPV_nomg_const",
 "SvPV_nomg_const_nolen", "SvPV_flags", "SvPV_flags_const", "SvPV_flags_mutable",
 "SvPVbyte", "SvPVbyte_nomg", "SvPVbyte_nolen", "SvPVbytex_nolen", "SvPVbytex",
 "SvPVbyte_or_null", "SvPVbyte_or_null_nomg", "SvPVutf8", "SvPVutf8x",
 "SvPVutf8_nomg", "SvPVutf8_nolen", "SvPVutf8_or_null", "SvPVutf8_or_null_nomg",
 "SvPVbyte", "SvPVbyte_force", "SvPVbyte_nolen", "SvPVbyte_nomg",
 "SvPVbyte_or_null", "SvPVbyte_or_null_nomg", "SvPVCLEAR", "SvPV_force",
 "SvPV_force_nolen", "SvPVx_force", "SvPV_force_nomg", "SvPV_force_nomg_nolen",
 "SvPV_force_mutable", "SvPV_force_flags", "SvPV_force_flags_nolen",

"SvPV_force_flags_mutable", "SvPVbyte_force", "SvPVbytex_force", "SvPVutf8_force",
 "SvPVutf8x_force", "SvPV_free", "sv_pvn_force_flags", "SvPV_renew", "SvPV_set",
 "SvPVutf8", "SvPVutf8_force", "SvPVutf8_nolen", "SvPVutf8_nomg",
 "SvPVutf8_or_null", "SvPVutf8_or_null_nomg", "SvPVX", "SvPVXx", "SvPVX_const",
 "SvPVX_mutable", "SvREADONLY", "SvREADONLY_off", "SvREADONLY_on", "sv_ref",
 "SvREFCNT", "SvREFCNT_dec", "SvREFCNT_dec_NN", "SvREFCNT_inc",
 "SvREFCNT_inc_NN", "SvREFCNT_inc_void", "SvREFCNT_inc_void_NN",
 "SvREFCNT_inc_simple", "SvREFCNT_inc_simple_NN", "SvREFCNT_inc_simple_void",
 "SvREFCNT_inc_simple_void_NN",
 "sv_reftype", "sv_replace", "sv_report_used", "sv_reset", "SvROK",
 "SvROK_off", "SvROK_on", "SvRV", "SvRV_set", "sv_rvunweaken", "sv_rvweaken",
 "sv_setiv", "sv_setiv_mg", "SvSETMAGIC", "sv_setnv", "sv_setnv_mg", "sv_setpv",
 "sv_setpv_mg", "sv_setpvf", "sv_setpvf_nocontext", "sv_setpvf_mg",
 "sv_setpvf_mg_nocontext", "sv_setpviv", "sv_setpviv_mg", "sv_setpvn",
 "sv_setpvn_mg", "sv_setpvs", "sv_setpvs_mg", "sv_setpv_bufsize",
 "sv_setref_iv", "sv_setref_nv", "sv_setref_pv", "sv_setref_pvn",
 "sv_setref_pvs", "sv_setref_uv", "SvSetSV", "SvSetMagicSV", "SvSetSV_nosteal",
 "SvSetMagicSV_nosteal", "sv_setsv", "sv_setsv_flags", "sv_setsv_mg",
 "sv_setsv_nomg", "sv_setuv", "sv_setuv_mg", "sv_set_undef", "SvSHARE",
 "SvSHARED_HASH", "SvSTASH", "SvSTASH_set", "SvTAINT", "SvTAINTED",
 "SvTAINTED_off", "SvTAINTED_on", "SvTRUE", "SvTRUEx", "SvTRUE_nomg",
 "SvTRUE_NN", "SvTRUE_nomg_NN", "SvTYPE", "SvUNLOCK", "sv_unmagic",
 "sv_unmagicext", "sv_unref", "sv_unref_flags", "SvUOK", "SvUPGRADE",
 "sv_upgrade", "sv_usepvn", "sv_usepvn_flags", "sv_usepvn_mg", "SvUTF8",
 "sv_utf8_decode", "sv_utf8_downgrade", "sv_utf8_downgrade_flags",
 "sv_utf8_downgrade_nomg", "sv_utf8_encode", "sv_utf8_upgrade",
 "sv_utf8_upgrade_nomg", "sv_utf8_upgrade_flags", "sv_utf8_upgrade_flags_grow",
 "SvUTF8_off", "SvUTF8_on", "SvUV", "SvUVx", "SvUV_nomg", "SvUV_set", "SvUVX",
 "SvUVXx", "sv_vcatpvf", "sv_vcatpvf_mg", "sv_vcatpvfn", "sv_vcatpvfn_flags",
 "SvVOK", "sv_vsetpvf", "sv_vsetpvf_mg", "sv_vsetpvfn", "SvVSTRING_mg",
 "vnewSVpvf"

Time

"HAS_ASCTIME64" , "HAS_ASCTIME_R" , "HAS_CTIME64" , "HAS_CTIME_R" , "HAS_DIFFTIME" ,
"HAS_DIFFTIME64" , "HAS_FUTIMES" , "HAS_GETITIMER" , "HAS_GETTIMEOFDAY" ,
"HAS_GMTIME64" , "HAS_GMTIME_R" , "HAS_LOCALTIME64" , "HAS_LOCALTIME_R" , "HAS_MKTIME"
 , "HAS_MKTIME64" , "HAS_NANOSLEEP" , "HAS_SETITIMER" , "HAS_STRFTIME" , "HAS_TIME" ,
"HAS_TIMEGM" , "HAS_TIMES" , "HAS_TM_TM_GMTOFF" , "HAS_TM_TM_ZONE" , "HAS_TZNAME" ,
"HAS_USLEEP" , "HAS_USLEEP_PROTO" , "l_time" , "l_utime" , "LOCALTIME_MAX" ,
"LOCALTIME_MIN" , "LOCALTIME_R_NEEDS_TZSET" , "LOCALTIME_R_PROTO" , "L_R_TZSET" ,
"mini_mktime" , "my_strftime"

Typedef names

"DB_Hash_t" , "DB_Prefix_t" , "Dirent_t" , "Fpos_t" , "Free_t" , "Gid_t" , "Gid_t_f"
 , "Gid_t_sign" , "Gid_t_size" , "Groups_t" , "Malloc_t" , "Mmap_t" , "Mode_t" ,
"Netdb_hlen_t" , "Netdb_host_t" , "Netdb_name_t" , "Netdb_net_t" , "Off_t" ,
"Off_t_size" , "Pid_t" , "Rand_seed_t" , "Select_fd_set_t" , "Shmat_t" , "Signal_t" ,
"Size_t" , "Size_t_size" , "Sock_size_t" , "SSize_t" , "Time_t" , "Uid_t" , "Uid_t_f"
 , "Uid_t_sign" , "Uid_t_size"

Unicode Support

"BOM_UTF8" , "bytes_cmp_utf8" , "bytes_from_utf8" , "bytes_to_utf8" , "DO_UTF8" ,
"foldEQ_utf8" , "is_ascii_string" , "is_c9strict_utf8_string" ,
"is_c9strict_utf8_string_loc" , "is_c9strict_utf8_string_loclen" ,
"isC9_STRICT_UTF8_CHAR" , "is_invariant_string" , "isSTRICT_UTF8_CHAR" ,
"is_strict_utf8_string" , "is_strict_utf8_string_loc" , "is_strict_utf8_string_loclen"
 , "is_utf8_char" , "is_utf8_char_buf" , "is_utf8_fixed_width_buf_flags" ,
"is_utf8_fixed_width_buf_loclen_flags" , "is_utf8_fixed_width_buf_loc_flags" ,
"is_utf8_invariant_string" , "is_utf8_invariant_string_loc" , "is_utf8_string" ,
"is_utf8_string_flags" , "is_utf8_string_loc" , "is_utf8_string_loclen" ,
"is_utf8_string_loclen_flags" , "is_utf8_string_loc_flags" ,
"is_utf8_valid_partial_char" , "is_utf8_valid_partial_char_flags" , "isUTF8_CHAR" ,
"isUTF8_CHAR_flags" , "LATIN1_TO_NATIVE" , "NATIVE_TO_LATIN1" , "NATIVE_TO_UNI" ,
"pad_compname_type" , "pv_uni_display" , "REPLACEMENT_CHARACTER_UTF8" ,
"sv_cat_decode" , "sv_recode_to_utf8" , "sv_uni_display" , "UNICODE_REPLACEMENT" ,
"UNI_TO_NATIVE" , "utf8n_to_uvchr" , "utf8n_to_uvchr_error" ,
"UTF8_GOT_PERL_EXTENDED" , "UTF8_GOT_CONTINUATION" , "UTF8_GOT_EMPTY" , "UTF8_GOT_LONG" ,
"UTF8_GOT_NONCHAR" , "UTF8_GOT_NON_CONTINUATION" , "UTF8_GOT_OVERFLOW" ,

"UTF8_GOT_SHORT", "UTF8_GOT_SUPER", "UTF8_GOT_SURROGATE", "utf8n_to_uvchr_msgs",
"text", "warn_categories", "flag", "UTF8SKIP", "UTF8_SAFE_SKIP" if you know the
maximum ending pointer in the buffer pointed to by "s"; or, "UTF8_CHK_SKIP" if you
don't know it, "UTF8_CHK_SKIP", "utf8_distance", "utf8_hop", "utf8_hop_back",
"utf8_hop_forward", "utf8_hop_safe", "UTF8_IS_INVARIANT", "UTF8_IS_NONCHAR",
"UTF8_IS_SUPER", "UTF8_IS_SURROGATE", "utf8_length", "UTF8_MAXBYTES",
"UTF8_MAXBYTES_CASE", "UTF8_SAFE_SKIP", "UTF8_SKIP", "utf8_to_bytes",
"utf8_to_uvchr", "utf8_to_uvchr_buf", "UVCHR_IS_INVARIANT", "UVCHR_SKIP",
"uvchr_to_utf8", "uvchr_to_utf8_flags", "uvchr_to_utf8_flags_msgs", "text",
"warn_categories", "flag"

Utility Functions

"C_ARRAY_END", "C_ARRAY_LENGTH", "getcwd_sv", "IN_PERL_COMPILETIME",
"IN_PERL_RUNTIME", "IS_SAFE_SYSCALL", "is_safe_syscall", "my_setenv", "Poison",
"PoisonFree", "PoisonNew", "PoisonWith", "StructCopy", "sv_destroyable",
"sv_nosharing"

Versioning

"new_version", "PERL_REVISION", "PERL_SUBVERSION", "PERL_VERSION",
"PERL_VERSION_EQ", "PERL_VERSION_NE", "PERL_VERSION_LT", "PERL_VERSION_LE",
"PERL_VERSION_GT", "PERL_VERSION_GE", "prescan_version", "scan_version",
"upg_version", "vcmp", "vnormal", "vnumify", "vstringify", "vverify", The SV is
an HV or a reference to an HV, The hash contains a "version" key, The "version" key
has a reference to an AV as its value

Warning and Dieing

"ckWARN", "ckWARN2", "ckWARN3", "ckWARN4", "ckWARN_d", "ckWARN2_d", "ckWARN3_d",
"ckWARN4_d", "ck_warner", "ck_warner_d", "CLEAR_ERRSV", "croak", "croak_nocontext",
"croak_no_modify", "croak_sv", "die", "die_sv", "die_nocontext", "ERRSV",
"packWARN", "packWARN2", "packWARN3", "packWARN4", "PL_curcop", "PL_curstash",
"PL_defgv", "SANE_ERRSV", "vcroak", "vwarn", "vwarner", "warn", "warn_nocontext",
"warner", "warner_nocontext", "warn_sv"

XS "ax", "CLASS", "dAX", "dAXMARK", "dITEMS", "dMY_CXT_SV", "dUNDERBAR", "dXSARGS",
"dXSI32", "items", "ix", "RETV", "ST", "THIS", "UNDERBAR", "XS",
"XS_EXTERNAL", "XS_INTERNAL", "XSPROTO"

AUTHORS

SEE ALSO

perlintern - autogenerated documentation of purely internal Perl functions

DESCRIPTION

AV Handling

"AvFILLp"

Callback Functions

Casting

Character case changing

Character classification

Compiler and Preprocessor information

Compiler directives

Compile-time scope hooks

"BhkENTRY" , "BhkFLAGS" , "CALL_BLOCK_HOOKS"

Concurrency

COP Hint Hashes

Custom Operators

"core_prototype"

CV Handling

"CvWEAKOUTSIDE" , "docatch"

Debugging

"free_c_backtrace" , "get_c_backtrace" , "PL_DBsingle" , "PL_DBsub" , "PL_DBtrace"

Display functions

Embedding and Interpreter Cloning

"cv_dump" , "cv_forget_slab" , "do_dump_pad" , "pad_alloc_name" , "pad_block_start" ,
"pad_check_dup" , "pad_findlex" , "pad_fixup_inner_anons" , "pad_free" , "pad_leavemy"
 , "padlist_dup" , "padname_dup" , "padnamelist_dup" , "pad_push" , "pad_reset" ,
"pad_setsv" , "pad_sv" , "pad_swipe"

Errno

"dSAVEDERRNO" , "dSAVE_ERRNO" , "RESTORE_ERRNO" , "SAVE_ERRNO" , "SETERRNO"

Exception Handling (simple) Macros

Filesystem configuration values

Floating point configuration values

Formats

General Configuration

Global Variables

GV Handling

"gv_stashvpvn_cached" , "gv_try_downgrade"

Hook manipulation

HV Handling

"hv_ename_add" , "hv_ename_delete" , "refcounted_he_chain_2hv" ,
"refcounted_he_fetch_pv" , "refcounted_he_fetch_pvn" , "refcounted_he_fetch_pvs" ,
"refcounted_he_fetch_sv" , "refcounted_he_free" , "refcounted_he_inc" ,
"refcounted_he_new_pv" , "refcounted_he_new_pvn" , "refcounted_he_new_pvs" ,
"refcounted_he_new_sv"

Input/Output

"PL_last_in_gv" , "PL_ofsgv" , "PL_rs" , "start_glob"

Integer configuration values

Lexer interface

"validate_proto"

Locales

Magic

"magic_clearhint" , "magic_clearhints" , "magic_methcall" , "magic_sethint" ,
"mg_localize"

Memory Management

MRO "mro_get_linear_isa_dfs" , "mro_isa_changed_in" , "mro_package_moved"

Multicall Functions

Numeric Functions

"grok_atoUV" , "isinfnansv"

Optree construction

Optree Manipulation Functions

"finalize_optree" , "newATTRSUB_x" , "newXS_len_flags" , "optimize_optree" ,
"traverse_op_tree"

Pack and Unpack

Pad Data Structures

"CX_CURPAD_SAVE" , "CX_CURPAD_SV" , "PAD_BASE_SV" , "PAD_CLONE_VARS" ,

"PAD_COMPNAME_FLAGS" , "PAD_COMPNAME_GEN" , "PAD_COMPNAME_GEN_set" ,
"PAD_COMPNAME_OURSTASH" , "PAD_COMPNAME_PV" , "PAD_COMPNAME_TYPE" , "PadnameIsOUR" ,
"PadnameIsSTATE" , "PadnameOURSTASH" , "PadnameOUTER" , "PadnameTYPE" ,
"PAD_RESTORE_LOCAL" , "PAD_SAVE_LOCAL" , "PAD_SAVE_SETNULLPAD" , "PAD_SETSV" ,
"PAD_SET_CUR" , "PAD_SET_CUR_NOSAVE" , "PAD_SV" , "PAD_SVI" , "SAVECLEARSV" ,
"SAVECOMPPAD" , "SAVEPADSV"

Password and Group access

Paths to system commands

Prototype information

REGEXP Functions

Signals

Site configuration

Sockets configuration values

Source Filters

Stack Manipulation Macros

"djSP" , "LVRET"

String Handling

"delimcpy_no_escape" , "quadmath_format_needed" , "quadmath_format_valid"

SV Flags

"SVt_INVLIST"

SV Handling

"PL_Sv" , "sv_2bool" , "sv_2bool_flags" , "sv_2num" , "sv_2pvbyte_nolen" ,
"sv_2pvutf8_nolen" , "sv_2pv_flags" , "sv_2pv_nolen" , "sv_add_arena" , "sv_clean_all"
 , "sv_clean_objs" , "sv_free_arenas" , "sv_grow" , "sv_iv" , "sv_newref" , "sv_nv" ,
"sv_pv" , "sv_pvbyte" , "sv_pvbyten" , "sv_pvbyten_force" , "sv_pvn" , "sv_pvn_force"
 , "sv_pvutf8" , "sv_pvutf8n" , "sv_pvutf8n_force" , "sv_taint" , "sv_tainted" ,
"SVTHINKFIRST" , "sv_true" , "sv_untaint" , "sv_uv"

Time

Typedef names

Unicode Support

"bytes_from_utf8_loc" , "find_uninit_var" , "isSCRIPT_RUN" ,
"is_utf8_non_invariant_string" , "report_uninit" , "utf8n_to_uvuni" , "utf8_to_uvuni"
 , "utf8_to_uvuni_buf" , "uvoffuni_to_utf8_flags" , "uvuni_to_utf8_flags" ,

"valid_utf8_to_uvchr" , "variant_under_utf8_count"

Utility Functions

Versioning

Warning and Dieing

"PL_dowarn"

XS

Undocumented elements

AUTHORS

SEE ALSO

perljol - C API for Perl's implementation of IO in Layers.

SYNOPSIS

DESCRIPTION

History and Background

Basic Structure

Layers vs Disciplines

Data Structures

Functions and Attributes

Per-instance Data

Layers in action.

Per-instance flag bits

PERLIO_F_EOF, PERLIO_F_CANWRITE, PERLIO_F_CANREAD, PERLIO_F_ERROR,
PERLIO_F_TRUNCATE, PERLIO_F_APPEND, PERLIO_F_CRLF, PERLIO_F_UTF8, PERLIO_F_UNBUF,
PERLIO_F_WRBUF, PERLIO_F_RDBUF, PERLIO_F_LINEBUF, PERLIO_F_TEMP, PERLIO_F_OPEN,
PERLIO_F_FASTGETS

Methods in Detail

fsize, name, size, kind, PERLIO_K_BUFFERED, PERLIO_K_RAW, PERLIO_K CancRLF,
PERLIO_K_FASTGETS, PERLIO_K_MULTIARG, Pushed, Popped, Open, Binmode, Getarg,
Fileno, Dup, Read, Write, Seek, Tell, Close, Flush, Fill, Eof, Error, Clearerr,
Setlinebuf, Get_base, Get_bufsiz, Get_ptr, Get_cnt, Set_ptrcnt

Utilities

Implementing PerlIO Layers

C implementations, Perl implementations

Core Layers

"unix", "perlio", "stdio", "crlf", "mmap", "pending", "raw", "utf8"

Extension Layers

":encoding", ":scalar", ":via"

TODO

perlapi - perl's IO abstraction interface.

SYNOPSIS

DESCRIPTION

1. USE_STDIO, 2. USE_PERLIO, PerlIO_stdin(), PerlIO_stdout(), PerlIO_stderr(),
PerlIO_open(path, mode), PerlIO_fdopen(fd,mode), PerlIO_reopen(path,mode,f),
PerlIO_printf(f,fmt,...), PerlIO_vprintf(f,fmt,a), PerlIO_stdoutf(fmt,...),
PerlIO_read(f,buf,count), PerlIO_write(f,buf,count), PerlIO_close(f),
PerlIO_puts(f,s), PerlIO_putc(f,c), PerlIO_ungetc(f,c), PerlIO_getc(f), PerlIO_eof(f),
PerlIO_error(f), PerlIO_fileno(f), PerlIO_clearerr(f), PerlIO_flush(f),
PerlIO_seek(f,offset,whence), PerlIO_tell(f), PerlIO_getpos(f,p), PerlIO_setpos(f,p),
PerlIO_rewind(f), PerlIO_tmpfile(), PerlIO_setlinebuf(f)

Co-existence with stdio

PerlIO_importFILE(f,mode), PerlIO_exportFILE(f,mode), PerlIO_releaseFILE(p,f),
PerlIO_findFILE(f)

"Fast gets" Functions

PerlIO_fast_gets(f), PerlIO_has_cntptr(f), PerlIO_get_cnt(f), PerlIO_get_ptr(f),
PerlIO_set_ptrcnt(f,p,c), PerlIO_canset_cnt(f), PerlIO_set_cnt(f,c),
PerlIO_has_base(f), PerlIO_get_base(f), PerlIO_get_bufsiz(f)

Other Functions

PerlIO_apply_layers(f,mode,layers), PerlIO_binmode(f,ptype,imode,layers), '<' read, '>' write, '+' read/write, PerlIO_debug(fmt,...)

perlhack - How to hack on Perl

DESCRIPTION

SUPER QUICK PATCH GUIDE

Check out the source repository, Ensure you're following the latest advice, Create a
branch for your change, Make your change, Test your change, Commit your change, Send
your change to the Perl issue tracker, Thank you, Acknowledgement, Next time

BUG REPORTING

PERL 5 PORTERS

perl-changes mailing list

#p5p on IRC

GETTING THE PERL SOURCE

Read access via Git

Read access via the web

Read access via rsync

Write access via git

PATCHING PERL

Submitting patches

Getting your patch accepted

Why, What, How

Patching a core module

Updating perldelta

What makes for a good patch?

TESTING

t/base, t/comp and t/opbasic, All other subdirectories of t/, Test files not found under t/

Special "make test" targets

test_porting, minitest, test.valgrind check.valgrind, test_harness, test-notty

test_notty

Parallel tests

Running tests by hand

Using t/harness for testing

-v, -torture, -re=PATTERN, -re LIST OF PATTERNS, PERL_CORE=1,

PERL_DESTRUCT_LEVEL=2, PERL, PERL_SKIP_TTY_TEST, PERL_TEST_Net_Ping,

PERL_TEST_NOVREXX, PERL_TEST_NUMCONVERTS, PERL_TEST_MEMORY

Performance testing

Building perl at older commits

MORE READING FOR GUTS HACKERS

perlsource, perlinterp, perlhacktut, perlhacktips, perlguts, perlxtut and perlxs,

perlapi, Porting/pumpkin.pod

CPAN TESTERS AND PERL SMOKERS

WHAT NEXT?

"The Road goes ever on and on, down from the door where it began."

Metaphoric Quotations

AUTHOR

perlsource - A guide to the Perl source tree

DESCRIPTION

FINDING YOUR WAY AROUND

C code

Core modules

lib/, ext/, dist/, cpan/

Tests

Module tests, t/base/, t/cmd/, t/comp/, t/io/, t/mro/, t/op/, t/opbasic/, t/re/,

t/run/, t/uni/, t/win32/, t/porting/, t/lib/

Documentation

Hacking tools and documentation

check*, Maintainers, Maintainers.pl, and Maintainers.pm, podtidy

Build system

AUTHORS

MANIFEST

perlinterp - An overview of the Perl interpreter

DESCRIPTION

ELEMENTS OF THE INTERPRETER

Startup

Parsing

Optimization

Running

Exception handling

INTERNAL VARIABLE TYPES

OP TREES

STACKS

Argument stack

Mark stack

Save stack

MILLIONS OF MACROS

FURTHER READING

perlhacktut - Walk through the creation of a simple C code patch

DESCRIPTION

EXAMPLE OF A SIMPLE PATCH

Writing the patch

Testing the patch

Documenting the patch

Submit

AUTHOR

perlhacktips - Tips for Perl core C code hacking

DESCRIPTION

COMMON PROBLEMS

Perl environment problems

Portability problems

Problematic System Interfaces

Security problems

DEBUGGING

Poking at Perl

Using a source-level debugger

run [args], break function_name, break source.c:xxx, step, next, continue, finish,

'enter', ptype, print

gdb macro support

Dumping Perl Data Structures

Using gdb to look at specific parts of a program

Using gdb to look at what the parser/lexer are doing

SOURCE CODE STATIC ANALYSIS

lint

Coverity

HP-UX cadviser (Code Advisor)

cpd (cut-and-paste detector)

gcc warnings

Warnings of other C compilers

MEMORY DEBUGGERS

valgrind

AddressSanitizer

-Dcc=clang, -Accflags=-fsanitize=address, -Aldflags=-fsanitize=address,

-Alddldflags=-shared -fsanitize=address, -fsanitize-blacklist=`pwd`/asan_ignore

PROFILING

Gprof Profiling

-a, -b, -e routine, -f routine, -s, -z

GCC gcov Profiling

MISCELLANEOUS TRICKS

PERL_DESTRUCT_LEVEL

PERL_MEM_LOG

DDD over gdb

C backtrace

Linux, OS X, get_c_backtrace, free_c_backtrace, get_c_backtrace_dump,
dump_c_backtrace

Poison

Read-only optrees

When is a bool not a bool?

The .i Targets

AUTHOR

perlpolicy - Various and sundry policies and commitments related to the Perl core

DESCRIPTION

GOVERNANCE

Perl 5 Porters

MAINTENANCE AND SUPPORT

BACKWARD COMPATIBILITY AND DEPRECATION

Terminology

experimental, deprecated, discouraged, removed

MAINTENANCE BRANCHES

Getting changes into a maint branch

CONTRIBUTED MODULES

A Social Contract about Artistic Control

DOCUMENTATION

STANDARDS OF CONDUCT

CREDITS

perlgov - Perl Rules of Governance

PREAMBLE

Mandate

Definitions

"Core Team", "Steering Council", "Vote Administrator"

The Core Team

The Steering Council

The Vote Administrator

Core Team Members

Abhijit Menon-Sen (inactive), Andy Dougherty (inactive), Chad Granum, Chris 'BinGOs'

Williams, Craig Berry, Dagfinn Ilmari Manns?ker, Dave Mitchell, David Golden, H.

Merijn Brand, Hugo van der Sanden, James E Keenan, Jan Dubois (inactive), Jesse

Vincent (inactive), Karen Etheridge, Karl Williamson, Leon Timmermans, Matthew

Horsfall, Max Maischein, Neil Bowers, Nicholas Clark, Nicolas R, Paul "LeoNerd" Evans,

Philippe "Book" Bruhat, Ricardo Signes, Steve Hay, Stuart Mackintosh, Todd Rinaldo,

Tony Cook

perlgit - Detailed information about git and the Perl repository

DESCRIPTION

CLONING THE REPOSITORY

WORKING WITH THE REPOSITORY

Finding out your status

Patch workflow

A note on derived files

Cleaning a working directory

Bisecting

Topic branches and rewriting history

Grafts

WRITE ACCESS TO THE GIT REPOSITORY

Working with Github pull requests

Accepting a patch

Committing to blead

On merging and rebasing

Committing to maintenance versions

Using a smoke-me branch to test changes

perlhst - the Perl history records

DESCRIPTION

INTRODUCTION

THE KEEPERS OF THE PUMPKIN

PUMPKIN?

THE RECORDS

SELECTED RELEASE SIZES

SELECTED PATCH SIZES

THE KEEPERS OF THE RECORDS

perldelta - what is new for perl v5.34.0

DESCRIPTION

Core Enhancements

Experimental Try/Catch Syntax

"qr/{,n}/" is now accepted

Blanks freely allowed within but adjacent to curly braces

New octal syntax "0odddd"

Performance Enhancements

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

perl5db.pl (the debugger)

New option: "HistItemMinLength", Fix to "i" and "I" commands

Configuration and Compilation

stadtx hash support has been removed, Configure, "-Dusedefaultstrict"

Testing

Platform Support

New Platforms

9front

Updated Platforms

Plan9, MacOS (Darwin)

Discontinued Platforms

Symbian

Platform-Specific Notes

DragonFlyBSD, Mac OS X, Windows, z/OS

Internal Changes

Selected Bug Fixes

pack/unpack format 'D' now works on all systems that could support it

Known Problems

Errata From Previous Releases

Obituary

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5340delta, perldelta - what is new for perl v5.34.0

DESCRIPTION

Core Enhancements

Experimental Try/Catch Syntax

"qr/{,n}/" is now accepted

Blanks freely allowed within but adjacent to curly braces

New octal syntax "0odddd"

Performance Enhancements

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

perl5db.pl (the debugger)

New option: "HistItemMinLength", Fix to "i" and "l" commands

Configuration and Compilation

stadtx hash support has been removed, Configure, "-Dusedefaultstrict"

Testing

Platform Support

New Platforms

9front

Updated Platforms

Plan9, MacOS (Darwin)

Discontinued Platforms

Symbian

Platform-Specific Notes

DragonFlyBSD, Mac OS X, Windows, z/OS

Internal Changes

Selected Bug Fixes

pack/unpack format 'D' now works on all systems that could support it

Known Problems

Errata From Previous Releases

Obituary

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5321delta - what is new for perl v5.32.1

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

Changes to Existing Diagnostics

Configuration and Compilation

Testing

Platform Support

Platform-Specific Notes

MacOS (Darwin), Minix

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5320delta - what is new for perl v5.32.0

DESCRIPTION

Core Enhancements

The isa Operator

Unicode 13.0 is supported

Chained comparisons capability

New Unicode properties "Identifier_Status" and "Identifier_Type" supported

It is now possible to write "qr/\p{Name=...}/", or "qr!\p{na=/(SMILING|GRINNING)FACE}/!"

Improvement of "POSIX::mblen()", "mbtowc", and "wctomb"

Alpha assertions are no longer experimental

Script runs are no longer experimental

Feature checks are now faster

Perl is now developed on GitHub

Compiled patterns can now be dumped before optimization

Security

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

Additional Note

Incompatible Changes

Certain pattern matching features are now prohibited in compiling Unicode property value wildcard subpatterns

Unused functions "POSIX::mbstowcs" and "POSIX::wcstombs" are removed

A bug fix for "(? [...])" may have caused some patterns to no longer compile

"p{user-defined}" properties now always override official Unicode ones

Modifiable variables are no longer permitted in constants

Use of "vec" on strings with code points above 0xFF is forbidden

Use of code points over 0xFF in string bitwise operators

"Sys::Hostname::hostname()" does not accept arguments

Plain "0" string now treated as a number for range operator

"K" now disallowed in look-ahead and look-behind assertions

Performance Enhancements

Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

Changes to Existing Documentation

"caller", "__FILE__", "__LINE__", "return", "open"

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

perlbug

The bug tracker homepage URL now points to GitHub

streamzip

Configuration and Compilation

Configure

Testing

Platform Support

Discontinued Platforms

Windows CE

Platform-Specific Notes

Linux, NetBSD 8.0, Windows, Solaris, VMS, z/OS

Internal Changes

Selected Bug Fixes

Obituary

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5303delta - what is new for perl v5.30.3

DESCRIPTION

Security

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

Additional Note

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Testing

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5302delta - what is new for perl v5.30.2

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Configuration and Compilation

Testing

Platform Support

Platform-Specific Notes

Windows

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5301delta - what is new for perl v5.30.1

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Configuration and Compilation

Testing

Platform Support

Platform-Specific Notes

Win32

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5300delta - what is new for perl v5.30.0

DESCRIPTION

Notice

Core Enhancements

Limited variable length lookbehind in regular expression pattern matching is now experimentally supported

The upper limit "n" specifiable in a regular expression quantifier of the form "{m,n}" has been doubled to 65534

Unicode 12.1 is supported

Wildcards in Unicode property value specifications are now partially supported

qr'\N{name}' is now supported

Turkic UTF-8 locales are now seamlessly supported

It is now possible to compile perl to always use thread-safe locale operations.

Eliminate opASSIGN macro usage from core

"-Drv" now means something on "-DDEBUGGING" builds

Incompatible Changes

Assigning non-zero to \$[is fatal

Delimiters must now be graphemes

Some formerly deprecated uses of an unescaped left brace "{" in regular expression patterns are now illegal

Previously deprecated sysread()/syswrite() on :utf8 handles is now fatal

my() in false conditional prohibited

Fatalize \$* and \$#

Fatalize unqualified use of dump()

Remove File::Glob::glob()

"pack()" no longer can return malformed UTF-8

Any set of digits in the Common script are legal in a script run of another script

JSON::PP enables allow_nonref by default

Deprecations

In XS code, use of various macros dealing with UTF-8.

Performance Enhancements

Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

Changes to Existing Documentation

Diagnostics

Changes to Existing Diagnostics

Utility Changes

xsubpp

Configuration and Compilation

Testing

Platform Support

Platform-Specific Notes

HP-UX 11.11, Mac OS X, Minix3, Cygwin, Win32 Mingw, Windows

Internal Changes

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5283delta - what is new for perl v5.28.3

DESCRIPTION

Security

[CVE-2020-10543] Buffer overflow caused by a crafted regular expression

[CVE-2020-10878] Integer overflow via malformed bytecode produced by a crafted regular expression

[CVE-2020-12723] Buffer overflow caused by a crafted regular expression

Additional Note

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Testing

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5282delta - what is new for perl v5.28.2

DESCRIPTION

Incompatible Changes

Any set of digits in the Common script are legal in a script run of another script

Modules and Pragmata

Updated Modules and Pragmata

Platform Support

Platform-Specific Notes

Windows, Mac OS X

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5281delta - what is new for perl v5.28.1

DESCRIPTION

Security

[CVE-2018-18311] Integer overflow leading to buffer overflow and segmentation fault

[CVE-2018-18312] Heap-buffer-overflow write in S_regatom (regcomp.c)

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5280delta - what is new for perl v5.28.0

DESCRIPTION

Core Enhancements

Unicode 10.0 is supported

"delete" on key/value hash slices

Experimentally, there are now alphabetic synonyms for some regular expression

assertions

Mixed Unicode scripts are now detectable

In-place editing with "perl -i" is now safer

Initialisation of aggregate state variables

Full-size inode numbers

The "sprintf" %j format size modifier is now available with pre-C99 compilers

Close-on-exec flag set atomically

String- and number-specific bitwise ops are no longer experimental

Locales are now thread-safe on systems that support them

New read-only predefined variable "\${^SAFE_LOCALES}"

Security

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] \$ENV{\$key} stack buffer overflow on Windows

Default Hash Function Change

Incompatible Changes

Subroutine attribute and signature order

Comma-less variable lists in formats are no longer allowed

The ":locked" and ":unique" attributes have been removed

"\N{" with nothing between the braces is now illegal

Opening the same symbol as both a file and directory handle is no longer allowed

Use of bare "<<" to mean "<<"" is no longer allowed

Setting \$/ to a reference to a non-positive integer no longer allowed

Unicode code points with values exceeding "IV_MAX" are now fatal

The "B::OP::terse" method has been removed

Use of inherited AUTOLOAD for non-methods is no longer allowed

Use of strings with code points over 0xFF is not allowed for bitwise string operators

Setting "\${^ENCODING}" to a defined value is now illegal

Backslash no longer escapes colon in PATH for the "-S" switch

the -DH (DEBUG_H) misfeature has been removed

Yada-yada is now strictly a statement

Sort algorithm can no longer be specified

Over-radix digits in floating point literals

Return type of "unpackstring()"

Deprecations

Use of "vec" on strings with code points above 0xFF is deprecated

Some uses of unescaped "{" in regexes are no longer fatal

Use of unescaped "(" immediately after a "(" in regular expression patterns is deprecated

Assignment to \$[will be fatal in Perl 5.30

hostname() won't accept arguments in Perl 5.32

Module removals

B::Debug, Locale::Codes and its associated Country, Currency and Language modules

Performance Enhancements

Modules and Pragmata

Removal of use vars

Use of DynaLoader changed to XSLoader in many modules

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

Changes to Existing Documentation

"Variable length lookbehind not implemented in regex m/%s/" in perldiag, "Use of state \$_ is experimental" in perldiag

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

perlbug

Configuration and Compilation

C89 requirement, New probes, HAS_BUILTIN_ADD_OVERFLOW, HAS_BUILTIN_MUL_OVERFLOW,

HAS_BUILTIN_SUB_OVERFLOW, HAS_THREAD_SAFE_NL_LANGINFO_L, HAS_LOCALECONV_L,

HAS_MBRLN,

HAS_MBRTOWC, HAS_MEMRCHR, HAS_NANOSLEEP, HAS_STRNLEN, HAS_STRTOLD_L, I_WCHAR

Testing

Packaging

Platform Support

Discontinued Platforms

PowerUX / Power MAX OS

Platform-Specific Notes

CentOS, Cygwin, Darwin, FreeBSD, VMS, Windows

Internal Changes

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5263delta - what is new for perl v5.26.3

DESCRIPTION

Security

[CVE-2018-12015] Directory traversal in module Archive::Tar

[CVE-2018-18311] Integer overflow leading to buffer overflow and segmentation fault

[CVE-2018-18312] Heap-buffer-overflow write in S_regatom (regcomp.c)

[CVE-2018-18313] Heap-buffer-overflow read in S_grok_bslash_N (regcomp.c)

[CVE-2018-18314] Heap-buffer-overflow write in S_regatom (regcomp.c)

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5262delta - what is new for perl v5.26.2

DESCRIPTION

Security

[CVE-2018-6797] heap-buffer-overflow (WRITE of size 1) in S_regatom (regcomp.c)

[CVE-2018-6798] Heap-buffer-overflow in Perl__byte_dump_string (utf8.c)

[CVE-2018-6913] heap-buffer-overflow in S_pack_rec

Assertion failure in Perl__core_swash_init (utf8.c)

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Platform Support

Platform-Specific Notes

Windows

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5261delta - what is new for perl v5.26.1

DESCRIPTION

Security

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] \$ENV{\$key} stack buffer overflow on Windows

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Platform Support

Platform-Specific Notes

FreeBSD, Windows

Selected Bug Fixes

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5260delta - what is new for perl v5.26.0

DESCRIPTION

Notice

"." no longer in @INC, "do" may now warn, In regular expression patterns, a literal left brace "{" should be escaped

Core Enhancements

Lexical subroutines are no longer experimental

Indented Here-documents

New regular expression modifier "/xx"

"@{^CAPTURE}", "%{^CAPTURE}", and "%{^CAPTURE_ALL}"

Declaring a reference to a variable

Unicode 9.0 is now supported

Use of "\p{script}" uses the improved Script_Extensions property

Perl can now do default collation in UTF-8 locales on platforms that support it

Better locale collation of strings containing embedded "NUL" characters

"CORE" subroutines for hash and array functions callable via reference

New Hash Function For 64-bit Builds

Security

Removal of the current directory (".") from @INC

Configure -Udefault_inc_excludes_dot, "PERL_USE_UNSAFE_INC", A new deprecation warning issued by "do", Script authors, Installing and using CPAN modules, Module Authors

Escaped colons and relative paths in PATH

New "-Di" switch is now required for PerlIO debugging output

Incompatible Changes

Unescaped literal "{" characters in regular expression patterns are no longer permissible

"scalar(%hash)" return signature changed

"keys" returned from an lvalue subroutine

The "\${^ENCODING}" facility has been removed

"POSIX::tmpnam()" has been removed

require ::Foo::Bar is now illegal.

Literal control character variable names are no longer permissible

"NBSP" is no longer permissible in "\N{...}"

Deprecations

String delimiters that aren't stand-alone graphemes are now deprecated

"cX" that maps to a printable is no longer deprecated

Performance Enhancements

New Faster Hash Function on 64 bit builds, readline is faster

Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

c2ph and pstruct

Porting/pod_lib.pl

Porting/sync-with-cpan

perf/benchmarks

Porting/checkAUTHORS.pl

t/porting/regen.t

utils/h2xs.PL

perlbug

Configuration and Compilation

Testing

Platform Support

New Platforms

NetBSD/VAX

Platform-Specific Notes

Darwin, EBCDIC, HP-UX, Hurd, VAX, VMS, Windows, Linux, OpenBSD 6, FreeBSD,

DragonFly BSD

Internal Changes

Selected Bug Fixes

Known Problems

Errata From Previous Releases

Obituary

Acknowledgements

Reporting Bugs

Give Thanks

SEE ALSO

perl5244delta - what is new for perl v5.24.4

DESCRIPTION

Security

[CVE-2018-6797] heap-buffer-overflow (WRITE of size 1) in S_regatom (regcomp.c)

[CVE-2018-6798] Heap-buffer-overflow in Perl__byte_dump_string (utf8.c)

[CVE-2018-6913] heap-buffer-overflow in S_pack_rec

Assertion failure in Perl__core_swash_init (utf8.c)

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5243delta - what is new for perl v5.24.3

DESCRIPTION

Security

[CVE-2017-12837] Heap buffer overflow in regular expression compiler

[CVE-2017-12883] Buffer over-read in regular expression parser

[CVE-2017-12814] \$ENV{\$key} stack buffer overflow on Windows

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Configuration and Compilation

Platform Support

Platform-Specific Notes

VMS, Windows

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5242delta - what is new for perl v5.24.2

DESCRIPTION

Security

Improved handling of '.' in @INC in base.pm

"Escaped" colons and relative paths in PATH

Modules and Pragmata

Updated Modules and Pragmata

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5241delta - what is new for perl v5.24.1

DESCRIPTION

Security

-Di switch is now required for PerlIO debugging output

Core modules and tools no longer search "." for optional modules

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Testing

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5240delta - what is new for perl v5.24.0

DESCRIPTION

Core Enhancements

Postfix dereferencing is no longer experimental

Unicode 8.0 is now supported

perl will now croak when closing an in-place output file fails

New "\b{lb}" boundary in regular expressions

"qr/(?[])/" now works in UTF-8 locales

Integer shift ("<<" and ">>") now more explicitly defined

printf and sprintf now allow reordered precision arguments

More fields provided to "sigaction" callback with "SA_SIGINFO"

Hashbang redirection to Perl 6

Security

Set proper umask before calling mkstemp(3)

Fix out of boundary access in Win32 path handling

Fix loss of taint in canonpath

Avoid accessing uninitialized memory in win32 "crypt()"

Remove duplicate environment variables from "environ"

Incompatible Changes

The "autoderef" feature has been removed

Lexical \$_ has been removed

"qr/\b{wb}/" is now tailored to Perl expectations

Regular expression compilation errors

"qr/\N{}/" now disallowed under "use re 'strict'"

Nested declarations are now disallowed

The "\C/" character class has been removed.

"chdir()" no longer chdirs home

ASCII characters in variable names must now be all visible

An off by one issue in \$Carp::MaxArgNums has been fixed

Only blanks and tabs are now allowed within "[...]" within "(? [...])".

Deprecations

Using code points above the platform's "IV_MAX" is now deprecated

Doing bitwise operations on strings containing code points above 0xFF is deprecated

"sysread()", "syswrite()", "recv()" and "send()" are deprecated on :utf8 handles

Performance Enhancements

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Configuration and Compilation

Testing

Platform Support

Platform-Specific Notes

AmigaOS, Cygwin, EBCDIC, UTF-EBCDIC extended, EBCDIC "cmp()" and "sort()" fixed for UTF-EBCDIC strings, EBCDIC "tr///" and "y///" fixed for "\N{ }", and "use?utf8" ranges, FreeBSD, IRIX, MacOS X, Solaris, Tru64, VMS, Win32, ppc64el, floating point

Internal Changes

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5224delta - what is new for perl v5.22.4

DESCRIPTION

Security

Improved handling of '.' in @INC in base.pm

"Escaped" colons and relative paths in PATH

Modules and Pragmata

Updated Modules and Pragmata

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5223delta - what is new for perl v5.22.3

DESCRIPTION

Security

-Di switch is now required for PerlIO debugging output

Core modules and tools no longer search "." for optional modules

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Testing

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5222delta - what is new for perl v5.22.2

DESCRIPTION

Security

Fix out of boundary access in Win32 path handling

Fix loss of taint in "canonpath()"

Set proper umask before calling mkstemp(3)

Avoid accessing uninitialized memory in Win32 "crypt()"

Remove duplicate environment variables from "environ"

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Configuration and Compilation

Platform Support

Platform-Specific Notes

Darwin, OS X/Darwin, ppc64el, Tru64

Internal Changes

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5221delta - what is new for perl v5.22.1

DESCRIPTION

Incompatible Changes

- Bounds Checking Constructs

Modules and Pragmata

- Updated Modules and Pragmata

Documentation

- Changes to Existing Documentation

Diagnostics

- Changes to Existing Diagnostics

Configuration and Compilation

Platform Support

- Platform-Specific Notes

- IRIX

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5220delta - what is new for perl v5.22.0

DESCRIPTION

Core Enhancements

- New bitwise operators

- New double-diamond operator

- New "\b" boundaries in regular expressions

- Non-Capturing Regular Expression Flag

- "use re 'strict'"

- Unicode 7.0 (with correction) is now supported

- "use?locale" can restrict which locale categories are affected

- Perl now supports POSIX 2008 locale currency additions

- Better heuristics on older platforms for determining locale UTF-8ness

- Aliasing via reference

- "prototype" with no arguments

- New "[:const]" subroutine attribute

- "fileno" now works on directory handles

List form of pipe open implemented for Win32

Assignment to list repetition

Infinity and NaN (not-a-number) handling improved

Floating point parsing has been improved

Packing infinity or not-a-number into a character is now fatal

Experimental C Backtrace API

Security

Perl is now compiled with "-fstack-protector-strong" if available

The Safe module could allow outside packages to be replaced

Perl is now always compiled with "-D_FORTIFY_SOURCE=2" if available

Incompatible Changes

Subroutine signatures moved before attributes

"&" and "\&" prototypes accepts only subs

"use encoding" is now lexical

List slices returning empty lists

"\N{" with a sequence of multiple spaces is now a fatal error

"use?UNIVERSAL?'...' is now a fatal error

In double-quotish "\cX", X must now be a printable ASCII character

Splitting the tokens "(?" and "("* in regular expressions is now a fatal compilation error.

"qr/foo/x" now ignores all Unicode pattern white space

Comment lines within "(?[?])" are now ended only by a "\n"

"(?[...])" operators now follow standard Perl precedence

Omitting "%" and "@" on hash and array names is no longer permitted

"\$!" text is now in English outside the scope of "use locale"

"\$!" text will be returned in UTF-8 when appropriate

Support for "?PATTERN?" without explicit operator has been removed

"defined(@array)" and "defined(%hash)" are now fatal errors

Using a hash or an array as a reference are now fatal errors

Changes to the "*" prototype

Deprecations

Setting "\${^ENCODING}" to anything but "undef"

Use of non-graphic characters in single-character variable names

Inlining of "sub () { \$var }" with observable side-effects

Use of multiple "/" regex modifiers

Using a NO-BREAK space in a character alias for "\N{...}" is now deprecated

A literal "{" should now be escaped in a pattern

Making all warnings fatal is discouraged

Performance Enhancements

Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Diagnostic Removals

Utility Changes

find2perl, s2p and a2p removal

h2ph

encguess

Configuration and Compilation

Testing

Platform Support

Regained Platforms

IRIX and Tru64 platforms are working again, z/OS running EBCDIC Code Page 1047

Discontinued Platforms

NeXTSTEP/OPENSTEP

Platform-Specific Notes

EBCDIC, HP-UX, Android, VMS, Win32, OpenBSD, Solaris

Internal Changes

Selected Bug Fixes

Known Problems

Obituary

Acknowledgements

Reporting Bugs

SEE ALSO

perl5203delta - what is new for perl v5.20.3

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Utility Changes

h2ph

Testing

Platform Support

Platform-Specific Notes

Win32

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5202delta - what is new for perl v5.20.2

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

Changes to Existing Diagnostics

Testing

Platform Support

Regained Platforms

Selected Bug Fixes

Known Problems

Errata From Previous Releases

Acknowledgements

Reporting Bugs

SEE ALSO

perl5201delta - what is new for perl v5.20.1

DESCRIPTION

Incompatible Changes

Performance Enhancements

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Diagnostics

Changes to Existing Diagnostics

Configuration and Compilation

Platform Support

Platform-Specific Notes

Android, OpenBSD, Solaris, VMS, Windows

Internal Changes

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5200delta - what is new for perl v5.20.0

DESCRIPTION

Core Enhancements

Experimental Subroutine signatures

"sub"s now take a "prototype" attribute

More consistent prototype parsing

"rand" now uses a consistent random number generator

New slice syntax

Experimental Postfix Dereferencing

Unicode 6.3 now supported

New "\p{Unicode}" regular expression pattern property

Better 64-bit support

"use?locale" now works on UTF-8 locales

"use?locale" now compiles on systems without locale ability

More locale initialization fallback options

"-DL" runtime option now added for tracing locale setting

-F now implies -a and -a implies -n

\$a and \$b warnings exemption

Security

Avoid possible read of free()d memory during parsing

Incompatible Changes

"do" can no longer be used to call subroutines

Quote-like escape changes

Tainting happens under more circumstances; now conforms to documentation

"\p{}", "\P{}" matching has changed for non-Unicode code points.

"\p{All}" has been expanded to match all possible code points

Data::Dumper's output may change

Locale decimal point character no longer leaks outside of "use?locale" scope

Assignments of Windows sockets error codes to \$! now prefer errno.h values over

WSAGetLastError() values

Functions "PerlIO_vsprintf" and "PerlIO_sprintf" have been removed

Deprecations

The "\C/" character class

Literal control characters in variable names

References to non-integers and non-positive integers in \$/

Character matching routines in POSIX

Interpreter-based threads are now discouraged

Module removals

CGI and its associated CGI:: packages, inc::latest, Package::Constants,

Module::Build and its associated Module::Build:: packages

Utility removals

find2perl, s2p, a2p

Performance Enhancements

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

Configuration and Compilation

Testing

Platform Support

New Platforms

Android, Bitrig, FreeMiNT, Synology

Discontinued Platforms

"sfio", AT&T 3b1, DG/UX, EBCDIC

Platform-Specific Notes

Cygwin, GNU/Hurd, Linux, Mac OS, MidnightBSD, Mixed-endian platforms, VMS, Win32,

WinCE

Internal Changes

Selected Bug Fixes

Regular Expressions

Perl 5 Debugger and -d

Lexical Subroutines

Everything Else

Known Problems

Obituary

Acknowledgements

Reporting Bugs

SEE ALSO

perl5184delta - what is new for perl v5.18.4

DESCRIPTION

Modules and Pragmata

Updated Modules and Pragmata

Platform Support

Platform-Specific Notes

Win32

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5182delta - what is new for perl v5.18.2

DESCRIPTION

Modules and Pragmata

Updated Modules and Pragmata

Documentation

Changes to Existing Documentation

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5181delta - what is new for perl v5.18.1

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Platform Support

Platform-Specific Notes

AIX, MidnightBSD

Selected Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

DESCRIPTION

Core Enhancements

New mechanism for experimental features

Hash overhaul

Upgrade to Unicode 6.2

Character name aliases may now include non-Latin1-range characters

New DTrace probes

"\${^LAST_FH}"

Regular Expression Set Operations

Lexical subroutines

Computed Labels

More CORE:: subs

"kill" with negative signal names

Security

See also: hash overhaul

"Storable" security warning in documentation

"Locale::Maketext" allowed code injection via a malicious template

Avoid calling memset with a negative count

Incompatible Changes

See also: hash overhaul

An unknown character name in "\N{...}" is now a syntax error

Formerly deprecated characters in "\N{}" character name aliases are now errors.

"\N{BELL}" now refers to U+1F514 instead of U+0007

New Restrictions in Multi-Character Case-Insensitive Matching in Regular Expression

Bracketed Character Classes

Explicit rules for variable names and identifiers

Vertical tabs are now whitespace

"/(?{})/" and "/(??{})/" have been heavily reworked

Stricter parsing of substitution replacement

"given" now aliases the global \$_

The smartmatch family of features are now experimental

Lexical \$_ is now experimental

readline() with "\$/ = \N" now reads N characters, not N bytes

Overridden "glob" is now passed one argument

Here doc parsing

Alphanumeric operators must now be separated from the closing delimiter of regular expressions

qw(...) can no longer be used as parentheses

Interaction of lexical and default warnings

"state sub" and "our sub"

Defined values stored in environment are forced to byte strings

"require" dies for unreadable files

"gv_fetchmeth_*" and SUPER

"split"'s first argument is more consistently interpreted

Deprecations

Module removals

encoding, Archive::Extract, B::Lint, B::Lint::Debug, CPANPLUS and all included

"CPANPLUS::*" modules, Devel::InnerPackage, Log::Message, Log::Message::Config,

Log::Message::Handlers, Log::Message::Item, Log::Message::Simple,

Module::Pluggable, Module::Pluggable::Object, Object::Accessor, Pod::LaTeX,

Term::UI, Term::UI::History

Deprecated Utilities

cpanp, "cpanp-run-perl", cpan2dist, pod2latex

PL_sv_objcount

Five additional characters should be escaped in patterns with "/x"

User-defined charnames with surprising whitespace

Various XS-callable functions are now deprecated

Certain rare uses of backslashes within regexes are now deprecated

Splitting the tokens "?" and "(" in regular expressions

Pre-PerlIO IO implementations

Future Deprecations

DG/UX, NeXT

Performance Enhancements

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

Changes to Existing Documentation

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

Configuration and Compilation

Testing

Platform Support

Discontinued Platforms

BeOS, UTS Global, VM/ESA, MPE/IX, EPOC, Rhapsody

Platform-Specific Notes

Internal Changes

Selected Bug Fixes

Known Problems

Obituary

Acknowledgements

Reporting Bugs

SEE ALSO

perl5163delta - what is new for perl v5.16.3

DESCRIPTION

Core Enhancements

Security

CVE-2013-1667: memory exhaustion with arbitrary hash keys

wrap-around with IO on long strings

memory leak in Encode

Incompatible Changes

Deprecations

Modules and Pragmata

Updated Modules and Pragmata

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5162delta - what is new for perl v5.16.2

DESCRIPTION

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Configuration and Compilation

configuration should no longer be confused by ls colorization

Platform Support

Platform-Specific Notes

AIX

Selected Bug Fixes

fix /\h/ equivalence with /\[h]/

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5161delta - what is new for perl v5.16.1

DESCRIPTION

Security

an off-by-two error in Scalar-List-Util has been fixed

Incompatible Changes

Modules and Pragmata

Updated Modules and Pragmata

Configuration and Compilation

Platform Support

Platform-Specific Notes

VMS

Selected Bug Fixes

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5160delta - what is new for perl v5.16.0

DESCRIPTION

Notice

Core Enhancements

"use VERSION"

"__SUB__"

New and Improved Built-ins

Unicode Support

XS Changes

Changes to Special Variables

Debugger Changes

The "CORE" Namespace

Other Changes

Security

Use "is_utf8_char_buf()" and not "is_utf8_char()"

Malformed UTF-8 input could cause attempts to read beyond the end of the buffer

"File::Glob::bsd_glob()" memory error with GLOB_ALTDIRFUNC (CVE-2011-2728).

Privileges are now set correctly when assigning to \$(

Deprecations

Don't read the Unicode data base files in lib/unicore

XS functions "is_utf8_char()", "utf8_to_uvchr()" and "utf8_to_uvuni()"

Future Deprecations

Core Modules

Platforms with no supporting programmers

Other Future Deprecations

Incompatible Changes

Special blocks called in void context

The "overloading" pragma and regexp objects

Two XS typemap Entries removed

Unicode 6.1 has incompatibilities with Unicode 6.0

Borland compiler

Certain deprecated Unicode properties are no longer supported by default

Dereferencing IO thingies as typeglobs

User-defined case-changing operations

XSUBs are now 'static'

Weakening read-only references

Tying scalars that hold typeglobs

IPC::Open3 no longer provides "xfork()", "xclose_on_exec()" and "xpipe_anon()"

\$\$ no longer caches PID

\$\$ and "getppid()" no longer emulate POSIX semantics under LinuxThreads

\$<, \$>, \$(and \$) are no longer cached

Which Non-ASCII characters get quoted by "quotemeta" and "\Q" has changed

Performance Enhancements

Modules and Pragmata

Deprecated Modules

Version::Requirements

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Removed Documentation

Diagnostics

New Diagnostics

Removed Errors

Changes to Existing Diagnostics

Utility Changes

Configuration and Compilation

Platform Support

Platform-Specific Notes

Internal Changes

Selected Bug Fixes

Array and hash

C API fixes

Compile-time hints
Copy-on-write scalars
The debugger
Dereferencing operators
Filehandle, last-accessed
Filetests and "stat"
Formats
"given" and "when"
The "glob" operator
Lvalue subroutines
Overloading
Prototypes of built-in keywords
Regular expressions
Smartmatching
The "sort" operator
The "substr" operator
Support for embedded nulls
Threading bugs
Tied variables
Version objects and vstrings
Warnings, redefinition
Warnings, "Uninitialized"
Weak references
Other notable fixes

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5144delta - what is new for perl v5.14.4

DESCRIPTION

Core Enhancements

Security

CVE-2013-1667: memory exhaustion with arbitrary hash keys

memory leak in Encode

[perl #111594] Socket::unpack_sockaddr_un heap-buffer-overflow

[perl #111586] SDBM_File: fix off-by-one access to global ".dir"

off-by-two error in List::Util

[perl #115994] fix segv in regcomp.c:S_join_exact()

[perl #115992] PL_eval_start use-after-free

wrap-around with IO on long strings

Incompatible Changes

Deprecations

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Socket, SDBM_File, List::Util

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

Utility Changes

Configuration and Compilation

Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

VMS

Selected Bug Fixes

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5143delta - what is new for perl v5.14.3

DESCRIPTION

Core Enhancements

Security

"Digest" unsafe use of eval (CVE-2011-3597)

Heap buffer overrun in 'x' string repeat operator (CVE-2012-5195)

Incompatible Changes

Deprecations

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Configuration and Compilation

Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

FreeBSD, Solaris and NetBSD, HP-UX, Linux, Mac OS X, GNU/Hurd, NetBSD

Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5142delta - what is new for perl v5.14.2

DESCRIPTION

Core Enhancements

Security

"File::Glob::bsd_glob()" memory error with GLOB_ALTDIRFUNC (CVE-2011-2728).

"Encode" decode_xs n-byte heap-overflow (CVE-2011-2939)

Incompatible Changes

Deprecations

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

HP-UX PA-RISC/64 now supports gcc-4.x, Building on OS X 10.7 Lion and Xcode 4
works again

Bug Fixes

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5141delta - what is new for perl v5.14.1

DESCRIPTION

Core Enhancements

Security

Incompatible Changes

Deprecations

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragmata

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Changes to Existing Diagnostics

Utility Changes

Configuration and Compilation

Testing

Platform Support

New Platforms

Discontinued Platforms

Platform-Specific Notes

Internal Changes

Bug Fixes

Acknowledgements

Reporting Bugs

SEE ALSO

perl5140delta - what is new for perl v5.14.0

DESCRIPTION

Notice

Core Enhancements

Unicode

Regular Expressions

Syntactical Enhancements

Exception Handling

Other Enhancements

"-d:-foo", "-d:-foo=bar"

New C APIs

Security

User-defined regular expression properties

Incompatible Changes

Regular Expressions and String Escapes

Stashes and Package Variables

Changes to Syntax or to Perl Operators

Threads and Processes

Configuration

Deprecations

Omitting a space between a regular expression and subsequent word

"\cX"

"\b{" and "\B{"

Perl 4-era .pl libraries

List assignment to \$[

Use of qw(...) as parentheses

"\N{BELL}"

"?PATTERN?"

Tie functions on scalars holding typeglobs

User-defined case-mapping

Deprecated modules

Devel::DProf

Performance Enhancements

"Safe signals" optimisation

Optimisation of shift() and pop() calls without arguments

Optimisation of regexp engine string comparison work

Regular expression compilation speed-up

String appending is 100 times faster

Eliminate "PL_*" accessor functions under ithreads

Freeing weak references

Lexical array and hash assignments

@_ uses less memory

Size optimisations to SV and HV structures

Memory consumption improvements to Exporter

Memory savings for weak references

"%+" and "%-" use less memory

Multiple small improvements to threads

Adjacent pairs of nextstate opcodes are now optimized away

Modules and Pragmata

New Modules and Pragmata

Updated Modules and Pragma

much less configuration dialog hassle, support for META/MYMETA.json, support for local::lib, support for HTTP::Tiny to reduce the dependency on FTP sites, automatic mirror selection, iron out all known bugs in configure_requires, support for distributions compressed with bzip2(1), allow Foo/Bar.pm on the command line to mean "Foo::Bar", charinfo(), charscript(), charblock()

Removed Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Diagnostics

New Diagnostics

Closure prototype called, Insecure user-defined property %s, panic: gp_free failed to free glob pointer - something is repeatedly re-creating entries, Parsing code internal error (%s), refcnt: fd %d%s, Regexp modifier "/"%c" may not appear twice, Regexp modifiers "/"%c" and "/"%c" are mutually exclusive, Using !~ with %s doesn't make sense, "\b{" is deprecated; use "\b{" instead, "\B{" is deprecated; use "\B{" instead, Operation "%s" returns its argument for .., Use of qw(...) as parentheses is deprecated

Changes to Existing Diagnostics

Utility Changes

Configuration and Compilation

Platform Support

New Platforms

AIX

Discontinued Platforms

Apollo DomainOS, MacOS Classic

Platform-Specific Notes

Internal Changes

New APIs

C API Changes

Deprecated C APIs

"Perl_ptr_table_clear", "sv_compile_2op", "find_rundefsvoffset", "CALL_FPTR" and "CPERLscope"

Other Internal Changes

Selected Bug Fixes

I/O

Regular Expression Bug Fixes

Syntax/Parsing Bugs

Stashes, Globes and Method Lookup

Aliasing packages by assigning to globs [perl #77358], Deleting packages by deleting their containing stash elements, Undefined the glob containing a package

("undef *Foo::"), Undefining an ISA glob ("undef *Foo::ISA"), Deleting an ISA
stash element ("delete \$Foo::{ISA}"), Sharing @ISA arrays between classes (via
"*Foo::ISA = \@Bar::ISA" or "*Foo::ISA = *Bar::ISA") [perl #77238]

Unicode

Ties, Overloading and Other Magic

The Debugger

Threads

Scoping and Subroutines

Signals

Miscellaneous Memory Leaks

Memory Corruption and Crashes

Fixes to Various Perl Operators

Bugs Relating to the C API

Known Problems

Errata

keys(), values(), and each() work on arrays

split() and @_

Obituary

Acknowledgements

Reporting Bugs

SEE ALSO

perl5125delta - what is new for perl v5.12.5

DESCRIPTION

Security

"Encode" decode_xs n-byte heap-overflow (CVE-2011-2939)

"File::Glob::bsd_glob()" memory error with GLOB_ALTDIRFUNC (CVE-2011-2728).

Heap buffer overrun in 'x' string repeat operator (CVE-2012-5195)

Incompatible Changes

Modules and Pragmata

Updated Modules

Changes to Existing Documentation

perlebcdic

perlunicode

perluniprops

Installation and Configuration Improvements

Platform Specific Changes

Mac OS X, NetBSD

Selected Bug Fixes

Errata

split() and @_

Acknowledgements

Reporting Bugs

SEE ALSO

perl5124delta - what is new for perl v5.12.4

DESCRIPTION

Incompatible Changes

Selected Bug Fixes

Modules and Pragmata

Testing

Documentation

Platform Specific Notes

Linux

Acknowledgements

Reporting Bugs

SEE ALSO

perl5123delta - what is new for perl v5.12.3

DESCRIPTION

Incompatible Changes

Core Enhancements

"keys", "values" work on arrays

Bug Fixes

Platform Specific Notes

Solaris, VMS, VOS

Acknowledgements

Reporting Bugs

SEE ALSO

perl5122delta - what is new for perl v5.12.2

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

- New Modules and Pragmata

- Pragmata Changes

- Updated Modules

 - "Carp", "CPANPLUS", "File::Glob", "File::Copy", "File::Spec"

Utility Changes

Changes to Existing Documentation

Installation and Configuration Improvements

- Configuration improvements

- Compilation improvements

Selected Bug Fixes

Platform Specific Notes

- AIX

- Windows

- VMS

Acknowledgements

Reporting Bugs

SEE ALSO

perl5121delta - what is new for perl v5.12.1

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

- Pragmata Changes

- Updated Modules

Changes to Existing Documentation

Testing

- Testing Improvements

Installation and Configuration Improvements

Configuration improvements

Bug Fixes

Platform Specific Notes

HP-UX

AIX

FreeBSD 7

VMS

Known Problems

Acknowledgements

Reporting Bugs

SEE ALSO

perl5120delta - what is new for perl v5.12.0

DESCRIPTION

Core Enhancements

New "package NAME VERSION" syntax

The "..." operator

Implicit strictures

Unicode improvements

Y2038 compliance

qr overloading

Pluggable keywords

APIs for more internals

Overridable function lookup

A proper interface for pluggable Method Resolution Orders

"\N" experimental regex escape

DTrace support

Support for "configure_requires" in CPAN module metadata

"each", "keys", "values" are now more flexible

"when" as a statement modifier

\$_, flexibility

// in when clauses

Enabling warnings from your shell environment

"delete local"

New support for Abstract namespace sockets

32-bit limit on substr arguments removed

Potentially Incompatible Changes

Deprecations warn by default

Version number formats

@INC reorganization

REGEXPs are now first class

Switch statement changes

flip-flop operators, defined-or operator

Smart match changes

Other potentially incompatible changes

Deprecations

suidperl, Use of "!=" to mean an empty attribute list, "UNIVERSAL->import()", Use of "goto" to jump into a construct, Custom character names in `\N{name}` that don't look like names, Deprecated Modules, `Class::ISA`, `Pod::Plainer`, `Shell`, `Switch`, Assignment to `$[, Use of the attribute :locked on subroutines, Use of "locked" with the attributes pragma, Use of "unique" with the attributes pragma, Perl_pmflag, Numerous Perl 4-era libraries`

Unicode overhaul

Modules and Pragmata

New Modules and Pragmata

"autodie", "Compress::Raw::Bzip2", "overloading", "parent", "Parse::CPAN::Meta", "VMS::DCLsym", "VMS::Stdio", "XS::APItest::KeywordRPN"

Updated Pragmata

"base", "bignum", "chardnames", "constant", "diagnostics", "feature", "less", "lib", "mro", "overload", "threads", "threads::shared", "version", "warnings"

Updated Modules

"Archive::Extract", "Archive::Tar", "Attribute::Handlers", "AutoLoader", "B::Concise", "B::Debug", "B::Deparse", "B::Lint", "CGI", "Class::ISA", "Compress::Raw::Zlib", "CPAN", "CPANPLUS", "CPANPLUS::Dist::Build", "Data::Dumper", "DB_File", "Devel::PPPort", "Digest", "Digest::MD5", "Digest::SHA", "Encode", "Exporter", "ExtUtils::CBuilder", "ExtUtils::Command", "ExtUtils::Constant", "ExtUtils::Install", "ExtUtils::MakeMaker",

"ExtUtils::Manifest", "ExtUtils::ParseXS", "File::Fetch", "File::Path",
"File::Temp", "Filter::Simple", "Filter::Util::Call", "Getopt::Long", "IO",
"IO::Zlib", "IPC::Cmd", "IPC::SysV", "Locale::Maketext",
"Locale::Maketext::Simple", "Log::Message", "Log::Message::Simple",
"Math::BigInt", "Math::BigInt::FastCalc", "Math::BigRat", "Math::Complex",
"Memoize", "MIME::Base64", "Module::Build", "Module::CoreList", "Module::Load",
"Module::Load::Conditional", "Module::Loaded", "Module::Pluggable", "Net::Ping",
"NEXT", "Object::Accessor", "Package::Constants", "PerlIO", "Pod::Parser",
"Pod::Perldoc", "Pod::Plainer", "Pod::Simple", "Safe", "SelfLoader", "Storable",
"Switch", "Sys::Syslog", "Term::ANSIColor", "Term::UI", "Test", "Test::Harness",
"Test::Simple", "Text::Balanced", "Text::ParseWords", "Text::Soundex",
"Thread::Queue", "Thread::Semaphore", "Tie::RefHash", "Time::HiRes",
"Time::Local", "Time::Piece", "Unicode::Collate", "Unicode::Normalize", "Win32",
"Win32API::File", "XSLoader"

Removed Modules and Pragmata

"attrs", "CPAN::API::HOWTO", "CPAN::DeferredCode", "CPANPLUS::inc", "DCLsym",
"ExtUtils::MakeMaker::bytes", "ExtUtils::MakeMaker::vmsish", "Stdio",
"Test::Harness::Assert", "Test::Harness::Iterator", "Test::Harness::Point",
"Test::Harness::Results", "Test::Harness::Straps", "Test::Harness::Util",
"XSSymSet"

Deprecated Modules and Pragmata

Documentation

New Documentation

Changes to Existing Documentation

Selected Performance Enhancements

Installation and Configuration Improvements

Internal Changes

Testing

Testing improvements

Parallel tests, Test harness flexibility, Test watchdog

New Tests

New or Changed Diagnostics

New Diagnostics

Changed Diagnostics

"Illegal character in prototype for %s : %s", "Prototype after '%c' for %s : %s"

Utility Changes

Selected Bug Fixes

Platform Specific Changes

New Platforms

Haiku, MirOS BSD

Discontinued Platforms

Domain/OS, MiNT, Tenon MachTen

Updated Platforms

AIX, Cygwin, Darwin (Mac OS X), DragonFly BSD, FreeBSD, Irix, NetBSD, OpenVMS,

Stratus VOS, Symbian, Windows

Known Problems

Errata

Acknowledgements

Reporting Bugs

SEE ALSO

perl5101delta - what is new for perl v5.10.1

DESCRIPTION

Incompatible Changes

Switch statement changes

flip-flop operators, defined-or operator

Smart match changes

Other incompatible changes

Core Enhancements

Unicode Character Database 5.1.0

A proper interface for pluggable Method Resolution Orders

The "overloading" pragma

Parallel tests

DTrace support

Support for "configure_requires" in CPAN module metadata

Modules and Pragmata

New Modules and Pragmata

"autodie", "Compress::Raw::Bzip2", "parent", "Parse::CPAN::Meta"

Pragmata Changes

"attributes", "attrs", "base", "bigint", "bignum", "bigrat", "charnames",
"constant", "feature", "fields", "lib", "open", "overload", "overloading",
"version"

Updated Modules

"Archive::Extract", "Archive::Tar", "Attribute::Handlers", "AutoLoader",
"AutoSplit", "B", "B::Debug", "B::Deparse", "B::Lint", "B::Xref", "Benchmark",
"Carp", "CGI", "Compress::Zlib", "CPAN", "CPANPLUS", "CPANPLUS::Dist::Build",
"Cwd", "Data::Dumper", "DB", "DB_File", "Devel::PPPort", "Digest::MD5",
"Digest::SHA", "DirHandle", "Dumpvalue", "DynaLoader", "Encode", "Errno",
"Exporter", "ExtUtils::CBuilder", "ExtUtils::Command", "ExtUtils::Constant",
"ExtUtils::Embed", "ExtUtils::Install", "ExtUtils::MakeMaker",
"ExtUtils::Manifest", "ExtUtils::ParseXS", "Fatal", "File::Basename",
"File::Compare", "File::Copy", "File::Fetch", "File::Find", "File::Path",
"File::Spec", "File::stat", "File::Temp", "FileCache", "FileHandle",
"Filter::Simple", "Filter::Util::Call", "FindBin", "GDBM_File", "Getopt::Long",
"Hash::Util::FieldHash", "I18N::Collate", "IO", "IO::Compress::*", "IO::Dir",
"IO::Handle", "IO::Socket", "IO::Zlib", "IPC::Cmd", "IPC::Open3", "IPC::SysV",
"lib", "List::Util", "Locale::MakeText", "Log::Message", "Math::BigFloat",
"Math::BigInt", "Math::BigInt::FastCalc", "Math::BigRat", "Math::Complex",
"Math::Trig", "Memoize", "Module::Build", "Module::CoreList", "Module::Load",
"Module::Load::Conditional", "Module::Loaded", "Module::Pluggable", "NDBM_File",
"Net::Ping", "NEXT", "Object::Accessor", "OS2::REXX", "Package::Constants",
"PerlIO", "PerlIO::via", "Pod::Man", "Pod::Parser", "Pod::Simple", "Pod::Text",
"POSIX", "Safe", "Scalar::Util", "SelectSaver", "SelfLoader", "Socket",
"Storable", "Switch", "Symbol", "Sys::Syslog", "Term::ANSIColor",
"Term::ReadLine", "Term::UI", "Test::Harness", "Test::Simple", "Text::ParseWords",
"Text::Tabs", "Text::Wrap", "Thread::Queue", "Thread::Semaphore", "threads",
"threads::shared", "Tie::RefHash", "Tie::StdHandle", "Time::HiRes", "Time::Local",
"Time::Piece", "Unicode::Normalize", "Unicode::UCD", "UNIVERSAL", "Win32",
"Win32API::File", "XSLoader"

h2ph, h2xs, perl5db.pl, perlthanks

New Documentation

perlhaiku, perlmroapi, perlperf, perlrepository, perlthanks

Changes to Existing Documentation

Performance Enhancements

Installation and Configuration Improvements

ext/ reorganisation

Configuration improvements

Compilation improvements

Platform Specific Changes

AIX, Cygwin, FreeBSD, Irix, Haiku, MirOS BSD, NetBSD, Stratus VOS, Symbian, Win32,

VMS

Selected Bug Fixes

New or Changed Diagnostics

"panic: sv_chop %s", "Can't locate package %s for the parents of %s", "v-string in
use/require is non-portable", "Deep recursion on subroutine \"%s\""

Changed Internals

"SVf_UTF8", "SVs_TEMP"

New Tests

t/comp/retainedlines.t, t/io/perlio_fail.t, t/io/perlio_leaks.t, t/io/perlio_open.t,
t/io/perlio.t, t/io/pvbm.t, t/mro/package_aliases.t, t/op/dbm.t, t/op/index_thr.t,
t/op/pat_thr.t, t/op/qr_gc.t, t/op/reg_email_thr.t, t/op/regexp_qr_embed_thr.t,
t/op/regexp_unicode_prop.t, t/op/regexp_unicode_prop_thr.t, t/op/reg_nc_tie.t,
t/op/reg_posixcc.t, t/op/re.t, t/op/setpgrpstack.t, t/op/substr_thr.t, t/op/upgrade.t,
t/uni/lex_utf8.t, t/uni/tie.t

Known Problems

Deprecations

Acknowledgements

Reporting Bugs

SEE ALSO

perl5100delta - what is new for perl 5.10.0

DESCRIPTION

Core Enhancements

The "feature" pragma

New -E command-line switch

Defined-or operator

Switch and Smart Match operator

Regular expressions

Recursive Patterns, Named Capture Buffers, Possessive Quantifiers, Backtracking

control verbs, Relative backreferences, "K" escape, Vertical and horizontal

whitespace, and linebreak, Optional pre-match and post-match captures with the /p

flag

"say()"

Lexical \$_

The "_" prototype

UNITCHECK blocks

New Pragma, "mro"

readdir() may return a "short filename" on Windows

readpipe() is now overridable

Default argument for readline()

state() variables

Stacked filetest operators

UNIVERSAL::DOES()

Formats

Byte-order modifiers for pack() and unpack()

"no VERSION"

"chdir", "chmod" and "chown" on filehandles

OS groups

Recursive sort subs

Exceptions in constant folding

Source filters in @INC

New internal variables

"\${^RE_DEBUG_FLAGS}", "\${^CHILD_ERROR_NATIVE}", "\${^RE_TRIE_MAXBUF}",

"\${^WIN32_SLOPPY_STAT}"

Miscellaneous

UCD 5.0.0

MAD

kill() on Windows

Incompatible Changes

Packing and UTF-8 strings

Byte/character count feature in unpack()

The \$* and \$# variables have been removed

substr() lvalues are no longer fixed-length

Parsing of "-f _"

":unique"

Effect of pragmas in eval

chdir FOO

Handling of .pmc files

\$^V is now a "version" object instead of a v-string

@- and @+ in patterns

\$AUTOLOAD can now be tainted

Tainting and printf

undef and signal handlers

strictures and dereferencing in defined()

"(?p{})" has been removed

Pseudo-hashes have been removed

Removal of the bytecode compiler and of perlcc

Removal of the JPL

Recursive inheritance detected earlier

warnings::enabled and warnings::warnif changed to favor users of modules

Modules and Pragmata

Upgrading individual core modules

Pragmata Changes

"feature", "mro", Scoping of the "sort" pragma, Scoping of "bignum", "bigint",

"bigint", "base", "strict" and "warnings", "version", "warnings", "less"

New modules

Selected Changes to Core Modules

"Attribute::Handlers", "B::Lint", "B", "Thread"

Utility Changes

perl -d, ptar, ptardiff, shasum, corelist, h2ph and h2xs, perlvp, find2perl,
config_data, cpanp, cpan2dist, pod2html

New Documentation

Performance Enhancements

In-place sorting

Lexical array access

XS-assisted SWASHGET

Constant subroutines

"PERL_DONT_CREATE_GVSV"

Weak references are cheaper

sort() enhancements

Memory optimisations

UTF-8 cache optimisation

Sloppy stat on Windows

Regular expressions optimisations

Engine de-recursivised, Single char char-classes treated as literals, Trie
optimisation of literal string alternations, Aho-Corasick start-point optimisation

Installation and Configuration Improvements

Configuration improvements

"-Dusesitecustomize", Relocatable installations, strlcat() and strlcpy(),

"d_pseudofork" and "d_printf_format_null", Configure help

Compilation improvements

Parallel build, Borland's compilers support, Static build on Windows, pport.h
files, C++ compatibility, Support for Microsoft 64-bit compiler, Visual C++, Win32
builds

Installation improvements

Module auxiliary files

New Or Improved Platforms

Selected Bug Fixes

strictures in regexp-eval blocks, Calling CORE::require(), Subscripts of slices, "no
warnings 'category'" works correctly with -w, threads improvements, chr() and negative
values, PERL5SHELL and tainting, Using *FILE{IO}, Overloading and reblessing,
Overloading and UTF-8, eval memory leaks fixed, Random device on Windows,

PERLIO_DEBUG, PerlIO::scalar and read-only scalars, study() and UTF-8, Critical signals, @INC-hook fix, "-t" switch fix, Duping UTF-8 filehandles, Localisation of hash elements

New or Changed Diagnostics

Use of uninitialized value, Deprecated use of my() in false conditional, !=~ should be !~, Newline in left-justified string, Too late for "-T" option, "%s" variable %s masks earlier declaration, readdir()/closedir()/etc. attempted on invalid dirhandle, Opening dirhandle/filehandle %s also as a file/directory, Use of -P is deprecated, v-string in use/require is non-portable, perl -V

Changed Internals

Reordering of SVt_* constants

Elimination of SVt_PVBM

New type SVt_BIND

Removal of CPP symbols

Less space is used by ops

New parser

Use of "const"

Mathoms

"AvFLAGS" has been removed

"av_*" changes

\$^H and %^H

B:: modules inheritance changed

Anonymous hash and array constructors

Known Problems

UTF-8 problems

Platform Specific Problems

Reporting Bugs

SEE ALSO

perl589delta - what is new for perl v5.8.9

DESCRIPTION

Notice

Incompatible Changes

Core Enhancements

Unicode Character Database 5.1.0.

stat and -X on directory handles

Source filters in @INC

Exceptions in constant folding

"no VERSION"

Improved internal UTF-8 caching code

Runtime relocatable installations

New internal variables

"\${^CHILD_ERROR_NATIVE}", "\${^UTF8CACHE}"

"readpipe" is now overridable

simple exception handling macros

-D option enhancements

XS-assisted SWASHGET

Constant subroutines

New Platforms

Modules and Pragmata

New Modules

Updated Modules

Utility Changes

debugger upgraded to version 1.31

perlthanks

perlbug

h2xs

h2ph

New Documentation

Changes to Existing Documentation

Performance Enhancements

Installation and Configuration Improvements

Relocatable installations

Configuration improvements

Compilation improvements

Installation improvements.

Platform Specific Changes

Selected Bug Fixes

Unicode

PerlIO

Magic

Reblessing overloaded objects now works

"strict" now propagates correctly into string evals

Other fixes

Platform Specific Fixes

Smaller fixes

New or Changed Diagnostics

panic: sv_chop %s

Maximal count of pending signals (%s) exceeded

panic: attempt to call %s in %s

FETCHSIZE returned a negative value

Can't upgrade %s (%d) to %d

%s argument is not a HASH or ARRAY element or a subroutine

Cannot make the non-overridable builtin %s fatal

Unrecognized character '%s' in column %d

Offset outside string

Invalid escape in the specified encoding in regexp; marked by <-- HERE in m/%s/

Your machine doesn't support dump/undump.

Changed Internals

Macro cleanups

New Tests

ext/DynaLoader/t/DynaLoader.t, t/comp/fold.t, t/io/pvbm.t,
t/lib/proxy_constant_subs.t, t/op/attrhand.t, t/op/dbm.t, t/op/inccode-tie.t,
t/op/incfilter.t, t/op/kill0.t, t/op/qrstack.t, t/op/qr.t, t/op/regexp_qr_embed.t,
t/op/regexp_qr.t, t/op/rxcode.t, t/op/studytied.t, t/op/substT.t, t/op/symbolcache.t,
t/op/upgrade.t, t/mro/package_aliases.t, t/pod/twice.t, t/run/cloexec.t,
t/uni/cache.t, t/uni/chr.t, t/uni/greek.t, t/uni/latin2.t, t/uni/overload.t,
t/uni/tie.t

Known Problems

Platform Specific Notes

Win32

OS/2

VMS

Obituary

Acknowledgements

Reporting Bugs

SEE ALSO

perl588delta - what is new for perl v5.8.8

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

Utility Changes

"h2xs" enhancements

"perlvp" enhancements

New Documentation

Performance Enhancements

Installation and Configuration Improvements

Selected Bug Fixes

no warnings 'category' works correctly with -w

Remove over-optimisation

sprintf() fixes

Debugger and Unicode slowdown

Smaller fixes

New or Changed Diagnostics

Attempt to set length of freed array

Non-string passed as bitmask

Search pattern not terminated or ternary operator parsed as search pattern

Changed Internals

Platform Specific Problems

Reporting Bugs

SEE ALSO

perl587delta - what is new for perl v5.8.7

DESCRIPTION

Incompatible Changes

Core Enhancements

- Unicode Character Database 4.1.0

- suidperl less insecure

- Optional site customization script

- "Config.pm" is now much smaller.

Modules and Pragmata

Utility Changes

- find2perl enhancements

Performance Enhancements

Installation and Configuration Improvements

Selected Bug Fixes

New or Changed Diagnostics

Changed Internals

Known Problems

Platform Specific Problems

Reporting Bugs

SEE ALSO

perl586delta - what is new for perl v5.8.6

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

Utility Changes

Performance Enhancements

Selected Bug Fixes

New or Changed Diagnostics

Changed Internals

New Tests

Reporting Bugs

SEE ALSO

perl585delta - what is new for perl v5.8.5

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

Utility Changes

- Perl's debugger

- h2ph

Installation and Configuration Improvements

Selected Bug Fixes

New or Changed Diagnostics

Changed Internals

Known Problems

Platform Specific Problems

Reporting Bugs

SEE ALSO

perl584delta - what is new for perl v5.8.4

DESCRIPTION

Incompatible Changes

Core Enhancements

- Malloc wrapping

- Unicode Character Database 4.0.1

- suidperl less insecure

- format

Modules and Pragmata

- Updated modules

- Attribute::Handlers, B, Benchmark, CGI, Carp, Cwd, Exporter, File::Find, IO,

- IPC::Open3, Local::Maketext, Math::BigFloat, Math::BigInt, Math::BigRat,

- MIME::Base64, ODBM_File, POSIX, Shell, Socket, Storable, Switch, Sys::Syslog,

- Term::ANSIColor, Time::HiRes, Unicode::UCD, Win32, base, open, threads, utf8

Performance Enhancements

Utility Changes

Installation and Configuration Improvements

Selected Bug Fixes

New or Changed Diagnostics

Changed Internals

Future Directions

Platform Specific Problems

Reporting Bugs

SEE ALSO

perl583delta - what is new for perl v5.8.3

DESCRIPTION

Incompatible Changes

Core Enhancements

Modules and Pragmata

CGI, Cwd, Digest, Digest::MD5, Encode, File::Spec, FindBin, List::Util, Math::BigInt,

PodParser, Pod::Perldoc, POSIX, Unicode::Collate, Unicode::Normalize, Test::Harness,

threads::shared

Utility Changes

New Documentation

Installation and Configuration Improvements

Selected Bug Fixes

New or Changed Diagnostics

Changed Internals

Configuration and Building

Platform Specific Problems

Known Problems

Future Directions

Obituary

Reporting Bugs

SEE ALSO

perl582delta - what is new for perl v5.8.2

DESCRIPTION

Incompatible Changes

Core Enhancements

Hash Randomisation

Threading

Modules and Pragmata

Updated Modules And Pragmata

Devel::PPPort, Digest::MD5, I18N::LangTags, libnet, MIME::Base64, Pod::Perldoc, strict, Tie::Hash, Time::HiRes, Unicode::Collate, Unicode::Normalize, UNIVERSAL

Selected Bug Fixes

Changed Internals

Platform Specific Problems

Future Directions

Reporting Bugs

SEE ALSO

perl581delta - what is new for perl v5.8.1

DESCRIPTION

Incompatible Changes

Hash Randomisation

UTF-8 On Filehandles No Longer Activated By Locale

Single-number v-strings are no longer v-strings before "=>"

(Win32) The -C Switch Has Been Repurposed

(Win32) The /d Switch Of cmd.exe

Core Enhancements

UTF-8 no longer default under UTF-8 locales

Unsafe signals again available

Tied Arrays with Negative Array Indices

local \${\$x}

Unicode Character Database 4.0.0

Deprecation Warnings

Miscellaneous Enhancements

Modules and Pragmata

Updated Modules And Pragmata

base, B::Bytecode, B::Concise, B::Deparse, Benchmark, ByteLoader, bytes, CGI, charnames, CPAN, Data::Dumper, DB_File, Devel::PPPort, Digest::MD5, Encode, fields, libnet, Math::BigInt, MIME::Base64, NEXT, Net::Ping, PerlIO::scalar, podlators, Pod::LaTeX, PodParsers, Pod::Perldoc, Scalar::Util, Storable, strict, Term::ANSIColor, Test::Harness, Test::More, Test::Simple, Text::Balanced,

Time::HiRes, threads, threads::shared, Unicode::Collate, Unicode::Normalize,

Win32::GetFolderPath, Win32::GetOSVersion

Utility Changes

New Documentation

Installation and Configuration Improvements

Platform-specific enhancements

Selected Bug Fixes

Closures, eval and lexicals

Generic fixes

Platform-specific fixes

New or Changed Diagnostics

Changed "A thread exited while %d threads were running"

Removed "Attempt to clear a restricted hash"

New "Illegal declaration of anonymous subroutine"

Changed "Invalid range \"%s\" in transliteration operator"

New "Missing control char name in \\c"

New "Newline in left-justified string for %s"

New "Possible precedence problem on bitwise %c operator"

New "Pseudo-hashes are deprecated"

New "read() on %s filehandle %s"

New "5.005 threads are deprecated"

New "Tied variable freed while still in use"

New "To%s: illegal mapping '%s'"

New "Use of freed value in iteration"

Changed Internals

New Tests

Known Problems

Tied hashes in scalar context

Net::Ping 450_service and 510_ping_udp failures

B::C

Platform Specific Problems

EBCDIC Platforms

Cygwin 1.5 problems

HP-UX: HP cc warnings about sendfile and sendpath

IRIX: t/uni/tr_7jis.t falsely failing

Mac OS X: no usemymalloc

Tru64: No threaded builds with GNU cc (gcc)

Win32: sysopen, sysread, syswrite

Future Directions

Reporting Bugs

SEE ALSO

perl58delta - what is new for perl v5.8.0

DESCRIPTION

Highlights In 5.8.0

Incompatible Changes

Binary Incompatibility

64-bit platforms and malloc

AIX Dynaloading

Attributes for "my" variables now handled at run-time

Socket Extension Dynamic in VMS

IEEE-format Floating Point Default on OpenVMS Alpha

New Unicode Semantics (no more "use utf8", almost)

New Unicode Properties

REF(...) Instead Of SCALAR(...)

pack/unpack D/F recycled

glob() now returns filenames in alphabetical order

Deprecations

Core Enhancements

Unicode Overhaul

PerlIO is Now The Default

ithreads

Restricted Hashes

Safe Signals

Understanding of Numbers

Arrays now always interpolate into double-quoted strings [561]

Miscellaneous Changes

Modules and Pragmata

- New Modules and Pragmata

- Updated And Improved Modules and Pragmata

Utility Changes

New Documentation

Performance Enhancements

Installation and Configuration Improvements

- Generic Improvements

- New Or Improved Platforms

Selected Bug Fixes

- Platform Specific Changes and Fixes

New or Changed Diagnostics

Changed Internals

Security Vulnerability Closed [561]

New Tests

Known Problems

- The Compiler Suite Is Still Very Experimental

- Localising Tied Arrays and Hashes Is Broken

- Building Extensions Can Fail Because Of Largefiles

- Modifying \$_ Inside for(..)

- mod_perl 1.26 Doesn't Build With Threaded Perl

- lib/ftmp-security tests warn 'system possibly insecure'

- libwww-perl (LWP) fails base/date #51

- PDL failing some tests

- Perl_get_sv

- Self-tying Problems

- ext/threads/t/libc

- Failure of Thread (5.005-style) tests

- Timing problems

- Tied/Magical Array/Hash Elements Do Not Autovivify

- Unicode in package/class and subroutine names does not work

Platform Specific Problems

- AIX

Alpha systems with old gccs fail several tests

AmigaOS

BeOS

Cygwin "unable to remap"

Cygwin ndbm tests fail on FAT

DJGPP Failures

FreeBSD built with ithreads coredumps reading large directories

FreeBSD Failing locale Test 117 For ISO 8859-15 Locales

IRIX fails ext/List/Util/t/shuffle.t or Digest::MD5

HP-UX lib/posix Subtest 9 Fails When LP64-Configured

Linux with glibc 2.2.5 fails t/op/int subtest #6 with -Duse64bitint

Linux With Sdio Fails op/misc Test 48

Mac OS X

Mac OS X dyld undefined symbols

OS/2 Test Failures

op/sprintf tests 91, 129, and 130

SCO

Solaris 2.5

Solaris x86 Fails Tests With -Duse64bitint

SUPER-UX (NEC SX)

Term::ReadKey not working on Win32

UNICOS/mk

UTS

VOS (Stratus)

VMS

Win32

XML::Parser not working

z/OS (OS/390)

Unicode Support on EBCDIC Still Spotty

Seen In Perl 5.7 But Gone Now

Reporting Bugs

SEE ALSO

HISTORY

DESCRIPTION

Summary of changes between 5.6.0 and 5.6.1

Security Issues

Core bug fixes

"UNIVERSAL::isa()", Memory leaks, Numeric conversions, qw(a\\b), caller(), Bugs in regular expressions, "slurp" mode, Autovivification of symbolic references to special variables, Lexical warnings, Spurious warnings and errors, glob(), Tainting, sort(), #line directives, Subroutine prototypes, map(), Debugger, PERL5OPT, chop(), Unicode support, 64-bit support, Compiler, Lvalue subroutines, IO::Socket, File::Find, xsubpp, "no Module;", Tests

Core features

Configuration issues

Documentation

Bundled modules

B::Concise, File::Temp, Pod::LaTeX, Pod::Text::Overstrike, CGI, CPAN, Class::Struct, DB_File, Devel::Peek, File::Find, Getopt::Long, IO::Poll, IPC::Open3, Math::BigFloat, Math::Complex, Net::Ping, Opcode, Pod::Parser, Pod::Text, SDBM_File, Sys::Syslog, Tie::RefHash, Tie::SubstrHash

Platform-specific improvements

NCR MP-RAS, NonStop-UX

Core Enhancements

Interpreter cloning, threads, and concurrency

Lexically scoped warning categories

Unicode and UTF-8 support

Support for interpolating named characters

"our" declarations

Support for strings represented as a vector of ordinals

Improved Perl version numbering system

New syntax for declaring subroutine attributes

File and directory handles can be autovivified

open() with more than two arguments

64-bit support

Large file support

Long doubles

"more bits"

Enhanced support for sort() subroutines

"sort \$coderef @foo" allowed

File globbing implemented internally

Support for CHECK blocks

POSIX character class syntax [: :] supported

Better pseudo-random number generator

Improved "qw//" operator

Better worst-case behavior of hashes

pack() format 'Z' supported

pack() format modifier '!' supported

pack() and unpack() support counted strings

Comments in pack() templates

Weak references

Binary numbers supported

Lvalue subroutines

Some arrows may be omitted in calls through references

Boolean assignment operators are legal lvalues

exists() is supported on subroutine names

exists() and delete() are supported on array elements

Pseudo-hashes work better

Automatic flushing of output buffers

Better diagnostics on meaningless filehandle operations

Where possible, buffered data discarded from duped input filehandle

eof() has the same old magic as <>

binmode() can be used to set :crlf and :raw modes

"-T" filetest recognizes UTF-8 encoded files as "text"

system(), backticks and pipe open now reflect exec() failure

Improved diagnostics

Diagnostics follow STDERR

More consistent close-on-exec behavior

syswrite() ease-of-use

Better syntax checks on parenthesized unary operators

Bit operators support full native integer width

Improved security features

More functional bareword prototype (*)

"require" and "do" may be overridden

\$^X variables may now have names longer than one character

New variable \$^C reflects "-c" switch

New variable \$^V contains Perl version as a string

Optional Y2K warnings

Arrays now always interpolate into double-quoted strings

@- and @+ provide starting/ending offsets of regex submatches

Modules and Pragmata

Modules

attributes, B, Benchmark, ByteLoader, constant, charnames, Data::Dumper, DB, DB_File, Devel::DProf, Devel::Peek, Dumpvalue, DynaLoader, English, Env, Fcntl, File::Compare, File::Find, File::Glob, File::Spec, File::Spec::Functions, Getopt::Long, IO, JPL, lib, Math::BigInt, Math::Complex, Math::Trig, Pod::Parser, Pod::InputObjects, Pod::Checker, podchecker, Pod::ParseUtils, Pod::Find, Pod::Select, podselect, Pod::Usage, pod2usage, Pod::Text and Pod::Man, SDBM_File, Sys::Syslog, Sys::Hostname, Term::ANSIColor, Time::Local, Win32, XSLoader, DBM

Filters

Pragmata

Utility Changes

dprofpp

find2perl

h2xs

perlcc

perldoc

The Perl Debugger

Improved Documentation

perlapi.pod, perlboot.pod, perlcompile.pod, perldbfilter.pod, perldebug.pod, perldebbugs.pod, perlfork.pod, perlfiler.pod, perlhack.pod, perlintern.pod,

perllexwarn.pod, perlnumber.pod, perlopentut.pod, perlreftut.pod, perltootc.pod,
perltodo.pod, perlunicode.pod

Performance enhancements

Simple sort() using { \$a <=> \$b } and the like are optimized

Optimized assignments to lexical variables

Faster subroutine calls

delete(), each(), values() and hash iteration are faster

Installation and Configuration Improvements

-Dusethreads means something different

New Configure flags

Threadedness and 64-bitness now more daring

Long Doubles

-Dusemorebits

-Duselargefiles

installusrbinperl

SOCKS support

"-A" flag

Enhanced Installation Directories

gcc automatically tried if 'cc' does not seem to be working

Platform specific changes

Supported platforms

DOS

OS390 (OpenEdition MVS)

VMS

Win32

Significant bug fixes

<HANDLE> on empty files

"eval '...'" improvements

All compilation errors are true errors

Implicitly closed filehandles are safer

Behavior of list slices is more consistent

"(\\$)" prototype and \$foo{a}

"goto &sub" and AUTOLOAD

"-bareword" allowed under "use integer"

Failures in DESTROY()

Locale bugs fixed

Memory leaks

Spurious subroutine stubs after failed subroutine calls

Taint failures under "-U"

END blocks and the "-c" switch

Potential to leak DATA filehandles

New or Changed Diagnostics

"%s" variable %s masks earlier declaration in same %s, "my sub" not yet implemented,
"our" variable %s redeclared, '!' allowed only after types %s, / cannot take a count,
/ must be followed by a, A or Z, / must be followed by a*, A* or Z*, / must follow a
numeric type, /%s/: Unrecognized escape \\%c passed through, /%s/: Unrecognized escape
\\%c in character class passed through, /%s/ should probably be written as "%s", %s()
called too early to check prototype, %s argument is not a HASH or ARRAY element, %s
argument is not a HASH or ARRAY element or slice, %s argument is not a subroutine
name, %s package attribute may clash with future reserved word: %s, (in cleanup) %s,
<> should be quotes, Attempt to join self, Bad evalled substitution pattern, Bad
realloc() ignored, Bareword found in conditional, Binary number >
0b11111111111111111111111111111111 non-portable, Bit vector size > 32 non-portable,
Buffer overflow in prime_env_iter: %s, Can't check filesystem of script "%s", Can't
declare class for non-scalar %s in "%s", Can't declare %s in "%s", Can't ignore signal
CHLD, forcing to default, Can't modify non-lvalue subroutine call, Can't read CRTL
environ, Can't remove %s: %s, skipping file, Can't return %s from lvalue subroutine,
Can't weaken a nonreference, Character class [%s:] unknown, Character class syntax
[%s] belongs inside character classes, Constant is not %s reference, constant(%s): %s,
CORE::%s is not a keyword, defined(@array) is deprecated, defined(%hash) is
deprecated, Did not produce a valid header, (Did you mean "local" instead of "our"?),
Document contains no data, entering effective %s failed, false [] range "%s" in
regexp, Filehandle %s opened only for output, flock() on closed filehandle %s, Global
symbol "%s" requires explicit package name, Hexadecimal number > 0xffffffff non-
portable, Ill-formed CRTL environ value "%s", Ill-formed message in prime_env_iter:
[%s], Illegal binary digit %s, Illegal binary digit %s ignored, Illegal number of bits

in vec, Integer overflow in %s number, Invalid %s attribute: %s, Invalid %s attributes: %s, invalid [] range "%s" in regexp, Invalid separator character %s in attribute list, Invalid separator character %s in subroutine attribute list, leaving effective %s failed, Lvalue subs returning %s not implemented yet, Method %s not permitted, Missing %sbrace%s on \N{}, Missing command in piped open, Missing name in "my sub", No %s specified for -%c, No package name allowed for variable %s in "our", No space allowed after -%c, no UTC offset information; assuming local time is UTC, Octal number > 037777777777 non-portable, panic: del_backref, panic: kid popen errno read, panic: magic_killbackrefs, Parentheses missing around "%s" list, Possible unintended interpolation of %s in string, Possible Y2K bug: %s, pragma "attrs" is deprecated, use "sub NAME : ATTRS" instead, Premature end of script headers, Repeat count in pack overflows, Repeat count in unpack overflows, realloc() of freed memory ignored, Reference is already weak, setpgrp can't take arguments, Strange *+?{} on zero-length expression, switching effective %s is not implemented, This Perl can't reset CRTL environ elements (%s), This Perl can't set CRTL environ elements (%s=%s), Too late to run %s block, Unknown open() mode '%s', Unknown process %x sent message to prime_env_iter: %s, Unrecognized escape \\%c passed through, Unterminated attribute parameter in attribute list, Unterminated attribute list, Unterminated attribute parameter in subroutine attribute list, Unterminated subroutine attribute list, Value of CLI symbol "%s" too long, Version number must be a constant number

New tests

Incompatible Changes

Perl Source Incompatibilities

CHECK is a new keyword, Treatment of list slices of undef has changed, Format of \$English::PERL_VERSION is different, Literals of the form 1.2.3 parse differently, Possibly changed pseudo-random number generator, Hashing function for hash keys has changed, "undef" fails on read only values, Close-on-exec bit may be set on pipe and socket handles, Writing "\$\$1" to mean "\${\$}1" is unsupported, delete(), each(), values() and "\(%h)", vec(EXPR,OFFSET,BITS) enforces powers-of-two BITS, Text of some diagnostic output has changed, "%@" has been removed, Parenthesized not() behaves like a list operator, Semantics of bareword prototype "(*)" have changed, Semantics of bit operators may have changed on 64-bit platforms, More builtins taint their results

C Source Incompatibilities

"PERL_POLLUTE", "PERL_IMPLICIT_CONTEXT", "PERL_POLLUTE_MALLOC"

Compatible C Source API Changes

"PATCHLEVEL" is now "PERL_VERSION"

Binary Incompatibilities

Known Problems

Localizing a tied hash element may leak memory

Known test failures

EBCDIC platforms not fully supported

UNICOS/mk CC failures during Configure run

Arrow operator and arrays

Experimental features

Threads, Unicode, 64-bit support, Lvalue subroutines, Weak references, The pseudo-hash data type, The Compiler suite, Internal implementation of file globbing, The DB module, The regular expression code constructs:

Obsolete Diagnostics

Character class syntax [: :] is reserved for future extensions, Ill-formed logical name [%s] in prime_env_iter, In string, @%s now must be written as \@%s, Probable precedence problem on %s, regexp too big, Use of "\$\$<digit>" to mean "\${\$}<digit>" is deprecated

Reporting Bugs

SEE ALSO

HISTORY

perl56delta - what's new for perl v5.6.0

DESCRIPTION

Core Enhancements

Interpreter cloning, threads, and concurrency

Lexically scoped warning categories

Unicode and UTF-8 support

Support for interpolating named characters

"our" declarations

Support for strings represented as a vector of ordinals

Improved Perl version numbering system

New syntax for declaring subroutine attributes

File and directory handles can be autovivified

open() with more than two arguments

64-bit support

Large file support

Long doubles

"more bits"

Enhanced support for sort() subroutines

"sort \$coderef @foo" allowed

File globbing implemented internally

Support for CHECK blocks

POSIX character class syntax [: :] supported

Better pseudo-random number generator

Improved "qw/" operator

Better worst-case behavior of hashes

pack() format 'Z' supported

pack() format modifier '!' supported

pack() and unpack() support counted strings

Comments in pack() templates

Weak references

Binary numbers supported

Lvalue subroutines

Some arrows may be omitted in calls through references

Boolean assignment operators are legal lvalues

exists() is supported on subroutine names

exists() and delete() are supported on array elements

Pseudo-hashes work better

Automatic flushing of output buffers

Better diagnostics on meaningless filehandle operations

Where possible, buffered data discarded from duped input filehandle

eof() has the same old magic as <>

binmode() can be used to set :crlf and :raw modes

"-T" filetest recognizes UTF-8 encoded files as "text"

system(), backticks and pipe open now reflect exec() failure

Improved diagnostics

Diagnostics follow STDERR

More consistent close-on-exec behavior

syswrite() ease-of-use

Better syntax checks on parenthesized unary operators

Bit operators support full native integer width

Improved security features

More functional bareword prototype (*)

"require" and "do" may be overridden

\$^X variables may now have names longer than one character

New variable \$^C reflects "-c" switch

New variable \$^V contains Perl version as a string

Optional Y2K warnings

Arrays now always interpolate into double-quoted strings

@- and @+ provide starting/ending offsets of regex matches

Modules and Pragmata

Modules

attributes, B, Benchmark, ByteLoader, constant, charnames, Data::Dumper, DB, DB_File, Devel::DProf, Devel::Peek, Dumpvalue, DynaLoader, English, Env, Fcntl, File::Compare, File::Find, File::Glob, File::Spec, File::Spec::Functions, Getopt::Long, IO, JPL, lib, Math::BigInt, Math::Complex, Math::Trig, Pod::Parser, Pod::InputObjects, Pod::Checker, podchecker, Pod::ParseUtils, Pod::Find, Pod::Select, podselect, Pod::Usage, pod2usage, Pod::Text and Pod::Man, SDBM_File, Sys::Syslog, Sys::Hostname, Term::ANSIColor, Time::Local, Win32, XSLoader, DBM

Filters

Pragmata

Utility Changes

dprofpp

find2perl

h2xs

perlcc

perldoc

The Perl Debugger

Improved Documentation

perlapi.pod, perlboot.pod, perlcompile.pod, perldbfilter.pod, perldebug.pod,
perldebbugs.pod, perlfork.pod, perlfilter.pod, perlhack.pod, perlintern.pod,
perllexwarn.pod, perlnumber.pod, perlopentut.pod, perlreftut.pod, perltootc.pod,
perltodo.pod, perlunicode.pod

Performance enhancements

Simple sort() using { \$a <=> \$b } and the like are optimized

Optimized assignments to lexical variables

Faster subroutine calls

delete(), each(), values() and hash iteration are faster

Installation and Configuration Improvements

-Dusethreads means something different

New Configure flags

Threadedness and 64-bitness now more daring

Long Doubles

-Dusemorebits

-Duselargefiles

installusrbinperl

SOCKS support

"-A" flag

Enhanced Installation Directories

Platform specific changes

Supported platforms

DOS

OS390 (OpenEdition MVS)

VMS

Win32

Significant bug fixes

<HANDLE> on empty files

"eval '...'" improvements

All compilation errors are true errors

Implicitly closed filehandles are safer

Behavior of list slices is more consistent

"(\\$)" prototype and \$foo{a}

"goto &sub" and AUTOLOAD

"-bareword" allowed under "use integer"

Failures in DESTROY()

Locale bugs fixed

Memory leaks

Spurious subroutine stubs after failed subroutine calls

Taint failures under "-U"

END blocks and the "-c" switch

Potential to leak DATA filehandles

New or Changed Diagnostics

"%s" variable %s masks earlier declaration in same %s, "my sub" not yet implemented,
"our" variable %s redeclared, '!' allowed only after types %s, / cannot take a count,
/ must be followed by a, A or Z, / must be followed by a*, A* or Z*, / must follow a
numeric type, /%s/: Unrecognized escape \\%c passed through, /%s/: Unrecognized escape
\\%c in character class passed through, /%s/ should probably be written as "%s", %s()
called too early to check prototype, %s argument is not a HASH or ARRAY element, %s
argument is not a HASH or ARRAY element or slice, %s argument is not a subroutine
name, %s package attribute may clash with future reserved word: %s, (in cleanup) %s,
<> should be quotes, Attempt to join self, Bad evalled substitution pattern, Bad
realloc() ignored, Bareword found in conditional, Binary number >
0b11111111111111111111111111111111 non-portable, Bit vector size > 32 non-portable,
Buffer overflow in prime_env_iter: %s, Can't check filesystem of script "%s", Can't
declare class for non-scalar %s in "%s", Can't declare %s in "%s", Can't ignore signal
CHLD, forcing to default, Can't modify non-lvalue subroutine call, Can't read CRTL
environ, Can't remove %s: %s, skipping file, Can't return %s from lvalue subroutine,
Can't weaken a nonreference, Character class [:%s:] unknown, Character class syntax
[%s] belongs inside character classes, Constant is not %s reference, constant(%s): %s,
CORE::%s is not a keyword, defined(@array) is deprecated, defined(%hash) is
deprecated, Did not produce a valid header, (Did you mean "local" instead of "our"?),
Document contains no data, entering effective %s failed, false [] range "%s" in
regexp, Filehandle %s opened only for output, flock() on closed filehandle %s, Global

symbol "%s" requires explicit package name, Hexadecimal number > 0xffffffff non-portable, Ill-formed CRTL environ value "%s", Ill-formed message in prime_env_iter: [%s], Illegal binary digit %s, Illegal binary digit %s ignored, Illegal number of bits in vec, Integer overflow in %s number, Invalid %s attribute: %s, Invalid %s attributes: %s, invalid [] range "%s" in regexp, Invalid separator character %s in attribute list, Invalid separator character %s in subroutine attribute list, leaving effective %s failed, Lvalue subs returning %s not implemented yet, Method %s not permitted, Missing %sbrace%s on \N{}, Missing command in piped open, Missing name in "my sub", No %s specified for -%c, No package name allowed for variable %s in "our", No space allowed after -%c, no UTC offset information; assuming local time is UTC, Octal number > 037777777777 non-portable, panic: del_backref, panic: kid popen errno read, panic: magic_killbackrefs, Parentheses missing around "%s" list, Possible unintended interpolation of %s in string, Possible Y2K bug: %s, pragma "attrs" is deprecated, use "sub NAME : ATTRS" instead, Premature end of script headers, Repeat count in pack overflows, Repeat count in unpack overflows, realloc() of freed memory ignored, Reference is already weak, setpgrp can't take arguments, Strange *+?{} on zero-length expression, switching effective %s is not implemented, This Perl can't reset CRTL environ elements (%s), This Perl can't set CRTL environ elements (%s=%s), Too late to run %s block, Unknown open() mode '%s', Unknown process %x sent message to prime_env_iter: %s, Unrecognized escape \\%c passed through, Unterminated attribute parameter in attribute list, Unterminated attribute list, Unterminated attribute parameter in subroutine attribute list, Unterminated subroutine attribute list, Value of CLI symbol "%s" too long, Version number must be a constant number

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Incompatible Changes

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not() behaves like a list operator, Semantics of bareword prototype "(*)" have changed, Semantics of bit operators may have changed on 64-bit platforms, More builtins taint their results

C Source Incompatibilities

"PERL_POLLUTE", "PERL_IMPLICIT_CONTEXT", "PERL_POLLUTE_MALLOC"

Compatible C Source API Changes

"PATCHLEVEL" is now "PERL_VERSION"

Binary Incompatibilities

Known Problems

Thread test failures

EBCDIC platforms not supported

In 64-bit HP-UX the lib/io_multihomed test may hang

NEXTSTEP 3.3 POSIX test failure

Tru64 (aka Digital UNIX, aka DEC OSF/1) lib/sdbm test failure with gcc

UNICOS/mk CC failures during Configure run

Arrow operator and arrays

Experimental features

Threads, Unicode, 64-bit support, Lvalue subroutines, Weak references, The pseudo-hash data type, The Compiler suite, Internal implementation of file globbing, The DB module, The regular expression code constructs:

Obsolete Diagnostics

Character class syntax [: :] is reserved for future extensions, Ill-formed logical name [%s] in prime_env_iter, In string, @%s now must be written as \@%s, Probable precedence problem on %s, regexp too big, Use of "\$\$<digit>" to mean "\${\$}<digit>" is deprecated

Reporting Bugs

SEE ALSO

HISTORY

perl5005delta - what's new for perl5.005

DESCRIPTION

About the new versioning system

Incompatible Changes

WARNING: This version is not binary compatible with Perl 5.004.

Default installation structure has changed

Perl Source Compatibility

C Source Compatibility

Binary Compatibility

Security fixes may affect compatibility

Relaxed new mandatory warnings introduced in 5.004

Licensing

Core Changes

Threads

Compiler

Regular Expressions

Many new and improved optimizations, Many bug fixes, New regular expression constructs, New operator for precompiled regular expressions, Other improvements, Incompatible changes

Improved malloc()

Quicksort is internally implemented

Reliable signals

Reliable stack pointers

More generous treatment of carriage returns

Memory leaks

Better support for multiple interpreters

Behavior of local() on array and hash elements is now well-defined

"%!" is transparently tied to the Errno module

Pseudo-hashes are supported

"EXPR foreach EXPR" is supported

Keywords can be globally overridden

\$^E is meaningful on Win32

"foreach (1..1000000)" optimized

"Foo::" can be used as implicitly quoted package name

"exists \$Foo::{Bar::}" tests existence of a package

Better locale support

Experimental support for 64-bit platforms

prototype() returns useful results on builtins

Extended support for exception handling

Re-blessing in DESTROY() supported for chaining DESTROY() methods

All "printf" format conversions are handled internally

New "INIT" keyword

New "lock" keyword

New "qr//" operator

"our" is now a reserved word

Tied arrays are now fully supported

Tied handles support is better

4th argument to substr

Negative LENGTH argument to splice

Magic lvalues are now more magical

<> now reads in records

Supported Platforms

New Platforms

Changes in existing support

Modules and Pragmata

New Modules

B, Data::Dumper, Dumpvalue, Errno, File::Spec, ExtUtils::Installed,
ExtUtils::Packlist, Fatal, IPC::SysV, Test, Tie::Array, Tie::Handle, Thread,
attrs, fields, re

Changes in existing modules

Benchmark, Carp, CGI, Fcntl, Math::Complex, Math::Trig, POSIX, DB_File, MakeMaker,
CPAN, Cwd

Utility Changes

Documentation Changes

New Diagnostics

Ambiguous call resolved as CORE::%s(), qualify as such or use &, Bad index while
coercing array into hash, Bareword "%s" refers to nonexistent package, Can't call
method "%s" on an undefined value, Can't check filesystem of script "%s" for nosuid,
Can't coerce array into hash, Can't goto subroutine from an eval-string, Can't
localize pseudo-hash element, Can't use %%! because Errno.pm is not available, Cannot
find an opnumber for "%s", Character class syntax [.] is reserved for future

extensions, Character class syntax [: :] is reserved for future extensions, Character class syntax [= =] is reserved for future extensions, %s: Eval-group in insecure regular expression, %s: Eval-group not allowed, use re 'eval', %s: Eval-group not allowed at run time, Explicit blessing to " (assuming package main), Illegal hex digit ignored, No such array field, No such field "%s" in variable %s of type %s, Out of memory during ridiculously large request, Range iterator outside integer range, Recursive inheritance detected while looking for method '%s' %s, Reference found where even-sized list expected, Undefined value assigned to typeglob, Use of reserved word "%s" is deprecated, perl: warning: Setting locale failed

Obsolete Diagnostics

Can't mktemp(), Can't write to temp file for -e: %s, Cannot open temporary file, regexp too big

Configuration Changes

BUGS

SEE ALSO

HISTORY

perl5004delta - what's new for perl5.004

DESCRIPTION

Supported Environments

Core Changes

List assignment to %ENV works

Change to "Can't locate Foo.pm in @INC" error

Compilation option: Binary compatibility with 5.003

\$PERL5OPT environment variable

Limitations on -M, -m, and -T options

More precise warnings

Deprecated: Inherited "AUTOLOAD" for non-methods

Previously deprecated %OVERLOAD is no longer usable

Subroutine arguments created only when they're modified

Group vector changeable with \$)

Fixed parsing of \$\$<digit>, &\$<digit>, etc.

Fixed localization of \$<digit>, \$&, etc.

No resetting of \$. on implicit close

"wantarray" may return undef

"eval EXPR" determines value of EXPR in scalar context

Changes to tainting checks

No glob() or <*>, No spawning if tainted \$CDPATH, \$ENV, \$BASH_ENV, No spawning if tainted \$TERM doesn't look like a terminal name

New Opcode module and revised Safe module

Embedding improvements

Internal change: FileHandle class based on IO::* classes

Internal change: PerlIO abstraction interface

New and changed syntax

\$coderef->(PARAMS)

New and changed builtin constants

__PACKAGE__

New and changed builtin variables

\$^E, \$^H, \$^M

New and changed builtin functions

delete on slices, flock, printf and sprintf, keys as an lvalue, my() in Control

Structures, pack() and unpack(), sysseek(), use VERSION, use Module VERSION LIST,

prototype(FUNCTION), srand, \$_ as Default, "m//gc" does not reset search position

on failure, "m//x" ignores whitespace before ?*+{}, nested "sub{}" closures work

now, formats work right on changing lexicals

New builtin methods

isa(CLASS), can(METHOD), VERSION([NEED])

TIEHANDLE now supported

TIEHANDLE classname, LIST, PRINT this, LIST, PRINTF this, LIST, READ this LIST,

READLINE this, GETC this, DESTROY this

Malloc enhancements

-DPERL_EMERGENCY_SBRK, -DPACK_MALLOC, -DTWO_POT_OPTIMIZE

Miscellaneous efficiency enhancements

Support for More Operating Systems

Win32

Plan 9

QNX

AmigaOS

Pragmata

use autouse MODULE => qw(sub1 sub2 sub3), use blib, use blib 'dir', use constant NAME
=> VALUE, use locale, use ops, use vmsish

Modules

Required Updates

Installation directories

Module information summary

Fcntl

IO

Math::Complex

Math::Trig

DB_File

Net::Ping

Object-oriented overrides for builtin operators

Utility Changes

pod2html

Sends converted HTML to standard output

xsubpp

"void" XSUBs now default to returning nothing

C Language API Changes

"gv_fetchmethod" and "perl_call_sv", "perl_eval_pv", Extended API for manipulating
hashes

Documentation Changes

perldelta, perlfaq, perllocale, perltoot, perlapio, perlmodlib, perldebug, perlsec

New Diagnostics

"my" variable %s masks earlier declaration in same scope, %s argument is not a HASH
element or slice, Allocation too large: %lx, Allocation too large, Applying %s to %s
will act on scalar(%s), Attempt to free nonexistent shared string, Attempt to use
reference as lvalue in substr, Bareword "%s" refers to nonexistent package, Can't
redefine active sort subroutine %s, Can't use bareword ("%s") as %s ref while "strict
refs" in use, Cannot resolve method `'%s'` overloading `'%s'` in package `'%s'`, Constant
subroutine %s redefined, Constant subroutine %s undefined, Copy method did not return

a reference, Died, Exiting pseudo-block via %s, Identifier too long, Illegal character
%s (carriage return), Illegal switch in PERL5OPT: %s, Integer overflow in hex number,
Integer overflow in octal number, internal error: glob failed, Invalid conversion in
%s: "%s", Invalid type in pack: '%s', Invalid type in unpack: '%s', Name "%s::%s" used
only once: possible typo, Null picture in formline, Offset outside string, Out of
memory!, Out of memory during request for %s, panic: frexp, Possible attempt to put
comments in qw() list, Possible attempt to separate words with commas, Scalar value
@%s{%s} better written as \$%s{%s}, Stub found while resolving method `%s' overloading
`%s' in %s, Too late for "-T" option, untie attempted while %d inner references still
exist, Unrecognized character %s, Unsupported function fork, Use of "\$\$<digit>" to
mean "\${\$}<digit>" is deprecated, Value of %s can be "0"; test with defined(),
Variable "%s" may be unavailable, Variable "%s" will not stay shared, Warning:
something's wrong, Ill-formed logical name [%s] in prime_env_iter, Got an error from
DosAllocMem, Malformed PERLLIB_PREFIX, PERL_SH_DIR too long, Process terminated by
SIG%s

BUGS

SEE ALSO

HISTORY

perlbook - Books about and related to Perl

DESCRIPTION

The most popular books

Programming Perl (the "Camel Book");, The Perl Cookbook (the "Ram Book");,
Learning Perl (the "Llama Book"), Intermediate Perl (the "Alpaca Book")

References

Perl 5 Pocket Reference, Perl Debugger Pocket Reference, Regular Expression Pocket
Reference

Tutorials

Beginning Perl, Learning Perl (the "Llama Book"), Intermediate Perl (the "Alpaca
Book"), Mastering Perl, Effective Perl Programming

Task-Oriented

Writing Perl Modules for CPAN, The Perl Cookbook, Automating System Administration
with Perl, Real World SQL Server Administration with Perl

Special Topics

Regular Expressions Cookbook, Programming the Perl DBI, Perl Best Practices,
Higher-Order Perl, Mastering Regular Expressions, Network Programming with Perl,
Perl Template Toolkit, Object Oriented Perl, Data Munging with Perl, Mastering
Perl/Tk, Extending and Embedding Perl, Pro Perl Debugging

Free (as in beer) books

Other interesting, non-Perl books

Programming Pearls, More Programming Pearls

A note on freshness

Get your book listed

perlcommunity - a brief overview of the Perl community

DESCRIPTION

Where to Find the Community

Mailing Lists and Newsgroups

IRC

Websites

<<https://perl.com/>>, <<http://blogs.perl.org/>>, <<http://perlsphere.net/>>,

<<http://perlweekly.com/>>, <<https://www.perlmonks.org/>>,

<<https://stackoverflow.com/>>, <<http://prepan.org/>>

User Groups

Workshops

Hackathons

Conventions

The Perl Conference, OSCON

Calendar of Perl Events

AUTHOR

perldoc - Look up Perl documentation in Pod format.

SYNOPSIS

DESCRIPTION

OPTIONS

-h, -D, -t, -u, -m module, -l, -U, -F, -f perlfunc, -q perlfaq-search-regexp, -a

perlapifunc, -v perlvar, -T, -d destination-filename, -o output-formatname, -M module-

name, -w option:value or -w option, -X, -L language_code,

PageName|ModuleName|ProgramName|URL, -n some-formatter, -r, -i, -V

SECURITY

ENVIRONMENT

CHANGES

SEE ALSO

AUTHOR

perlexperiment - A listing of experimental features in Perl

DESCRIPTION

Current experiments

Smart match ("~~"), Pluggable keywords, Regular Expression Set Operations, Subroutine signatures, Aliasing via reference, The "const" attribute, use re 'strict';, The <:win32> IO pseudolayer, Declaring a reference to a variable, There is an "installhtml" target in the Makefile, (Limited) Variable-length look-behind, Unicode private use character hooks, Unicode property wildcards, isa infix operator, try/catch control structure

Accepted features

64-bit support, die accepts a reference, DB module, Weak references, Internal file glob, fork() emulation, -Dusemultiplicity -Duseithreads, Support for long doubles, The "\N" regex character class, "(?{code})" and "(??{ code })", Linux abstract Unix domain sockets, Lvalue subroutines, Backtracking control verbs, The <:pop> IO pseudolayer, "\s" in regexp matches vertical tab, Postfix dereference syntax, Lexical subroutines, String- and number-specific bitwise operators, Alphabetic assertions, Script runs

Removed features

5.005-style threading, perlcc, The pseudo-hash data type, GetOpt::Long Options can now take multiple values at once (experimental), Assertions, Test::Harness::Straps, "legacy", Lexical \$_, Array and hash container functions accept references, "our" can have an experimental optional attribute "unique"

SEE ALSO

AUTHORS

COPYRIGHT

LICENSE

perlartistic - the Perl Artistic License

SYNOPSIS

DESCRIPTION

The "Artistic License"

Preamble

Definitions

"Package", "Standard Version", "Copyright Holder", "You", "Reasonable copying fee", "Freely Available"

Conditions

a), b), c), d), a), b), c), d)

perl - the GNU General Public License, version 1

SYNOPSIS

DESCRIPTION

GNU GENERAL PUBLIC LICENSE

perl - Perl version 5 on IBM AIX (UNIX) systems

DESCRIPTION

Compiling Perl 5 on AIX

Supported Compilers

Incompatibility with AIX Toolbox lib gdbm

Perl 5 was successfully compiled and tested on:

Building Dynamic Extensions on AIX

Using Large Files with Perl

Threaded Perl

64-bit Perl

Long doubles

Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (threaded/32-bit)

Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (32-bit)

Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (threaded/64-bit)

Recommended Options AIX 5.1/5.2/5.3/6.1 and 7.1 (64-bit)

Compiling Perl 5 on AIX 7.1.0

Compiling Perl 5 on older AIX versions up to 4.3.3

OS level

Building Dynamic Extensions on AIX < 5L

The IBM ANSI C Compiler

The `usenm` option

Using GNU's gcc for building Perl

Using Large Files with Perl < 5L

Threaded Perl < 5L

64-bit Perl < 5L

AIX 4.2 and extensions using C++ with statics

AUTHORS

perlamiga - Perl under AmigaOS 4.1

NOTE

SYNOPSIS

DESCRIPTION

Prerequisites for running Perl 5.22.1 under AmigaOS 4.1

AmigaOS 4.1 update 6 with all updates applied as of 9th October 2013,

newlib.library version 53.28 or greater, AmigaOS SDK, abc-shell

Starting Perl programs under AmigaOS 4.1

Limitations of Perl under AmigaOS 4.1

Nested Piped programs can crash when run from older abc-shells, Incorrect or

unexpected command line unescaping, Starting subprocesses via open has

limitations, If you find any other limitations or bugs then let me know

INSTALLATION

Amiga Specific Modules

Amiga::ARexx

Amiga::Exec

BUILDING

CHANGES

August 2015, Port to Perl 5.22, Add handling of NIL: to afstat(), Fix inheritance of

environment variables by subprocesses, Fix exec, and exit in "forked" subprocesses,

Fix issue with newlib's unlink, which could cause infinite loops, Add flock()

emulation using IDOS->LockRecord thanks to Tony Cook for the suggestion, Fix issue

where kill was using the wrong kind of process ID, 27th November 2013, Create new

installation system based on installperl links and Amiga protection bits now set

correctly, Pod now defaults to text, File::Spec should now recognise an Amiga style

absolute path as well as an Unix style one. Relative paths must always be Unix style,

20th November 2013, Configured to use SDK:Local/C/perl to start standard scripts,

Added Amiga::Exec module with support for Wait() and AmigaOS signal numbers, 10th

October 13

SEE ALSO

perlandroid - Perl under Android

SYNOPSIS

DESCRIPTION

Cross-compilation

Get the Android Native Development Kit (NDK)

Determine the architecture you'll be cross-compiling for

Set up a standalone toolchain

adb or ssh?

Configure and beyond

Native Builds

CCTools

Termux

AUTHOR

perlbs2000 - building and installing Perl for BS2000.

SYNOPSIS

DESCRIPTION

gzip on BS2000

bison on BS2000

Unpacking Perl Distribution on BS2000

Compiling Perl on BS2000

Testing Perl on BS2000

Installing Perl on BS2000

Using Perl in the Posix-Shell of BS2000

Using Perl in "native" BS2000

Floating point anomalies on BS2000

Using PerlIO and different encodings on ASCII and EBCDIC partitions

AUTHORS

SEE ALSO

Mailing list

HISTORY

perlcygwin - Perl for Cygwin

SYNOPSIS

PREREQUISITES FOR COMPILING PERL ON CYGWIN

Cygwin = GNU+Cygnus+Windows (Don't leave UNIX without it)

Cygwin Configuration

"PATH", nroff

CONFIGURE PERL ON CYGWIN

Stripping Perl Binaries on Cygwin

Optional Libraries for Perl on Cygwin

"-lcrypt", "-lgdbm_compat" ("use GDBM_File"), "-ldb" ("use DB_File"), "cygserver"
("use IPC::SysV"), "-lutil"

Configure-time Options for Perl on Cygwin

"-Uusedl", "-Dusemymalloc", "-Uuseperlio", "-Dusemultiplicity", "-Uuse64bitint",
"-Duselongdouble", "-Uuseithreads", "-Duselargefiles", "-Dmksymlinks"

Suspicious Warnings on Cygwin

Win9x and "d_eofnblk", Compiler/Preprocessor defines

MAKE ON CYGWIN

TEST ON CYGWIN

File Permissions on Cygwin

NDBM_File and ODBM_File do not work on FAT filesystems

"fork()" failures in io_* tests

Specific features of the Cygwin port

Script Portability on Cygwin

Pathnames, Text/Binary, PerlIO, .exe, Cygwin vs. Windows process ids, Cygwin vs.

Windows errors, rebase errors on fork or system, "chown()", Miscellaneous

Prebuilt methods:

"Cwd::cwd", "Cygwin::pid_to_winpid", "Cygwin::winpid_to_pid",
"Cygwin::win_to_posix_path", "Cygwin::posix_to_win_path", "Cygwin::mount_table()",
"Cygwin::mount_flags", "Cygwin::is_binmount", "Cygwin::sync_winenv"

INSTALL PERL ON CYGWIN

MANIFEST ON CYGWIN

Documentation, Build, Configure, Make, Install, Tests, Compiled Perl Source, Compiled

Module Source, Perl Modules/Scripts, Perl Module Tests

BUGS ON CYGWIN

AUTHORS

HISTORY

perldos - Perl under DOS, W31, W95.

SYNOPSIS

DESCRIPTION

Prerequisites for Compiling Perl on DOS

DJGPP, Pthreads

Shortcomings of Perl under DOS

Building Perl on DOS

Testing Perl on DOS

Installation of Perl on DOS

BUILDING AND INSTALLING MODULES ON DOS

Building Prerequisites for Perl on DOS

Unpacking CPAN Modules on DOS

Building Non-XS Modules on DOS

Building XS Modules on DOS

AUTHOR

SEE ALSO

perlfreebsd - Perl version 5 on FreeBSD systems

DESCRIPTION

FreeBSD core dumps from readdir_r with ithreads

\$^X doesn't always contain a full path in FreeBSD

AUTHOR

perlhaiku - Perl version 5.10+ on Haiku

DESCRIPTION

BUILD AND INSTALL

KNOWN PROBLEMS

CONTACT

perlhpx - Perl version 5 on Hewlett-Packard Unix (HP-UX) systems

DESCRIPTION

Using perl as shipped with HP-UX

Using perl from HP's porting centre

Other prebuilt perl binaries

Compiling Perl 5 on HP-UX

PA-RISC

PA-RISC 1.0

PA-RISC 1.1

PA-RISC 2.0

Portability Between PA-RISC Versions

Itanium Processor Family (IPF) and HP-UX

Itanium, Itanium 2 & Madison 6

HP-UX versions

Building Dynamic Extensions on HP-UX

The HP ANSI C Compiler

The GNU C Compiler

Using Large Files with Perl on HP-UX

Threaded Perl on HP-UX

64-bit Perl on HP-UX

Oracle on HP-UX

GDBM and Threads on HP-UX

NFS filesystems and utime(2) on HP-UX

HP-UX Kernel Parameters (maxdsiz) for Compiling Perl

nss_delete core dump from op/pwent or op/grent

error: pasting ")" and "I" does not give a valid preprocessing token

Redeclaration of "sendpath" with a different storage class specifier

Miscellaneous

AUTHOR

perlhurd - Perl version 5 on Hurd

DESCRIPTION

Known Problems with Perl on Hurd

AUTHOR

perlirix - Perl version 5 on Irix systems

DESCRIPTION

Building 32-bit Perl in Irix

Building 64-bit Perl in Irix

About Compiler Versions of Irix

Linker Problems in Irix

Malloc in Irix

Building with threads in Irix

Irix 5.3

AUTHOR

perllinux - Perl version 5 on Linux systems

DESCRIPTION

Deploying Perl on Linux

Experimental Support for Sun Studio Compilers for Linux OS

AUTHOR

perlmacos - Perl under Mac OS (Classic)

SYNOPSIS

DESCRIPTION

AUTHOR

perlmacosx - Perl under Mac OS X

SYNOPSIS

DESCRIPTION

Installation Prefix

SDK support

Universal Binary support

64-bit PPC support

libperl and Prebinding

Updating Apple's Perl

Known problems

Cocoa

Starting From Scratch

AUTHOR

DATE

perlnetware - Perl for NetWare

DESCRIPTION

BUILD

Tools & SDK

Setup

SetNWBld.bat, Buildtype.bat

Make

Interpreter

Extensions

INSTALL

BUILD NEW EXTENSIONS

ACKNOWLEDGEMENTS

AUTHORS

DATE

perlopenbsd - Perl version 5 on OpenBSD systems

DESCRIPTION

OpenBSD core dumps from getprotobyname_r and getservbyname_r with ithreads

AUTHOR

perlos2 - Perl under OS/2, DOS, Win0.3*, Win0.95 and WinNT.

SYNOPSIS

DESCRIPTION

Target

Other OSes

Prerequisites

EMX, RSX, HPFS, pdksh

Starting Perl programs under OS/2 (and DOS and...)

Starting OS/2 (and DOS) programs under Perl

Frequently asked questions

"It does not work"

I cannot run external programs

I cannot embed perl into my program, or use perl.dll from my program.

Is your program EMX-compiled with "-Zmt -Zcrtdll"?, Did you use ExtUtils::Embed?

"" and pipe-"open" do not work under DOS.

Cannot start "find.exe "pattern" file"

INSTALLATION

Automatic binary installation

"PERL_BADLANG", "PERL_BADFREE", Config.pm

Manual binary installation

Perl VIO and PM executables (dynamically linked), Perl_ VIO executable (statically linked), Executables for Perl utilities, Main Perl library, Additional Perl modules, Tools to compile Perl modules, Manpages for Perl and utilities, Manpages for Perl modules, Source for Perl documentation, Perl manual in .INF format, Pdksh

Warning

Accessing documentation

OS/2 .INF file

Plain text

Manpages

HTML

GNU "info" files

PDF files

"LaTeX" docs

BUILD

The short story

Prerequisites

Getting perl source

Application of the patches

Hand-editing

Making

Testing

A lot of "bad free", Process terminated by SIGTERM/SIGINT, op/fs.t, 18, 25,
op/stat.t

Installing the built perl

"a.out"-style build

Building a binary distribution

Building custom .EXE files

Making executables with a custom collection of statically loaded extensions

Making executables with a custom search-paths

Build FAQ

Some "/" became "\" in pdksh.

'errno' - unresolved external

Problems with tr or sed

Some problem (forget which ;-)

Library ... not found

Segfault in make

op/sprintf test failure

Specific (mis)features of OS/2 port

"setpriority", "getpriority"

"system()"

"extproc" on the first line

Additional modules:

Prebuilt methods:

"File::Copy::syscopy", "DynaLoader::mod2fname", "Cwd::current_drive()",
"Cwd::sys_chdir(name)", "Cwd::change_drive(name)",
"Cwd::sys_is_absolute(name)", "Cwd::sys_is_rooted(name)",
"Cwd::sys_is_relative(name)", "Cwd::sys_cwd(name)", "Cwd::sys_abspath(name, dir)",
"Cwd::extLibpath([type])", "Cwd::extLibpath_set(path [, type])",
"OS2::Error(do_hardware_error,do_exception)", "OS2::Errors2Drive(drive)",
OS2::SysInfo(), OS2::BootDrive(), "OS2::MorphPM(serve)", "OS2::UnMorphPM(serve)",
"OS2::Serve_Messages(force)", "OS2::Process_Messages(force [, cnt])",
"OS2::_control87(new,mask)", OS2::get_control87(),
"OS2::set_control87_em(new=MCW_EM,mask=MCW_EM)", "OS2::DLLname([how [, \&xsub]])"

Prebuilt variables:

\$OS2::emx_rev, \$OS2::emx_env, \$OS2::os_ver, \$OS2::is_aout, \$OS2::can_fork,
\$OS2::nsyserror

Misfeatures

Modifications

"popen", "tmpnam", "tmpfile", "ctermid", "stat", "mkdir", "rmdir", "flock"

Identifying DLLs

Centralized management of resources

"HAB", "HMQ", Treating errors reported by OS/2 API, "CheckOSErrors(expr)",
"CheckWinError(expr)", "SaveWinError(expr)",
"SaveCroakWinError(expr,die,name1,name2)", "WinError_2_Perl_rc", "FillWinError",
"FillOSErrors(rc)", Loading DLLs and ordinals in DLLs

Perl flavors

perl.exe

perl_.exe

perl__.exe

perl____.exe

Why strange names?

Why dynamic linking?

Why chimera build?

ENVIRONMENT

"PERLLIB_PREFIX"

"PERL_BADLANG"

"PERL_BADFREE"

"PERL_SH_DIR"

"USE_PERL_FLOCK"

"TMP" or "TEMP"

Evolution

Text-mode filehandles

Priorities

DLL name mangling: pre 5.6.2

DLL name mangling: 5.6.2 and beyond

Global DLLs, specific DLLs, "BEGINLIBPATH" and "ENDLIBPATH", . from "LIBPATH"

DLL forwarder generation

Threading

Calls to external programs

Memory allocation

Threads

"COND_WAIT", os2.c

BUGS

AUTHOR

SEE ALSO

perlos390 - building and installing Perl for OS/390 and z/OS

SYNOPSIS

DESCRIPTION

Tools

Unpacking Perl distribution on OS/390

Setup and utilities for Perl on OS/390

Configure Perl on OS/390

Build, Test, Install Perl on OS/390

Build Anomalies with Perl on OS/390

Testing Anomalies with Perl on OS/390

Installation Anomalies with Perl on OS/390

Usage Hints for Perl on OS/390

Floating Point Anomalies with Perl on OS/390

Modules and Extensions for Perl on OS/390

AUTHORS

SEE ALSO

Mailing list for Perl on OS/390

HISTORY

perlos400 - Perl version 5 on OS/400

DESCRIPTION

Compiling Perl for OS/400 PASE

Installing Perl in OS/400 PASE

Using Perl in OS/400 PASE

Known Problems

Perl on ILE

AUTHORS

perlplan9 - Plan 9-specific documentation for Perl

DESCRIPTION

Invoking Perl

What's in Plan 9 Perl

What's not in Plan 9 Perl

Perl5 Functions not currently supported in Plan 9 Perl

Signals in Plan 9 Perl

COMPILING AND INSTALLING PERL ON PLAN 9

Installing Perl Documentation on Plan 9

BUGS

Revision date

AUTHOR

perlqnx - Perl version 5 on QNX

DESCRIPTION

Required Software for Compiling Perl on QNX4

/bin/sh, ar, nm, cpp, make

Outstanding Issues with Perl on QNX4

QNX auxiliary files

qnx/ar, qnx/cpp

Outstanding issues with perl under QNX6

Cross-compilation

AUTHOR

perliscos - Perl version 5 for RISC OS

DESCRIPTION

BUILD

AUTHOR

perlsolaris - Perl version 5 on Solaris systems

DESCRIPTION

Solaris Version Numbers.

RESOURCES

Solaris FAQ, Precompiled Binaries, Solaris Documentation

SETTING UP

File Extraction Problems on Solaris.

Compiler and Related Tools on Solaris.

Environment for Compiling perl on Solaris

RUN CONFIGURE.

64-bit perl on Solaris.

Threads in perl on Solaris.

Malloc Issues with perl on Solaris.

MAKE PROBLEMS.

Dynamic Loading Problems With GNU as and GNU ld, ld.so.1: ./perl: fatal: relocation

error:, dlopen: stub interception failed, #error "No DATAMODEL_NATIVE specified", sh:

ar: not found

MAKE TEST

op/stat.t test 4 in Solaris

nss_delete core dump from op/pwent or op/grent

CROSS-COMPILATION

PREBUILT BINARIES OF PERL FOR SOLARIS.

RUNTIME ISSUES FOR PERL ON SOLARIS.

Limits on Numbers of Open Files on Solaris.

SOLARIS-SPECIFIC MODULES.

SOLARIS-SPECIFIC PROBLEMS WITH MODULES.

Proc::ProcessTable on Solaris

BSD::Resource on Solaris

Net::SSLeay on Solaris

SunOS 4.x

AUTHOR

perlsynology - Perl 5 on Synology DSM systems

DESCRIPTION

Setting up the build environment

Compiling Perl 5

Known problems

Error message "No error definitions found", ext/DynaLoader/t/DynaLoader.t

Smoke testing Perl 5

Adding libraries

REVISION

AUTHOR

perltru64 - Perl version 5 on Tru64 (formerly known as Digital UNIX formerly known as DEC

OSF/1) systems

DESCRIPTION

Compiling Perl 5 on Tru64

Using Large Files with Perl on Tru64

Threaded Perl on Tru64

Long Doubles on Tru64

DB_File tests failing on Tru64

64-bit Perl on Tru64

Warnings about floating-point overflow when compiling Perl on Tru64

Testing Perl on Tru64

ext/ODBM_File/odbm Test Failing With Static Builds

Perl Fails Because Of Unresolved Symbol sockatmark

read_cur_obj_info: bad file magic number

AUTHOR

perlvm - VMS-specific documentation for Perl

DESCRIPTION

Installation

Organization of Perl Images

Core Images

Perl Extensions

Installing static extensions

Installing dynamic extensions

File specifications

Syntax

Filename Case

Symbolic Links

Wildcard expansion

Pipes

PERL5LIB and PERLLIB

The Perl Forked Debugger

PERL_VMS_EXCEPTION_DEBUG

Command line

I/O redirection and backgrounding

Command line switches

-i, -S, -u

Perl functions

File tests, backticks, binmode FILEHANDLE, crypt PLAINTEXT, USER, die, dump, exec

LIST, fork, getpwent, getpwnam, getpwuid, gmtime, kill, qx//, select (system call),

stat EXPR, system LIST, time, times, unlink LIST, utime LIST, waitpid PID, FLAGS

Perl variables

%ENV, CRTL_ENV, CLISYM_[LOCAL], Any other string, \$!, \$^E, \$?, \$|

Standard modules with VMS-specific differences

SDBM_File

Revision date

AUTHOR

perlvos - Perl for Stratus OpenVOS

SYNOPSIS

BUILDING PERL FOR OPENVOS

INSTALLING PERL IN OPENVOS

USING PERL IN OPENVOS

Restrictions of Perl on OpenVOS

TEST STATUS

SUPPORT STATUS

AUTHOR

LAST UPDATE

perlwin32 - Perl under Windows

SYNOPSIS

DESCRIPTION

<<http://mingw.org>>, <<http://mingw-w64.org>>

Setting Up Perl on Windows

Make, Command Shell, Microsoft Visual C++, Microsoft Visual C++ 2008-2019

Express/Community Edition, Microsoft Visual C++ 2005 Express Edition, Microsoft

Visual C++ Toolkit 2003, Microsoft Platform SDK 64-bit Compiler, GCC, Intel C++

Compiler

Building

Testing Perl on Windows

Installation of Perl on Windows

Usage Hints for Perl on Windows

Environment Variables, File Globbing, Using perl from the command line, Building

Extensions, Command-line Wildcard Expansion, Notes on 64-bit Windows

Running Perl Scripts

Miscellaneous Things

BUGS AND CAVEATS

ACKNOWLEDGEMENTS

AUTHORS

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SEE ALSO

HISTORY

perlboot - Links to information on object-oriented programming in Perl

DESCRIPTION

perlbot - Links to information on object-oriented programming in Perl

DESCRIPTION

perlrepository - Links to current information on the Perl source repository

DESCRIPTION

perltodo - Link to the Perl to-do list

DESCRIPTION

perltooc - Links to information on object-oriented programming in Perl

DESCRIPTION

perltoot - Links to information on object-oriented programming in Perl

DESCRIPTION

PRAGMA DOCUMENTATION

attributes - get/set subroutine or variable attributes

SYNOPSIS

DESCRIPTION

What "import" does

Built-in Attributes

lvalue, method, prototype(..), const, shared

Available Subroutines

get, reftype

Package-specific Attribute Handling

FETCH_type_ATTRIBUTES, MODIFY_type_ATTRIBUTES

Syntax of Attribute Lists

EXPORTS

Default exports

Available exports

Export tags defined

EXAMPLES

MORE EXAMPLES

SEE ALSO

autodie - Replace functions with ones that succeed or die with lexical scope

SYNOPSIS

DESCRIPTION

EXCEPTIONS

CATEGORIES

FUNCTION SPECIFIC NOTES

print

flock

system/exec

GOTCHAS

DIAGNOSTICS

:void cannot be used with lexical scope, No user hints defined for %s

Tips and Tricks

Importing autodie into another namespace than "caller"

BUGS

autodie and string eval

REPORTING BUGS

FEEDBACK

AUTHOR

LICENSE

SEE ALSO

ACKNOWLEDGEMENTS

autodie::Scope::Guard - Wrapper class for calling subs at end of scope

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

autodie::Scope::GuardStack - Hook stack for managing scopes via %^H

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

autodie::Util - Internal Utility subroutines for autodie and Fatal

SYNOPSIS

DESCRIPTION

Methods

AUTHOR

LICENSE

autodie::exception - Exceptions from autodying functions.

SYNOPSIS

DESCRIPTION

Common Methods

Advanced methods

SEE ALSO

LICENSE

AUTHOR

autodie::exception::system - Exceptions from autodying system().

SYNOPSIS

DESCRIPTION

stringify

LICENSE

AUTHOR

autodie::hints - Provide hints about user subroutines to autodie

SYNOPSIS

DESCRIPTION

Introduction

What are hints?

Example hints

Manually setting hints from within your program

Adding hints to your module

Insisting on hints

Diagnostics

Attempts to set `_hints_` for unidentifiable subroutine, fail hints cannot be provided

with either scalar or list hints for `%s`, `%s` hint missing for `%s`

ACKNOWLEDGEMENTS

AUTHOR

LICENSE

SEE ALSO

`autodie::skip` - Skip a package when throwing `autodie` exceptions

SYNOPSIS

DESCRIPTION

AUTHOR

LICENSE

SEE ALSO

`autouse` - postpone load of modules until a function is used

SYNOPSIS

DESCRIPTION

WARNING

AUTHOR

SEE ALSO

`base` - Establish an ISA relationship with base classes at compile time

SYNOPSIS

DESCRIPTION

DIAGNOSTICS

Base class package `"%s"` is empty, Class `'Foo'` tried to inherit from itself

HISTORY

CAVEATS

SEE ALSO

`bigint` - Transparent `BigInteger` support for Perl

SYNOPSIS

DESCRIPTION

use integer vs. use `bigint`

Options

a or accuracy, p or precision, t or trace, hex, oct, l, lib, try or only, v or version

Math Library

Internal Format

Sign

Method calls

Methods

inf(), NaN(), e, PI, bexp(), bpi(), upgrade(), in_effect()

CAVEATS

Operator vs literal overloading, ranges, in_effect(), hex()/oct()

MODULES USED

EXAMPLES

BUGS

SUPPORT

LICENSE

SEE ALSO

AUTHORS

bignum - Transparent BigNumber support for Perl

SYNOPSIS

DESCRIPTION

Options

a or accuracy, p or precision, t or trace, l or lib, hex, oct, v or version

Methods

Caveats

inf(), NaN(), e, PI(), bexp(), bpi(), upgrade(), in_effect()

Math Library

INTERNAL FORMAT

SIGN

CAVEATS

Operator vs literal overloading, in_effect(), hex()/oct()

MODULES USED

EXAMPLES

BUGS

SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings,

Search CPAN, CPAN Testers Matrix

LICENSE

SEE ALSO

AUTHORS

bigrat - Transparent BigNumber/BigRational support for Perl

SYNOPSIS

DESCRIPTION

Modules Used

Math Library

Sign

Methods

inf(), NaN(), e, PI, bexp(), bpi(), upgrade(), in_effect()

MATH LIBRARY

Caveat

Options

a or accuracy, p or precision, t or trace, l or lib, hex, oct, v or version

CAVEATS

Operator vs literal overloading, in_effect(), hex()/oct()

EXAMPLES

BUGS

SUPPORT

LICENSE

SEE ALSO

AUTHORS

blib - Use MakeMaker's uninstalled version of a package

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

bytes - Perl pragma to expose the individual bytes of characters

NOTICE

SYNOPSIS

DESCRIPTION

LIMITATIONS

SEE ALSO

charnames - access to Unicode character names and named character sequences; also define

character names

SYNOPSIS

DESCRIPTION

LOOSE MATCHES

ALIASES

CUSTOM ALIASES

charnames::string_vianame(name)

charnames::vianame(name)

charnames::viacode(code)

CUSTOM TRANSLATORS

BUGS

constant - Perl pragma to declare constants

SYNOPSIS

DESCRIPTION

NOTES

List constants

Defining multiple constants at once

Magic constants

TECHNICAL NOTES

CAVEATS

SEE ALSO

BUGS

AUTHORS

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deprecate - Perl pragma for deprecating the inclusion of a module in core

SYNOPSIS

DESCRIPTION

Important Caveat

EXPORT

SEE ALSO

AUTHOR

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diagnostics, splain - produce verbose warning diagnostics

SYNOPSIS

DESCRIPTION

The "diagnostics" Pragma

The splain Program

EXAMPLES

INTERNALS

BUGS

AUTHOR

encoding - allows you to write your script in non-ASCII and non-UTF-8

WARNING

SYNOPSIS

DESCRIPTION

"use encoding ['ENCNAME'] ;", "use encoding ENCNAME, Filter=>1;", "no encoding;"

OPTIONS

Setting "STDIN" and/or "STDOUT" individually

The "[:locale]" sub-pragma

CAVEATS

SIDE EFFECTS

DO NOT MIX MULTIPLE ENCODINGS

Prior to Perl v5.22

Prior to Encode version 1.87

Prior to Perl v5.8.1

"NON-EUC" doublebyte encodings, "tr//", Legend of characters above

EXAMPLE - Greekperl

BUGS

Thread safety, Can't be used by more than one module in a single program, Other modules using "STDIN" and "STDOUT" get the encoded stream, literals in regex that are longer than 127 bytes, EBCDIC, "format", See also "CAVEATS"

HISTORY

SEE ALSO

encoding::warnings - Warn on implicit encoding conversions

VERSION

NOTICE

SYNOPSIS

DESCRIPTION

Overview of the problem

Detecting the problem

Solving the problem

Upgrade both sides to unicode-strings, Downgrade both sides to byte-strings,

Specify the encoding for implicit byte-string upgrading, PerlIO layers for STDIN

and STDOUT, Literal conversions, Implicit upgrading for byte-strings

CAVEATS

SEE ALSO

AUTHORS

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experimental - Experimental features made easy

VERSION

SYNOPSIS

DESCRIPTION

"array_base" - allow the use of \$[to change the starting index of @array, "autoderef"

- allow push, each, keys, and other built-ins on references, "bitwise" - allow the new
stringwise bit operators, "const_attr" - allow the :const attribute on subs,

"declared_refs" - enables aliasing via assignment to references, "isa" - allow the use
of the "isa" infix operator, "lexical_topic" - allow the use of lexical \$_ via "my

\$_", "lexical_subs" - allow the use of lexical subroutines, "postderef" - allow the

use of postfix dereferencing expressions, "postderef_qq" - allow the use of postfix
dereferencing expressions inside interpolating strings, "re_strict" - enables strict

mode in regular expressions, "refaliasing" - allow aliasing via "\$x = \$y",

"regex_sets" - allow extended bracketed character classes in regexps, "signatures" -
allow subroutine signatures (for named arguments), "smartmatch" - allow the use of

"~~", "switch" - allow the use of "~~", given, and when, "win32_perlio" - allows the

use of the :win32 IO layer

Ordering matters

Disclaimer

SEE ALSO

AUTHOR

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feature - Perl pragma to enable new features

SYNOPSIS

DESCRIPTION

Lexical effect

"no feature"

AVAILABLE FEATURES

The 'say' feature

The 'state' feature

The 'switch' feature

The 'unicode_strings' feature

The 'unicode_eval' and 'evalbytes' features

The 'current_sub' feature

The 'array_base' feature

The 'fc' feature

The 'lexical_subs' feature

The 'postderef' and 'postderef_qq' features

The 'signatures' feature

The 'refaliasing' feature

The 'bitwise' feature

The 'declared_refs' feature

The 'isa' feature

The 'indirect' feature

The 'multidimensional' feature

The 'bareword_filehandles' feature.

The 'try' feature.

FEATURE BUNDLES

IMPLICIT LOADING

fields - compile-time class fields

SYNOPSIS

DESCRIPTION

new, phash

SEE ALSO

filetest - Perl pragma to control the filetest permission operators

SYNOPSIS

DESCRIPTION

Consider this carefully

The "access" sub-pragma

Limitation with regard to "_"

if - "use" a Perl module if a condition holds

SYNOPSIS

DESCRIPTION

"use if"

"no if"

BUGS

SEE ALSO

AUTHOR

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integer - Perl pragma to use integer arithmetic instead of floating point

SYNOPSIS

DESCRIPTION

less - perl pragma to request less of something

SYNOPSIS

DESCRIPTION

FOR MODULE AUTHORS

"BOOLEAN = less->of(FEATURE)"

"FEATURES = less->of()"

CAVEATS

This probably does nothing, This works only on 5.10+

lib - manipulate @INC at compile time

SYNOPSIS

DESCRIPTION

Adding directories to @INC

Deleting directories from @INC

Restoring original @INC

CAVEATS

NOTES

SEE ALSO

AUTHOR

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locale - Perl pragma to use or avoid POSIX locales for built-in operations

WARNING

SYNOPSIS

DESCRIPTION

mro - Method Resolution Order

SYNOPSIS

DESCRIPTION

OVERVIEW

The C3 MRO

What is C3?

How does C3 work

Functions

mro::get_linear_isa(\$classname[, \$type])

mro::set_mro (\$classname, \$type)

mro::get_mro(\$classname)

mro::get_isarev(\$classname)

mro::is_universal(\$classname)

mro::invalidate_all_method_caches()

mro::method_changed_in(\$classname)

mro::get_pkg_gen(\$classname)

next::method

next::can

maybe::next::method

SEE ALSO

The original Dylan paper

["/citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.19.3910&rep=rep1 &type=pdf"](http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.19.3910&rep=rep1&type=pdf) in
http:

Python 2.3 MRO

<<https://www.python.org/download/releases/2.3/mro/>>

Class::C3

Class::C3

AUTHOR

ok - Alternative to Test::More::use_ok

SYNOPSIS

DESCRIPTION

CC0 1.0 Universal

open - perl pragma to set default PerlIO layers for input and output

SYNOPSIS

DESCRIPTION

IMPLEMENTATION DETAILS

SEE ALSO

ops - Perl pragma to restrict unsafe operations when compiling

SYNOPSIS

DESCRIPTION

SEE ALSO

overload - Package for overloading Perl operations

SYNOPSIS

DESCRIPTION

Fundamentals

Overloadable Operations

"not", "neg", "++", "--", Assignments, Non-mutators with a mutator variant, "int",

String, numeric, boolean, and regexp conversions, Iteration, File tests, Matching,

Dereferencing, Special

Magic Autogeneration

Special Keys for "use overload"

defined, but FALSE, "undef", TRUE

How Perl Chooses an Operator Implementation

Losing Overloading

Inheritance and Overloading

Method names in the "use overload" directive, Overloading of an operation is inherited by derived classes

Run-time Overloading

Public Functions

`overload::StrVal(arg)`, `overload::Overloaded(arg)`, `overload::Method(obj,op)`

Overloading Constants

integer, float, binary, q, qr

IMPLEMENTATION

COOKBOOK

Two-face Scalars

Two-face References

Symbolic Calculator

Really Symbolic Calculator

AUTHOR

SEE ALSO

DIAGNOSTICS

Odd number of arguments for `overload::constant`, '%s' is not an overloadable type, '%s' is not a code reference, overload arg '%s' is invalid

BUGS AND PITFALLS

overloading - perl pragma to lexically control overloading

SYNOPSIS

DESCRIPTION

"no overloading", "no overloading @ops", "use overloading", "use overloading @ops"

parent - Establish an ISA relationship with base classes at compile time

SYNOPSIS

DESCRIPTION

HISTORY

CAVEATS

SEE ALSO

base, `parent::versioned`

AUTHORS AND CONTRIBUTORS

MAINTAINER

LICENSE

re - Perl pragma to alter regular expression behaviour

SYNOPSIS

DESCRIPTION

'taint' mode

'eval' mode

'strict' mode

'/flags' mode

'debug' mode

'Debug' mode

Compile related options, COMPILE, PARSE, OPTIMISE, TRIEC, DUMP, FLAGS, TEST,

Execute related options, EXECUTE, MATCH, TRIEE, INTUIT, Extra debugging options,

EXTRA, BUFFERS, TRIEM, STATE, STACK, GPOS, OPTIMISEM, OFFSETS, OFFSETSDBG,

DUMP_PRE_OPTIMIZE, WILDCARD, Other useful flags, ALL, All, MORE, More

Exportable Functions

is_regexp(\$ref), regexp_pattern(\$ref), regname(\$name,\$all), regnames(\$all),

regnames_count(), regmust(\$ref), optimization(\$ref), minlen, minlenret, gofs,

noscan, isall, anchor SBOL, anchor MBOL, anchor GPOS, skip, implicit,

anchored/floating, anchored utf8/floating utf8, anchored min offset/floating min

offset, anchored max offset/floating max offset, anchored end shift/floating end

shift, checking, stclass

SEE ALSO

sigtrap - Perl pragma to enable simple signal handling

SYNOPSIS

DESCRIPTION

OPTIONS

SIGNAL HANDLERS

stack-trace, die, handler your-handler

SIGNAL LISTS

normal-signals, error-signals, old-interface-signals

OTHER

untrapped, any, signal, number

EXAMPLES

sort - perl pragma to control sort() behaviour

SYNOPSIS

DESCRIPTION

CAVEATS

strict - Perl pragma to restrict unsafe constructs

SYNOPSIS

DESCRIPTION

"strict refs", "strict vars", "strict subs"

HISTORY

subs - Perl pragma to predeclare subroutine names

SYNOPSIS

DESCRIPTION

threads - Perl interpreter-based threads

VERSION

WARNING

SYNOPSIS

DESCRIPTION

```
$thr = threads->create(FUNCTION, ARGS), $thr->join(), $thr->detach(),  
threads->detach(), threads->self(), $thr->tid(), threads->tid(), "$thr",  
threads->object($tid), threads->yield(), threads->list(), threads->list(threads::all),  
threads->list(threads::running), threads->list(threads::joinable),  
$thr1->equal($thr2), async BLOCK;, $thr->error(), $thr->_handle(), threads->_handle()
```

EXITING A THREAD

```
threads->exit(), threads->exit(status), die(), exit(status), use threads 'exit' =>  
'threads_only', threads->create({'exit' => 'thread_only'}, ...),  
$thr->set_thread_exit_only(boolean), threads->set_thread_exit_only(boolean)
```

THREAD STATE

```
$thr->is_running(), $thr->is_joinable(), $thr->is_detached(), threads->is_detached()
```

THREAD CONTEXT

Explicit context

Implicit context

```
$thr->wantarray()
```

threads->wantarray()

THREAD STACK SIZE

```
threads->get_stack_size();, $size = $thr->get_stack_size();, $old_size =  
threads->set_stack_size($new_size);, use threads ('stack_size' => VALUE);,  
$ENV{'PERL5_ITHREADS_STACK_SIZE'}, threads->create({'stack_size' => VALUE}, FUNCTION,  
ARGS), $thr2 = $thr1->create(FUNCTION, ARGS)
```

THREAD SIGNALLING

```
$thr->kill('SIG...');
```

WARNINGS

Perl exited with active threads:, Thread creation failed: pthread_create returned #,
Thread # terminated abnormally: .., Using minimum thread stack size of #, Thread
creation failed: pthread_attr_setstacksize(SIZE) returned 22

ERRORS

This Perl not built to support threads, Cannot change stack size of an existing
thread, Cannot signal threads without safe signals, Unrecognized signal name: ..

BUGS AND LIMITATIONS

Thread-safe modules, Using non-thread-safe modules, Memory consumption, Current
working directory, Locales, Environment variables, Catching signals, Parent-child
threads, Unsafe signals, Perl has been built with "PERL_OLD_SIGNALS" (see "perl -V"),
The environment variable "PERL_SIGNALS" is set to "unsafe" (see "PERL_SIGNALS" in
perlrun), The module Perl::Unsafe::Signals is used, Identity of objects returned from
threads, Returning blessed objects from threads, END blocks in threads, Open directory
handles, Detached threads and global destruction, Perl Bugs and the CPAN Version of
threads

REQUIREMENTS

SEE ALSO

AUTHOR

LICENSE

ACKNOWLEDGEMENTS

threads::shared - Perl extension for sharing data structures between threads

VERSION

SYNOPSIS

DESCRIPTION

EXPORT

FUNCTIONS

share VARIABLE, shared_clone REF, is_shared VARIABLE, lock VARIABLE, cond_wait
VARIABLE, cond_wait CONDVAR, LOCKVAR, cond_timedwait VARIABLE, ABS_TIMEOUT,
cond_timedwait CONDVAR, ABS_TIMEOUT, LOCKVAR, cond_signal VARIABLE, cond_broadcast
VARIABLE

OBJECTS

NOTES

WARNINGS

cond_broadcast() called on unlocked variable, cond_signal() called on unlocked
variable

BUGS AND LIMITATIONS

SEE ALSO

AUTHOR

LICENSE

utf8 - Perl pragma to enable/disable UTF-8 (or UTF-EBCDIC) in source code

SYNOPSIS

DESCRIPTION

Utility functions

```
"$num_octets = utf8::upgrade($string)", "$success = utf8::downgrade($string[,  
$fail_ok])", "utf8::encode($string)", "$success = utf8::decode($string)",  
"$unicode = utf8::native_to_unicode($code_point)", "$native =  
utf8::unicode_to_native($code_point)", "$flag = utf8::is_utf8($string)", "$flag =  
utf8::valid($string)"
```

BUGS

SEE ALSO

vars - Perl pragma to predeclare global variable names

SYNOPSIS

DESCRIPTION

version - Perl extension for Version Objects

SYNOPSIS

DESCRIPTION

TYPES OF VERSION OBJECTS

Decimal Versions, Dotted Decimal Versions

DECLARING VERSIONS

How to convert a module from decimal to dotted-decimal

How to "declare()" a dotted-decimal version

PARSING AND COMPARING VERSIONS

How to "parse()" a version

How to check for a legal version string

"is_lax()", "is_strict()"

How to compare version objects

OBJECT METHODS

is_alpha()

is_qv()

normal()

numify()

stringify()

EXPORTED FUNCTIONS

qv()

is_lax()

is_strict()

AUTHOR

SEE ALSO

version::Internals - Perl extension for Version Objects

DESCRIPTION

WHAT IS A VERSION?

Decimal versions, Dotted-Decimal versions

Decimal Versions

Dotted-Decimal Versions

Alpha Versions

Regular Expressions for Version Parsing

`$version::LAX`, `$version::STRICT`, `v1.234.5`

IMPLEMENTATION DETAILS

Equivalence between Decimal and Dotted-Decimal Versions

Quoting Rules

What about v-strings?

Version Object Internals

original, qv, alpha, version

Replacement UNIVERSAL::VERSION

USAGE DETAILS

Using modules that use version.pm

Decimal versions always work, Dotted-Decimal version work sometimes

Object Methods

new(), qv(), Normal Form, Numification, Stringification, Comparison operators,

Logical Operators

AUTHOR

SEE ALSO

vmsish - Perl pragma to control VMS-specific language features

SYNOPSIS

DESCRIPTION

"vmsish status", "vmsish exit", "vmsish time", "vmsish hushed"

warnings - Perl pragma to control optional warnings

SYNOPSIS

DESCRIPTION

Default Warnings and Optional Warnings

"Negative warnings"

What's wrong with -w and \$^W

Controlling Warnings from the Command Line

-w , -W , -X

Backward Compatibility

Category Hierarchy

Fatal Warnings

Reporting Warnings from a Module

FUNCTIONS

use warnings::register, warnings::enabled(), warnings::enabled(\$category),

warnings::enabled(\$object), warnings::enabled_at_level(\$category, \$level),

warnings::fatal_enabled(), warnings::fatal_enabled(\$category),

warnings::fatal_enabled(\$object), warnings::fatal_enabled_at_level(\$category, \$level),

```
warnings::warn($message), warnings::warn($category, $message), warnings::warn($object,  
$message), warnings::warn_at_level($category, $level, $message),  
warnings::warnif($message), warnings::warnif($category, $message),  
warnings::warnif($object, $message), warnings::warnif_at_level($category, $level,  
$message), warnings::register_categories(@names)
```

warnings::register - warnings import function

SYNOPSIS

DESCRIPTION

MODULE DOCUMENTATION

AnyDBM_File - provide framework for multiple DBMs

SYNOPSIS

DESCRIPTION

DBM Comparisons

[0], [1], [2], [3]

SEE ALSO

App::Cpan - easily interact with CPAN from the command line

SYNOPSIS

DESCRIPTION

Options

-a, -A module [module ...], -c module, -C module [module ...], -D module [module ...], -f, -F, -g module [module ...], -G module [module ...], -h, -i module [module ...], -l, -j Config.pm, -J, -l, -L author [author ...], -m, -M mirror1,mirror2,..., -n, -O, -p, -P, -r, -s, -t module [module ...], -T, -u, -v, -V, -w, -x module [module ...], -X

Examples

Environment variables

NONINTERACTIVE_TESTING, PERL_MM_USE_DEFAULT, CPAN_OPTS, CPANSRIPT_LOGLEVEL,
GIT_COMMAND

Methods

run()

EXIT VALUES

TO DO

BUGS

SEE ALSO

SOURCE AVAILABILITY

CREDITS

AUTHOR

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App::Prove - Implements the "prove" command.

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

Attributes

"archive", "argv", "backwards", "blib", "color", "directives", "dry", "exec",
"extensions", "failures", "comments", "formatter", "harness", "ignore_exit",
"includes", "jobs", "lib", "merge", "modules", "parse", "plugins", "quiet",
"really_quiet", "recurse", "rules", "show_count", "show_help", "show_man",
"show_version", "shuffle", "state", "state_class", "taint_fail", "taint_warn",
"test_args", "timer", "verbose", "warnings_fail", "warnings_warn", "tapversion",
"trap"

PLUGINS

Sample Plugin

SEE ALSO

App::Prove::State - State storage for the "prove" command.

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

"store", "extensions" (optional), "result_class" (optional)

"result_class"

"extensions"

"results"

"commit"

Instance Methods

"last", "failed", "passed", "all", "hot", "todo", "slow", "fast", "new", "old", "save"

App::Prove::State::Result - Individual test suite results.

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

"state_version"

"test_class"

App::Prove::State::Result::Test - Individual test results.

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

Instance Methods

Archive::Tar - module for manipulations of tar archives

SYNOPSIS

DESCRIPTION

Object Methods

Archive::Tar->new([\$file, \$compressed])

\$tar->read (\$filename|\$handle, [\$compressed, {opt => 'val'}])

limit, filter, md5, extract

\$tar->contains_file(\$filename)

\$tar->extract([@filenames])

\$tar->extract_file(\$file, [\$extract_path])

\$tar->list_files([\@properties])

\$tar->get_files([\@filenames])

\$tar->get_content(\$file)

\$tar->replace_content(\$file, \$content)

\$tar->rename(\$file, \$new_name)

\$tar->chmod(\$file, \$mode)

```
$tar->chown( $file, $uname [, $gname] )
```

```
$tar->remove ( @filenamelist)
```

```
$tar->clear
```

```
$tar->write ( [ $file, $compressed, $prefix] )
```

```
$tar->add_files( @filenamelist )
```

```
$tar->add_data ( $filename, $data, [$opthashref] )
```

```
FILE, HARDLINK, SYMLINK, CHARDEV, BLOCKDEV, DIR, FIFO, SOCKET
```

```
$tar->error( [$BOOL] )
```

```
$tar->setcwd( $cwd );
```

Class Methods

```
Archive::Tar->create_archive($file, $compressed, @filelist)
```

```
Archive::Tar->iter( $filename, [ $compressed, {opt => $val} ] )
```

```
Archive::Tar->list_archive($file, $compressed, [ @properties])
```

```
Archive::Tar->extract_archive($file, $compressed)
```

```
$bool = Archive::Tar->has_io_string
```

```
$bool = Archive::Tar->has_perlio
```

```
$bool = Archive::Tar->has_zlib_support
```

```
$bool = Archive::Tar->has_bzip2_support
```

```
$bool = Archive::Tar->has_xz_support
```

```
Archive::Tar->can_handle_compressed_files
```

GLOBAL VARIABLES

```
$Archive::Tar::FOLLOW_SYMLINK
```

```
$Archive::Tar::CHOWN
```

```
$Archive::Tar::CHMOD
```

```
$Archive::Tar::SAME_PERMISSIONS
```

```
$Archive::Tar::DO_NOT_USE_PREFIX
```

```
$Archive::Tar::DEBUG
```

```
$Archive::Tar::WARN
```

```
$Archive::Tar::error
```

```
$Archive::Tar::INSECURE_EXTRACT_MODE
```

```
$Archive::Tar::HAS_PERLIO
```

```
$Archive::Tar::HAS_IO_STRING
```

```
$Archive::Tar::ZERO_PAD_NUMBERS
```

Tuning the way RESOLVE_SYMLINK will work

FAQ What's the minimum perl version required to run Archive::Tar?, Isn't Archive::Tar slow?, Isn't Archive::Tar heavier on memory than /bin/tar?, Can you lazy-load data instead?, How much memory will an X kb tar file need?, What do you do with unsupported filetypes in an archive?, I'm using WinZip, or some other non-POSIX client, and files are not being extracted properly!, How do I extract only files that have property X from an archive?, How do I access .tar.Z files?, How do I handle Unicode strings?

CAVEATS

TODO

Check if passed in handles are open for read/write, Allow archives to be passed in as string, Facilitate processing an opened filehandle of a compressed archive

SEE ALSO

The GNU tar specification, The PAX format specification, A comparison of GNU and POSIX tar standards; "http://www.delorie.com/gnu/docs/tar/tar_114.html", GNU tar intends to switch to POSIX compatibility, A Comparison between various tar implementations

AUTHOR

ACKNOWLEDGEMENTS

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Archive::Tar::File - a subclass for in-memory extracted file from Archive::Tar

SYNOPSIS

DESCRIPTION

Accessors

name, mode, uid, gid, size, mtime, chksum, type, linkname, magic, version, uname, gname, devmajor, devminor, prefix, raw

Methods

```
Archive::Tar::File->new( file => $path )
```

```
Archive::Tar::File->new( data => $path, $data, $opt )
```

```
Archive::Tar::File->new( chunk => $chunk )
```

```
$bool = $file->extract( [ $alternative_name ] )
```

```
$path = $file->full_path
```

```
$bool = $file->validate
```

```
$bool = $file->has_content
```

```
$content = $file->get_content
```

```
$cref = $file->get_content_by_ref
```

```
$bool = $file->replace_content( $content )
```

```
$bool = $file->rename( $new_name )
```

```
$bool = $file->chmod $mode)
```

```
$bool = $file->chown( $user [, $group])
```

Convenience methods

```
$file->is_file, $file->is_dir, $file->is_hardlink, $file->is_symlink,
```

```
$file->is_chardev, $file->is_blockdev, $file->is_fifo, $file->is_socket,
```

```
$file->is_longlink, $file->is_label, $file->is_unknown
```

Attribute::Handlers - Simpler definition of attribute handlers

VERSION

SYNOPSIS

DESCRIPTION

```
[0], [1], [2], [3], [4], [5], [6], [7]
```

Typed lexicals

Type-specific attribute handlers

Non-interpretive attribute handlers

Phase-specific attribute handlers

Attributes as "tie" interfaces

EXAMPLES

UTILITY FUNCTIONS

```
findsym
```

DIAGNOSTICS

```
"Bad attribute type: ATTR(%s)", "Attribute handler %s doesn't handle %s attributes",
```

```
"Declaration of %s attribute in package %s may clash with future reserved word",
```

```
"Can't have two ATTR specifiers on one subroutine", "Can't autotie a %s", "Internal
```

```
error: %s symbol went missing", "Won't be able to apply END handler"
```

AUTHOR

BUGS

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AutoLoader - load subroutines only on demand

SYNOPSIS

DESCRIPTION

Subroutine Stubs

Using AutoLoader's AUTOLOAD Subroutine

Overriding AutoLoader's AUTOLOAD Subroutine

Package Lexicals

Not Using AutoLoader

AutoLoader vs. SelfLoader

Forcing AutoLoader to Load a Function

CAVEATS

SEE ALSO

AUTHOR

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AutoSplit - split a package for autoloading

SYNOPSIS

DESCRIPTION

\$keep, \$check, \$modtime

Multiple packages

DIAGNOSTICS

AUTHOR

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B - The Perl Compiler Backend

SYNOPSIS

DESCRIPTION

OVERVIEW

Utility Functions

Functions Returning "B::SV", "B::AV", "B::HV", and "B::CV" objects

sv_undef, sv_yes, sv_no, svref_2object(SVREF), amagic_generation, init_av,

check_av, unitcheck_av, begin_av, end_av, comppadlist, regex_padav, main_cv

Functions for Examining the Symbol Table

walksymtable(SYMREF, METHOD, RECURSE, PREFIX)

Functions Returning "B::OP" objects or for walking op trees

main_root, main_start, walkoptree(OP, METHOD), walkoptree_debug(DEBUG)

Miscellaneous Utility Functions

ppname(OPNUM), hash(STR), cast_l32(I), minus_c, cstring(STR), perlstring(STR),

safename(STR), class(OBJ), threadsv_names

Exported utility variables

@optype, @specialsv_name

OVERVIEW OF CLASSES

SV-RELATED CLASSES

B::SV Methods

REFCNT, FLAGS, object_2svref

B::IV Methods

IV, IVX, UVX, int_value, needs64bits, packiv

B::NV Methods

NV, NVX, COP_SEQ_RANGE_LOW, COP_SEQ_RANGE_HIGH

B::RV Methods

RV

B::PV Methods

PV, RV, PVX, CUR, LEN

B::PVMG Methods

MAGIC, SvSTASH

B::MAGIC Methods

MOREMAGIC, precomp, PRIVATE, TYPE, FLAGS, OBJ, PTR, REGEX

B::INVLIST Methods

prev_index, is_offset, array_len, get_invlist_array

B::PVLV Methods

TARGOFF, TARGLEN, TYPE, TARG

B::BM Methods

USEFUL, PREVIOUS, RARE, TABLE

B::REGEXP Methods

REGEX, precomp, qr_anoncv, compflags

B::GV Methods

is_empty, NAME, SAFENAME, STASH, SV, IO, FORM, AV, HV, EGV, CV, CVGEN, LINE, FILE,
FILEGV, GvREFCNT, FLAGS, GPFLAGS

B::IO Methods

LINES, PAGE, PAGE_LEN, LINES_LEFT, TOP_NAME, TOP_GV, FMT_NAME, FMT_GV,
BOTTOM_NAME, BOTTOM_GV, SUBPROCESS, IoTYPE, IoFLAGS, IsSTD

B::AV Methods

FILL, MAX, ARRAY, ARRAYelt

B::CV Methods

STASH, START, ROOT, GV, FILE, DEPTH, PADLIST, OUTSIDE, OUTSIDE_SEQ, XSUB, XSUBANY, CvFLAGS, const_sv, NAME_HEK

B::HV Methods

FILL, MAX, KEYS, RITER, NAME, ARRAY

OP-RELATED CLASSES

B::OP Methods

next, sibling, parent, name, ppaddr, desc, targ, type, opt, flags, private, spare

B::UNOP Method

first

B::UNOP_AUX Methods (since 5.22)

aux_list(cv), string(cv)

B::BINOP Method

last

B::LOGOP Method

other

B::LISTOP Method

children

B::PMOP Methods

pmreplroot, pmreplstart, pmflags, precomp, pmoffset, code_list, pmregexp

B::SVOP Methods

sv, gv

B::PADOP Method

padix

B::PVOP Method

pv

B::LOOP Methods

redoop, nextop, lastop

B::COP Methods

label, stash, stashpv, stashoff (threaded only), file, cop_seq, line, warnings, io, hints, hints_hash

B::METHOP Methods (Since Perl 5.22)

first, meth_sv

PAD-RELATED CLASSES

B::PADLIST Methods

MAX, ARRAY, ARRAYelt, NAMES, REFCNT, id, outid

B::PADNAMELIST Methods

MAX, ARRAY, ARRAYelt, REFCNT

B::PADNAME Methods

PV, PVX, LEN, REFCNT, FLAGS, TYPE, SvSTASH, OURSTASH, PROTOCV, COP_SEQ_RANGE_LOW,
COP_SEQ_RANGE_HIGH, PARENT_PAD_INDEX, PARENT_FAKELEX_FLAGS

\$B::overlay

AUTHOR

B::Concise - Walk Perl syntax tree, printing concise info about ops

SYNOPSIS

DESCRIPTION

EXAMPLE

OPTIONS

Options for Opcode Ordering

-basic, -exec, -tree

Options for Line-Style

-concise, -terse, -linenoise, -debug, -env

Options for tree-specific formatting

-compact, -loose, -vt, -ascii

Options controlling sequence numbering

-basen, -bigendian, -littleendian

Other options

-src, -stash="somepackage", -main, -nomain, -nobanner, -banner, -banneris =>

subref

Option Stickiness

ABBREVIATIONS

OP class abbreviations

OP flags abbreviations

FORMATTING SPECIFICATIONS

Special Patterns

(x(exec_text;basic_text)x), (*(text)*), (*(text1;text2)*), (?(text1#varText2)?), ~

Variables

#var, #varN, #Var, #addr, #arg, #class, #classsym, #coplabel, #exname, #extarg,
#firstaddr, #flags, #flagval, #hints, #hintsval, #hyphseq, #label, #lastaddr,
#name, #NAME, #next, #nextaddr, #noise, #private, #privval, #seq, #opt, #sibaddr,
#svaddr, #svclass, #svval, #targ, #targarg, #targarglife, #typenum

One-Liner Command tips

```
perl -MO=Concise,bar foo.pl, perl -MDigest::MD5=md5 -MO=Concise,md5 -e1, perl -MPOSIX  
-MO=Concise,_POSIX_ARG_MAX -e1, perl -MPOSIX -MO=Concise,a -e 'print  
_POSIX_SAVED_IDS', perl -MPOSIX -MO=Concise,a -e 'sub a[_POSIX_SAVED_IDS]', perl  
-MB::Concise -e 'B::Concise::compile("-exec","-src", \%B::Concise::)->()'
```

Using B::Concise outside of the O framework

Example: Altering Concise Renderings

set_style()

set_style_standard(\$name)

add_style ()

add_callback ()

Running B::Concise::compile()

B::Concise::reset_sequence()

Errors

AUTHOR

B::Deparse - Perl compiler backend to produce perl code

SYNOPSIS

DESCRIPTION

OPTIONS

-d, -fFILE, -l, -p, -P, -q, -sLETTERS, C, iNUMBER, T, vSTRING., -xLEVEL

USING B::Deparse AS A MODULE

Synopsis

Description

new

ambient_pragmas

strict, \$[, bytes, utf8, integer, re, warnings, hint_bits, warning_bits, %^H

coderef2text

BUGS

AUTHOR

B::Op_private - OP op_private flag definitions

SYNOPSIS

DESCRIPTION

%bits

%defines

%labels

%ops_using

B::Showlex - Show lexical variables used in functions or files

SYNOPSIS

DESCRIPTION

EXAMPLES

OPTIONS

SEE ALSO

TODO

AUTHOR

B::Terse - Walk Perl syntax tree, printing terse info about ops

SYNOPSIS

DESCRIPTION

AUTHOR

B::Xref - Generates cross reference reports for Perl programs

SYNOPSIS

DESCRIPTION

i, &, s, r

OPTIONS

"-oFILENAME", "-r", "-d", "-D[tO]"

BUGS

AUTHOR

Benchmark - benchmark running times of Perl code

SYNOPSIS

DESCRIPTION

Methods

new, debug, iters

Standard Exports

timeit(COUNT, CODE), timethis (COUNT, CODE, [TITLE, [STYLE]]), timethese (COUNT, CODEHASHREF, [STYLE]), timediff (T1, T2), timestr (TIMEDIFF, [STYLE, [FORMAT]])

Optional Exports

clearcache (COUNT), clearallcache (), cmpthese (COUNT, CODEHASHREF, [STYLE]), cmpthese (RESULTSHASHREF, [STYLE]), countit(TIME, CODE), disablecache (), enablecache (), timesum (T1, T2)

:hireswallclock

Benchmark Object

cpu_p, cpu_c, cpu_a, real, iters

NOTES

EXAMPLES

INHERITANCE

CAVEATS

SEE ALSO

AUTHORS

MODIFICATION HISTORY

CORE - Namespace for Perl's core routines

SYNOPSIS

DESCRIPTION

OVERRIDING CORE FUNCTIONS

AUTHOR

SEE ALSO

CPAN - query, download and build perl modules from CPAN sites

SYNOPSIS

DESCRIPTION

CPAN::shell([\$prompt, \$command]) Starting Interactive Mode

Searching for authors, bundles, distribution files and modules, "get", "make",

"test", "install", "clean" modules or distributions, "readme", "perldoc", "look"

module or distribution, "ls" author, "ls" globbing_expression, "failed",

Persistence between sessions, The "force" and the "fforce" pragma, Lockfile,

Signals

CPAN::Shell

autobundle

hosts

install_tested, is_tested

mkmyconfig

r [Module|/Regexp/]...

recent ***EXPERIMENTAL COMMAND***

recompile

report Bundle|Distribution|Module

smoke ***EXPERIMENTAL COMMAND***

upgrade [Module|/Regexp/]...

The four "CPAN::*" Classes: Author, Bundle, Module, Distribution

Integrating local directories

Redirection

Plugin support ***EXPERIMENTAL***

CONFIGURATION

completion support, displaying some help: o conf help, displaying current values: o

conf [KEY], changing of scalar values: o conf KEY VALUE, changing of list values: o

conf KEY SHIFT|UNSHIFT|PUSH|POP|SPLICE|LIST, reverting to saved: o conf defaults,

saving the config: o conf commit

Config Variables

"o conf <scalar option>", "o conf <scalar option> <value>", "o conf <list

option>", "o conf <list option> [shift|pop]", "o conf <list option>

[unshift|push|splice] <list>", interactive editing: o conf init [MATCH|LIST]

CPAN::anycwd(\$path): Note on config variable getcwd

cwd, getcwd, fastcwd, getdcwd, backtickcwd

Note on the format of the urllist parameter

The urllist parameter has CD-ROM support

Maintaining the urllist parameter

The "requires" and "build_requires" dependency declarations

Configuration of the allow_installing_* parameters

Configuration for individual distributions (Distroprefs)

Filenames

Fallback Data::Dumper and Storable

Blueprint

Language Specs

comment [scalar], cpanconfig [hash], depends [hash] *** EXPERIMENTAL FEATURE ***,
disabled [boolean], features [array] *** EXPERIMENTAL FEATURE ***, goto [string],
install [hash], make [hash], match [hash], patches [array], pl [hash], test [hash]

Processing Instructions

args [array], commandline, eexpect [hash], env [hash], expect [array]

Schema verification with "Kwalify"

Example Distroprefs Files

PROGRAMMER'S INTERFACE

expand(\$type,@things), expandany(@things), Programming Examples

Methods in the other Classes

CPAN::Author::as_glimpse(), CPAN::Author::as_string(), CPAN::Author::email(),
CPAN::Author::fullname(), CPAN::Author::name(), CPAN::Bundle::as_glimpse(),
CPAN::Bundle::as_string(), CPAN::Bundle::clean(), CPAN::Bundle::contains(),
CPAN::Bundle::force(\$method,@args), CPAN::Bundle::get(),
CPAN::Bundle::inst_file(), CPAN::Bundle::inst_version(), CPAN::Bundle::uptodate(),
CPAN::Bundle::install(), CPAN::Bundle::make(), CPAN::Bundle::readme(),
CPAN::Bundle::test(), CPAN::Distribution::as_glimpse(),
CPAN::Distribution::as_string(), CPAN::Distribution::author,
CPAN::Distribution::pretty_id(), CPAN::Distribution::base_id(),
CPAN::Distribution::clean(), CPAN::Distribution::containsmods(),
CPAN::Distribution::cvs_import(), CPAN::Distribution::dir(),
CPAN::Distribution::force(\$method,@args), CPAN::Distribution::get(),
CPAN::Distribution::install(), CPAN::Distribution::isa_perl(),
CPAN::Distribution::look(), CPAN::Distribution::make(),
CPAN::Distribution::perldoc(), CPAN::Distribution::prefs(),
CPAN::Distribution::prereq_pm(), CPAN::Distribution::readme(),
CPAN::Distribution::reports(), CPAN::Distribution::read_yaml(),
CPAN::Distribution::test(), CPAN::Distribution::uptodate(),

CPAN::Index::force_reload(), CPAN::Index::reload(), CPAN::InfoObj::dump(),
CPAN::Module::as_glimpse(), CPAN::Module::as_string(), CPAN::Module::clean(),
CPAN::Module::cpan_file(), CPAN::Module::cpan_version(),
CPAN::Module::cvs_import(), CPAN::Module::description(),
CPAN::Module::distribution(), CPAN::Module::dslip_status(),
CPAN::Module::force(\$method,@args), CPAN::Module::get(),
CPAN::Module::inst_file(), CPAN::Module::available_file(),
CPAN::Module::inst_version(), CPAN::Module::available_version(),
CPAN::Module::install(), CPAN::Module::look(), CPAN::Module::make(),
CPAN::Module::manpage_headline(), CPAN::Module::perldoc(), CPAN::Module::readme(),
CPAN::Module::reports(), CPAN::Module::test(), CPAN::Module::uptodate(),
CPAN::Module::userid()

Cache Manager

Bundles

PREREQUISITES

UTILITIES

Finding packages and VERSION

Debugging

o debug package..., o debug -package..., o debug all, o debug number

Floppy, Zip, Offline Mode

Basic Utilities for Programmers

has_inst(\$module), use_inst(\$module), has_usable(\$module), instance(\$module),
frontend(), frontend(\$new_frontend)

SECURITY

Cryptographically signed modules

EXPORT

ENVIRONMENT

POPULATE AN INSTALLATION WITH LOTS OF MODULES

WORKING WITH CPAN.pm BEHIND FIREWALLS

Three basic types of firewalls

http firewall, ftp firewall, One-way visibility, SOCKS, IP Masquerade

Configuring lynx or ncftp for going through a firewall

COMPATIBILITY

OLD PERL VERSIONS

CPANPLUS

CPANMINUS

SECURITY ADVICE

BUGS

AUTHOR

LICENSE

TRANSLATIONS

SEE ALSO

CPAN::API::HOWTO - a recipe book for programming with CPAN.pm

RECIPES

What distribution contains a particular module?

What modules does a particular distribution contain?

SEE ALSO

LICENSE

AUTHOR

CPAN::Debug - internal debugging for CPAN.pm

LICENSE

CPAN::Distroprefs -- read and match distroprefs

SYNOPSIS

DESCRIPTION

INTERFACE

a CPAN::Distroprefs::Result object, "undef", indicating that no prefs files remain to be found

RESULTS

Common

Errors

Successes

PREFS

LICENSE

CPAN::FirstTime - Utility for CPAN::Config file Initialization

SYNOPSIS

DESCRIPTION

allow_installing_module_downgrades, allow_installing_outdated_dists, auto_commit,
build_cache, build_dir, build_dir_reuse, build_requires_install_policy, cache_metadata,
check_sigs, cleanup_after_install, colorize_output, colorize_print, colorize_warn,
colorize_debug, commandnumber_in_prompt, connect_to_internet_ok, ftp_passive,
ftpstats_period, ftpstats_size, getcwd, halt_on_failure, histfile, histsize,
inactivity_timeout, index_expire, inhibit_startup_message, keep_source_where,
load_module_verbosity, makepl_arg, make_arg, make_install_arg, make_install_make_command,
mbuildpl_arg, mbuild_arg, mbuild_install_arg, mbuild_install_build_command, pager,
prefer_installer, prefs_dir, prerequisites_policy, randomize_urllist, recommends_policy,
scan_cache, shell, show_unparsable_versions, show_upload_date, show_zero_versions,
suggests_policy, tar_verbosity, term_is_latin, term_ornaments, test_report,
perl5lib_verbosity, prefer_external_tar, trust_test_report_history, urllist_ping_external,
urllist_ping_verbos, use_prompt_default, use_sqlite, version_timeout, yaml_load_code,
yaml_module

LICENSE

CPAN::HandleConfig - internal configuration handling for CPAN.pm

"CLASS->safe_quote ITEM"

LICENSE

CPAN::Kwalify - Interface between CPAN.pm and Kwalify.pm

SYNOPSIS

DESCRIPTION

_validate(\$schema_name, \$data, \$file, \$doc), yaml(\$schema_name)

AUTHOR

LICENSE

CPAN::Meta - the distribution metadata for a CPAN dist

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

create

load_file

load_yaml_string

load_json_string

load_string

save

meta_spec_version

effective_prereqs

should_index_file

should_index_package

features

feature

as_struct

as_string

STRING DATA

LIST DATA

MAP DATA

CUSTOM DATA

BUGS

SEE ALSO

SUPPORT

Bugs / Feature Requests

Source Code

AUTHORS

CONTRIBUTORS

COPYRIGHT AND LICENSE

CPAN::Meta::Converter - Convert CPAN distribution metadata structures

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

convert

upgrade_fragment

BUGS

AUTHORS

COPYRIGHT AND LICENSE

CPAN::Meta::Feature - an optional feature provided by a CPAN distribution

VERSION

DESCRIPTION

METHODS

new

identifier

description

prereqs

BUGS

AUTHORS

COPYRIGHT AND LICENSE

CPAN::Meta::History - history of CPAN Meta Spec changes

VERSION

DESCRIPTION

HISTORY

Version 2

Version 1.4

Version 1.3

Version 1.2

Version 1.1

Version 1.0

AUTHORS

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CPAN::Meta::History::Meta_1_0 - Version 1.0 metadata specification for META.yml

PREFACE

DESCRIPTION

Format

Fields

name, version, license, perl, gpl, lgpl, artistic, bsd, open_source, unrestricted,

restrictive, distribution_type, requires, recommends, build_requires, conflicts,

dynamic_config, generated_by

Related Projects

DOAP

History

CPAN::Meta::History::Meta_1_1 - Version 1.1 metadata specification for META.yml

PREFACE

DESCRIPTION

Format

Fields

name, version, license, perl, gpl, lgpl, artistic, bsd, open_source, unrestricted,
restrictive, license_uri, distribution_type, private, requires, recommends,
build_requires, conflicts, dynamic_config, generated_by

Ingy's suggestions

short_description, description, maturity, author_id, owner_id, categorization,
keyword, chapter_id, URL for further information, namespaces

History

CPAN::Meta::History::Meta_1_2 - Version 1.2 metadata specification for META.yml

PREFACE

SYNOPSIS

DESCRIPTION

FORMAT

TERMINOLOGY

distribution, module

VERSION SPECIFICATIONS

HEADER

FIELDS

meta-spec

name

version

abstract

author

license

perl, gpl, lgpl, artistic, bsd, open_source, unrestricted, restrictive

distribution_type

requires

recommends

build_requires

conflicts

dynamic_config

private

provides

no_index

keywords

resources

homepage, license, bugtracker

generated_by

SEE ALSO

HISTORY

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December 9, 2003, December 15, 2003, July 26, 2005, August 23, 2005

CPAN::Meta::History::Meta_1_3 - Version 1.3 metadata specification for META.yml

PREFACE

SYNOPSIS

DESCRIPTION

FORMAT

TERMINOLOGY

distribution, module

HEADER

FIELDS

meta-spec

name

version

abstract

author

license

apache, artistic, bsd, gpl, lgpl, mit, mozilla, open_source, perl, restrictive,

unrestricted

distribution_type

requires

recommends

build_requires

conflicts

dynamic_config

private

provides

no_index

keywords

resources

homepage, license, bugtracker

generated_by

VERSION SPECIFICATIONS

SEE ALSO

HISTORY

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December 9, 2003, December 15, 2003, July 26, 2005, August 23, 2005

CPAN::Meta::History::Meta_1_4 - Version 1.4 metadata specification for META.yml

PREFACE

SYNOPSIS

DESCRIPTION

FORMAT

TERMINOLOGY

distribution, module

HEADER

FIELDS

meta-spec

name

version

abstract

author

license

apache, artistic, bsd, gpl, lgpl, mit, mozilla, open_source, perl, restrictive,

unrestricted

distribution_type

requires

recommends

build_requires

configure_requires

conflicts

dynamic_config

private

provides

no_index

keywords

resources

homepage, license, bugtracker

generated_by

VERSION SPECIFICATIONS

SEE ALSO

HISTORY

March 14, 2003 (Pi day), May 8, 2003, November 13, 2003, November 16, 2003, December

9, 2003, December 15, 2003, July 26, 2005, August 23, 2005, June 12, 2007

CPAN::Meta::Merge - Merging CPAN Meta fragments

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

merge(@fragments)

MERGE STRATEGIES

identical, set_addition, uniq_map, improvise

AUTHORS

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VERSION

DESCRIPTION

METHODS

new

requirements_for

phases

types_in

with_merged_prereqs

merged_requirements

as_string_hash

is_finalized

finalize

clone

BUGS

AUTHORS

COPYRIGHT AND LICENSE

CPAN::Meta::Requirements - a set of version requirements for a CPAN dist

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

add_minimum

add_maximum

add_exclusion

exact_version

add_requirements

accepts_module

clear_requirement

requirements_for_module

structured_requirements_for_module

required_modules

clone

is_simple

is_finalized

finalize

as_string_hash

add_string_requirement

>= 1.3, <= 1.3, != 1.3, > 1.3, < 1.3, >= 1.3, != 1.5, <= 2.0

from_string_hash

SUPPORT

Bugs / Feature Requests

Source Code

AUTHORS

CONTRIBUTORS

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CPAN::Meta::Spec - specification for CPAN distribution metadata

VERSION

SYNOPSIS

DESCRIPTION

TERMINOLOGY

distribution, module, package, consumer, producer, must, should, may, etc

DATA TYPES

Boolean

String

List

Map

License String

URL

Version

Version Range

STRUCTURE

REQUIRED FIELDS

version, url, stable, testing, unstable

OPTIONAL FIELDS

file, directory, package, namespace, description, prereqs, file, version,

homepage, license, bugtracker, repository

DEPRECATED FIELDS

VERSION NUMBERS

Version Formats

Decimal versions, Dotted-integer versions

Version Ranges

PREREQUISITES

Prereq Spec

configure, build, test, runtime, develop, requires, recommends, suggests,
conflicts

Merging and Resolving Prerequisites

SERIALIZATION

NOTES FOR IMPLEMENTORS

Extracting Version Numbers from Perl Modules

Comparing Version Numbers

Prerequisites for dynamically configured distributions

Indexing distributions a la PAUSE

SEE ALSO

HISTORY

AUTHORS

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CPAN::Meta::Validator - validate CPAN distribution metadata structures

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

is_valid

errors

Check Methods

Validator Methods

BUGS

AUTHORS

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CPAN::Meta::YAML - Read and write a subset of YAML for CPAN Meta files

VERSION

SYNOPSIS

DESCRIPTION

SUPPORT

SEE ALSO

AUTHORS

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SYNOPSIS

DESCRIPTION

new(LOCAL_FILE_NAME)

continents()

countries([CONTINENTS])

mirrors([COUNTRIES])

get_mirrors_by_countries([COUNTRIES])

get_mirrors_by_continents([CONTINENTS])

get_countries_by_continents([CONTINENTS])

default_mirror

best_mirrors

get_n_random_mirrors_by_continents(N, [CONTINENTS])

get_mirrors_timings(MIRROR_LIST, SEEN, CALLBACK, %ARGS);

find_best_continents(HASH_REF);

AUTHOR

LICENSE

CPAN::Nox - Wrapper around CPAN.pm without using any XS module

SYNOPSIS

DESCRIPTION

LICENSE

SEE ALSO

CPAN::Plugin - Base class for CPAN shell extensions

SYNOPSIS

DESCRIPTION

Alpha Status

How Plugins work?

METHODS

plugin_requires

distribution_object

distribution

distribution_info

build_dir

is_xs

AUTHOR

CPAN::Plugin::Specfile - Proof of concept implementation of a trivial CPAN::Plugin

SYNOPSIS

DESCRIPTION

OPTIONS

AUTHOR

CPAN::Queue - internal queue support for CPAN.pm

LICENSE

CPAN::Tarzip - internal handling of tar archives for CPAN.pm

LICENSE

CPAN::Version - utility functions to compare CPAN versions

SYNOPSIS

DESCRIPTION

LICENSE

Carp - alternative warn and die for modules

SYNOPSIS

DESCRIPTION

Forcing a Stack Trace

Stack Trace formatting

GLOBAL VARIABLES

\$Carp::MaxEvalLen

\$Carp::MaxArgLen

\$Carp::MaxArgNums

\$Carp::Verbose

\$Carp::RefArgFormatter

@CARP_NOT

%Carp::Internal

%Carp::CarpInternal

\$Carp::CarpLevel

BUGS

SEE ALSO

CONTRIBUTING

AUTHOR

COPYRIGHT

LICENSE

Class::Struct - declare struct-like datatypes as Perl classes

SYNOPSIS

DESCRIPTION

The "struct()" function

Class Creation at Compile Time

Element Types and Accessor Methods

Scalar ('\$ or '\$*'), Array ('@' or '@*'), Hash ('%' or '%*'), Class ('Class_Name'
or '*Class_Name')

Initializing with "new"

EXAMPLES

Example 1, Example 2, Example 3

Author and Modification History

Compress::Raw::Bzip2 - Low-Level Interface to bzip2 compression library

SYNOPSIS

DESCRIPTION

Compression

```
($z, $status) = new Compress::Raw::Bzip2 $appendOutput, $blockSize100k, $workfactor;
```

```
    $appendOutput, $blockSize100k, $workfactor
```

```
$status = $bz->bzdeflate($input, $output);
```

```
$status = $bz->bzflush($output);
```

```
$status = $bz->bzclose($output);
```

Example

Uncompression

```
($z, $status) = new Compress::Raw::Bunzip2 $appendOutput, $consumeInput, $small,  
$verbosity, $limitOutput;  
$appendOutput, $consumeInput, $small, $limitOutput, $verbosity  
$status = $z->bzinflate($input, $output);
```

Misc

```
my $version = Compress::Raw::Bzip2::bzlibversion();
```

Constants

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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Compress::Raw::Zlib - Low-Level Interface to zlib compression library

SYNOPSIS

DESCRIPTION

Compress::Raw::Zlib::Deflate

```
($d, $status) = new Compress::Raw::Zlib::Deflate( [OPT] )  
    -Level, -Method, -WindowBits, -MemLevel, -Strategy, -Dictionary, -Bufsize,  
    -AppendOutput, -CRC32, -ADLER32  
$status = $d->deflate($input, $output)  
$status = $d->flush($output [, $flush_type])  
$status = $d->deflateReset()  
$status = $d->deflateParams([OPT])  
    -Level, -Strategy, -BufSize  
$status = $d->deflateTune($good_length, $max_lazy, $nice_length, $max_chain)  
$d->dict_adler()  
$d->crc32()  
$d->adler32()  
$d->msg()  
$d->total_in()  
$d->total_out()  
$d->get_Strategy()
```

`$d->get_Level()`

`$d->get_BufSize()`

Example

Compress::Raw::Zlib::Inflate

`($i, $status) = new Compress::Raw::Zlib::Inflate( [OPT] )`

`-WindowBits, -Bufsize, -Dictionary, -AppendOutput, -CRC32, -ADLER32,`

`-ConsumeInput, -LimitOutput`

`$status = $i->inflate($input, $output [,$eof])`

`$status = $i->inflateSync($input)`

`$status = $i->inflateReset()`

`$i->dict_adler()`

`$i->crc32()`

`$i->adler32()`

`$i->msg()`

`$i->total_in()`

`$i->total_out()`

`$d->get_BufSize()`

Examples

CHECKSUM FUNCTIONS

Misc

`my $version = Compress::Raw::Zlib::zlib_version();`

`my $flags = Compress::Raw::Zlib::zlibCompileFlags();`

The LimitOutput option.

ACCESSING ZIP FILES

FAQ

Compatibility with Unix compress/uncompress.

Accessing .tar.Z files

Zlib Library Version Support

CONSTANTS

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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Compress::Zlib - Interface to zlib compression library

SYNOPSIS

DESCRIPTION

Notes for users of Compress::Zlib version 1

GZIP INTERFACE

```
$gz = gzopen($filename, $mode), $gz = gzopen($filehandle, $mode), $bytesread =  
$gz->gzread($buffer [, $size]) ;; $bytesread = $gz->gzreadline($line) ;; $byteswritten  
= $gz->gzwrite($buffer) ;; $status = $gz->gzflush($flush_type) ;; $offset =  
$gz->gztell() ;; $status = $gz->gzseek($offset, $whence) ;; $gz->gzclose,  
$gz->gzsetparams($level, $strategy, $level, $strategy, $gz->gzerror, $gzerrno
```

Examples

```
Compress::Zlib::memGzip
```

```
Compress::Zlib::memGunzip
```

COMPRESS/UNCOMPRESS

```
$dest = compress($source [, $level] ) ;; $dest = uncompress($source) ;
```

Deflate Interface

```
($d, $status) = deflateInit( [OPT] )  
-Level, -Method, -WindowBits, -MemLevel, -Strategy, -Dictionary, -Bufsize  
($out, $status) = $d->deflate($buffer)  
($out, $status) = $d->flush() =head2 ($out, $status) = $d->flush($flush_type)  
$status = $d->deflateParams([OPT])  
-Level, -Strategy  
$d->dict_adler()  
$d->msg()  
$d->total_in()  
$d->total_out()
```

Example

Inflate Interface

```
($i, $status) = inflateInit()  
-WindowBits, -Bufsize, -Dictionary  
($out, $status) = $i->inflate($buffer)  
$status = $i->inflateSync($buffer)
```


`$i->dict_adler()`

`$i->msg()`

`$i->total_in()`

`$i->total_out()`

Example

CHECKSUM FUNCTIONS

Misc

`my $version = Compress::Zlib::zlib_version();`

CONSTANTS

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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Config, =for comment Generated by configpm. Any changes made here will be lost!

SYNOPSIS

DESCRIPTION

`myconfig()`, `config_sh()`, `config_re($regex)`, `config_vars(@names)`, `bincompat_options()`,
`non_bincompat_options()`, `compile_date()`, `local_patches()`, `header_files()`

EXAMPLE

WARNING

GLOSSARY

_ "a", "_exe", "_o"

a "afs", "afsroot", "alignbytes", "aphostname", "api_revision", "api_subversion",
"api_version", "api_versionstring", "ar", "archlib", "archlibexp", "archname",
"archname64", "archobjs", "asctime_r_proto", "awk"

b "baserev", "bash", "bin", "bin_ELF", "binexp", "bison", "byacc", "byteorder"

c "c", "castflags", "cat", "cc", "cccdlflags", "ccdlflags", "ccflags",
"ccflags_uselargefiles", "ccname", "ccsymbols", "ccversion", "cf_by", "cf_email",
"cf_time", "charbits", "charsize", "chgrp", "chmod", "chown", "clocktype", "comm",
"compiler_warning", "compress", "config_arg0", "config_argc", "config_args",
"contains", "cp", "cpio", "cpp", "cpp_stuff", "cppccsymbols", "cppflags", "cpplast",
"cppminus", "cpprun", "cppstdin", "cppsymbols", "crypt_r_proto", "cryptlib", "csh",

"ctermid_r_proto", "ctime_r_proto"

d "d__fwalk", "d_accept4", "d_access", "d_accessx", "d_acosh", "d_aintl", "d_alarm",
"d_archlib", "d_asctime64", "d_asctime_r", "d_asinh", "d_atanh", "d_atolf", "d_atoll",
"d_attribute_always_inline", "d_attribute_deprecated", "d_attribute_format",
"d_attribute_malloc", "d_attribute_nonnull", "d_attribute_noreturn",
"d_attribute_pure", "d_attribute_unused", "d_attribute_warn_unused_result",
"d_backtrace", "d_bsd", "d_bsdgetpgrp", "d_bsdsetpgrp", "d_builtin_add_overflow",
"d_builtin_choose_expr", "d_builtin_expect", "d_builtin_mul_overflow",
"d_builtin_sub_overflow", "d_c99_variadic_macros", "d_casti32", "d_castneg", "d_cbrt",
"d_chown", "d_chroot", "d_chsize", "d_class", "d_clearenv", "d_closedir",
"d_msgsghdr_s", "d_copysign", "d_copysignl", "d_cplusplus", "d_crypt", "d_crypt_r",
"d_csh", "d_ctermid", "d_ctermid_r", "d_ctime64", "d_ctime_r", "d_cuserid",
"d_dbm_initproto", "d_difftime", "d_difftime64", "d_dir_dd_fd", "d_dirfd",
"d_dirnamlen", "d_dladdr", "d_dLError", "d_dlopen", "d_dlsymun", "d_dosuid",
"d_double_has_inf", "d_double_has_nan", "d_double_has_negative_zero",
"d_double_has_subnormals", "d_double_style_cray", "d_double_style_ibm",
"d_double_style_ieee", "d_double_style_vax", "d_drand48_r", "d_drand48proto",
"d_dup2", "d_dup3", "d_duplocale", "d_eaccess", "d_endgrent", "d_endgrent_r",
"d_endhent", "d_endhostent_r", "d_endnrent", "d_endnetent_r", "d_endpent",
"d_endprotoent_r", "d_endpwent", "d_endpwent_r", "d_endsent", "d_endservent_r",
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"d_stdio_base", "d_stdstdio", "d_strcoll", "d_strerror_l", "d_strerror_r",
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 "freetype", "from", "full_ar", "full_csh", "full_sed"
 g "gccansipedantic", "gccosandvers", "gccversion", "getgrent_r_proto",
 "getgrgid_r_proto", "getgrnam_r_proto", "gethostbyaddr_r_proto",
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 "getpwent_r_proto", "getpwnam_r_proto", "getpwuid_r_proto", "getservbyname_r_proto",
 "getservbyport_r_proto", "getservent_r_proto", "getspnam_r_proto", "gidformat",
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 h "h_fcntl", "h_sysfile", "hint", "hostcat", "hostgenerate", "hostosname", "hostperl",
 "html1dir", "html1direxp", "html3dir", "html3direxp"
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 k "known_extensions", "ksh"
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 m "mail", "mailx", "make", "make_set_make", "mallocobj", "malloccsrc", "malloctype",
 "man1dir", "man1direxp", "man1ext", "man3dir", "man3direxp", "man3ext", "mips_type",
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 "nvfformat", "nvFUformat", "nvgformat", "nvGUformat", "nvmantbits", "nvsize", "nvtype"
 o "o_nonblock", "obj_ext", "old_pthread_create_joinable", "optimize", "orderlib",
 "osname", "osvers", "otherlibdirs"
 p "package", "pager", "passcat", "patchlevel", "path_sep", "perl", "perl5"
 P "PERL_API_REVISION", "PERL_API_SUBVERSION", "PERL_API_VERSION", "PERL_CONFIG_SH",
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 t "tail", "tar", "targetarch", "targetdir", "targetenv", "targethost", "targetmkdir",

"targetport", "targetsh", "tbl", "tee", "test", "timeincl", "timetype",
 "tmpnam_r_proto", "to", "touch", "tr", "trnl", "troff", "ttyname_r_proto"
 u "u16size", "u16type", "u32size", "u32type", "u64size", "u64type", "u8size", "u8type",
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 "vendorman3dir", "vendorman3direxp", "vendorprefix", "vendorprefixexp",
 "vendorscript", "vendorscriptexp", "version", "version_patchlevel_string",
 "versiononly", "vi"
 x "xlibpth"
 y "yacc", "yaccflags"
 z "zcat", "zip"

GIT DATA

NOTE

Config::Extensions - hash lookup of which core extensions were built.

SYNOPSIS

DESCRIPTION

dynamic, nonxs, static

AUTHOR

Config::Perl::V - Structured data retrieval of perl -V output

SYNOPSIS

DESCRIPTION

\$conf = myconfig ()

\$conf = plv2hash (\$text [, ...])

\$info = summary ([\${conf}])

\$md5 = signature ([\${conf}])

The hash structure

build, osname, stamp, options, derived, patches, environment, config, inc

REASONING

BUGS

TODO

AUTHOR

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Cwd - get pathname of current working directory

SYNOPSIS

DESCRIPTION

getcwd and friends

getcwd, cwd, fastcwd, fastgetcwd, getdcwd

abs_path and friends

abs_path, realpath, fast_abs_path

\$ENV{PWD}

NOTES

AUTHOR

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SEE ALSO

DB - programmatic interface to the Perl debugging API

SYNOPSIS

DESCRIPTION

Global Variables

\$DB::sub, %DB::sub, \$DB::single, \$DB::signal, \$DB::trace, @DB::args,
@DB::dbline, %DB::dbline, \$DB::package, \$DB::filename, \$DB::subname,
\$DB::lineno

API Methods

CLIENT->register(), CLIENT->evalcode(STRING), CLIENT->skippkg('D::hide'),
CLIENT->run(), CLIENT->step(), CLIENT->next(), CLIENT->done()

Client Callback Methods

CLIENT->init(), CLIENT->prestop([STRING]), CLIENT->stop(), CLIENT->idle(),

CLIENT->poststop([STRING]), CLIENT->evalcode(STRING), CLIENT->cleanup(),

CLIENT->output(LIST)

BUGS

AUTHOR

DBM_Filter -- Filter DBM keys/values

SYNOPSIS

DESCRIPTION

What is a DBM Filter?

So what's new?

METHODS

\$db->Filter_Push() / \$db->Filter_Key_Push() / \$db->Filter_Value_Push()

Filter_Push, Filter_Key_Push, Filter_Value_Push

\$db->Filter_Pop()

\$db->Filtered()

Writing a Filter

Immediate Filters

Canned Filters

"name", params

Filters Included

utf8, encode, compress, int32, null

NOTES

Maintain Round Trip Integrity

Don't mix filtered & non-filtered data in the same database file.

EXAMPLE

SEE ALSO

AUTHOR

DBM_Filter::compress - filter for DBM_Filter

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

DBM_Filter::encode - filter for DBM_Filter

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

DBM_Filter::int32 - filter for DBM_Filter

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

DBM_Filter::null - filter for DBM_Filter

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

DBM_Filter::utf8 - filter for DBM_Filter

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

DB_File - Perl5 access to Berkeley DB version 1.x

SYNOPSIS

DESCRIPTION

DB_HASH, DB_BTREE, DB_RECNO

Using DB_File with Berkeley DB version 2 or greater

Interface to Berkeley DB

Opening a Berkeley DB Database File

Default Parameters

In Memory Databases

DB_HASH

A Simple Example

DB_BTREE

Changing the BTREE sort order

Handling Duplicate Keys

The get_dup() Method

The find_dup() Method

The del_dup() Method

Matching Partial Keys

DB_RECNO

The 'bval' Option

A Simple Example

Extra RECNO Methods

```
$X->push(list) ;, $value = $X->pop ;, $X->shift, $X->unshift(list) ;, $X->length,  
$X->splice(offset, length, elements);
```

Another Example

THE API INTERFACE

```
$status = $X->get($key, $value [, $flags]) ;, $status = $X->put($key, $value [,  
$flags]) ;, $status = $X->del($key [, $flags]) ;, $status = $X->fd ;, $status =  
$X->seq($key, $value, $flags) ;, $status = $X->sync([$flags]) ;
```

DBM FILTERS

DBM Filter Low-level API

```
filter_store_key, filter_store_value, filter_fetch_key, filter_fetch_value
```

The Filter

An Example -- the NULL termination problem.

Another Example -- Key is a C int.

HINTS AND TIPS

Locking: The Trouble with fd

Safe ways to lock a database

```
Tie::DB_Lock, Tie::DB_LockFile, DB_File::Lock
```

Sharing Databases With C Applications

The untie() Gotcha

COMMON QUESTIONS

Why is there Perl source in my database?

How do I store complex data structures with DB_File?

What does "wide character in subroutine entry" mean?

What does "Invalid Argument" mean?

What does "Bareword 'DB_File' not allowed" mean?

REFERENCES

HISTORY

BUGS

SUPPORT

AVAILABILITY

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SEE ALSO

AUTHOR

Data::Dumper - stringified perl data structures, suitable for both printing and "eval"

SYNOPSIS

DESCRIPTION

Methods

```
PACKAGE->new(ARRAYREF [, ARRAYREF]), $OBJ->Dump or PACKAGE->Dump(ARRAYREF [,
ARRAYREF]), $OBJ->Seen([HASHREF]), $OBJ->Values([ARRAYREF]),
$OBJ->Names([ARRAYREF]), $OBJ->Reset
```

Functions

```
Dumper(LIST)
```

Configuration Variables or Methods

Exports

```
Dumper
```

EXAMPLES

BUGS

NOTE

AUTHOR

VERSION

SEE ALSO

Devel::PPPort - Perl/Pollution/Portability

SYNOPSIS

Start using Devel::PPPort for XS projects

DESCRIPTION

Why use ppport.h?

How to use ppport.h

Running ppport.h

FUNCTIONS

WriteFile

GetFileContents

COMPATIBILITY

Provided Perl compatibility API

Supported Perl API, sorted by version

perl 5.33.1, perl 5.33.0, perl 5.32.0, perl 5.31.7, perl 5.31.6, perl 5.31.5, perl 5.31.4, perl 5.31.3, perl 5.29.10, perl 5.29.9, perl 5.27.11, perl 5.27.9, perl 5.27.8, perl 5.27.7, perl 5.27.6, perl 5.27.5, perl 5.27.4, perl 5.27.3, perl 5.27.2, perl 5.27.1, perl 5.25.11, perl 5.25.10, perl 5.25.9, perl 5.25.8, perl 5.25.7, perl 5.25.6, perl 5.25.5, perl 5.25.4, perl 5.25.3, perl 5.25.2, perl 5.25.1, perl 5.24.0, perl 5.23.9, perl 5.23.8, perl 5.23.6, perl 5.23.5, perl 5.23.2, perl 5.23.0, perl 5.21.10, perl 5.21.9, perl 5.21.8, perl 5.21.7, perl 5.21.6, perl 5.21.5, perl 5.21.4, perl 5.21.3, perl 5.21.2, perl 5.21.1, perl 5.19.10, perl 5.19.9, perl 5.19.7, perl 5.19.5, perl 5.19.4, perl 5.19.3, perl 5.19.2, perl 5.19.1, perl 5.18.0, perl 5.17.11, perl 5.17.8, perl 5.17.7, perl 5.17.6, perl 5.17.5, perl 5.17.4, perl 5.17.2, perl 5.17.1, perl 5.16.0, perl 5.15.8, perl 5.15.7, perl 5.15.6, perl 5.15.4, perl 5.15.3, perl 5.15.2, perl 5.15.1, perl 5.13.10, perl 5.13.9, perl 5.13.8, perl 5.13.7, perl 5.13.6, perl 5.13.5, perl 5.13.4, perl 5.13.3, perl 5.13.2, perl 5.13.1, perl 5.13.0, perl 5.11.5, perl 5.11.4, perl 5.11.2, perl 5.11.1, perl 5.11.0, perl 5.10.1, perl 5.10.0, perl 5.9.5, perl 5.9.4, perl 5.9.3, perl 5.9.2, perl 5.9.1, perl 5.9.0, perl 5.8.8, perl 5.8.3, perl 5.8.1, perl 5.8.0, perl 5.7.3, perl 5.7.2, perl 5.7.1, perl 5.6.1, perl 5.6.0, perl 5.005_03, perl 5.005, perl 5.004_05, perl 5.004, perl 5.003_07 (or maybe earlier), Backported version unknown

BUGS

AUTHORS

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SEE ALSO

Devel::Peek - A data debugging tool for the XS programmer

SYNOPSIS

DESCRIPTION

Runtime debugging

Memory footprint debugging

EXAMPLES

A simple scalar string

A simple scalar number

A simple scalar with an extra reference

A reference to a simple scalar

A reference to an array

A reference to a hash

Dumping a large array or hash

A reference to an SV which holds a C pointer

A reference to a subroutine

EXPORTS

BUGS

AUTHOR

SEE ALSO

Devel::SelfStubber - generate stubs for a SelfLoading module

SYNOPSIS

DESCRIPTION

Digest - Modules that calculate message digests

SYNOPSIS

DESCRIPTION

binary, hex, base64

OO INTERFACE

```
$ctx = Digest->XXX($arg,...), $ctx = Digest->new(XXX => $arg,...), $ctx =  
Digest::XXX->new($arg,...), $other_ctx = $ctx->clone, $ctx->reset, $ctx->add( $data ),  
$ctx->add( $chunk1, $chunk2, ... ), $ctx->addfile( $io_handle ), $ctx->add_bits(  
$data, $nbits ), $ctx->add_bits( $bitstring ), $ctx->digest, $ctx->hexdigest,  
$ctx->b64digest, $ctx->base64_padded_digest
```

Digest speed

SEE ALSO

AUTHOR

Digest::MD5 - Perl interface to the MD5 Algorithm

SYNOPSIS

DESCRIPTION

FUNCTIONS

md5(\$data,...), md5_hex(\$data,...), md5_base64(\$data,...)

METHODS

\$md5 = Digest::MD5->new, \$md5->reset, \$md5->clone, \$md5->add(\$data,...),
\$md5->addfile(\$io_handle), \$md5->add_bits(\$data, \$nbits), \$md5->add_bits(\$bitstring),
\$md5->digest, \$md5->hexdigest, \$md5->b64digest, @ctx = \$md5->context,
\$md5->context(@ctx)

EXAMPLES

SEE ALSO

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AUTHORS

Digest::SHA - Perl extension for SHA-1/224/256/384/512

SYNOPSIS

SYNOPSIS (HMAC-SHA)

ABSTRACT

DESCRIPTION

UNICODE AND SIDE EFFECTS

NIST STATEMENT ON SHA-1

PADDING OF BASE64 DIGESTS

EXPORT

EXPORTABLE FUNCTIONS

sha1(\$data, ...), sha224(\$data, ...), sha256(\$data, ...), sha384(\$data, ...),
sha512(\$data, ...), sha512224(\$data, ...), sha512256(\$data, ...), sha1_hex(\$data,
...), sha224_hex(\$data, ...), sha256_hex(\$data, ...), sha384_hex(\$data, ...),
sha512_hex(\$data, ...), sha512224_hex(\$data, ...), sha512256_hex(\$data, ...),
sha1_base64(\$data, ...), sha224_base64(\$data, ...), sha256_base64(\$data, ...),
sha384_base64(\$data, ...), sha512_base64(\$data, ...), sha512224_base64(\$data, ...),
sha512256_base64(\$data, ...), new(\$alg), reset(\$alg), hashsize, algorithm, clone,
add(\$data, ...), add_bits(\$data, \$nbits), add_bits(\$bits), addfile(*FILE),
addfile(\$filename [, \$mode]), getstate, putstate(\$str), dump(\$filename),
load(\$filename), digest, hexdigest, b64digest, hmac_sha1(\$data, \$key),
hmac_sha224(\$data, \$key), hmac_sha256(\$data, \$key), hmac_sha384(\$data, \$key),
hmac_sha512(\$data, \$key), hmac_sha512224(\$data, \$key), hmac_sha512256(\$data, \$key),


```
hmac_sha1_hex($data, $key), hmac_sha224_hex($data, $key), hmac_sha256_hex($data,  
$key), hmac_sha384_hex($data, $key), hmac_sha512_hex($data, $key),  
hmac_sha512224_hex($data, $key), hmac_sha512256_hex($data, $key),  
hmac_sha1_base64($data, $key), hmac_sha224_base64($data, $key),  
hmac_sha256_base64($data, $key), hmac_sha384_base64($data, $key),  
hmac_sha512_base64($data, $key), hmac_sha512224_base64($data, $key),  
hmac_sha512256_base64($data, $key)
```

SEE ALSO

AUTHOR

ACKNOWLEDGMENTS

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Digest::base - Digest base class

SYNOPSIS

DESCRIPTION

SEE ALSO

Digest::file - Calculate digests of files

SYNOPSIS

DESCRIPTION

```
digest_file( $file, $algorithm, [$arg,...] ), digest_file_hex( $file, $algorithm,  
[$arg,...] ), digest_file_base64( $file, $algorithm, [$arg,...] )
```

SEE ALSO

DirHandle - (obsolete) supply object methods for directory handles

SYNOPSIS

DESCRIPTION

Dumpvalue - provides screen dump of Perl data.

SYNOPSIS

DESCRIPTION

Creation

```
"arrayDepth", "hashDepth", "compactDump", "veryCompact", "globPrint",  
"dumpDBFiles", "dumpPackages", "dumpReused", "tick", "quoteHighBit", "printUndef",  
"usageOnly", unctrl, subdump, bareStringify, quoteHighBit, stopDbSignal
```

Methods

```
dumpValue, dumpValues, stringify, dumpvars, set_quote, set_unctrl, compactDump,
```

veryCompact, set, get

DynaLoader - Dynamically load C libraries into Perl code

SYNOPSIS

DESCRIPTION

@dl_library_path, @dl_resolve_using, @dl_require_symbols, @dl_librefs, @dl_modules,
@dl_shared_objects, dl_error(), \$dl_debug, \$dl_dlex, dl_findfile(), dl_expandspec(),
dl_load_file(), dl_unload_file(), dl_load_flags(), dl_find_symbol(),
dl_find_symbol_anywhere(), dl_undef_symbols(), dl_install_xsub(), bootstrap()

AUTHOR

Encode - character encodings in Perl

SYNOPSIS

Table of Contents

Encode::Alias - Alias definitions to encodings, Encode::Encoding - Encode

Implementation Base Class, Encode::Supported - List of Supported Encodings,

Encode::CN - Simplified Chinese Encodings, Encode::JP - Japanese Encodings,

Encode::KR - Korean Encodings, Encode::TW - Traditional Chinese Encodings

DESCRIPTION

TERMINOLOGY

THE PERL ENCODING API

Basic methods

Listing available encodings

Defining Aliases

Finding IANA Character Set Registry names

Encoding via PerlIO

Handling Malformed Data

List of CHECK values

perlqq mode (CHECK = Encode::FB_PERLQQ), HTML charref mode (CHECK =

Encode::FB_HTMLCREF), XML charref mode (CHECK = Encode::FB_XMLCREF)

coderef for CHECK

Defining Encodings

The UTF8 flag

Goal #1:, Goal #2:, Goal #3:, Goal #4:

Messing with Perl's Internals

UTF-8 vs. utf8 vs. UTF8

SEE ALSO

MAINTAINER

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Encode::Alias - alias definitions to encodings

SYNOPSIS

DESCRIPTION

As a simple string, As a qr// compiled regular expression, e.g.: As a code reference,
e.g.:

Alias overloading

SEE ALSO

Encode::Byte - Single Byte Encodings

SYNOPSIS

ABSTRACT

DESCRIPTION

SEE ALSO

Encode::CJKConstants -- Internally used by Encode::??::ISO_2022_*

Encode::CN - China-based Chinese Encodings

SYNOPSIS

DESCRIPTION

NOTES

BUGS

SEE ALSO

Encode::CN::HZ -- internally used by Encode::CN

Encode::Config -- internally used by Encode

Encode::EBCDIC - EBCDIC Encodings

SYNOPSIS

ABSTRACT

DESCRIPTION

SEE ALSO

Encode::Encoder -- Object Oriented Encoder

SYNOPSIS

ABSTRACT

Description

Predefined Methods

```
$e = Encode::Encoder->new([$data, $encoding],, encoder(), $e->data([$data]),  
$e->encoding([$encoding]), $e->bytes([$encoding])
```

Example: base64 transcoder

Operator Overloading

SEE ALSO

Encode::Encoding - Encode Implementation Base Class

SYNOPSIS

DESCRIPTION

Methods you should implement

```
->encode($string [,$check]), ->decode($octets [,$check]),  
->cat_decode($destination, $octets, $offset, $terminator [,$check])
```

Other methods defined in Encode::Encodings

```
->name, ->mime_name, ->renew, ->renewed, ->perlio_ok(), ->needs_lines()
```

Example: Encode::ROT13

Why the heck Encode API is different?

Compiled Encodings

SEE ALSO

Scheme 1, Scheme 2, Other Schemes

Encode::GSM0338 -- ETSI GSM 03.38 Encoding

SYNOPSIS

DESCRIPTION

Septets

BUGS

SEE ALSO

Encode::Guess -- Guesses encoding from data

SYNOPSIS

ABSTRACT

DESCRIPTION

```
Encode::Guess->set_suspects, Encode::Guess->add_suspects, Encode::decode("Guess" ...),  
Encode::Guess->guess($data), guess_encoding($data, [, list of suspects])
```

CAVEATS

TO DO

SEE ALSO

Encode::JP - Japanese Encodings

SYNOPSIS

ABSTRACT

DESCRIPTION

Note on ISO-2022-JP(-1)?

BUGS

SEE ALSO

Encode::JP::H2Z -- internally used by Encode::JP::2022_JP*

Encode::JP::JIS7 -- internally used by Encode::JP

Encode::KR - Korean Encodings

SYNOPSIS

DESCRIPTION

BUGS

SEE ALSO

Encode::KR::2022_KR -- internally used by Encode::KR

Encode::MIME::Header -- MIME encoding for an unstructured email header

SYNOPSIS

ABSTRACT

DESCRIPTION

BUGS

AUTHORS

SEE ALSO

Encode::MIME::Name, Encode::MIME::NAME -- internally used by Encode

SEE ALSO

Encode::PerlIO -- a detailed document on Encode and PerlIO

Overview

How does it work?

Line Buffering

How can I tell whether my encoding fully supports PerlIO ?

SEE ALSO

Encode::Supported -- Encodings supported by Encode

DESCRIPTION

Encoding Names

Supported Encodings

Built-in Encodings

Encode::Unicode -- other Unicode encodings

Encode::Byte -- Extended ASCII

ISO-8859 and corresponding vendor mappings, KOI8 - De Facto Standard for the Cyrillic world

gsm0338 - Hentai Latin 1

gsm0338 support before 2.19

CJK: Chinese, Japanese, Korean (Multibyte)

Encode::CN -- Continental China, Encode::JP -- Japan, Encode::KR -- Korea,

Encode::TW -- Taiwan, Encode::HanExtra -- More Chinese via CPAN, Encode::JIS2K --

JIS X 0213 encodings via CPAN

Miscellaneous encodings

Encode::EBCDIC, Encode::Symbols, Encode::MIME::Header, Encode::Guess

Unsupported encodings

ISO-2022-JP-2 [RFC1554], ISO-2022-CN [RFC1922], Various HP-UX encodings,

Cyrillic encoding ISO-IR-111, ISO-8859-8-1 [Hebrew], ISIRI 3342, Iran

System, ISIRI 2900 [Farsi], Thai encoding TCVN, Vietnamese encodings VPS,

Various Mac encodings, (Mac) Indic encodings

Encoding vs. Charset -- terminology

Encoding Classification (by Anton Tagunov and Dan Kogai)

Microsoft-related naming mess

KS_C_5601-1987, GB2312, Big5, Shift_JIS

Glossary

character repertoire, coded character set (CCS), character encoding scheme (CES),

charset (in MIME context), EUC, ISO-2022, UCS, UCS-2, Unicode, UTF, UTF-16

See Also

References

ECMA, ECMA-035 (eq "ISO-2022"), IANA, Assigned Charset Names by IANA, ISO, RFC, UC,

Unicode Glossary

Other Notable Sites

czyborra.com, CJK.inf, Jungshik Shin's Hangul FAQ, debian.org: "Introduction to i18n"

Offline sources

"CJKV Information Processing" by Ken Lunde

Encode::Symbol - Symbol Encodings

SYNOPSIS

ABSTRACT

DESCRIPTION

SEE ALSO

Encode::TW - Taiwan-based Chinese Encodings

SYNOPSIS

DESCRIPTION

NOTES

BUGS

SEE ALSO

Encode::Unicode -- Various Unicode Transformation Formats

SYNOPSIS

ABSTRACT

<<http://www.unicode.org/glossary/>> says:, Quick Reference

Size, Endianness, and BOM

by size

by endianness

BOM as integer when fetched in network byte order

Surrogate Pairs

Error Checking

SEE ALSO

Encode::Unicode::UTF7 -- UTF-7 encoding

SYNOPSIS

ABSTRACT

In Practice

SEE ALSO

English - use nice English (or awk) names for ugly punctuation variables

SYNOPSIS

DESCRIPTION

PERFORMANCE

Env - perl module that imports environment variables as scalars or arrays

SYNOPSIS

DESCRIPTION

LIMITATIONS

AUTHOR

Errno - System errno constants

SYNOPSIS

DESCRIPTION

CAVEATS

AUTHOR

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Exporter - Implements default import method for modules

SYNOPSIS

DESCRIPTION

How to Export

Selecting What to Export

How to Import

```
"use YourModule;"; "use YourModule ();"; "use YourModule qw(...);"
```

Advanced Features

Specialised Import Lists

Exporting Without Using Exporter's import Method

Exporting Without Inheriting from Exporter

Module Version Checking

Managing Unknown Symbols

Tag Handling Utility Functions

Generating Combined Tags

"AUTOLOAD"ed Constants

Good Practices

Declaring @EXPORT_OK and Friends

Playing Safe

What Not to Export

SEE ALSO

LICENSE

Exporter::Heavy - Exporter guts

SYNOPSIS

DESCRIPTION

ExtUtils::CBuilder - Compile and link C code for Perl modules

SYNOPSIS

DESCRIPTION

METHODS

new, have_compiler, have_cplusplus, compile, "object_file", "include_dirs",
"extra_compiler_flags", "C++", link, lib_file, module_name, extra_linker_flags,
link_executable, exe_file, object_file, lib_file, exe_file, prelink, need_prelink,
extra_link_args_after_prelink

TO DO

HISTORY

SUPPORT

AUTHOR

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SEE ALSO

ExtUtils::CBuilder::Platform::Windows - Builder class for Windows platforms

DESCRIPTION

AUTHOR

SEE ALSO

ExtUtils::Command - utilities to replace common UNIX commands in Makefiles etc.

SYNOPSIS

DESCRIPTION

FUNCTIONS

cat

eqtime

rm_rf

rm_f

touch

mv

cp

chmod

mkpath

test_f

test_d

dos2unix

SEE ALSO

AUTHOR

ExtUtils::Command::MM - Commands for the MM's to use in Makefiles

SYNOPSIS

DESCRIPTION

test_harness

pod2man

warn_if_old_packlist

perllocal_install

uninstall

test_s

cp_nonempty

ExtUtils::Constant - generate XS code to import C header constants

SYNOPSIS

DESCRIPTION

USAGE

IV, UV, NV, PV, PVN, SV, YES, NO, UNDEF

FUNCTIONS

constant_types

XS_constant PACKAGE, TYPES, XS_SUBNAME, C_SUBNAME

autoload PACKAGE, VERSION, AUTOLOADER

WriteMakefileSnippet

WriteConstants ATTRIBUTE => VALUE [, ...], NAME, DEFAULT_TYPE, BREAKOUT_AT, NAMES,

PROXYSUBS, C_FH, C_FILE, XS_FH, XS_FILE, XS_SUBNAME, C_SUBNAME

AUTHOR

ExtUtils::Constant::Base - base class for ExtUtils::Constant objects

SYNOPSIS

DESCRIPTION

USAGE

header

memEQ_clause args_hashref

dump_names arg_hashref, ITEM..

assign arg_hashref, VALUE..

return_clause arg_hashref, ITEM

switch_clause arg_hashref, NAMELEN, ITEMHASH, ITEM..

params WHAT

dogfood arg_hashref, ITEM..

normalise_items args, default_type, seen_types, seen_items, ITEM..

C_constant arg_hashref, ITEM.., name, type, value, macro, default, pre, post, def_pre,

def_post, utf8, weight

BUGS

AUTHOR

ExtUtils::Constant::Utils - helper functions for ExtUtils::Constant

SYNOPSIS

DESCRIPTION

USAGE

C_stringify NAME

perl_stringify NAME

AUTHOR

ExtUtils::Constant::XS - generate C code for XS modules' constants.

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

ExtUtils::Embed - Utilities for embedding Perl in C/C++ applications

SYNOPSIS

DESCRIPTION

@EXPORT

FUNCTIONS

xsinit(), Examples, ldopts(), Examples, perl_inc(), ccflags(), ccldflags(), ccopts(),

xsi_header(), xsi_protos(@modules), xsi_body(@modules)

EXAMPLES

SEE ALSO

AUTHOR

ExtUtils::Install - install files from here to there

SYNOPSIS

VERSION

DESCRIPTION

_chmod(\$\$,\$)

_warnonce(@)

_choke(@)

_move_file_at_boot(\$file, \$target, \$moan)

_unlink_or_rename(\$file, \$tryhard, \$installing)

Functions

_get_install_skip

_have_write_access

_can_write_dir(\$dir)

_mkpath(\$dir,\$show,\$verbose,\$dry_run)

_copy(\$from,\$to,\$verbose,\$dry_run)

_chdir(\$from)

install

_do_cleanup

install_rooted_file(\$file)

install_rooted_dir(\$dir)

forceunlink(\$file, \$tryhard)

directory_not_empty(\$dir)

install_default

uninstall

inc_uninstall(\$filepath,\$libdir,\$verbose,\$dry_run,\$ignore,\$results)

run_filter(\$cmd,\$src,\$dest)

pm_to_blib

_autosplit

_invokant

ENVIRONMENT

PERL_INSTALL_ROOT, EU_INSTALL_IGNORE_SKIP, EU_INSTALL_SITE_SKIPFILE,
EU_INSTALL_ALWAYS_COPY

AUTHOR

LICENSE

ExtUtils::Installed - Inventory management of installed modules

SYNOPSIS

DESCRIPTION

USAGE

METHODS

new(), modules(), files(), directories(), directory_tree(), validate(), packlist(),
version()

EXAMPLE

AUTHOR

ExtUtils::Liblist - determine libraries to use and how to use them

SYNOPSIS

DESCRIPTION

For static extensions, For dynamic extensions at build/link time, For dynamic
extensions at load time

EXTRALIBS

LDLOADLIBS and LD_RUN_PATH

BSLOADLIBS

PORTABILITY

VMS implementation

Win32 implementation

SEE ALSO

ExtUtils::MM - OS adjusted ExtUtils::MakeMaker subclass

SYNOPSIS

DESCRIPTION

ExtUtils::MM_AIX - AIX specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overridden methods

AUTHOR

SEE ALSO

ExtUtils::MM_Any - Platform-agnostic MM methods

SYNOPSIS

DESCRIPTION

METHODS

Cross-platform helper methods

Targets

Init methods

Tools

File::Spec wrappers

Misc

AUTHOR

ExtUtils::MM_BeOS - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

os_flavor

init_linker

ExtUtils::MM_Cygwin - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

os_flavor

cflags

replace_manpage_separator

init_linker

maybe_command

dynamic_lib

install

ExtUtils::MM_DOS - DOS specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overridden methods

os_flavor

replace_manpage_separator

xs_static_lib_is_xs

AUTHOR

SEE ALSO

ExtUtils::MM_Darwin - special behaviors for OS X

SYNOPSIS

DESCRIPTION

Overridden Methods

ExtUtils::MM_MacOS - once produced Makefiles for MacOS Classic

SYNOPSIS

DESCRIPTION

ExtUtils::MM_NW5 - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

os_flavor

init_platform, platform_constants

static_lib_pure_cmd

xs_static_lib_is_xs

dynamic_lib

ExtUtils::MM_OS2 - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

METHODS

init_dist

init_linker

os_flavor

xs_static_lib_is_xs

ExtUtils::MM_OS390 - OS390 specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overriden methods

xs_make_dynamic_lib

AUTHOR

SEE ALSO

ExtUtils::MM_QNX - QNX specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overridden methods

AUTHOR

SEE ALSO

ExtUtils::MM_UWIN - U/WIN specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overridden methods

os_flavor

replace_manpage_separator

AUTHOR

SEE ALSO

ExtUtils::MM_Unix - methods used by ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

METHODS

Methods

os_flavor

c_o (o)

xs_obj_opt

dbgoutflag

cflags (o)

const_cccmd (o)

const_config (o)

const_loadlibs (o)

constants (o)

depend (o)

init_DEST

init_dist

dist (o)

dist_basics (o)
dist_ci (o)
dist_core (o)
dist_target
tardist_target
zipdist_target
tarfile_target
zipfile_target
uutardist_target
shdist_target
dlsyms (o)
dynamic_bs (o)
dynamic_lib (o)
xs_dynamic_lib_macros
xs_make_dynamic_lib
exescan
extliblist
find_perl
fixin
force (o)
guess_name
has_link_code
init_dirscan
init_MANPODS
init_MAN1PODS
init_MAN3PODS
init_PM
init_DIRFILESEP
init_main
init_tools
init_linker
init_lib2arch
init_PERL

init_platform, platform_constants

init_PERM

init_xs

install (o)

installbin (o)

linkext (o)

lsdir

macro (o)

makeaperl (o)

xs_static_lib_is_xs (o)

makefile (o)

maybe_command

needs_linking (o)

parse_abstract

parse_version

pasthru (o)

perl_script

perldepend (o)

pm_to_blib

ppd

prefixify

processPL (o)

specify_shell

quote_paren

replace_manpage_separator

cd

oneliner

quote_literal

escape_newlines

max_exec_len

static (o)

xs_make_static_lib

static_lib_closures

static_lib_fixtures
static_lib_pure_cmd
staticmake (o)
subdir_x (o)
subdirs (o)
test (o)
test_via_harness (override)
test_via_script (override)
tool_xsubpp (o)
all_target
top_targets (o)
writedoc
xs_c (o)
xs_cpp (o)
xs_o (o)
SEE ALSO

ExtUtils::MM_VMS - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

Methods always loaded

wraplist

Methods

guess_name (override)
find_perl (override)
_fixin_replace_shebang (override)
maybe_command (override)
psthru (override)
pm_to_blib (override)
perl_script (override)
replace_manpage_separator
init_DEST
init_DIRFILESEP
init_main (override)

init_tools (override)
init_platform (override)
platform_constants
init_VERSION (override)
constants (override)
special_targets
cflags (override)
const_cccmd (override)
tools_other (override)
init_dist (override)
c_o (override)
xs_c (override)
xs_o (override)
_xsbuild_replace_macro (override)
_xsbuild_value (override)
dlsyms (override)
xs_obj_opt
dynamic_lib (override)
xs_make_static_lib (override)
static_lib_pure_cmd (override)
xs_static_lib_is_xs
extra_clean_files
zipfile_target, tarfile_target, shdist_target
install (override)
perldepend (override)
makeaperl (override)
maketext_filter (override)
prefixify (override)
cd
oneliner
echo
quote_literal
escape_dollarsigns

escape_all_dollarsigns

escape_newlines

max_exec_len

init_linker

catdir (override), catfile (override)

eliminate_macros

fixpath

os_flavor

is_make_type (override)

make_type (override)

AUTHOR

ExtUtils::MM_VOS - VOS specific subclass of ExtUtils::MM_Unix

SYNOPSIS

DESCRIPTION

Overridden methods

AUTHOR

SEE ALSO

ExtUtils::MM_Win32 - methods to override UN*X behaviour in ExtUtils::MakeMaker

SYNOPSIS

DESCRIPTION

Overridden methods

dlsyms

xs_dlsyms_ext

replace_manpage_separator

maybe_command

init_DIRFILESEP

init_tools

init_others

init_platform, platform_constants

specify_shell

constants

special_targets

static_lib_pure_cmd

dynamic_lib
extra_clean_files
init_linker
perl_script
quote_dep
xs_obj_opt
psthru
arch_check (override)
oneliner
cd
max_exec_len
os_flavor
dbgoutflag
cflags
make_type

ExtUtils::MM_Win95 - method to customize MakeMaker for Win9X

SYNOPSIS

DESCRIPTION

Overridden methods

max_exec_len

os_flavor

AUTHOR

ExtUtils::MY - ExtUtils::MakeMaker subclass for customization

SYNOPSIS

DESCRIPTION

ExtUtils::MakeMaker - Create a module Makefile

SYNOPSIS

DESCRIPTION

How To Write A Makefile.PL

Default Makefile Behaviour

make test

make testdb

make install

INSTALL_BASE

PREFIX and LIB attribute

AFS users

Static Linking of a new Perl Binary

Determination of Perl Library and Installation Locations

Which architecture dependent directory?

Using Attributes and Parameters

ABSTRACT, ABSTRACT_FROM, AUTHOR, BINARY_LOCATION, BUILD_REQUIRES, C, CCFLAGS, CONFIG, CONFIGURE, CONFIGURE_REQUIRES, DEFINE, DESTDIR, DIR, DISTNAME, DISTVNAME, DLEX, DL_FUNCS, DL_VARS, EXCLUDE_EXT, EXE_FILES, FIRST_MAKEFILE, FULLPERL, FULLPERLRUN, FULLPERLRUNINST, FUNCLIST, H, IMPORTS, INC, INCLUDE_EXT, INSTALLARCHLIB, INSTALLBIN, INSTALLDIRS, INSTALLMAN1DIR, INSTALLMAN3DIR, INSTALLPRIVLIB, INSTALLSCRIPT, INSTALLSITEARCH, INSTALLSITEBIN, INSTALLSITELIB, INSTALLSITEMAN1DIR, INSTALLSITEMAN3DIR, INSTALLSITESCRIPT, INSTALLVENDORARCH, INSTALLVENDORBIN, INSTALLVENDORLIB, INSTALLVENDORMAN1DIR, INSTALLVENDORMAN3DIR, INSTALLVENDORSRIPT, INST_ARCHLIB, INST_BIN, INST_LIB, INST_MAN1DIR, INST_MAN3DIR, INST_SCRIPT, LD, LDDLFLAGS, LDFROM, LIB, LIBPERL_A, LIBS, LICENSE, LINKTYPE, MAGICXS, MAKE, MAKEAPERL, MAKEFILE_OLD, MAN1PODS, MAN3PODS, MAP_TARGET, META_ADD, META_MERGE, MIN_PERL_VERSION, MYEXTLIB, NAME, NEEDS_LINKING, NOECHO, NORECURS, NO_META, NO_MYMETA, NO_PACKLIST, NO_PERLLOCAL, NO_VC, OBJECT, OPTIMIZE, PERL, PERL_CORE, PERLMAINCC, PERL_ARCHLIB, PERL_LIB, PERL_MALLOC_OK, PERLPREFIX, PERLRUN, PERLRUNINST, PERL_SRC, PERM_DIR, PERM_RW, PERM_RWX, PL_FILES, PM, PMLIBDIRS, PM_FILTER, POLLUTE, PPM_INSTALL_EXEC, PPM_INSTALL_SCRIPT, PPM_UNINSTALL_EXEC, PPM_UNINSTALL_SCRIPT, PREFIX, PREREQ_FATAL, PREREQ_PM, PREREQ_PRINT, PRINT_PREREQ, SITEPREFIX, SIGN, SKIP, TEST_REQUIRES, TYPEMAPS, VENDORPREFIX, VERBINST, VERSION, VERSION_FROM, VERSION_SYM, XS, XSBUILD, XSMULTI, XSOPT, XSPROTOARG, XS_VERSION

Additional lowercase attributes

clean, depend, dist, dynamic_lib, linkext, macro, postamble, realclean, test, tool_autosplit

Overriding MakeMaker Methods

The End Of Cargo Cult Programming

"MAN3PODS => ' '"

Hintsfile support

Distribution Support

make distcheck, make skipcheck, make distclean, make veryclean,
make manifest, make distdir, make disttest, make tardist,
make dist, make uutardist, make shdist, make zipdist, make ci

Module Meta-Data (META and MYMETA)

Disabling an extension

Other Handy Functions

prompt, os_unsupported

Supported versions of Perl

ENVIRONMENT

PERL_MM_OPT, PERL_MM_USE_DEFAULT, PERL_CORE

SEE ALSO

AUTHORS

LICENSE

ExtUtils::MakeMaker::Config - Wrapper around Config.pm

SYNOPSIS

DESCRIPTION

ExtUtils::MakeMaker::FAQ - Frequently Asked Questions About MakeMaker

DESCRIPTION

Module Installation

How do I install a module into my home directory?, How do I get MakeMaker and
Module::Build to install to the same place?, How do I keep from installing man
pages?, How do I use a module without installing it?, How can I organize tests
into subdirectories and have them run?, PREFIX vs INSTALL_BASE from
Module::Build::Cookbook, Generating *.pm files with substitutions eg of \$VERSION

Common errors and problems

"No rule to make target `/usr/lib/perl5/CORE/config.h', needed by `Makefile'"

Philosophy and History

Why not just use <insert other build config tool here>?, What is Module::Build and
how does it relate to MakeMaker?, pure perl. no make, no shell commands, easier
to customize, cleaner internals, less cruft

Module Writing

How do I keep my \$VERSION up to date without resetting it manually?, What's this META.yml thing and how did it get in my MANIFEST?!, How do I delete everything not in my MANIFEST?, Which tar should I use on Windows?, Which zip should I use on Windows for '[ndg]make zipdist'?

XS How do I prevent "object version X.XX does not match bootstrap parameter Y.YY" errors?, How do I make two or more XS files coexist in the same directory?, XSMULTI, Separate directories, Bootstrapping

DESIGN

MakeMaker object hierarchy (simplified)
MakeMaker object hierarchy (real)
The MM_* hierarchy

PATCHING

make a pull request on the MakeMaker github repository, raise a issue on the MakeMaker github repository, file an RT ticket, email makemaker@perl.org

AUTHOR

SEE ALSO

ExtUtils::MakeMaker::Locale - bundled Encode::Locale

SYNOPSIS

DESCRIPTION

decode_argv(), decode_argv(Encode::FB_CROAK), env(\$uni_key), env(\$uni_key => \$uni_value), reinit(), reinit(\$encoding), \$ENCODING_LOCALE, \$ENCODING_LOCALE_FS, \$ENCODING_CONSOLE_IN, \$ENCODING_CONSOLE_OUT

NOTES

Windows
Mac OS X
POSIX (Linux and other Unixes)

SEE ALSO

AUTHOR

ExtUtils::MakeMaker::Tutorial - Writing a module with MakeMaker

SYNOPSIS

DESCRIPTION

The Mantra
The Layout

Makefile.PL, MANIFEST, lib/, t/, Changes, README, INSTALL, MANIFEST.SKIP, bin/

SEE ALSO

ExtUtils::Manifest - Utilities to write and check a MANIFEST file

VERSION

SYNOPSIS

DESCRIPTION

FUNCTIONS

mkmanifest

manifind

manicheck

filecheck

fullcheck

skipcheck

maniread

maniskip

manicopy

maniadd

MANIFEST

MANIFEST.SKIP

`#!include_default, #!include /Path/to/another/manifest.skip`

EXPORT_OK

GLOBAL VARIABLES

DIAGNOSTICS

"Not in MANIFEST:" file, "Skipping" file, "No such file:" file, "MANIFEST:" \$!, "Added
to MANIFEST:" file

ENVIRONMENT

PERL_MM_MANIFEST_DEBUG

SEE ALSO

AUTHOR

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ExtUtils::Miniperl - write the C code for miniperlmain.c and perlmain.c

SYNOPSIS

DESCRIPTION

SEE ALSO

ExtUtils::Mkbootstrap - make a bootstrap file for use by DynaLoader

SYNOPSIS

DESCRIPTION

ExtUtils::Mksymlists - write linker options files for dynamic extension

SYNOPSIS

DESCRIPTION

DLBASE, DL_FUNCS, DL_VARS, FILE, FUNCLIST, IMPORTS, NAME

AUTHOR

REVISION

ExtUtils::PL2Bat - Batch file creation to run perl scripts on Windows

VERSION

OVERVIEW

FUNCTIONS

pl2bat(%opts)

"in", "out", "ntargs", "otherargs", "stripsuffix", "usewarnings", "update"

ACKNOWLEDGEMENTS

AUTHOR

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mkfh()

__find_relocations

ExtUtils::Packlist - manage .packlist files

SYNOPSIS

DESCRIPTION

USAGE

FUNCTIONS

new(), read(), write(), validate(), packlist_file()

EXAMPLE

AUTHOR

ExtUtils::ParseXS - converts Perl XS code into C code

SYNOPSIS

DESCRIPTION

EXPORT

METHODS

`$pxs->new()`, `$pxs->process_file()`, C++, hiertype, except, typemap, prototypes,
versioncheck, linenumbers, optimize, inout, argtypes, s, `$pxs->report_error_count()`

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SEE ALSO

ExtUtils::ParseXS::Constants - Initialization values for some globals

SYNOPSIS

DESCRIPTION

ExtUtils::ParseXS::Eval - Clean package to evaluate code in

SYNOPSIS

SUBROUTINES

`$pxs->eval_output_typemap_code($typemapcode, $other_hashref)`

`$pxs->eval_input_typemap_code($typemapcode, $other_hashref)`

TODO

ExtUtils::ParseXS::Utilities - Subroutines used with ExtUtils::ParseXS

SYNOPSIS

SUBROUTINES

"standard_typemap_locations()

Purpose, Arguments, Return Value

"trim_whitespace()

Purpose, Argument, Return Value

"C_string()

Purpose, Arguments, Return Value

"valid_proto_string()

Purpose, Arguments, Return Value

"process_typemaps()

Purpose, Arguments, Return Value

"map_type()

Purpose, Arguments, Return Value

"standard_XS_defs()

Purpose, Arguments, Return Value

"assign_func_args()

Purpose, Arguments, Return Value

"analyze_preprocessor_statements()"

Purpose, Arguments, Return Value

"set_cond()"

Purpose, Arguments, Return Value

"current_line_number()"

Purpose, Arguments, Return Value

"Warn()"

Purpose, Arguments, Return Value

"blurt()"

Purpose, Arguments, Return Value

"death()"

Purpose, Arguments, Return Value

"check_conditional_preprocessor_statements()"

Purpose, Arguments, Return Value

"escape_file_for_line_directive()"

Purpose, Arguments, Return Value

"report_typemap_failure"

Purpose, Arguments, Return Value

ExtUtils::Typemaps - Read/Write/Modify Perl/XS typemap files

SYNOPSIS

DESCRIPTION

METHODS

new

file

add_typemap

add_inputmap

add_outputmap

add_string

remove_typemap

remove_inputmap

remove_inputmap

get_typemap

get_inputmap
get_outputmap
write
as_string
as_embedded_typemap
merge
is_empty
list_mapped_ctypes
_get_typemap_hash
_get_inputmap_hash
_get_outputmap_hash
_get_prototype_hash
clone
tidy_type

CAVEATS

SEE ALSO

AUTHOR

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ExtUtils::Typemaps::Cmd - Quick commands for handling typemaps

SYNOPSIS

DESCRIPTION

EXPORTED FUNCTIONS

 embeddable_typemap

SEE ALSO

AUTHOR

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ExtUtils::Typemaps::InputMap - Entry in the INPUT section of a typemap

SYNOPSIS

DESCRIPTION

METHODS

new

code

xstype

cleaned_code

SEE ALSO

AUTHOR

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ExtUtils::Typemaps::OutputMap - Entry in the OUTPUT section of a typemap

SYNOPSIS

DESCRIPTION

METHODS

new

code

xstype

cleaned_code

targetable

SEE ALSO

AUTHOR

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ExtUtils::Typemaps::Type - Entry in the TYPEMAP section of a typemap

SYNOPSIS

DESCRIPTION

METHODS

new

proto

xstype

ctype

tidy_ctype

SEE ALSO

AUTHOR

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ExtUtils::testlib - add blib/* directories to @INC

SYNOPSIS

DESCRIPTION

Fatal - Replace functions with equivalents which succeed or die

SYNOPSIS

BEST PRACTICE

DESCRIPTION

DIAGNOSTICS

Bad subroutine name for Fatal: %s, %s is not a Perl subroutine, %s is neither a builtin, nor a Perl subroutine, Cannot make the non-overrideable %s fatal, Internal error: %s

BUGS

AUTHOR

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SEE ALSO

Fcntl - load the C Fcntl.h defines

SYNOPSIS

DESCRIPTION

NOTE

EXPORTED SYMBOLS

File::Basename - Parse file paths into directory, filename and suffix.

SYNOPSIS

DESCRIPTION

"fileparse"

"basename"

"dirname"

"fileparse_set_fstype"

SEE ALSO

File::Compare - Compare files or filehandles

SYNOPSIS

DESCRIPTION

RETURN

AUTHOR

File::Copy - Copy files or filehandles

SYNOPSIS

DESCRIPTION

copy , move , syscopy , rscopy(\$from,\$to[\$date_flag])

RETURN

NOTES

AUTHOR

File::DosGlob - DOS like globbing and then some

SYNOPSIS

DESCRIPTION

EXPORTS (by request only)

BUGS

AUTHOR

HISTORY

SEE ALSO

File::Fetch - A generic file fetching mechanism

SYNOPSIS

DESCRIPTION

ACCESSORS

\$ff->uri, \$ff->scheme, \$ff->host, \$ff->vol, \$ff->share, \$ff->path, \$ff->file,

\$ff->file_default

\$ff->output_file

METHODS

\$ff = File::Fetch->new(uri => 'http://some.where.com/dir/file.txt');

\$where = \$ff->fetch([to => /my/output/dir/ | \ \$scalar])

\$ff->error([BOOL])

HOW IT WORKS

GLOBAL VARIABLES

\$File::Fetch::FROM_EMAIL

\$File::Fetch::USER_AGENT

\$File::Fetch::FTP_PASSIVE

\$File::Fetch::TIMEOUT

\$File::Fetch::WARN

\$File::Fetch::DEBUG

\$File::Fetch::BLACKLIST

\$File::Fetch::METHOD_FAIL

MAPPING

FREQUENTLY ASKED QUESTIONS

So how do I use a proxy with File::Fetch?

I used 'lynx' to fetch a file, but its contents is all wrong!

Files I'm trying to fetch have reserved characters or non-ASCII characters in them.

What do I do?

TODO

Implement \$PREFER_BIN

BUG REPORTS

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File::Find - Traverse a directory tree.

SYNOPSIS

DESCRIPTION

find, finddepth

%options

"wanted", "bydepth", "preprocess", "postprocess", "follow", "follow_fast",
"follow_skip", "dangling_symlinks", "no_chdir", "untaint", "untaint_pattern",
"untaint_skip"

The wanted function

\$File::Find::dir is the current directory name,, \$_ is the current filename within
that directory, \$File::Find::name is the complete pathname to the file

WARNINGS

BUGS AND CAVEATS

\$dont_use_nlink, symlinks

HISTORY

SEE ALSO

File::Glob - Perl extension for BSD glob routine

SYNOPSIS

DESCRIPTION

META CHARACTERS

EXPORTS

POSIX FLAGS

"GLOB_ERR", "GLOB_LIMIT", "GLOB_MARK", "GLOB_NOCASE", "GLOB_NOCHECK",
"GLOB_NOSORT", "GLOB_BRACE", "GLOB_NOMAGIC", "GLOB_QUOTE", "GLOB_TILDE",

"GLOB_CSH", "GLOB_ALPHASORT"

DIAGNOSTICS

"GLOB_NOSPACE", "GLOB_ABEND"

NOTES

SEE ALSO

AUTHOR

File::GlobMapper - Extend File Glob to Allow Input and Output Files

SYNOPSIS

DESCRIPTION

Behind The Scenes

Limitations

Input File Glob

~, ~user, ., *, ?, \, [], {}, ()

Output File Glob

"*", #1

Returned Data

EXAMPLES

A Rename script

A few example globmaps

SEE ALSO

AUTHOR

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File::Path - Create or remove directory trees

VERSION

SYNOPSIS

DESCRIPTION

make_path(\$dir1, \$dir2,), make_path(\$dir1, \$dir2,, \%opts), mode =>
\$num, chmod => \$num, verbose => \$bool, error => \ \$err, owner => \$owner, user =>
\$owner, uid => \$owner, group => \$group, mkpath(\$dir), mkpath(\$dir, \$verbose, \$mode
, mkpath([\$dir1, \$dir2,...], \$verbose, \$mode), mkpath(\$dir1, \$dir2,..., \%opt),
remove_tree(\$dir1, \$dir2,), remove_tree(\$dir1, \$dir2,, \%opts), verbose
=> \$bool, safe => \$bool, keep_root => \$bool, result => \ \$res, error => \ \$err, rmtree(
\$dir), rmtree(\$dir, \$verbose, \$safe), rmtree([\$dir1, \$dir2,...], \$verbose, \$safe

), rmtree(\$dir1, \$dir2,..., \%opt)

ERROR HANDLING

NOTE:

NOTES

<<http://cve.circl.lu/cve/CVE-2004-0452>>, <<http://cve.circl.lu/cve/CVE-2005-0448>>

DIAGNOSTICS

mkdir [path]: [errmsg] (SEVERE), No root path(s) specified, No such file or directory, cannot fetch initial working directory: [errmsg], cannot stat initial working directory: [errmsg], cannot chdir to [dir]: [errmsg], directory [dir] changed before chdir, expected dev=[n] ino=[n], actual dev=[n] ino=[n], aborting. (FATAL), cannot make directory [dir] read+writeable: [errmsg], cannot read [dir]: [errmsg], cannot reset chmod [dir]: [errmsg], cannot remove [dir] when cwd is [dir], cannot chdir to [parent-dir] from [child-dir]: [errmsg], aborting. (FATAL), cannot stat prior working directory [dir]: [errmsg], aborting. (FATAL), previous directory [parent-dir] changed before entering [child-dir], expected dev=[n] ino=[n], actual dev=[n] ino=[n], aborting. (FATAL), cannot make directory [dir] writeable: [errmsg], cannot remove directory [dir]: [errmsg], cannot restore permissions of [dir] to [0nnn]: [errmsg], cannot make file [file] writeable: [errmsg], cannot unlink file [file]: [errmsg], cannot restore permissions of [file] to [0nnn]: [errmsg], unable to map [owner] to a uid, ownership not changed");, unable to map [group] to a gid, group ownership not changed

SEE ALSO

BUGS AND LIMITATIONS

MULTITHREADED APPLICATIONS

NFS Mount Points

REPORTING BUGS

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File::Spec - portably perform operations on file names

SYNOPSIS

DESCRIPTION

METHODS

 canonpath , catdir , catfile , curdir , devnull , rootdir , tmpdir , updir ,
 no_upwards, case_tolerant, file_name_is_absolute, path , join , splitpath , splitdir
 , catpath(), abs2rel , rel2abs()

SEE ALSO

AUTHOR

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File::Spec::AmigaOS - File::Spec for AmigaOS

SYNOPSIS

DESCRIPTION

METHODS

 tmpdir
 file_name_is_absolute

File::Spec::Cygwin - methods for Cygwin file specs

SYNOPSIS

DESCRIPTION

 canonpath
 file_name_is_absolute
 tmpdir (override)
 case_tolerant

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File::Spec::Epoc - methods for Epoc file specs

SYNOPSIS

DESCRIPTION

 canonpath()

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SEE ALSO

File::Spec::Functions - portably perform operations on file names

SYNOPSIS

DESCRIPTION

Exports

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SEE ALSO

File::Spec::Mac - File::Spec for Mac OS (Classic)

SYNOPSIS

DESCRIPTION

METHODS

 canonpath

catdir()

catfile

curdir

devnull

rootdir

tmpdir

updir

file_name_is_absolute

path

splitpath

splitdir

catpath

abs2rel

rel2abs

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SEE ALSO

File::Spec::OS2 - methods for OS/2 file specs

SYNOPSIS

DESCRIPTION

 tmpdir, splitpath

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File::Spec::Unix - File::Spec for Unix, base for other File::Spec modules

SYNOPSIS

DESCRIPTION

METHODS

 canonpath()

catdir()

catfile

curdir

devnull

rootdir

tmpdir

updir

no_upwards

case_tolerant

file_name_is_absolute

path

join

splitpath

splitdir

catpath()

abs2rel

rel2abs()

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SEE ALSO

File::Spec::VMS - methods for VMS file specs

SYNOPSIS

DESCRIPTION

canonpath (override)

catdir (override)

catfile (override)

curdir (override)

devnull (override)

rootdir (override)

tmpdir (override)

updir (override)

case_tolerant (override)

path (override)

file_name_is_absolute (override)

splitpath (override)

splitdir (override)

catpath (override)

abs2rel (override)

rel2abs (override)

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SEE ALSO

File::Spec::Win32 - methods for Win32 file specs

SYNOPSIS

DESCRIPTION

devnull

tmpdir

case_tolerant

file_name_is_absolute

catfile

canonpath

splitpath

splitdir

catpath

Note For File::Spec::Win32 Maintainers

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SEE ALSO

File::Temp - return name and handle of a temporary file safely

VERSION

SYNOPSIS

DESCRIPTION

PORTABILITY

OBJECT-ORIENTED INTERFACE

new, newdir, filename, dirname, unlink_on_destroy, DESTROY

FUNCTIONS

tempfile, tempdir

MKTEMP FUNCTIONS

mkstemp, mkstemp, mkdtemp, mktemp

POSIX FUNCTIONS

tmpnam, tmpfile

ADDITIONAL FUNCTIONS

tempnam

UTILITY FUNCTIONS

unlink0, cmpstat, unlink1, cleanup

PACKAGE VARIABLES

safe_level, STANDARD, MEDIUM, HIGH, TopSystemUID, \$KEEP_ALL, \$DEBUG

WARNING

Temporary files and NFS

Forking

Directory removal

Taint mode

BINMODE

HISTORY

SEE ALSO

SUPPORT

AUTHOR

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File::stat - by-name interface to Perl's built-in stat() functions

SYNOPSIS

DESCRIPTION

BUGS

ERRORS

-%s is not implemented on a File::stat object

WARNINGS

File::stat ignores use filetest 'access', File::stat ignores VMS ACLs

NOTE

AUTHOR

FileCache - keep more files open than the system permits

SYNOPSIS

DESCRIPTION

cacheout EXPR, cacheout MODE, EXPR

CAVEATS

BUGS

FileHandle - supply object methods for filehandles

SYNOPSIS

DESCRIPTION

\$fh->print, \$fh->printf, \$fh->getline, \$fh->getlines

SEE ALSO

Filter::Simple - Simplified source filtering

SYNOPSIS

DESCRIPTION

The Problem

A Solution

Disabling or changing <no> behaviour

All-in-one interface

Filtering only specific components of source code

"code", "code_no_comments", "executable", "executable_no_comments", "quotelike",

"string", "regex", "all"

Filtering only the code parts of source code

Using Filter::Simple with an explicit "import" subroutine

Using Filter::Simple and Exporter together

How it works

AUTHOR

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Filter::Util::Call - Perl Source Filter Utility Module

SYNOPSIS

DESCRIPTION

use Filter::Util::Call

import()

filter_add()

filter() and anonymous sub

\$_, \$status, filter_read and filter_read_exact, filter_del, real_import,

unimport()

LIMITATIONS

__DATA__ is ignored, Max. codesize limited to 32-bit

EXAMPLES

Example 1: A simple filter.

Example 2: Using the context

Example 3: Using the context within the filter

Example 4: Using filter_del

Filter::Simple

AUTHOR

DATE

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FindBin - Locate directory of original perl script

SYNOPSIS

DESCRIPTION

EXPORTABLE VARIABLES

KNOWN ISSUES

AUTHORS

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GDBM_File - Perl5 access to the gdbm library.

SYNOPSIS

DESCRIPTION

STATIC METHODS

GDBM_version

1 - exact guess, 2 - approximate, 3 - rough guess

METHODS

close

errno

syserrno

strerror

clear_error

needs_recovery

reorganize

sync

count

flags

dbname

cache_size

block_size

sync_mode

centfree

coalesce

mmap

mmapsize

recover

```
err => sub { ... }, backup => \ $str, max_failed_keys => $n, max_failed_buckets =>
    $n, max_failures => $n, stat => \%hash, recovered_keys, recovered_buckets,
    failed_keys, failed_buckets
```

AVAILABILITY

SECURITY AND PORTABILITY

SEE ALSO

Getopt::Long - Extended processing of command line options

SYNOPSIS

DESCRIPTION

Command Line Options, an Introduction

Getting Started with Getopt::Long

Simple options

A little bit less simple options

Mixing command line option with other arguments

Options with values

Options with multiple values

Options with hash values

User-defined subroutines to handle options

Options with multiple names

Case and abbreviations

Summary of Option Specifications

!, +, s, i, o, f, : type [desttype], : number [desttype], : + [desttype]

Advanced Possibilities

Object oriented interface

Callback object

name, given

Thread Safety

Documentation and help texts

Parsing options from an arbitrary array

Parsing options from an arbitrary string

Storing options values in a hash

Bundling

The lonesome dash

Argument callback

Configuring Getopt::Long

default, posix_default, auto_abbrev, getopt_compat, gnu_compat, gnu_getopt,
require_order, permute, bundling (default: disabled), bundling_override (default:
disabled), ignore_case (default: enabled), ignore_case_always (default: disabled),
auto_version (default:disabled), auto_help (default:disabled), pass_through (default:
disabled), prefix, prefix_pattern, long_prefix_pattern, debug (default: disabled)

Exportable Methods

VersionMessage, "-message", "-msg", "-exitval", "-output", HelpMessage

Return values and Errors

Legacy

Default destinations

Alternative option starters

Configuration variables

Tips and Techniques

Pushing multiple values in a hash option

Troubleshooting

GetOptions does not return a false result when an option is not supplied

GetOptions does not split the command line correctly

Undefined subroutine &main::GetOptions called

How do I put a "-?" option into a Getopt::Long?

AUTHOR

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Getopt::Std - Process single-character switches with switch clustering

SYNOPSIS

DESCRIPTION

"--help" and "--version"

HTTP::Tiny - A small, simple, correct HTTP/1.1 client

VERSION

SYNOPSIS

DESCRIPTION

METHODS

new

get|head|put|post|delete

post_form

mirror

request

www_form_urlencode

can_ssl

connected

SSL SUPPORT

PROXY SUPPORT

LIMITATIONS

SEE ALSO

SUPPORT

Bugs / Feature Requests

Source Code

AUTHORS

CONTRIBUTORS

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Hash::Util - A selection of general-utility hash subroutines

SYNOPSIS

DESCRIPTION

Restricted hashes

lock_keys, unlock_keys

lock_keys_plus

lock_value, unlock_value

lock_hash, unlock_hash

lock_hash_recurse, unlock_hash_recurse

hashref_locked, hash_locked

hashref_unlocked, hash_unlocked

legal_keys, hidden_keys, all_keys, hash_seed, hash_value, bucket_info, bucket_stats,

bucket_array

bucket_stats_formatted

hv_store, hash_traversal_mask, bucket_ratio, used_buckets, num_buckets

Operating on references to hashes.

lock_ref_keys, unlock_ref_keys, lock_ref_keys_plus, lock_ref_value, unlock_ref_value,

lock_hashref, unlock_hashref, lock_hashref_recurse, unlock_hashref_recurse,

hash_ref_unlocked, legal_ref_keys, hidden_ref_keys

CAVEATS

BUGS

AUTHOR

SEE ALSO

Hash::Util::FieldHash - Support for Inside-Out Classes

SYNOPSIS

FUNCTIONS

id, id_2obj, register, idhash, idhashes, fieldhash, fieldhashes

DESCRIPTION

The Inside-out Technique

Problems of Inside-out

Solutions

More Problems

The Generic Object

How to use Field Hashes

Garbage-Collected Hashes

EXAMPLES

"init()", "first()", "last()", "name()", "Name_hash", "Name_id", "Name_idhash",

"Name_id_reg", "Name_idhash_reg", "Name_fieldhash"

Example 1

Example 2

GUTS

The "PERL_MAGIC_uvar" interface for hashes

Weakrefs call uvar magic

How field hashes work

Internal function Hash::Util::FieldHash::_fieldhash

AUTHOR

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I18N::Collate - compare 8-bit scalar data according to the current locale

SYNOPSIS

DESCRIPTION

I18N::LangTags - functions for dealing with RFC3066-style language tags

SYNOPSIS

DESCRIPTION

the function is_language_tag(\$lang1)

the function extract_language_tags(\$whatever)

the function same_language_tag(\$lang1, \$lang2)

the function similarity_language_tag(\$lang1, \$lang2)

the function is_dialect_of(\$lang1, \$lang2)

the function super_languages(\$lang1)

the function locale2language_tag(\$locale_identifier)

the function encode_language_tag(\$lang1)

the function alternate_language_tags(\$lang1)

the function @langs = panic_languages(@accept_languages)

the function implicate_supers(...languages...), the function implicate_supers_strictly(

...languages...)

ABOUT LOWERCASING

ABOUT UNICODE PLAINTEXT LANGUAGE TAGS

SEE ALSO

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I18N::LangTags::Detect - detect the user's language preferences

SYNOPSIS

DESCRIPTION

FUNCTIONS

ENVIRONMENT

SEE ALSO

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I18N::LangTags::List -- tags and names for human languages

SYNOPSIS

DESCRIPTION

ABOUT LANGUAGE TAGS

LIST OF LANGUAGES

{ab} : Abkhazian, {ace} : Achinese, {ach} : Acoli, {ada} : Adangme, {ady} : Adyghe,
{aa} : Afar, {afh} : Afrihili, {af} : Afrikaans, [{afa} : Afro-Asiatic (Other)], {ak}
: Akan, {akk} : Akkadian, {sq} : Albanian, {ale} : Aleut, [{alg} : Algonquian
languages], [{tut} : Altaic (Other)], {am} : Amharic, {i-ami} : Ami, [{apa} : Apache
languages], {ar} : Arabic, {arc} : Aramaic, {arp} : Arapaho, {arn} : Araucanian, {arw}
: Arawak, {hy} : Armenian, {an} : Aragonese, [{art} : Artificial (Other)], {ast} :
Asturian, {as} : Assamese, [{ath} : Athapaskan languages], [{aus} : Australian
languages], [{map} : Austronesian (Other)], {av} : Avaric, {ae} : Avestan, {awa} :
Awadhi, {ay} : Aymara, {az} : Azerbaijani, {ban} : Balinese, [{bat} : Baltic (Other)],
{bal} : Baluchi, {bm} : Bambara, [{bai} : Bamileke languages], {bad} : Banda, [{bnt} :
Bantu (Other)], {bas} : Basa, {ba} : Bashkir, {eu} : Basque, {btk} : Batak
(Indonesia), {bej} : Beja, {be} : Belarusian, {bem} : Bemba, {bn} : Bengali, [{ber} :
Berber (Other)], {bho} : Bhojpuri, {bh} : Bihari, {bik} : Bikol, {bin} : Bini, {bi} :
Bislama, {bs} : Bosnian, {bra} : Braj, {br} : Breton, {bug} : Buginese, {bg} :

Bulgarian, {i-bnn} : Bunun, {bua} : Buriat, {my} : Burmese, {cad} : Caddo, {car} :
 Carib, {ca} : Catalan, [{cau} : Caucasian (Other)], {ceb} : Cebuano, [{cel} : Celtic
 (Other)], [{cai} : Central American Indian (Other)], {chg} : Chagatai, [{cmc} : Chamic
 languages], {ch} : Chamorro, {ce} : Chechen, {chr} : Cherokee, {chy} : Cheyenne, {chb}
 : Chibcha, {ny} : Chichewa, {zh} : Chinese, {chn} : Chinook Jargon, {chp} : Chipewyan,
 {cho} : Choctaw, {cu} : Church Slavic, {chk} : Chuukese, {cv} : Chuvash, {cop} :
 Coptic, {kw} : Cornish, {co} : Corsican, {cr} : Cree, {mus} : Creek, [{cpe} : English-
 based Creoles and pidgins (Other)], [{cpf} : French-based Creoles and pidgins
 (Other)], [{cpp} : Portuguese-based Creoles and pidgins (Other)], [{crp} : Creoles and
 pidgins (Other)], {hr} : Croatian, [{cus} : Cushitic (Other)], {cs} : Czech, {dak} :
 Dakota, {da} : Danish, {dar} : Dargwa, {day} : Dayak, {i-default} : Default (Fallthru)
 Language, {del} : Delaware, {din} : Dinka, {dv} : Divehi, {doi} : Dogri, {dgr} :
 Dogrib, [{dra} : Dravidian (Other)], {dua} : Duala, {nl} : Dutch, {dum} : Middle Dutch
 (ca.1050-1350), {dyu} : Dyula, {dz} : Dzongkha, {efi} : Efik, {egy} : Ancient
 Egyptian, {eka} : Ekajuk, {elx} : Elamite, {en} : English, {enm} : Old English
 (1100-1500), {ang} : Old English (ca.450-1100), {i-enochian} : Enochian (Artificial),
 {myv} : Erzya, {eo} : Esperanto, {et} : Estonian, {ee} : Ewe, {ewo} : Ewondo, {fan} :
 Fang, {fat} : Fanti, {fo} : Faroese, {fj} : Fijian, {fi} : Finnish, [{fiu} : Finno-
 Ugrian (Other)], {fon} : Fon, {fr} : French, {frm} : Middle French (ca.1400-1600),
 {fro} : Old French (842-ca.1400), {fy} : Frisian, {fur} : Friulian, {ff} : Fulah,
 {gaa} : Ga, {gd} : Scots Gaelic, {gl} : Gallegan, {lg} : Ganda, {gay} : Gayo, {gba} :
 Gbaya, {gez} : Geez, {ka} : Georgian, {de} : German, {gmh} : Middle High German
 (ca.1050-1500), {goh} : Old High German (ca.750-1050), [{gem} : Germanic (Other)],
 {gil} : Gilbertese, {gon} : Gondi, {gor} : Gorontalo, {got} : Gothic, {grb} : Grebo,
 {grc} : Ancient Greek, {el} : Modern Greek, {gn} : Guarani, {gu} : Gujarati, {gwi} :
 Gwich'in, {hai} : Haida, {ht} : Haitian, {ha} : Hausa, {haw} : Hawaiian, {he} :
 Hebrew, {hz} : Herero, {hil} : Hiligaynon, {him} : Himachali, {hi} : Hindi, {ho} :
 Hiri Motu, {hit} : Hittite, {hmn} : Hmong, {hu} : Hungarian, {hup} : Hupa, {iba} :
 Iban, {is} : Icelandic, {io} : Ido, {ig} : Igbo, {ijo} : Ijo, {ilo} : Iloko, [{inc} :
 Indic (Other)], [{ine} : Indo-European (Other)], {id} : Indonesian, {inh} : Ingush,
 {ia} : Interlingua (International Auxiliary Language Association), {ie} : Interlingue,
 {iu} : Inuktitut, {ik} : Inupiaq, [{ira} : Iranian (Other)], {ga} : Irish, {mga} :
 Middle Irish (900-1200), {sga} : Old Irish (to 900), [{iro} : Iroquoian languages],

{it} : Italian, {ja} : Japanese, {jv} : Javanese, {jrb} : Judeo-Arabic, {jpr} : Judeo-Persian, {kbd} : Kabardian, {kab} : Kabyle, {kac} : Kachin, {kl} : Kalaallisut, {xal} : Kalmyk, {kam} : Kamba, {kn} : Kannada, {kr} : Kanuri, {krc} : Karachay-Balkar, {kaa} : Kara-Kalpak, {kar} : Karen, {ks} : Kashmiri, {csb} : Kashubian, {kaw} : Kawi, {kk} : Kazakh, {kha} : Khasi, {km} : Khmer, [{khi} : Khoisan (Other)], {kho} : Khotanese, {ki} : Kikuyu, {kmb} : Kimbundu, {rw} : Kinyarwanda, {ky} : Kirghiz, {i-klngon} : Klingon, {kv} : Komi, {kg} : Kongo, {kok} : Konkani, {ko} : Korean, {kos} : Kosraean, {kpe} : Kpelle, {kro} : Kru, {kj} : Kuanyama, {kum} : Kumyk, {ku} : Kurdish, {kru} : Kurukh, {kut} : Kutenai, {lad} : Ladino, {lah} : Lahnda, {lam} : Lamba, {lo} : Lao, {la} : Latin, {lv} : Latvian, {lb} : Letzeburgesch, {lez} : Lezghian, {li} : Limburgish, {ln} : Lingala, {lt} : Lithuanian, {nds} : Low German, {art-lojban} : Lojban (Artificial), {loz} : Lozi, {lu} : Luba-Katanga, {lua} : Luba-Lulua, {lui} : Luiseno, {lun} : Lunda, {luo} : Luo (Kenya and Tanzania), {lus} : Lushai, {mk} : Macedonian, {mad} : Madurese, {mag} : Magahi, {mai} : Maithili, {mak} : Makasar, {mg} : Malagasy, {ms} : Malay, {ml} : Malayalam, {mt} : Maltese, {mnc} : Manchu, {mdr} : Mandar, {man} : Mandingo, {mni} : Manipuri, [{mno} : Manobo languages], {gv} : Manx, {mi} : Maori, {mr} : Marathi, {chm} : Mari, {mh} : Marshall, {mwr} : Marwari, {mas} : Masai, [{myn} : Mayan languages], {men} : Mende, {mic} : Micmac, {min} : Minangkabau, {i-mingo} : Mingo, [{mis} : Miscellaneous languages], {moh} : Mohawk, {mdf} : Moksha, {mo} : Moldavian, [{mkh} : Mon-Khmer (Other)], {lol} : Mongo, {mn} : Mongolian, {mos} : Mossi, [{mul} : Multiple languages], [{mun} : Munda languages], {nah} : Nahuatl, {nap} : Neapolitan, {na} : Nauru, {nv} : Navajo, {nd} : North Ndebele, {nr} : South Ndebele, {ng} : Ndonga, {ne} : Nepali, {new} : Newari, {nia} : Nias, [{nic} : Niger-Kordofanian (Other)], [{ssa} : Nilo-Saharan (Other)], {niu} : Niuean, {nog} : Nogai, {non} : Old Norse, [{nai} : North American Indian], {no} : Norwegian, 487 : Norwegian Bokmal, {nn} : Norwegian Nynorsk, [{nub} : Nubian languages], {nym} : Nyamwezi, {nyn} : Nyankole, {nyo} : Nyoro, {nzi} : Nzima, {oc} : Occitan (post 1500), {oj} : Ojibwa, {or} : Oriya, {om} : Oromo, {osa} : Osage, {os} : Ossetian; Ossetic, [{oto} : Otomian languages], {pal} : Pahlavi, {i-pwn} : Paiwan, {pau} : Palauan, {pi} : Pali, {pam} : Pampanga, {pag} : Pangasinan, {pa} : Panjabi, {pap} : Papiamentu, [{paa} : Papuan (Other)], {fa} : Persian, {peo} : Old Persian (ca.600-400 B.C.), [{phi} : Philippine (Other)], {phn} : Phoenician, {pon} : Pohnpeian, {pl} : Polish, {pt} : Portuguese, [{pra} : Prakrit languages], {pro} : Old Provencal (to 1500), {ps} : Pushto, {qu} :

Quechua, {rm} : Raeto-Romance, {raj} : Rajasthani, {rap} : Rapanui, {rar} :
 Rarotongan, [{qaa - qtz} : Reserved for local use.], [{roa} : Romance (Other)], {ro} :
 Romanian, {rom} : Romany, {rn} : Rundi, {ru} : Russian, [{sal} : Salishan languages],
 {sam} : Samaritan Aramaic, {se} : Northern Sami, {sma} : Southern Sami, {smn} : Inari
 Sami, {smj} : Lule Sami, {sms} : Skolt Sami, [{smi} : Sami languages (Other)], {sm} :
 Samoan, {sad} : Sandawe, {sg} : Sango, {sa} : Sanskrit, {sat} : Santali, {sc} :
 Sardinian, {sas} : Sasak, {sco} : Scots, {sel} : Selkup, [{sem} : Semitic (Other)],
 {sr} : Serbian, {srr} : Serer, {shn} : Shan, {sn} : Shona, {sid} : Sidamo, {sgn-...} :
 Sign Languages, {bla} : Siksika, {sd} : Sindhi, {si} : Sinhalese, [{sit} : Sino-
 Tibetan (Other)], [{sio} : Siouan languages], {den} : Slave (Athapaskan), [{sla} :
 Slavic (Other)], {sk} : Slovak, {sl} : Slovenian, {sog} : Sogdian, {so} : Somali,
 {son} : Songhai, {snk} : Soninke, {wen} : Sorbian languages, {nso} : Northern Sotho,
 {st} : Southern Sotho, [{sai} : South American Indian (Other)], {es} : Spanish, {suk}
 : Sukuma, {sux} : Sumerian, {su} : Sundanese, {sus} : Susu, {sw} : Swahili, {ss} :
 Swati, {sv} : Swedish, {syr} : Syriac, {tl} : Tagalog, {ty} : Tahitian, [{tai} : Tai
 (Other)], {tg} : Tajik, {tmh} : Tamashek, {ta} : Tamil, {i-tao} : Tao, {tt} : Tatar,
 {i-tay} : Tayal, {te} : Telugu, {ter} : Tereno, {tet} : Tetum, {th} : Thai, {bo} :
 Tibetan, {tig} : Tigre, {ti} : Tigrinya, {tem} : Timne, {tiv} : Tiv, {tli} : Tlingit,
 {tpi} : Tok Pisin, {tkl} : Tokelau, {tog} : Tonga (Nyasa), {to} : Tonga (Tonga
 Islands), {tsi} : Tsimshian, {ts} : Tsonga, {i-tsu} : Tsou, {tn} : Tswana, {tum} :
 Tumbuka, [{tup} : Tupi languages], {tr} : Turkish, {ota} : Ottoman Turkish
 (1500-1928), {crh} : Crimean Turkish, {tk} : Turkmen, {tlv} : Tuvalu, {tyv} :
 Tuvinian, {tw} : Twi, {udm} : Udmurt, {uga} : Ugaritic, {ug} : Uighur, {uk} :
 Ukrainian, {umb} : Umbundu, {und} : Undetermined, {ur} : Urdu, {uz} : Uzbek, {vai} :
 Vai, {ve} : Venda, {vi} : Vietnamese, {vo} : Volapuk, {vot} : Votic, [{wak} : Wakashan
 languages], {wa} : Walloon, {wal} : Walamo, {war} : Waray, {was} : Washo, {cy} :
 Welsh, {wo} : Wolof, {x-...} : Unregistered (Semi-Private Use), {xh} : Xhosa, {sah} :
 Yakut, {yao} : Yao, {yap} : Yapese, {ii} : Sichuan Yi, {yi} : Yiddish, {yo} : Yoruba,
 [{ypk} : Yupik languages], {znd} : Zande, [{zap} : Zapotec], {zen} : Zenaga, {za} :
 Zhuang, {zu} : Zulu, {zun} : Zuni

SEE ALSO

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l18N::Langinfo - query locale information

SYNOPSIS

DESCRIPTION

For systems without "nl_langinfo"

"ERA", "CODESET", "YESEXPR", "YESSTR", "NOEXPR", "NOSTR", "D_FMT", "T_FMT",
"D_T_FMT", "CRNCYSTR", "ALT_DIGITS", "ERA_D_FMT", "ERA_T_FMT", "ERA_D_T_FMT",
"T_FMT_AMPM"

EXPORT

BUGS

SEE ALSO

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IO - load various IO modules

SYNOPSIS

DESCRIPTION

DEPRECATED

IO::Compress::Base - Base Class for IO::Compress modules

SYNOPSIS

DESCRIPTION

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Compress::Bzip2 - Write bzip2 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

bzip2 \$input_filename_or_reference => \$output_filename_or_reference [, OPTS]

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeIn => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "Append => 0|1", A Buffer, A Filename, A Filehandle,

"BlockSize100K => number", "WorkFactor => number", "Strict => 0|1"

Examples

Methods

print

printf

syswrite

write

flush

tell

eof

seek

binmode

opened

autoflush

input_line_number

fileno

close

newStream([OPTS])

Importing

:all

EXAMPLES

Apache::GZip Revisited

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Compress::Deflate - Write RFC 1950 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
deflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeIn => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "Append => 0|1", A Buffer, A Filename, A Filehandle, "Merge =>

0|1", -Level, -Strategy, "Strict => 0|1"

Examples

Methods

print

printf

syswrite

write

flush

tell

eof

seek

binmode
opened
autoflush
input_line_number
fileno
close
newStream([OPTS])
deflateParams

Importing

:all, :constants, :flush, :level, :strategy

EXAMPLES

Apache::GZip Revisited

Working with Net::FTP

SUPPORT

SEE ALSO

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MODIFICATION HISTORY

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IO::Compress::FAQ -- Frequently Asked Questions about IO::Compress

DESCRIPTION

GENERAL

Compatibility with Unix compress/uncompress.

Accessing .tar.Z files

How do I recompress using a different compression?

ZIP

What Compression Types do IO::Compress::Zip & IO::Uncompress::Unzip support?

Store (method 0), Deflate (method 8), Bzip2 (method 12), Lzma (method 14)

Can I Read/Write Zip files larger the 4 Gig?

Can I write more that 64K entries is a Zip files?

Zip Resources

GZIP

Gzip Resources

Dealing with concatenated gzip files

Reading bgzip files with IO::Uncompress::Gunzip

ZLIB

Zlib Resources

Bzip2

Bzip2 Resources

Dealing with Concatenated bzip2 files

Interoperating with Pbzip2

HTTP & NETWORK

Apache::GZip Revisited

Compressed files and Net::FTP

MISC

Using "InputLength" to uncompress data embedded in a larger file/buffer.

SUPPORT

SEE ALSO

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IO::Compress::Gzip - Write RFC 1952 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
gzip $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeIn => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "Append => 0|1", A Buffer, A Filename, A Filehandle, "Merge => 0|1", -Level, -Strategy, "Minimal => 0|1", "Comment => \$comment", "Name => \$string", "Time => \$number", "TextFlag => 0|1", "HeaderCRC => 0|1", "OS_Code => \$value", "ExtraField => \$data", "ExtraFlags => \$value", "Strict => 0|1"

Examples

Methods

print
printf
syswrite
write
flush
tell
eof
seek
binmode
opened
autoflush
input_line_number
fileno
close
newStream([OPTS])
deflateParams

Importing

:all, :constants, :flush, :level, :strategy

EXAMPLES

Apache::GZip Revisited

Working with Net::FTP

SUPPORT

SEE ALSO

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MODIFICATION HISTORY

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SYNOPSIS

DESCRIPTION

Functional Interface

```
rawdeflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeIn => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "Append => 0|1", A Buffer, A Filename, A Filehandle, "Merge =>

0|1", -Level, -Strategy, "Strict => 0|1"

Examples

Methods

print

printf

syswrite

write

flush

tell

eof

seek

binmode

opened

autoflush

input_line_number

fileno

close

newStream([OPTS])

deflateParams

Importing

:all, :constants, :flush, :level, :strategy

EXAMPLES

Apache::GZip Revisited

Working with Net::FTP

SUPPORT

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IO::Compress::Zip - Write zip files/buffers

SYNOPSIS

DESCRIPTION

Store (0), Deflate (8), Bzip2 (12), Lzma (14), Zstandard (93), Xz (95)

Functional Interface

zip \$input_filename_or_reference => \$output_filename_or_reference [, OPTS]

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeIn => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "Append => 0|1", A Buffer, A Filename, A Filehandle, "Name =>

\$string", If the \$input parameter is not a filename, the archive member name will be an empty string, "CanonicalName => 0|1", "FilterName => sub { ... }", "Efs => 0|1", "Minimal => 1|0", "Stream => 0|1", "Zip64 => 0|1", -Level, -Strategy, "BlockSize100K => number", "WorkFactor => number", "Preset => number", "Extreme => 0|1", "Time => \$number", "ExtAttr => \$attr", "exTime => [\$atime, \$mtime, \$ctime]", "exUnix2 => [\$uid, \$gid]", "exUnixN => [\$uid, \$gid]", "Comment => \$comment", "ZipComment => \$comment", "Method => \$method", "TextFlag => 0|1", "ExtraFieldLocal => \$data", "ExtraFieldCentral => \$data", "Strict => 0|1"

Examples

Methods

print
printf
syswrite
write
flush
tell
eof
seek
binmode
opened
autoflush
input_line_number
fileno
close
newStream([OPTS])
deflateParams

Importing

:all, :constants, :flush, :level, :strategy, :zip_method

EXAMPLES

Apache::GZip Revisited

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Dir - supply object methods for directory handles

SYNOPSIS

DESCRIPTION

```
new ( [ DIRNAME ] ), open ( DIRNAME ), read (), seek ( POS ), tell (), rewind (),  
close (), tie %hash, 'IO::Dir', DIRNAME [, OPTIONS ]
```

SEE ALSO

AUTHOR

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IO::File - supply object methods for filehandles

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

```
new ( FILENAME [,MODE [,PERMS]] ), new_tmpfile
```

METHODS

```
open( FILENAME [,MODE [,PERMS]] ), open( FILENAME, IOLAYERS ), binmode( [LAYER] )
```

NOTE

SEE ALSO

HISTORY

IO::Handle - supply object methods for I/O handles

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

```
new (), new_from_fd ( FD, MODE )
```

METHODS

```
$io->fdopen ( FD, MODE ), $io->opened, $io->getline, $io->getlines, $io->ungetc ( ORD  
, $io->write ( BUF, LEN [, OFFSET ] ), $io->error, $io->clearerr, $io->sync,  
$io->flush, $io->printf flush ( ARGS ), $io->blocking ( [ BOOL ] ), $io->untaint
```

NOTE

SEE ALSO

BUGS

HISTORY

IO::Pipe - supply object methods for pipes

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

new ([READER, WRITER])

METHODS

reader ([ARGS]), writer ([ARGS]), handles ()

SEE ALSO

AUTHOR

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IO::Poll - Object interface to system poll call

SYNOPSIS

DESCRIPTION

METHODS

mask (IO [, EVENT_MASK]), poll ([TIMEOUT]), events (IO), remove (IO),
handles([EVENT_MASK])

SEE ALSO

AUTHOR

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IO::Seekable - supply seek based methods for I/O objects

SYNOPSIS

DESCRIPTION

\$io->getpos, \$io->setpos, \$io->seek (POS, WHENCE), WHENCE=0 (SEEK_SET), WHENCE=1
(SEEK_CUR), WHENCE=2 (SEEK_END), \$io->sysseek(POS, WHENCE), \$io->tell

SEE ALSO

HISTORY

IO::Select - OO interface to the select system call

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

new ([HANDLES])

METHODS

```
add ( HANDLES ), remove ( HANDLES ), exists ( HANDLE ), handles, can_read ( [ TIMEOUT  
]), can_write ( [ TIMEOUT ] ), has_exception ( [ TIMEOUT ] ), count (), bits(),  
select ( READ, WRITE, EXCEPTION [, TIMEOUT ] )
```

EXAMPLE

AUTHOR

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IO::Socket - Object interface to socket communications

SYNOPSIS

DESCRIPTION

CONSTRUCTOR ARGUMENTS

Blocking

Domain

Listen

Timeout

Type

CONSTRUCTORS

new

METHODS

accept

atmark

autoflush

bind

connected

getsockopt

listen

peername

protocol

recv

send

setsockopt

shutdown

sockdomain

socket

socketpair

sockname

sockopt

socktype

timeout

EXAMPLES

LIMITATIONS

SEE ALSO

AUTHOR

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IO::Socket::INET - Object interface for AF_INET domain sockets

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

new ([ARGS])

METHODS

sockaddr (), sockport (), sockhost (), peeraddr (), peerport (), peerhost ()

SEE ALSO

AUTHOR

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IO::Socket::IP, "IO::Socket::IP" - Family-neutral IP socket supporting both IPv4 and IPv6

SYNOPSIS

DESCRIPTION

REPLACING "IO::Socket" DEFAULT BEHAVIOUR

CONSTRUCTORS

new PeerHost => STRING, PeerService => STRING, PeerAddr => STRING, PeerPort => STRING,
PeerAddrInfo => ARRAY, LocalHost => STRING, LocalService => STRING, LocalAddr =>
STRING, LocalPort => STRING, LocalAddrInfo => ARRAY, Family => INT, Type => INT, Proto
=> STRING or INT, GetAddrInfoFlags => INT, Listen => INT, ReuseAddr => BOOL, ReusePort
=> BOOL, Broadcast => BOOL, Sockopts => ARRAY, V6Only => BOOL, MultiHomed, Blocking =>
BOOL, Timeout => NUM

new (one arg)

METHODS

sockhost_service

sockhost

sockport

sockhostname

sockservice

sockaddr

peerhost_service

peerhost

peerport

peerhostname

peerservice

peeraddr

as_inet

NON-BLOCKING

"PeerHost" AND "LocalHost" PARSING

split_addr

join_addr

"IO::Socket::INET" INCOMPATIBILITIES

TODO

AUTHOR

IO::Socket::UNIX - Object interface for AF_UNIX domain sockets

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

new ([ARGS])

METHODS

hostpath(), peerpath()

SEE ALSO

AUTHOR

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IO::Uncompress::AnyInflate - Uncompress zlib-based (zip, gzip) file/buffer

SYNOPSIS

DESCRIPTION

RFC 1950, RFC 1951 (optionally), gzip (RFC 1952), zip

Functional Interface

`anyinflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]`

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent =>

0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict =>

0|1", "RawInflate => 0|1", "ParseExtra => 0|1" If the gzip FEXTRA header field is

present and this option is set, it will force the module to check that it conforms

to the sub-field structure as defined in RFC 1952

Examples

Methods

`read`

`read`

`getline`

`getc`

`ungetc`

`inflateSync`

`getHeaderInfo`

`tell`

`eof`

`seek`

`binmode`

opened

autoflush

input_line_number

fileno

close

nextStream

trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::AnyUncompress - Uncompress gzip, zip, bzip2, zstd, xz, lzma, lzip, lzf or lzop

file/buffer

SYNOPSIS

DESCRIPTION

RFC 1950, RFC 1951 (optionally), gzip (RFC 1952), zip, zstd (Zstandard), bzip2, lzop,
lzf, lzma, lzip, xz

Functional Interface

anyuncompress \$input_filename_or_reference => \$output_filename_or_reference [, OPTS]

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A
Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent => 0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict => 0|1", "RawInflate => 0|1", "UnLzma => 0|1"

Examples

Methods

read

read

getline

getc

ungetc

getHeaderInfo

tell

eof

seek

binmode

opened

autoflush

input_line_number

fileno

close

nextStream

trailingData

Importing

:all

EXAMPLES

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::Base - Base Class for IO::Uncompress modules

SYNOPSIS

DESCRIPTION

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::Bunzip2 - Read bzip2 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
bunzip2 $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent =>

0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict =>

0|1", "Small => 0|1"

Examples

Methods

read

read

getline

getc
ungetc
getHeaderInfo
tell
eof
seek
binmode
opened
autoflush
input_line_number
fileno
close
nextStream
trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::Gunzip - Read RFC 1952 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
gunzip $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A
Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent =>
0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict =>
0|1", "ParseExtra => 0|1" If the gzip FEXTRA header field is present and this
option is set, it will force the module to check that it conforms to the sub-field
structure as defined in RFC 1952

Examples

Methods

read

read

getline

getc

ungetc

inflateSync

getHeaderInfo

Name, Comment

tell

eof

seek

binmode

opened

autoflush

input_line_number

fileno

close

nextStream

trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::Inflate - Read RFC 1950 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
inflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent =>

0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict =>

0|1"

Examples

Methods

read

read

getline
getc
ungetc
inflateSync
getHeaderInfo
tell
eof
seek
binmode
opened
autoflush
input_line_number
fileno
close
nextStream
trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::RawInflate - Read RFC 1951 files/buffers

SYNOPSIS

DESCRIPTION

Functional Interface

```
rawinflate $input_filename_or_reference => $output_filename_or_reference [, OPTS]
```

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A
Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"AutoClose => 0|1", "MultiStream => 0|1", "Prime => \$string", "Transparent =>
0|1", "BlockSize => \$num", "InputLength => \$size", "Append => 0|1", "Strict =>
0|1"

Examples

Methods

read

read

getline

getc

ungetc

inflateSync

getHeaderInfo

tell

eof

seek

binmode

opened

autoflush

input_line_number

fileno

close

nextStream

trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Uncompress::Unzip - Read zip files/buffers

SYNOPSIS

DESCRIPTION

Store (0), Deflate (8), Bzip2 (12), Lzma (14), Xz (95), Zstandard (93)

Functional Interface

unzip \$input_filename_or_reference => \$output_filename_or_reference [, OPTS]

A filename, A filehandle, A scalar reference, An array reference, An Input

FileGlob string, A filename, A filehandle, A scalar reference, An Array Reference,

An Output FileGlob

Notes

Optional Parameters

"AutoClose => 0|1", "BinModeOut => 0|1", "Append => 0|1", A Buffer, A Filename, A

Filehandle, "MultiStream => 0|1", "TrailingData => \$scalar"

Examples

OO Interface

Constructor

A filename, A filehandle, A scalar reference

Constructor Options

"Name => "membername"", "Efs => 0|1", "AutoClose => 0|1", "MultiStream => 0|1",

"Prime => \$string", "Transparent => 0|1", "BlockSize => \$num", "InputLength =>

\$size", "Append => 0|1", "Strict => 0|1"

Examples

Methods

read

read

getline
getc
ungetc
inflateSync
getHeaderInfo
tell
eof
seek
binmode
opened
autoflush
input_line_number
fileno
close
nextStream
trailingData

Importing

:all

EXAMPLES

Working with Net::FTP

Walking through a zip file

Unzipping a complete zip file to disk

SUPPORT

SEE ALSO

AUTHOR

MODIFICATION HISTORY

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IO::Zlib - IO:: style interface to Compress::Zlib

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

new ([ARGS])

OBJECT METHODS

open (FILENAME, MODE), opened, close, getc, getline, getlines, print (ARGS...),
read (BUF, NBYTES, [OFFSET]), eof, seek (OFFSET, WHENCE), tell, setpos (POS),
getpos (POS)

USING THE EXTERNAL GZIP

CLASS METHODS

has_Compress_Zlib, gzip_external, gzip_used, gzip_read_open, gzip_write_open

DIAGNOSTICS

IO::Zlib::getline: must be called in list context, IO::Zlib::gzopen_external: mode
'...' is illegal, IO::Zlib::import: '...' is illegal, IO::Zlib::import:
'gzip_external' requires an argument, IO::Zlib::import: 'gzip_read_open' requires an
argument, IO::Zlib::import: 'gzip_read' '...' is illegal, IO::Zlib::import:
'gzip_write_open' requires an argument, IO::Zlib::import: 'gzip_write_open' '...' is
illegal, IO::Zlib::import: no Compress::Zlib and no external gzip, IO::Zlib::open:
needs a filename, IO::Zlib::READ: NBYTES must be specified, IO::Zlib::WRITE: too long

LENGTH

SEE ALSO

HISTORY

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IPC::Cmd - finding and running system commands made easy

SYNOPSIS

DESCRIPTION

CLASS METHODS

```
$ipc_run_version = IPC::Cmd->can_use_ipc_run( [VERBOSE] )  
$ipc_open3_version = IPC::Cmd->can_use_ipc_open3( [VERBOSE] )  
$bool = IPC::Cmd->can_capture_buffer  
$bool = IPC::Cmd->can_use_run_forked
```

FUNCTIONS

```
$path = can_run( PROGRAM );  
$ok | ($ok, $err, $full_buf, $stdout_buf, $stderr_buf) = run( command => COMMAND,  
[verbose => BOOL, buffer => \SCALAR, timeout => DIGIT] );  
command, verbose, buffer, timeout, success, error message, full_buffer, out_buffer,  
error_buffer
```

```
$hashref = run_forked( COMMAND, { child_stdin => SCALAR, timeout => DIGIT, stdout_handler
```

```
=> CODEREF, stderr_handler => CODEREF} );  
  
"timeout", "child_stdin", "stdout_handler", "stderr_handler", "wait_loop_callback",  
  
"discard_output", "terminate_on_parent_sudden_death", "exit_code", "timeout",  
  
"stdout", "stderr", "merged", "err_msg"
```

\$q = QUOTE

HOW IT WORKS

Global Variables

```
$IPC::Cmd::VERBOSE  
  
$IPC::Cmd::USE_IPC_RUN  
  
$IPC::Cmd::USE_IPC_OPEN3  
  
$IPC::Cmd::WARN  
  
$IPC::Cmd::INSTANCES  
  
$IPC::Cmd::ALLOW_NULL_ARGS
```

Caveats

Whitespace and IPC::Open3 / system(), Whitespace and IPC::Run, IO Redirect,

Interleaving STDOUT/STDERR

See Also

ACKNOWLEDGEMENTS

BUG REPORTS

AUTHOR

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IPC::Msg - SysV Msg IPC object class

SYNOPSIS

DESCRIPTION

METHODS

```
new ( KEY , FLAGS ), id, rcv ( BUF, LEN [, TYPE [, FLAGS ]] ), remove, set ( STAT ),  
  
set ( NAME => VALUE [, NAME => VALUE ...] ), snd ( TYPE, MSG [, FLAGS ] ), stat
```

SEE ALSO

AUTHORS

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IPC::Open2 - open a process for both reading and writing using open2()

SYNOPSIS

DESCRIPTION

WARNING

SEE ALSO

IPC::Open3 - open a process for reading, writing, and error handling using open3()

SYNOPSIS

DESCRIPTION

See Also

IPC::Open2, IPC::Run

WARNING

IPC::Semaphore - SysV Semaphore IPC object class

SYNOPSIS

DESCRIPTION

METHODS

new (KEY , NSEMS , FLAGS), getall, getncnt (SEM), getpid (SEM), getval (SEM),
getzcnt (SEM), id, op (OPLIST), remove, set (STAT), set (NAME => VALUE [, NAME
=> VALUE ...]), setall (VALUES), setval (N , VALUE), stat

SEE ALSO

AUTHORS

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IPC::SharedMem - SysV Shared Memory IPC object class

SYNOPSIS

DESCRIPTION

METHODS

new (KEY , SIZE , FLAGS), id, read (POS, SIZE), write (STRING, POS, SIZE),
remove, is_removed, stat, attach ([FLAG]), detach, addr

SEE ALSO

AUTHORS

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IPC::SysV - System V IPC constants and system calls

SYNOPSIS

DESCRIPTION

ftok(PATH), ftok(PATH, ID), shmat(ID, ADDR, FLAG), shmdt(ADDR), memread(ADDR,
VAR, POS, SIZE), memwrite(ADDR, STRING, POS, SIZE)

SEE ALSO

AUTHORS

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Internals - Reserved special namespace for internals related functions

SYNOPSIS

DESCRIPTION

FUNCTIONS

SvREFCNT(THING [, \$value]), SvREADONLY(THING, [, \$value]),

hv_clear_placeholders(%hash)

AUTHOR

SEE ALSO

JSON::PP - JSON::XS compatible pure-Perl module.

SYNOPSIS

VERSION

DESCRIPTION

FUNCTIONAL INTERFACE

encode_json

decode_json

JSON::PP::is_bool

OBJECT-ORIENTED INTERFACE

new

ascii

latin1

utf8

pretty

indent

space_before

space_after

relaxed

list items can have an end-comma, shell-style '#'-comments, C-style multiple-line

/* */-comments (JSON::PP only), C++-style one-line '//'-comments (JSON::PP

only), literal ASCII TAB characters in strings

canonical

allow_nonref

allow_unknown
allow_blessed
convert_blessed
allow_tags
boolean_values
filter_json_object
filter_json_single_key_object
shrink
max_depth
max_size
encode
decode
decode_prefix

FLAGS FOR JSON::PP ONLY

allow_singlequote
allow_barekey
allow_bignum
loose
escape_slash
indent_length
sort_by

INCREMENTAL PARSING

incr_parse
incr_text
incr_skip
incr_reset

MAPPING

JSON -> PERL

object, array, string, number, true, false, null, shell-style comments ("# text"),
tagged values ("(tag)value")

PERL -> JSON

hash references, array references, other references, JSON::PP::true,
JSON::PP::false, JSON::PP::null, blessed objects, simple scalars

OBJECT SERIALISATION

1. "allow_tags" is enabled and the object has a "FREEZE" method, 2.
- "convert_blessed" is enabled and the object has a "TO_JSON" method, 3.
- "allow_bignum" is enabled and the object is a "Math::BigInt" or "Math::BigFloat",
4. "allow_blessed" is enabled, 5. none of the above

ENCODING/CODESET FLAG NOTES

"utf8" flag disabled, "utf8" flag enabled, "latin1" or "ascii" flags enabled

BUGS

SEE ALSO

AUTHOR

CURRENT MAINTAINER

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JSON::PP::Boolean - dummy module providing JSON::PP::Boolean

SYNOPSIS

DESCRIPTION

AUTHOR

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List::Util - A selection of general-utility list subroutines

SYNOPSIS

DESCRIPTION

LIST-REDUCTION FUNCTIONS

reduce

reductions

any

all

none

notall

first

max

maxstr

min

minstr

product

sum

sum0

KEY/VALUE PAIR LIST FUNCTIONS

pairs

unpairs

pairkeys

pairvalues

pairgrep

pairfirst

pairmap

OTHER FUNCTIONS

shuffle

sample

uniq

uniqint

uniqnum

uniqstr

head

tail

CONFIGURATION VARIABLES

\$RAND

KNOWN BUGS

RT #95409

uniqnum() on oversized bignums

SUGGESTED ADDITIONS

SEE ALSO

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List::Util::XS - Indicate if List::Util was compiled with a C compiler

SYNOPSIS

DESCRIPTION

SEE ALSO

COPYRIGHT

SYNOPSIS

DESCRIPTION

QUICK OVERVIEW

METHODS

Construction Methods

The "maketext" Method

`$lh->fail_with` or `$lh->fail_with(PARAM)`, `$lh->failure_handler_auto`,

`$lh->blacklist(@list)`, `$lh->whitelist(@list)`

Utility Methods

`$language->quant($number, $singular)`, `$language->quant($number, $singular,`

`$plural)`, `$language->quant($number, $singular, $plural, $negative)`,

`$language->numf($number)`, `$language->numerate($number, $singular, $plural,`

`$negative)`, `$language->sprintf($format, @items)`, `$language->language_tag()`,

`$language->encoding()`

Language Handle Attributes and Internals

LANGUAGE CLASS HIERARCHIES

ENTRIES IN EACH LEXICON

BRACKET NOTATION

BRACKET NOTATION SECURITY

AUTO LEXICONS

READONLY LEXICONS

CONTROLLING LOOKUP FAILURE

HOW TO USE MAKETEXT

SEE ALSO

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AUTHOR

Locale::Maketext::Cookbook - recipes for using Locale::Maketext

INTRODUCTION

ONESIDED LEXICONS

DECIMAL PLACES IN NUMBER FORMATTING

Locale::Maketext::Guts - Deprecated module to load Locale::Maketext utf8 code

SYNOPSIS

DESCRIPTION

Locale::Maketext::GutsLoader - Deprecated module to load Locale::Maketext utf8 code

SYNOPSIS

DESCRIPTION

Locale::Maketext::Simple - Simple interface to Locale::Maketext::Lexicon

VERSION

SYNOPSIS

DESCRIPTION

OPTIONS

Class

Path

Style

Export

Subclass

Decode

Encoding

ACKNOWLEDGMENTS

SEE ALSO

AUTHORS

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Locale::Maketext::TPJ13 -- article about software localization

SYNOPSIS

DESCRIPTION

Localization and Perl: gettext breaks, Maketext fixes

A Localization Horror Story: It Could Happen To You

The Linguistic View

Breaking gettext

Replacing gettext

Buzzwords: Abstraction and Encapsulation

Buzzword: Isomorphism

Buzzword: Inheritance

Buzzword: Concision

The Devil in the Details

References

MIME::Base64 - Encoding and decoding of base64 strings

SYNOPSIS

DESCRIPTION

```
encode_base64( $bytes ), encode_base64( $bytes, $eol );, decode_base64( $str ),
encode_base64url( $bytes ), decode_base64url( $str ), encoded_base64_length( $bytes ),
encoded_base64_length( $bytes, $eol ), decoded_base64_length( $str )
```

EXAMPLES

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SEE ALSO

MIME::QuotedPrint - Encoding and decoding of quoted-printable strings

SYNOPSIS

DESCRIPTION

```
encode_qp( $str), encode_qp( $str, $eol), encode_qp( $str, $eol, $binmode ),
decode_qp( $str )
```

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SEE ALSO

Math::BigFloat - Arbitrary size floating point math package

SYNOPSIS

DESCRIPTION

Input

Output

METHODS

Configuration methods

```
accuracy(), precision()
```

Constructor methods

```
from_hex(), from_oct(), from_bin(), from_ieee754(), bpi()
```

Arithmetic methods

```
bmuladd(), bdiv(), bmod(), bexp(), bnok(), bsin(), bcos(), batan(), batan2(),
as_float(), to_ieee754()
```

ACCURACY AND PRECISION

Rounding

bfround (+\$scale), bfround (-\$scale), bfround (0), bround (+\$scale),
bround (-\$scale) and bround (0)

Autocreating constants

Math library

Using Math::BigInt::Lite

EXPORTS

CAVEATS

stringify, bstr(), brsft(), Modifying and =, precision() vs. accuracy()

BUGS

SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings,

MetaCPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View

mailing list, Subscribe/Unsubscribe

LICENSE

SEE ALSO

AUTHORS

Math::BigInt - Arbitrary size integer/float math package

SYNOPSIS

DESCRIPTION

Input

Output

METHODS

Configuration methods

accuracy(), precision(), div_scale(), round_mode(), upgrade(), downgrade(),
modify(), config()

Constructor methods

new(), from_hex(), from_oct(), from_bin(), from_bytes(), from_base(), bzero(),
bone(), binf(), bnan(), bpi(), copy(), as_int(), as_number()

Boolean methods

is_zero(), is_one([SIGN]), is_finite(), is_inf([SIGN]), is_nan(),
is_positive(), is_pos(), is_negative(), is_neg(), is_non_positive(),
is_non_negative(), is_odd(), is_even(), is_int()

Comparison methods

bcmp(), bacmp(), beq(), bne(), blt(), ble(), bgt(), bge()

Arithmetic methods

bneg(), babs(), bsgn(), bnorm(), binc(), bdec(), badd(), bsub(), bmul(),
bmuladd(), bdiv(), btdiv(), bmod(), btmod(), bmodinv(), bmodpow(), bpow(), blog(),
bexp(), bnok(), buparrow(), uparrow(), backermann(), ackermann(), bsin(), bcos(),
batan(), batan2(), bsqrt(), broot(), bfac(), bdfac(), bfib(), blucas(), brsft(),
blsft()

Bitwise methods

band(), bior(), bxor(), bnot()

Rounding methods

round(), bround(), bfround(), bfloor(), bceil(), bint()

Other mathematical methods

bgcd(), blcm()

Object property methods

sign(), digit(), digitsum(), bdigitsum(), length(), mantissa(), exponent(),
parts(), sparts(), nparts(), eparts(), dparts()

String conversion methods

bstr(), bsstr(), bnstr(), bestr(), bdstr(), to_hex(), to_bin(), to_oct(),
to_bytes(), to_base(), as_hex(), as_bin(), as_oct(), as_bytes()

Other conversion methods

numify()

ACCURACY and PRECISION

Precision P

Accuracy A

Fallback F

Rounding mode R

'trunc', 'even', 'odd', '+inf', '-inf', 'zero', 'common', Precision, Accuracy

(significant digits), Setting/Accessing, Creating numbers, Usage, Precedence,

Overriding globals, Local settings, Rounding, Default values, Remarks

Infinity and Not a Number

oct()/hex()

INTERNALS

MATH LIBRARY

SIGN

EXAMPLES

Autocreating constants

PERFORMANCE

Alternative math libraries

SUBCLASSING

Subclassing Math::BigInt

UPGRADING

Auto-upgrade

EXPORTS

CAVEATS

Comparing numbers as strings, int(), Modifying and =, Overloading -\$x, Mixing
different object types

BUGS

SUPPORT

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MetaCPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View
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SEE ALSO

AUTHORS

Math::BigInt::Calc - Pure Perl module to support Math::BigInt

SYNOPSIS

DESCRIPTION

SEE ALSO

Math::BigInt::FastCalc - Math::BigInt::Calc with some XS for more speed

SYNOPSIS

DESCRIPTION

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METHODS

BUGS

SUPPORT

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Math::BigInt::Lib - virtual parent class for Math::BigInt libraries

[SYNOPSIS](#)

[DESCRIPTION](#)

General Notes

```
CLASS->api_version(), CLASS->_new(STR), CLASS->_zero(), CLASS->_one(),
CLASS->_two(), CLASS->_ten(), CLASS->_from_bin(STR), CLASS->_from_oct(STR),
CLASS->_from_hex(STR), CLASS->_from_bytes(STR), CLASS->_from_base(STR, BASE,
COLLSEQ), CLASS->_add(OBJ1, OBJ2), CLASS->_mul(OBJ1, OBJ2), CLASS->_div(OBJ1,
OBJ2), CLASS->_sub(OBJ1, OBJ2, FLAG), CLASS->_sub(OBJ1, OBJ2), CLASS->_dec(OBJ),
CLASS->_inc(OBJ), CLASS->_mod(OBJ1, OBJ2), CLASS->_sqrt(OBJ), CLASS->_root(OBJ,
N), CLASS->_fac(OBJ), CLASS->_dfac(OBJ), CLASS->_pow(OBJ1, OBJ2),
CLASS->_modinv(OBJ1, OBJ2), CLASS->_modpow(OBJ1, OBJ2, OBJ3), CLASS->_rsft(OBJ, N,
B), CLASS->_lsft(OBJ, N, B), CLASS->_log_int(OBJ, B), CLASS->_gcd(OBJ1, OBJ2),
CLASS->_lcm(OBJ1, OBJ2), CLASS->_fib(OBJ), CLASS->_lucas(OBJ), CLASS->_and(OBJ1,
OBJ2), CLASS->_or(OBJ1, OBJ2), CLASS->_xor(OBJ1, OBJ2), CLASS->_sand(OBJ1, OBJ2,
SIGN1, SIGN2), CLASS->_sor(OBJ1, OBJ2, SIGN1, SIGN2), CLASS->_sxor(OBJ1, OBJ2,
SIGN1, SIGN2), CLASS->_is_zero(OBJ), CLASS->_is_one(OBJ), CLASS->_is_two(OBJ),
CLASS->_is_ten(OBJ), CLASS->_is_even(OBJ), CLASS->_is_odd(OBJ), CLASS->_acmp(OBJ1,
OBJ2), CLASS->_str(OBJ), CLASS->_to_bin(OBJ), CLASS->_to_oct(OBJ),
CLASS->_to_hex(OBJ), CLASS->_to_bytes(OBJ), CLASS->_to_base(OBJ, BASE, COLLSEQ),
CLASS->_as_bin(OBJ), CLASS->_as_oct(OBJ), CLASS->_as_hex(OBJ),
CLASS->_as_bytes(OBJ), CLASS->_num(OBJ), CLASS->_copy(OBJ), CLASS->_len(OBJ),
CLASS->_zeros(OBJ), CLASS->_digit(OBJ, N), CLASS->_digitsum(OBJ),
CLASS->_check(OBJ), CLASS->_set(OBJ)
```

API version 2

```
CLASS->_1ex(N), CLASS->_nok(OBJ1, OBJ2), CLASS->_alen(OBJ)
```

[WRAP YOUR OWN](#)

[BUGS](#)

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SEE ALSO

Math::BigRat - Arbitrary big rational numbers

SYNOPSIS

DESCRIPTION

MATH LIBRARY

METHODS

new(), numerator(), denominator(), parts(), numify(), as_int(), as_number(), as_float(), as_hex(), as_bin(), as_oct(), from_hex(), from_oct(), from_bin(), bnan(), bzero(), binf(), bone(), length(), digit(), bnorm(), bfac(), bround()/round()/bfround(), bmod(), bmodinv(), bmodpow(), bneg(), is_one(), is_zero(), is_pos()/is_positive(), is_neg()/is_negative(), is_int(), is_odd(), is_even(), bceil(), bfloor(), bint(), bsqrt(), broot(), badd(), bmul(), bsub(), bdiv(), bdec(), binc(), copy(), bstr()/bsstr(), bcmp(), bacmp(), beq(), bne(), blt(), ble(), bgt(), bge(), blsft()/brsft(), band(), bior(), bxor(), bnot(), bpow(), blog(), bexp(), bnok(), config()

BUGS

SUPPORT

RT: CPAN's request tracker, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, Search CPAN, CPAN Testers Matrix, The Bignum mailing list, Post to mailing list, View mailing list, Subscribe/Unsubscribe

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AUTHORS

Math::Complex - complex numbers and associated mathematical functions

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ERRORS DUE TO INDIGESTIBLE ARGUMENTS

BUGS

SEE ALSO

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Math::Trig - trigonometric functions

SYNOPSIS

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TRIGONOMETRIC FUNCTIONS

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ERRORS DUE TO DIVISION BY ZERO

SIMPLE (REAL) ARGUMENTS, COMPLEX RESULTS

PLANE ANGLE CONVERSIONS

deg2rad, grad2rad, rad2deg, grad2deg, deg2grad, rad2grad, rad2rad, deg2deg, grad2grad

RADIAL COORDINATE CONVERSIONS

COORDINATE SYSTEMS

3-D ANGLE CONVERSIONS

cartesian_to_cylindrical, cartesian_to_spherical, cylindrical_to_cartesian,

cylindrical_to_spherical, spherical_to_cartesian, spherical_to_cylindrical

GREAT CIRCLE DISTANCES AND DIRECTIONS

great_circle_distance

great_circle_direction

great_circle_bearing

great_circle_destination

great_circle_midpoint

great_circle_waypoint

EXAMPLES

CAVEAT FOR GREAT CIRCLE FORMULAS

Real-valued asin and acos

asin_real, acos_real

BUGS

SEE ALSO

AUTHORS

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Memoize - Make functions faster by trading space for time

SYNOPSIS

DESCRIPTION

DETAILS

OPTIONS

INSTALL

NORMALIZER

"SCALAR_CACHE", "LIST_CACHE"

"MEMORY", "HASH", "TIE", "FAULT", "MERGE"

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"unmemoize"

"flush_cache"

CAVEATS

PERSISTENT CACHE SUPPORT

EXPIRATION SUPPORT

BUGS

MAILING LIST

AUTHOR

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THANK YOU

Memoize::AnyDBM_File - glue to provide EXISTS for AnyDBM_File for Storable use

DESCRIPTION

Memoize::Expire - Plug-in module for automatic expiration of memoized values

SYNOPSIS

DESCRIPTION

INTERFACE

TIEHASH, EXISTS, STORE

ALTERNATIVES

CAVEATS

AUTHOR

SEE ALSO

Memoize::ExpireFile - test for Memoize expiration semantics

DESCRIPTION

Memoize::ExpireTest - test for Memoize expiration semantics

DESCRIPTION

Memoize::NDBM_File - glue to provide EXISTS for NDBM_File for Storable use

DESCRIPTION

Memoize::SDBM_File - glue to provide EXISTS for SDBM_File for Storable use

DESCRIPTION

Memoize::Storable - store Memoized data in Storable database

DESCRIPTION

Module::CoreList - what modules shipped with versions of perl

SYNOPSIS

DESCRIPTION

FUNCTIONS API

```
"first_release( MODULE )", "first_release_by_date( MODULE )", "find_modules( REGEX, [
LIST OF PERLS ] )", "find_version( PERL_VERSION )", "is_core( MODULE, [
MODULE_VERSION, [ PERL_VERSION ] ] )", "is_deprecated( MODULE, PERL_VERSION )",
"deprecated_in( MODULE )", "removed_from( MODULE )", "removed_from_by_date( MODULE )",
"changes_between( PERL_VERSION, PERL_VERSION )"
```

DATA STRUCTURES

```
%Module::CoreList::version, %Module::CoreList::delta, %Module::CoreList::released,
%Module::CoreList::families, %Module::CoreList::deprecated,
%Module::CoreList::upstream, %Module::CoreList::bug_tracker
```

CAVEATS

HISTORY

AUTHOR

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SEE ALSO

Module::CoreList::Utils - what utilities shipped with versions of perl

SYNOPSIS

DESCRIPTION

FUNCTIONS API

"utilities", "first_release(UTILITY)", "first_release_by_date(UTILITY)",

"removed_from(UTILITY)", "removed_from_by_date(UTILITY)"

DATA STRUCTURES

%Module::CoreList::Utils::utilities

AUTHOR

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SEE ALSO

Module::Load - runtime require of both modules and files

SYNOPSIS

DESCRIPTION

Difference between "load" and "autoload"

FUNCTIONS

load, autoload, load_remote, autoload_remote

Rules

IMPORTS THE FUNCTIONS

"load","autoload","load_remote","autoload_remote", 'all', ",','none',undef

Caveats

SEE ALSO

ACKNOWLEDGEMENTS

BUG REPORTS

AUTHOR

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Module::Load::Conditional - Looking up module information / loading at runtime

SYNOPSIS

DESCRIPTION

Methods


```
$href = check_install( module => NAME [, version => VERSION, verbose => BOOL ] );
```

module, version, verbose, file, dir, version, uptodate

```
$bool = can_load( modules => { NAME => VERSION [,NAME => VERSION] }, [verbose => BOOL,  
nocache => BOOL, autoload => BOOL] )
```

modules, verbose, nocache, autoload

```
@list = requires( MODULE );
```

Global Variables

\$Module::Load::Conditional::VERBOSE

\$Module::Load::Conditional::FIND_VERSION

\$Module::Load::Conditional::CHECK_INC_HASH

\$Module::Load::Conditional::FORCE_SAFE_INC

\$Module::Load::Conditional::CACHE

\$Module::Load::Conditional::ERROR

\$Module::Load::Conditional::DEPRECATED

See Also

BUG REPORTS

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Module::Loaded - mark modules as loaded or unloaded

SYNOPSIS

DESCRIPTION

FUNCTIONS

```
$bool = mark_as_loaded( PACKAGE );
```

```
$bool = mark_as_unloaded( PACKAGE );
```

```
$loc = is_loaded( PACKAGE );
```

BUG REPORTS

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Module::Metadata - Gather package and POD information from perl module files

VERSION

SYNOPSIS

DESCRIPTION

CLASS METHODS

```
"new_from_file($filename, collect_pod => 1, decode_pod => 1)"
"new_from_handle($handle, $filename, collect_pod => 1, decode_pod => 1)"
"new_from_module($module, collect_pod => 1, inc => \@dirs, decode_pod => 1)"
"find_module_by_name($module, \@dirs)"
"find_module_dir_by_name($module, \@dirs)"
"provides( %options )"
    version (required), dir, files, prefix
"package_versions_from_directory($dir, \@files?)"
"log_info (internal)"
```

OBJECT METHODS

```
"name()"
"version($package)"
"filename()"
"packages_inside()"
"pod_inside()"
"contains_pod()"
"pod($section)"
"is_indexable($package)" or "is_indexable()"
```

SUPPORT

AUTHOR

CONTRIBUTORS

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NDBM_File - Tied access to ndbm files

SYNOPSIS

DESCRIPTION

```
"O_RDONLY", "O_WRONLY", "O_RDWR"
```

DIAGNOSTICS

```
"ndbm store returned -1, errno 22, key "..." at ..."
```

SECURITY AND PORTABILITY

BUGS AND WARNINGS

NEXT - Provide a pseudo-class NEXT (et al) that allows method redispach

SYNOPSIS

DESCRIPTION

Enforcing redispatch

Avoiding repetitions

Invoking all versions of a method with a single call

Using "EVERY" methods

SEE ALSO

AUTHOR

BUGS AND IRRITATIONS

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Net::Cmd - Network Command class (as used by FTP, SMTP etc)

SYNOPSIS

DESCRIPTION

Public Methods

"debug(\$level)", "message()", "code()", "ok()", "status()", "datasend(\$data)",
"dataend()"

Protected Methods

"debug_print(\$dir, \$text)", "debug_text(\$dir, \$text)", "command(\$cmd[, \$args, ...
])", "unsupported()", "response()", "parse_response(\$text)", "getline()",
"ungetline(\$text)", "rawdatasend(\$data)", "read_until_dot()", "tied_fh()"

Pseudo Responses

Initial value, Connection closed, Timeout

EXPORTS

Default Exports, Optional Exports, Export Tags

KNOWN BUGS

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VERSION

DATE

HISTORY

Net::Config - Local configuration data for libnet

SYNOPSIS

DESCRIPTION

Class Methods

"requires_firewall(\$host)"

NetConfig Values

nntp_hosts, snpp_hosts, pop3_hosts, smtp_hosts, ph_hosts, daytime_hosts,
time_hosts, inet_domain, ftp_firewall, ftp_firewall_type, 0, 1, 2, 3, 4, 5, 6, 7,
ftp_ext_passive, ftp_int_passive, local_netmask, test_hosts, test_exists

EXPORTS

Default Exports, Optional Exports, Export Tags

KNOWN BUGS

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VERSION

DATE

HISTORY

Net::Domain - Attempt to evaluate the current host's internet name and domain

SYNOPSIS

DESCRIPTION

Functions

"hostfqdn()", "domainname()", "hostname()", "hostdomain()"

EXPORTS

Default Exports, Optional Exports, Export Tags

KNOWN BUGS

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LICENCE

VERSION

DATE

HISTORY

Net::FTP - FTP Client class

SYNOPSIS

DESCRIPTION

Overview

Class Methods

"new([\$host][, %options])"

Object Methods

"login([\$login[, \$password[, \$account]])", "starttls()", "stoptls()",
"prot(\$level)", "host()", "account(\$acct)", "authorize([\$auth[, \$resp]])",
"site(\$args)", "ascii()", "binary()", "type([\$type])", "rename(\$oldname,
\$newname)", "delete(\$filename)", "cwd([\$dir])", "cdup()", "passive([\$passive])",
"pwd()", "restart(\$where)", "rmdir(\$dir[, \$recurse])", "mkdir(\$dir[, \$recurse])",
"alloc(\$size[, \$record_size])", "ls([\$dir])", "dir([\$dir])", "get(\$remote_file[,
\$local_file[, \$where]])", "put(\$local_file[, \$remote_file])",
"put_unique(\$local_file[, \$remote_file])", "append(\$local_file[, \$remote_file])",
"unique_name()", "mdtm(\$file)", "size(\$file)", "supported(\$cmd)",
"hash([\$filehandle_glob_ref[, \$bytes_per_hash_mark]])", "feature(\$name)",
"nlist([\$dir])", "list([\$dir])", "retr(\$file)", "stor(\$file)", "stou(\$file)",
"appe(\$file)", "port([\$port])", "eprt([\$port])", "pasv()", "epsv()",
"pasv_xfer(\$src_file, \$dest_server[, \$dest_file])", "pasv_xfer_unique(\$src_file,
\$dest_server[, \$dest_file])", "pasv_wait(\$non_pasv_server)", "abort()", "quit()"

Methods for the Adventurous

"quot(\$cmd[, \$args])", "can_inet6()", "can_ssl()"

The dataconn Class

Unimplemented

"SMNT", "HELP", "MODE", "SYST", "STAT", "STRU", "REIN"

EXAMPLES

<<https://www.csh.rit.edu/~adam/Progs/>>

EXPORTS

KNOWN BUGS

Reporting Bugs

SEE ALSO

ACKNOWLEDGEMENTS

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VERSION

DATE

HISTORY

Net::NNTP - NNTP Client class

SYNOPSIS

DESCRIPTION

Class Methods

"new([\$host][, %options])"

Object Methods

"host()", "starttls()", "article([{\$msgid\$msgnum}[, \$fh]]",
"body([{\$msgid\$msgnum}[, \$fh]]", "head([{\$msgid\$msgnum}[, \$fh]]",
"articlefh([{\$msgid\$msgnum}])", "bodyfh([{\$msgid\$msgnum}])",
"headfh([{\$msgid\$msgnum}])", "nntpstat([{\$msgid\$msgnum}])", "group([\$group])",
"help()", "ihave(\$msgid[, \$message])", "last()", "date()", "postok()",
"authinfo(\$user, \$pass)", "authinfo_simple(\$user, \$pass)", "list()",
"newgroups(\$since[, \$distributions])", "newnews(\$since[, \$groups[,
\$distributions]])", "next()", "post([\$message])", "postfh()", "slave()", "quit()",
"can_inet6()", "can_ssl()"

Extension Methods

"newsgroups([\$pattern])", "distributions()", "distribution_patterns()",
"subscriptions()", "overview_fmt()", "active_times()", "active([\$pattern])",
"xgtitle(\$pattern)", "xhdr(\$header, \$message_spec)", "xover(\$message_spec)",
"xpath(\$message_id)", "xpat(\$header, \$pattern, \$message_spec)",
"xrover(\$message_spec)", "listgroup([\$group])", "reader()"

Unsupported

Definitions

\$message_spec, \$pattern, Examples, "[^]-", *bdc, "[0-9a-zA-Z]", "a??d"

EXPORTS

KNOWN BUGS

SEE ALSO

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VERSION

DATE

HISTORY

Net::Netrc - OO interface to users netrc file

SYNOPSIS

DESCRIPTION

The .netrc File

machine name, default, login name, password string, account string, macdef name

Class Methods

"lookup(\$machine[, \$login])"

Object Methods

"login()", "password()", "account()", "lpa()"

EXPORTS

KNOWN BUGS

SEE ALSO

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VERSION

DATE

HISTORY

Net::POP3 - Post Office Protocol 3 Client class (RFC1939)

SYNOPSIS

DESCRIPTION

Class Methods

"new([\$host][, %options])"

Object Methods

"host()", "auth(\$username, \$password)", "user(\$user)", "pass(\$pass)",
"login([\$user[, \$pass]])", "starttls(%sslargs)", "apop([\$user[, \$pass]])",
"banner()", "capa()", "capabilities()", "top(\$msgnum[, \$numlines])",
"list([\$msgnum])", "get(\$msgnum[, \$fh])", "getfh(\$msgnum)", "last()", "popstat()",
"ping(\$user)", "uidl([\$msgnum])", "delete(\$msgnum)", "reset()", "quit()",
"can_inet6()", "can_ssl()"

Notes

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KNOWN BUGS

SEE ALSO

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VERSION

DATE

HISTORY

Net::Ping - check a remote host for reachability

SYNOPSIS

DESCRIPTION

Functions

```
Net::Ping->new([proto, timeout, bytes, device, tos, ttl, family,      host,
port, bind, gateway, retrans, pingstring,
source_verify econnrefused dontfrag      IPV6_USE_MIN_MTU
IPV6_RECVPATHMTU]), $p->ping($host [, $timeout [, $family]]); ,
$p->source_verify( { 0 | 1 } ); , $p->service_check( { 0 | 1 } ); ,
$p->tcp_service_check( { 0 | 1 } ); , $p->hires( { 0 | 1 } ); , $p->time ,
$p->socket_blocking_mode( $fh, $mode ); , $p->IPV6_USE_MIN_MTU ,
$p->IPV6_RECVPATHMTU , $p->IPV6_HOPLIMIT , $p->IPV6_REACHCONF NYI ,
$p->bind($local_addr); , $p->message_type([$ping_type]); , $p->open($host); ,
$p->ack( [ $host ] ); , $p->nack( $failed_ack_host ); , $p->ack_unfork($host) ,
$p->ping_icmp([$host, $timeout, $family]) , $p->ping_icmpv6([$host, $timeout,
$family]) , $p->ping_stream([$host, $timeout, $family]) , $p->ping_syn([$host,
$ip, $start_time, $stop_time]) , $p->ping_syn_fork([$host, $timeout, $family]) ,
$p->ping_tcp([$host, $timeout, $family]) , $p->ping_udp([$host, $timeout,
$family]) , $p->ping_external([$host, $timeout, $family]) , $p->tcp_connect([$ip,
$timeout]) , $p->tcp_echo([$ip, $timeout, $pingstring]) , $p->close(); ,
$p->port_number([$port_number]) , $p->mselect , $p->ntop , $p->checksum($msg) ,
$p->icmp_result , pingecho($host [, $timeout]); , wakeonlan($mac, [$host,
[$port]])
```

NOTES

INSTALL

BUGS

AUTHORS

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Net::SMTP - Simple Mail Transfer Protocol Client

SYNOPSIS

DESCRIPTION

Class Methods

```
"new([$host][, %options])"
```

Object Methods

```
"banner()", "domain()", "hello($domain)", "host()", "etrn($domain)",  
"starttls(%sslargs)", "auth($username, $password)", "auth($sas)", "mail($address[,  
%options])", "send($address)", "send_or_mail($address)", "send_and_mail($address)",  
"reset()", "recipient($address[, $address[, ...]][, %options])", "to($address[,  
$address[, ...]])", "cc($address[, $address[, ...]])", "bcc($address[, $address[,  
...]])", "data([$data])", "bdat($data)", "bdatlast($data)", "expand($address)",  
"verify($address)", "help([$subject])", "quit()", "can_inet6()", "can_ssl()"
```

Addresses

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KNOWN BUGS

SEE ALSO

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LICENCE

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DATE

HISTORY

Net::Time - time and daytime network client interface

SYNOPSIS

DESCRIPTION

Functions

```
"inet_time([$host[, $protocol[, $timeout]])", "inet_daytime([$host[, $protocol[,  
$timeout]])"
```

EXPORTS

Default Exports, Optional Exports, Export Tags

KNOWN BUGS

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HISTORY

Net::hostent - by-name interface to Perl's built-in gethost*() functions

SYNOPSIS

DESCRIPTION

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AUTHOR

Net::libnetFAQ, libnetFAQ - libnet Frequently Asked Questions

DESCRIPTION

Where to get this document

How to contribute to this document

Author and Copyright Information

Disclaimer

Obtaining and installing libnet

What is libnet ?

Which version of perl do I need ?

What other modules do I need ?

What machines support libnet ?

Where can I get the latest libnet release

Using Net::FTP

How do I download files from an FTP server ?

How do I transfer files in binary mode ?

How can I get the size of a file on a remote FTP server ?

How can I get the modification time of a file on a remote FTP server ?

How can I change the permissions of a file on a remote server ?

Can I do a reget operation like the ftp command ?

How do I get a directory listing from an FTP server ?

Changing directory to "" does not fail ?

I am behind a SOCKS firewall, but the Firewall option does not work ?

I am behind an FTP proxy firewall, but cannot access machines outside ?

My ftp proxy firewall does not listen on port 21

Is it possible to change the file permissions of a file on an FTP server ?

I have seen scripts call a method message, but cannot find it documented ?

Why does Net::FTP not implement mput and mget methods

Using Net::SMTP

Why can't the part of an Email address after the @ be used as the hostname ?

Why does Net::SMTP not do DNS MX lookups ?

The verify method always returns true ?

Debugging scripts

How can I debug my scripts that use Net::* modules ?

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Net::netent - by-name interface to Perl's built-in getnet*() functions

SYNOPSIS

DESCRIPTION

EXAMPLES

NOTE

AUTHOR

Net::protoent - by-name interface to Perl's built-in getproto*() functions

SYNOPSIS

DESCRIPTION

NOTE

AUTHOR

Net::servent - by-name interface to Perl's built-in getserv*() functions

SYNOPSIS

DESCRIPTION

EXAMPLES

NOTE

AUTHOR

O - Generic interface to Perl Compiler backends

SYNOPSIS

DESCRIPTION

CONVENTIONS

IMPLEMENTATION

BUGS

AUTHOR

ODBM_File - Tied access to odbm files

SYNOPSIS

DESCRIPTION

"O_RDONLY", "O_WRONLY", "O_RDWR"

DIAGNOSTICS

"odbm store returned -1, errno 22, key "..." at ..."

SECURITY AND PORTABILITY

BUGS AND WARNINGS

Opcode - Disable named opcodes when compiling perl code

SYNOPSIS

DESCRIPTION

NOTE

WARNING

Operator Names and Operator Lists

an operator name (opname), an operator tag name (optag), a negated opname or optag, an operator set (opset)

Opcode Functions

opcodes, opset (OP, ...), opset_to_ops (OPSET), opset_to_hex (OPSET), full_opset, empty_opset, invert_opset (OPSET), verify_opset (OPSET, ...), define_optag (OPTAG, OPSET), opmask_add (OPSET), opmask, opdesc (OP, ...), opdump (PAT)

Manipulating Opsets

TO DO (maybe)

Predefined Opcode Tags

:base_core, :base_mem, :base_loop, :base_io, :base_orig, :base_math, :base_thread,
:default, :filesystem_read, :sys_db, :browse, :filesystem_open, :filesystem_write, :subprocess,
:ownprocess, :others, :load, :still_to_be_decided, :dangerous

SEE ALSO

AUTHORS

POSIX - Perl interface to IEEE Std 1003.1

SYNOPSIS

DESCRIPTION

CAVEATS

FUNCTIONS

"_exit", "abort", "abs", "access", "acos", "acosh", "alarm", "asctime", "asin",
"asinh", "assert", "atan", "atanh", "atan2", "atexit", "atof", "atoi", "atol",
"bsearch", "calloc", "cbrt", "ceil", "chdir", "chmod", "chown", "clearerr", "clock",
"close", "closedir", "cos", "cosh", "copysign", "creat", "ctermid", "ctime", "cuserid"
[POSIX.1-1988], "difftime", "div", "dup", "dup2", "erf", "erfc", "errno", "execl",
"execle", "execlp", "execv", "execve", "execvp", "exit", "exp", "expm1", "fabs",
"fclose", "fcntl", "fdopen", "feof", "ferror", "fflush", "fgetc", "fgetpos", "fgets",
"fileno", "floor", "fdim", "fegetround", "fesetround", "fma", "fmax", "fmin", "fmod",
"fopen", "fork", "fpathconf", "fpclassify", "fprintf", "fputc", "fputs", "fread",
"free", "freopen", "frexp", "fscanf", "fseek", "fsetpos", "fstat", "fsync", "ftell",
"fwrite", "getc", "getchar", "getcwd", "getegid", "getenv", "geteuid", "getgid",
"getgrgid", "getgrnam", "getgroups", "getlogin", "getpayload", "getpgrp", "getpid",
"getppid", "getpwnam", "getpwuid", "gets", "getuid", "gmtime", "hypot", "ilogb",
"In", "isalnum", "isalpha", "isatty", "isctrl", "isdigit", "isfinite", "isgraph",
"isgreater", "isinf", "islower", "isnan", "isnormal", "isprint", "ispunct",
"issignaling", "isspace", "isupper", "isxdigit", "j0", "j1", "jn", "y0", "y1", "yn",
"kill", "labs", "lchown", "ldexp", "ldiv", "lgamma", "log1p", "log2", "logb", "link",
"localeconv", "localtime", "log", "log10", "longjmp", "lseek", "lrint", "lround",
"malloc", "mblen", "mbtowc", "memchr", "memcmp", "memcpy", "memmove", "memset",
"mkdir", "mkfifo", "mktime", "modf", "NaN", "nan", "nearbyint", "nextafter",
"nexttoward", "nice", "offsetof", "open", "opendir", "pathconf", "pause", "perror",
"pipe", "pow", "printf", "putc", "putchar", "puts", "qsort", "raise", "rand", "read",
"readdir", "realloc", "remainder", "remove", "remquo", "rename", "rewind",
"rewinddir", "rint", "rmdir", "round", "scalbn", "scanf", "setgid", "setjmp",
"setlocale", "setpayload", "setpayloadsig", "setpgid", "setsid", "setuid",
"sigaction", "siglongjmp", "signbit", "sigpending", "sigprocmask", "sigsetjmp",

"sigsuspend", "sin", "sinh", "sleep", "sprintf", "sqrt", "srand", "sscanf", "stat",
"strcat", "strchr", "strcmp", "strcoll", "strcpy", "strcspn", "strerror", "strftime",
"strlen", "strncat", "strncmp", "strncpy", "strpbrk", "strrchr", "strspn", "strstr",
"strtod", "strtok", "strtol", "strtold", "strtoul", "strxfrm", "sysconf", "system",
"tan", "tanh", "tcdrain", "tcflow", "tcflush", "tcgetpgrp", "tcsendbreak",
"tcsetpgrp", "tgamma", "time", "times", "tmpfile", "tmpnam", "tolower", "toupper",
"trunc", "ttyname", "tzname", "tzset", "umask", "uname", "ungetc", "unlink", "utime",
"vfprintf", "vprintf", "vsprintf", "wait", "waitpid", "wctomb", "write"

CLASSES

"POSIX::SigAction"

"new", "handler", "mask", "flags", "safe"

"POSIX::SigRt"

%SIGRT, "SIGRTMIN", "SIGRTMAX"

"POSIX::SigSet"

"new", "addset", "delset", "emptyset", "fillset", "ismember"

"POSIX::Termios"

"new", "getattr", "getcc", "getcflag", "getiflag", "getispeed", "getlflag",
"getoflag", "getospeed", "setattr", "setcc", "setcflag", "setiflag", "setispeed",
"setlflag", "setoflag", "setospeed", Baud rate values, Terminal interface values,
"c_cc" field values, "c_cflag" field values, "c_iflag" field values, "c_lflag"
field values, "c_oflag" field values

PATHNAME CONSTANTS

Constants

POSIX CONSTANTS

Constants

RESOURCE CONSTANTS

Constants

SYSTEM CONFIGURATION

Constants

ERRNO

Constants

FCNTL

Constants

FLOAT

Constants

FLOATING-POINT ENVIRONMENT

Constants

LIMITS

Constants

LOCALE

Constants

MATH

Constants

SIGNAL

Constants

STAT

Constants, Macros

STDLIB

Constants

STDIO

Constants

TIME

Constants

UNISTD

Constants

WAIT

Constants, "WNOHANG", "WUNTRACED", Macros, "WIFEXITED", "WEXITSTATUS", "WIFSIGNALED",
"WTERMSIG", "WIFSTOPPED", "WSTOPSIG"

WINSOCK

Constants

Params::Check - A generic input parsing/checking mechanism.

SYNOPSIS

DESCRIPTION

Template

default, required, strict_type, defined, no_override, store, allow

Functions

check(\%tmpl, \%args, [\$verbose]);

Template, Arguments, Verbose

allow(\$test_me, \@criteria);

string, regexp, subroutine, array ref

last_error()

Global Variables

\$Params::Check::VERBOSE

\$Params::Check::STRICT_TYPE

\$Params::Check::ALLOW_UNKNOWN

\$Params::Check::STRIP_LEADING_DASHES

\$Params::Check::NO_DUPLICATES

\$Params::Check::PRESERVE_CASE

\$Params::Check::ONLY_ALLOW_DEFINED

\$Params::Check::SANITY_CHECK_TEMPLATE

\$Params::Check::WARNINGS_FATAL

\$Params::Check::CALLER_DEPTH

Acknowledgements

BUG REPORTS

AUTHOR

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Parse::CPAN::Meta - Parse META.yml and META.json CPAN metadata files

VERSION

SYNOPSIS

DESCRIPTION

METHODS

load_file

load_yaml_string

load_json_string

load_string

yaml_backend

json_backend

json_decoder

FUNCTIONS

Load

LoadFile

ENVIRONMENT

CPAN_META_JSON_DECODER

CPAN_META_JSON_BACKEND

PERL_JSON_BACKEND

PERL_YAML_BACKEND

AUTHORS

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Perl::OSType - Map Perl operating system names to generic types

VERSION

SYNOPSIS

DESCRIPTION

USAGE

os_type()

is_os_type()

SEE ALSO

SUPPORT

Bugs / Feature Requests

Source Code

AUTHOR

CONTRIBUTORS

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PerlIO - On demand loader for PerlIO layers and root of PerlIO::* name space

SYNOPSIS

DESCRIPTION

Layers

:unix, :stdio, :perl, :crlf, :utf8, :bytes, :raw, :pop, :win32

Custom Layers

:encoding, :mmap, :via, :scalar

Alternatives to raw

Defaults and how to override them

Querying the layers of filehandles

AUTHOR

SEE ALSO

PerlIO::encoding - encoding layer

SYNOPSIS

DESCRIPTION

SEE ALSO

PerlIO::mmap - Memory mapped IO

SYNOPSIS

DESCRIPTION

IMPLEMENTATION NOTE

PerlIO::scalar - in-memory IO, scalar IO

SYNOPSIS

DESCRIPTION

IMPLEMENTATION NOTE

PerlIO::via - Helper class for PerlIO layers implemented in perl

SYNOPSIS

DESCRIPTION

EXPECTED METHODS

```
$class->PUSHED([$mode,$fh]), $obj->POPPED([$fh]), $obj->UTF8($belowFlag,$fh),  
$obj->OPEN($path,$mode,$fh), $obj->BINMODE([$fh]), $obj->FDOPEN($fd,$fh),  
$obj->SYSOPEN($path,$mode,$perm,$fh), $obj->FILENO($fh),  
$obj->READ($buffer,$len,$fh), $obj->WRITE($buffer,$fh), $obj->FILL($fh),  
$obj->CLOSE($fh), $obj->SEEK($posn,$whence,$fh), $obj->TELL($fh),  
$obj->UNREAD($buffer,$fh), $obj->FLUSH($fh), $obj->SETLINEBUF($fh),  
$obj->CLEARERR($fh), $obj->ERROR($fh), $obj->EOF($fh)
```

EXAMPLES

Example - a Hexadecimal Handle

PerlIO::via::QuotedPrint - PerlIO layer for quoted-printable strings

SYNOPSIS

DESCRIPTION

EXPORTS

KNOWN BUGS

FEEDBACK

SEE ALSO

ACKNOWLEDGEMENTS

AVAILABILITY

INSTALLATION

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LICENCE

VERSION

DATE

HISTORY

Pod::Checker - check pod documents for syntax errors

SYNOPSIS

OPTIONS/ARGUMENTS

podchecker()

-warnings => val, -quiet => val

DESCRIPTION

DIAGNOSTICS

Errors

empty =headn, =over on line N without closing =back, You forgot a '=back' before
'=headN', =over is the last thing in the document?!, '=item' outside of any
'=over', =back without =over, Can't have a 0 in =over N, =over should be: '=over'
or '=over positive_number', =begin TARGET without matching =end TARGET, =begin
without a target?, =end TARGET without matching =begin, '=end' without a target?,
'=end TARGET' is invalid, =end CONTENT doesn't match =begin TARGET, =for without a
target?, unresolved internal link NAME, Unknown directive: CMD, Deleting unknown
formatting code SEQ, Unterminated SEQ<> sequence, An E<...> surrounding strange
content, An empty E<>, An empty "L<>", An empty X<>, Spurious text after =pod /
=cut, =back doesn't take any parameters, but you said =back ARGUMENT, =pod
directives shouldn't be over one line long! Ignoring all N lines of content, =cut
found outside a pod block, Invalid =encoding syntax: CONTENT

Warnings

nested commands CMD<...CMD<...>...>, multiple occurrences (N) of link target name,
line containing nothing but whitespace in paragraph, =item has no contents, You

can't have =items (as at line N) unless the first thing after the =over is an
=item, Expected '=item EXPECTED VALUE', Expected '=item *', Possible =item type
mismatch: 'x' found leading a supposed definition =item, You have '=item x'
instead of the expected '=item N', Unknown E content in E<CONTENT>, empty
=over/=back block, empty section in previous paragraph, Verbatim paragraph in NAME
section, =headn without preceding higher level, A non-empty Z<>

Hyperlinks

ignoring leading/trailing whitespace in link, alternative text/node '%s' contains
non-escaped | or /

RETURN VALUE

EXAMPLES

SCRIPTS

INTERFACE

end_B, end_C, end_Document, end_F, end_I, end_L, end_Para, end_S, end_X, end_fcode,
end_for, end_head, end_head1, end_head2, end_head3, end_head4, end_item,
end_item_bullet, end_item_number, end_item_text, handle_pod_and_cut, handle_text,
handle_whiteline, hyperlink, scream, start_B, start_C, start_Data, start_F, start_I,
start_L, start_Para, start_S, start_Verbatim, start_X, start_fcode, start_for,
start_head, start_head1, start_head2, start_head3, start_head4, start_item_bullet,
start_item_number, start_item_text, start_over, start_over_block, start_over_bullet,
start_over_empty, start_over_number, start_over_text, whine

```
"Pod::Checker->new( %options )"
```

```
"$checker->poderror( @args )", "$checker->poderror( {%opts}, @args )"
```

```
"$checker->num_errors()"
```

```
"$checker->num_warnings()"
```

```
"$checker->name()"
```

```
"$checker->node()"
```

```
"$checker->idx()"
```

```
"$checker->hyperlinks()"
```

```
line()
```

```
type()
```

```
page()
```

```
node()
```

AUTHOR

Pod::Escapes - for resolving Pod E<...> sequences

SYNOPSIS

DESCRIPTION

GOODIES

```
e2char($e_content), e2charnum($e_content), $Name2character{name},  
$Name2character_number{name}, $Latin1Code_to_fallback{integer},  
$Latin1Char_to_fallback{character}, $Code2USASCII{integer}
```

CAVEATS

SEE ALSO

REPOSITORY

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Pod::Html - module to convert pod files to HTML

SYNOPSIS

DESCRIPTION

FUNCTIONS

```
pod2html  
  
backlink, cachedir, css, flush, header, help, htmldir, htmlroot, index, infile,  
outfile, poderrors, podpath, podroot, quiet, recurse, title, verbose  
  
htmlify  
  
anchorify
```

ENVIRONMENT

AUTHOR

SEE ALSO

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Pod::Man - Convert POD data to formatted *roff input

SYNOPSIS

DESCRIPTION

```
center, date, errors, fixed, fixedbold, fixeditalic, fixedbolditalic, lquote, rquote,  
name, nourls, quotes, release, section, stderr, utf8
```

DIAGNOSTICS

roff font should be 1 or 2 chars, not "%s", Invalid errors setting "%s", Invalid quote

specification "%s", POD document had syntax errors

ENVIRONMENT

PERL_CORE, POD_MAN_DATE, SOURCE_DATE_EPOCH

BUGS

CAVEATS

AUTHOR

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SEE ALSO

Pod::ParseLink - Parse an L<> formatting code in POD text

SYNOPSIS

DESCRIPTION

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SEE ALSO

Pod::Perldoc - Look up Perl documentation in Pod format.

SYNOPSIS

DESCRIPTION

SEE ALSO

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AUTHOR

Pod::Perldoc::BaseTo - Base for Pod::Perldoc formatters

SYNOPSIS

DESCRIPTION

SEE ALSO

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AUTHOR

Pod::Perldoc::GetOptsOO - Customized option parser for Pod::Perldoc

SYNOPSIS

DESCRIPTION

Call Pod::Perldoc::GetOptsOO::getopts(\$object, \@ARGV, \$truth), Given -n, if there's a
opt_n_with, it'll call \$object->opt_n_with(ARGUMENT) (e.g., "-n foo" =>
\$object->opt_n_with('foo'). Ditto "-nfoo"), Otherwise (given -n) if there's an
opt_n, we'll call it \$object->opt_n(\$truth) (Truth defaults to 1), Otherwise we try

calling `$object->handle_unknown_option('n')` (and we increment the error count by the return value of it), If there's no `handle_unknown_option`, then we just warn, and then increment the error counter

SEE ALSO

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`Pod::Perldoc::ToANSI` - render Pod with ANSI color escapes

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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`Pod::Perldoc::ToChecker` - let Perldoc check Pod for errors

SYNOPSIS

DESCRIPTION

SEE ALSO

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AUTHOR

`Pod::Perldoc::ToMan` - let Perldoc render Pod as man pages

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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`Pod::Perldoc::ToNroff` - let Perldoc convert Pod to nroff

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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Pod::Perldoc::ToPod - let Perldoc render Pod as ... Pod!

SYNOPSIS

DESCRIPTION

SEE ALSO

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Pod::Perldoc::ToRtf - let Perldoc render Pod as RTF

SYNOPSIS

DESCRIPTION

SEE ALSO

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AUTHOR

Pod::Perldoc::ToTerm - render Pod with terminal escapes

SYNOPSIS

DESCRIPTION

PAGER FORMATTING

CAVEAT

SEE ALSO

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Pod::Perldoc::ToText - let Perldoc render Pod as plaintext

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

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Pod::Perldoc::ToTk - let Perldoc use Tk::Pod to render Pod

SYNOPSIS

DESCRIPTION

SEE ALSO

AUTHOR

Pod::Perldoc::ToXml - let Perldoc render Pod as XML

SYNOPSIS

DESCRIPTION

SEE ALSO

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Pod::Simple - framework for parsing Pod

SYNOPSIS

DESCRIPTION

MAIN METHODS

```
"$parser = SomeClass->new();" , "$parser->output_fh( *OUT );" , "$parser->output_string(
\ $somestring );" , "$parser->parse_file( $some_filename );" , "$parser->parse_file(
*INPUT_FH );" , "$parser->parse_string_document( $all_content );" ,
"$parser->parse_lines( ...@lines..., undef );" , "$parser->content_seen",
"SomeClass->filter( $filename );" , "SomeClass->filter( *INPUT_FH );" ,
"SomeClass->filter( \ $document_content );"
```

SECONDARY METHODS

```
"$parser->parse_characters( SOMEVALUE )" , "$parser->no_whining( SOMEVALUE )" ,
"$parser->no_errata_section( SOMEVALUE )" , "$parser->complain_stderr( SOMEVALUE )" ,
"$parser->source_filename" , "$parser->doc_has_started" , "$parser->source_dead" ,
"$parser->strip_verbatim_indent( SOMEVALUE )" , "$parser->expand_verbatim_tabs( n )"
```

TERTIARY METHODS

```
"$parser->abandon_output_fh()" , "$parser->abandon_output_string()" ,
"$parser->accept_code( @codes )" , "$parser->accept_codes( @codes )" ,
"$parser->accept_directive_as_data( @directives )" ,
"$parser->accept_directive_as_processed( @directives )" ,
"$parser->accept_directive_as_verbatim( @directives )" , "$parser->accept_target(
@targets )" , "$parser->accept_target_as_text( @targets )" , "$parser->accept_targets(
@targets )" , "$parser->accept_targets_as_text( @targets )" ,
"$parser->any_errata_seen()" , "$parser->errata_seen()" ,
"$parser->detected_encoding()" , "$parser->encoding()" , "$parser->parse_from_file(
$source, $to )" , "$parser->scream( @error_messages )" , "$parser->unaccept_code( @codes
)" , "$parser->unaccept_codes( @codes )" , "$parser->unaccept_directive( @directives )" ,
"$parser->unaccept_directives( @directives )" , "$parser->unaccept_target( @targets )" ,
```

```
"$parser->unaccept_targets( @targets )", "$parser->version_report()", "$parser->whine(
    @error_messages )"

```

ENCODING

SEE ALSO

SUPPORT

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Pod::Simple::Checker -- check the Pod syntax of a document

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::Debug -- put Pod::Simple into trace/debug mode

SYNOPSIS

DESCRIPTION

CAVEATS

GUTS

SEE ALSO

SUPPORT

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Pod::Simple::DumpAsText -- dump Pod-parsing events as text

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::DumpAsXML -- turn Pod into XML

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::HTML - convert Pod to HTML

SYNOPSIS

DESCRIPTION

CALLING FROM THE COMMAND LINE

CALLING FROM PERL

Minimal code

More detailed example

METHODS

html_css

html_javascript

title_prefix

title_postfix

html_header_before_title

top_anchor

html_h_level

index

html_header_after_title

html_footer

SUBCLASSING

SEE ALSO

SUPPORT

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ACKNOWLEDGEMENTS

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Pod::Simple::HTMLBatch - convert several Pod files to several HTML files

SYNOPSIS

DESCRIPTION

FROM THE COMMAND LINE

MAIN METHODS

```
$batchconv = Pod::Simple::HTMLBatch->new;; $batchconv->batch_convert( indir, outdir  
);, $batchconv->batch_convert( undef , ...);, $batchconv->batch_convert( q{@INC},  
...);, $batchconv->batch_convert( \@dirs , ...);, $batchconv->batch_convert( "somedir"  
, ...);, $batchconv->batch_convert( 'somedir:someother:also' , ...);,  
$batchconv->batch_convert( ... , undef );, $batchconv->batch_convert( ... , 'somedir'  
);
```

ACCESSOR METHODS

```
$batchconv->verbose( nonnegative_integer );, $batchconv->index( true-or-false );,  
$batchconv->contents_file( filename );, $batchconv->contents_page_start(  
HTML_string );, $batchconv->contents_page_end( HTML_string );,  
$batchconv->add_css( $url );, $batchconv->add_javascript( $url );,  
$batchconv->css_flurry( true-or-false );, $batchconv->javascript_flurry( true-or-  
false );, $batchconv->no_contents_links( true-or-false );,  
$batchconv->html_render_class( classname );, $batchconv->search_class( classname  
);
```

NOTES ON CUSTOMIZATION

SEE ALSO

SUPPORT

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Pod::Simple::JustPod -- just the Pod, the whole Pod, and nothing but the Pod

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::LinkSection -- represent "section" attributes of L codes

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::Methody -- turn Pod::Simple events into method calls

SYNOPSIS

DESCRIPTION

METHOD CALLING

SEE ALSO

SUPPORT

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Pod::Simple::PullParser -- a pull-parser interface to parsing Pod

SYNOPSIS

DESCRIPTION

METHODS

```
my $token = $parser->get_token, $parser->unget_token( $token ), $parser->unget_token(
$token1, $token2, ... ), $parser->set_source( $filename ), $parser->set_source(
$filehandle_object ), $parser->set_source( \ $document_source ), $parser->set_source(
\@document_lines ), $parser->parse_file(...), $parser->parse_string_document(...),
$parser->filter(...), $parser->parse_from_file(...), my $title_string =
$parser->get_title, my $title_string = $parser->get_short_title, $author_name =
$parser->get_author, $description_name = $parser->get_description, $version_block =
$parser->get_version
```

NOTE

SEE ALSO

SUPPORT

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AUTHOR

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Pod::Simple::PullParserEndToken -- end-tokens from Pod::Simple::PullParser

SYNOPSIS

DESCRIPTION

```
$token->tagname, $token->tagname(somestring), $token->tag(...),
$token->is_tag(somestring) or $token->is_tagname(somestring)
```

SEE ALSO

SUPPORT

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Pod::Simple::PullParserStartToken -- start-tokens from Pod::Simple::PullParser

SYNOPSIS

DESCRIPTION

```
$token->tagname, $token->tagname(somestring), $token->tag(...),
$token->is_tag(somestring) or $token->is_tagname(somestring), $token->attr(attrname),
$token->attr(attrname, newvalue), $token->attr_hash
```

SEE ALSO

SEE ALSO

SUPPORT

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Pod::Simple::PullParserTextToken -- text-tokens from Pod::Simple::PullParser

SYNOPSIS

DESCRIPTION

\$token->text, \$token->text(somestring), \$token->text_r()

SEE ALSO

SUPPORT

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Pod::Simple::PullParserToken -- tokens from Pod::Simple::PullParser

SYNOPSIS

DESCRIPTION

\$token->type, \$token->is_start, \$token->is_text, \$token->is_end, \$token->dump

SEE ALSO

SUPPORT

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Pod::Simple::RTF -- format Pod as RTF

SYNOPSIS

DESCRIPTION

FORMAT CONTROL ATTRIBUTES

\$parser->head1_halfpoint_size(halfpoint_integer);, \$parser->head2_halfpoint_size(
halfpoint_integer);, \$parser->head3_halfpoint_size(halfpoint_integer);,

```
$parser->head4_halfpoint_size( halfpoint_integer );,  
$parser->codeblock_halfpoint_size( halfpoint_integer );,  
$parser->header_halfpoint_size( halfpoint_integer );, $parser->normal_halfpoint_size(  
halfpoint_integer );, $parser->no_proofing_exemptions( true_or_false );,  
$parser->doc_lang( microsoft_decimal_language_code )
```

SEE ALSO

SUPPORT

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Pod::Simple::Search - find POD documents in directory trees

SYNOPSIS

DESCRIPTION

CONSTRUCTOR

ACCESSORS

```
$search->inc( true-or-false );, $search->verbose( nonnegative-number );,  
$search->limit_glob( some-glob-string );, $search->callback( \&some_routine );,  
$search->laborious( true-or-false );, $search->recurse( true-or-false );,  
$search->shadows( true-or-false );, $search->is_case_insensitive( true-or-false );,  
$search->limit_re( some-regexp );, $search->dir_prefix( some-string-value );,  
$search->progress( some-progress-object );, $name2path = $self->name2path;, $path2name  
= $self->path2name;
```

MAIN SEARCH METHODS

```
"$search->survey( @directories )"
  
"name2path", "path2name"  
"$search->simplify_name( $str )"
  
"$search->find( $pod )"
  
"$search->find( $pod, @search_dirs )"
  
"$self->contains_pod( $file )"
```

SUPPORT

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AUTHOR

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Pod::Simple::SimpleTree -- parse Pod into a simple parse tree

SYNOPSIS

DESCRIPTION

METHODS

Tree Contents

SEE ALSO

SUPPORT

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AUTHOR

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Pod::Simple::Subclassing -- write a formatter as a Pod::Simple subclass

SYNOPSIS

DESCRIPTION

Pod::Simple, Pod::Simple::Methody, Pod::Simple::PullParser, Pod::Simple::SimpleTree

Events

"\$parser->_handle_element_start(element_name, attr_hashref)",

"\$parser->_handle_element_end(element_name)",

"\$parser->_handle_text(text_string)", events with an element_name of Document,

events with an element_name of Para, events with an element_name of B, C, F, or I,

events with an element_name of S, events with an element_name of X, events with an

element_name of L, events with an element_name of E or Z, events with an element_name

of Verbatim, events with an element_name of head1 .. head4, events with an

element_name of encoding, events with an element_name of over-bullet, events with an

element_name of over-number, events with an element_name of over-text, events with an

element_name of over-block, events with an element_name of over-empty, events with an

element_name of item-bullet, events with an element_name of item-number, events with

an element_name of item-text, events with an element_name of for, events with an

element_name of Data

More Pod::Simple Methods

"\$parser->accept_targets(SOMEVALUE)", "\$parser->accept_targets_as_text(

```
SOMEVALUE )", "$parser->accept_codes( Codename, Codename... )",
"$parser->accept_directive_as_data( directive_name )",
"$parser->accept_directive_as_verbatim( directive_name )",
"$parser->accept_directive_as_processed( directive_name )", "$parser->nbsp_for_S(
BOOLEAN );", "$parser->version_report()", "$parser->pod_para_count()",
"$parser->line_count()", "$parser->nix_X_codes( SOMEVALUE )",
"$parser->keep_encoding_directive( SOMEVALUE )", "$parser->merge_text( SOMEVALUE
)", "$parser->code_handler( CODE_REF )", "$parser->cut_handler( CODE_REF )",
"$parser->pod_handler( CODE_REF )", "$parser->whiteline_handler( CODE_REF )",
"$parser->whine( linenumber, complaint string )", "$parser->scream( linenumber,
complaint string )", "$parser->source_dead(1)", "$parser->hide_line_numbers( SOMEVALUE
)", "$parser->no_whining( SOMEVALUE )", "$parser->no_errata_section( SOMEVALUE )",
"$parser->complain_stderr( SOMEVALUE )", "$parser->bare_output( SOMEVALUE )",
"$parser->preserve_whitespace( SOMEVALUE )", "$parser->parse_empty_lists( SOMEVALUE )"
```

SEE ALSO

SUPPORT

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Pod::Simple::Text -- format Pod as plaintext

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::TextContent -- get the text content of Pod

SYNOPSIS

DESCRIPTION

SEE ALSO

SUPPORT

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Pod::Simple::XHTML -- format Pod as validating XHTML

SYNOPSIS

DESCRIPTION

Minimal code

METHODS

perldoc_url_prefix

perldoc_url_postfix

man_url_prefix

man_url_postfix

title_prefix, title_postfix

html_css

html_javascript

html_doctype

html_charset

html_header_tags

html_h_level

default_title

force_title

html_header, html_footer

index

anchor_items

backlink

SUBCLASSING

handle_text

handle_code

accept_targets_as_html

resolve_pod_page_link

resolve_man_page_link

idify

batch_mode_page_object_init

SEE ALSO

SUPPORT

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ACKNOWLEDGEMENTS

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Pod::Simple::XMLOutputStream -- turn Pod into XML

SYNOPSIS

DESCRIPTION

SEE ALSO

ABOUT EXTENDING POD

SEE ALSO

SUPPORT

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Pod::Text - Convert POD data to formatted text

SYNOPSIS

DESCRIPTION

alt, code, errors, indent, loose, margin, nours, quotes, sentence, stderr, utf8,
width

DIAGNOSTICS

Bizarre space in item, Item called without tag, Can't open %s for reading: %s, Invalid
errors setting "%s", Invalid quote specification "%s", POD document had syntax errors

BUGS

CAVEATS

NOTES

AUTHOR

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SEE ALSO

Pod::Text::Color - Convert POD data to formatted color ASCII text

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

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SEE ALSO

Pod::Text::Overstrike - Convert POD data to formatted overstrike text

SYNOPSIS

DESCRIPTION

BUGS

AUTHOR

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SEE ALSO

Pod::Text::Termcap - Convert POD data to ASCII text with format escapes

SYNOPSIS

DESCRIPTION

AUTHOR

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SEE ALSO

Pod::Usage - extracts POD documentation and shows usage information

SYNOPSIS

ARGUMENTS

"-message" string, "-msg" string, "-exitval" value, "-verbose" value, "-sections"

spec, "-output" handle, "-input" handle, "-pathlist" string, "-noperldoc", "-perlcmd",

"-perldoc" path-to-perldoc, "-perldocopt" string

Formatting base class

Pass-through options

DESCRIPTION

Scripts

EXAMPLES

Recommended Use

CAVEATS

SUPPORT

AUTHOR

LICENSE

ACKNOWLEDGMENTS

SEE ALSO

SDBM_File - Tied access to sdbm files

SYNOPSIS

DESCRIPTION

Tie

EXPORTS

DIAGNOSTICS

"sdbm store returned -1, errno 22, key "..." at ..."

SECURITY WARNING

BUGS AND WARNINGS

Safe - Compile and execute code in restricted compartments

SYNOPSIS

DESCRIPTION

a new namespace, an operator mask

WARNING

METHODS

permit (OP, ...)

permit_only (OP, ...)

deny (OP, ...)

deny_only (OP, ...)

trap (OP, ...), untrap (OP, ...)

share (NAME, ...)

share_from (PACKAGE, ARRAYREF)

varglob (VARNAME)

reval (STRING, STRICT)

rdo (FILENAME)

root (NAMESPACE)

mask (MASK)

wrap_code_ref (CODEREF)

wrap_code_refs_within (...)

RISKS

Memory, CPU, Snooping, Signals, State Changes

AUTHOR

Scalar::Util - A selection of general-utility scalar subroutines

SYNOPSIS

DESCRIPTION

FUNCTIONS FOR REFERENCES

blessed

refaddr

reftype

weaken

unweaken

isweak

OTHER FUNCTIONS

dualvar

isdual

isvstring

looks_like_number

openhandle

readonly

set_prototype

tainted

DIAGNOSTICS

Weak references are not implemented in the version of perl, Vstrings are not implemented in the version of perl

KNOWN BUGS

SEE ALSO

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Search::Dict - look - search for key in dictionary file

SYNOPSIS

DESCRIPTION

SelectSaver - save and restore selected file handle

SYNOPSIS

DESCRIPTION

SelfLoader - load functions only on demand

SYNOPSIS

DESCRIPTION

The __DATA__ token

SelfLoader autoloading

Autoloading and package lexicals

SelfLoader and AutoLoader

__DATA__, __END__, and the FOOBAR::DATA filehandle.

Classes and inherited methods.

Multiple packages and fully qualified subroutine names

AUTHOR

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a), b)

Socket, "Socket" - networking constants and support functions

SYNOPSIS

DESCRIPTION

CONSTANTS

PF_INET, PF_INET6, PF_UNIX, ...

AF_INET, AF_INET6, AF_UNIX, ...

SOCK_STREAM, SOCK_DGRAM, SOCK_RAW, ...

SOCK_NONBLOCK. SOCK_CLOEXEC

SOL_SOCKET

SO_ACCEPTCONN, SO_BROADCAST, SO_ERROR, ...

IP_OPTIONS, IP_TOS, IP_TTL, ...

IP_PMTUDISC_WANT, IP_PMTUDISC_DONT, ...

IPTOS_LOWDELAY, IPTOS_THROUGHPUT, IPTOS_RELIABILITY, ...

MSG_BCAST, MSG_OOB, MSG_TRUNC, ...

SHUT_RD, SHUT_RDWR, SHUT_WR

INADDR_ANY, INADDR_BROADCAST, INADDR_LOOPBACK, INADDR_NONE

IPPROTO_IP, IPPROTO_IPV6, IPPROTO_TCP, ...

TCP_CORK, TCP_KEEPALIVE, TCP_NODELAY, ...

IN6ADDR_ANY, IN6ADDR_LOOPBACK

IPV6_ADD_MEMBERSHIP, IPV6_MTU, IPV6_V6ONLY, ...

STRUCTURE MANIPULATORS

\$family = sockaddr_family \$sockaddr

\$sockaddr = pack_sockaddr_in \$port, \$ip_address

(\$port, \$ip_address) = unpack_sockaddr_in \$sockaddr

\$sockaddr = sockaddr_in \$port, \$ip_address

(\$port, \$ip_address) = sockaddr_in \$sockaddr

\$sockaddr = pack_sockaddr_in6 \$port, \$ip6_address, [\$scope_id, [\$flowinfo]]

(\$port, \$ip6_address, \$scope_id, \$flowinfo) = unpack_sockaddr_in6 \$sockaddr

\$sockaddr = sockaddr_in6 \$port, \$ip6_address, [\$scope_id, [\$flowinfo]]

(\$port, \$ip6_address, \$scope_id, \$flowinfo) = sockaddr_in6 \$sockaddr

\$sockaddr = pack_sockaddr_un \$path

(\$path) = unpack_sockaddr_un \$sockaddr

\$sockaddr = sockaddr_un \$path

(\$path) = sockaddr_un \$sockaddr

\$ip_mreq = pack_ip_mreq \$multiaddr, \$interface

(\$multiaddr, \$interface) = unpack_ip_mreq \$ip_mreq

\$ip_mreq_source = pack_ip_mreq_source \$multiaddr, \$source, \$interface

(\$multiaddr, \$source, \$interface) = unpack_ip_mreq_source \$ip_mreq

\$ipv6_mreq = pack_ipv6_mreq \$multiaddr6, \$ifindex

(\$multiaddr6, \$ifindex) = unpack_ipv6_mreq \$ipv6_mreq

FUNCTIONS

\$ip_address = inet_aton \$string

\$string = inet_ntoa \$ip_address

\$address = inet_pton \$family, \$string

\$string = inet_ntop \$family, \$address

(\$err, @result) = getaddrinfo \$host, \$service, [\$hints]

flags => INT, family => INT, socktype => INT, protocol => INT, family => INT, socktype

=> INT, protocol => INT, addr => STRING, canonname => STRING, AI_PASSIVE,

AI_CANONNAME, AI_NUMERICHOST

(\$err, \$hostname, \$servicename) = getnameinfo \$sockaddr, [\$flags, [\$xflags]]

NI_NUMERICHOST, NI_NUMERICSERV, NI_NAMEREQD, NI_DGRAM, Nix_NOHOST, Nix_NOSERV

getaddrinfo() / getnameinfo() ERROR CONSTANTS

EAI_AGAIN, EAI_BADFLAGS, EAI_FAMILY, EAI_NODATA, EAI_NONAME, EAI_SERVICE

EXAMPLES

Lookup for connect()

Making a human-readable string out of an address

Resolving hostnames into IP addresses

Accessing socket options

AUTHOR

Storable - persistence for Perl data structures

SYNOPSIS

DESCRIPTION

MEMORY STORE

ADVISORY LOCKING

SPEED

CANONICAL REPRESENTATION

CODE REFERENCES

FORWARD COMPATIBILITY

utf8 data, restricted hashes, huge objects, files from future versions of Storable

ERROR REPORTING

WIZARDS ONLY

Hooks

"STORABLE_freeze" obj, cloning, "STORABLE_thaw" obj, cloning, serialized, ...

"STORABLE_attach" class, cloning, serialized

Predicates

"Storable::last_op_in_netorder", "Storable::is_storing", "Storable::is_retrieving"

Recursion

Deep Cloning

Storable magic

\$info = Storable::file_magic(\$filename), "version", "version_nv", "major", "minor",

"hdrsize", "netorder", "byteorder", "intsize", "longsize", "ptrsize", "nvsize",

"file", \$info = Storable::read_magic(\$buffer), \$info = Storable::read_magic(

\$buffer, \$must_be_file)

EXAMPLES

SECURITY WARNING

WARNING

REGULAR EXPRESSIONS

BUGS

64 bit data in perl 5.6.0 and 5.6.1

CREDITS

AUTHOR

SEE ALSO

Sub::Util - A selection of utility subroutines for subs and CODE references

SYNOPSIS

DESCRIPTION

FUNCTIONS

prototype

set_prototype

subname

set_subname

AUTHOR

Symbol - manipulate Perl symbols and their names

SYNOPSIS

DESCRIPTION

BUGS

Sys::Hostname - Try every conceivable way to get hostname

SYNOPSIS

DESCRIPTION

AUTHOR

Sys::Syslog - Perl interface to the UNIX syslog(3) calls

VERSION

SYNOPSIS

DESCRIPTION

EXPORTS

FUNCTIONS

openlog(\$ident, \$logopt, \$facility), syslog(\$priority, \$message), syslog(\$priority,

`$format, @args)`, `Note`, `setlogmask($mask_priority)`, `setlogsock()`, `Note`, `closelog()`

THE RULES OF SYS::SYSLOG

EXAMPLES

CONSTANTS

Facilities

Levels

DIAGNOSTICS

"Invalid argument passed to setlogsock", "eventlog passed to setlogsock, but no Win32 API available", "no connection to syslog available", "stream passed to setlogsock, but %s is not writable", "stream passed to setlogsock, but could not find any device", "tcp passed to setlogsock, but tcp service unavailable", "syslog: expecting argument %s", "syslog: invalid level/facility: %s", "syslog: too many levels given: %s", "syslog: too many facilities given: %s", "syslog: level must be given", "udp passed to setlogsock, but udp service unavailable", "unix passed to setlogsock, but path not available"

HISTORY

SEE ALSO

Other modules

Manual Pages

RFCs

Articles

Event Log

AUTHORS & ACKNOWLEDGEMENTS

BUGS

SUPPORT

Perl Documentation, MetaCPAN, Search CPAN, AnnoCPAN: Annotated CPAN documentation, CPAN Ratings, RT: CPAN's request tracker

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TAP::Base - Base class that provides common functionality to TAP::Parser and TAP::Harness

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

TAP::Formatter::Base - Base class for harness output delegates

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

"verbosity", "verbose", "timer", "failures", "comments", "quiet", "really_quiet",
"silent", "errors", "directives", "stdout", "color", "jobs", "show_count"

TAP::Formatter::Color - Run Perl test scripts with color

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

TAP::Formatter::Console - Harness output delegate for default console output

VERSION

DESCRIPTION

SYNOPSIS

"open_test"

TAP::Formatter::Console::ParallelSession - Harness output delegate for parallel console output

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

TAP::Formatter::Console::Session - Harness output delegate for default console output

VERSION

DESCRIPTION

"clear_for_close"

"close_test"

"header"

"result"

TAP::Formatter::File - Harness output delegate for file output

VERSION

DESCRIPTION

SYNOPSIS

"open_test"

TAP::Formatter::File::Session - Harness output delegate for file output

VERSION

DESCRIPTION

METHODS

result

close_test

TAP::Formatter::Session - Abstract base class for harness output delegate

VERSION

METHODS

Class Methods

"formatter", "parser", "name", "show_count"

TAP::Harness - Run test scripts with statistics

VERSION

DESCRIPTION

SYNOPSIS

METHODS

Class Methods

"verbosity", "timer", "failures", "comments", "show_count", "normalize", "lib",

"switches", "test_args", "color", "exec", "merge", "sources", "aggregator_class",

"version", "formatter_class", "multiplexer_class", "parser_class",

"scheduler_class", "formatter", "errors", "directives", "ignore_exit", "jobs",

"rules", "rulesfiles", "stdout", "trap"

Instance Methods

the source name of a test to run, a reference to a [source name, display name] array

CONFIGURING

Plugins

"Module::Build"

"ExtUtils::MakeMaker"

"prove"

WRITING PLUGINS

Customize how TAP gets into the parser, Customize how TAP results are output from the parser

SUBCLASSING

Methods

"new", "runtests", "summary"

REPLACING

SEE ALSO

TAP::Harness::Beyond, Test::Harness::Beyond - Beyond make test

Beyond make test

Saved State

Parallel Testing

Non-Perl Tests

Mixing it up

Rolling My Own

Deeper Customisation

Callbacks

Parsing TAP

Getting Support

TAP::Harness::Env - Parsing harness related environmental variables where appropriate

VERSION

SYNOPSIS

DESCRIPTION

METHODS

create(\%args)

ENVIRONMENTAL VARIABLES

"HARNESS_PERL_SWITCHES", "HARNESS_VERBOSE", "HARNESS_SUBCLASS", "HARNESS_OPTIONS",

"j<n>", "c", "a<file.tgz>", "fPackage-With-Dashes", "HARNESS_TIMER", "HARNESS_COLOR",

"HARNESS_IGNORE_EXIT"

TAP::Object - Base class that provides common functionality to all "TAP::*" modules

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

TAP::Parser - Parse TAP output

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

"source", "tap", "exec", "sources", "callback", "switches", "test_args", "spool",

"merge", "grammar_class", "result_factory_class", "iterator_factory_class"

Instance Methods

INDIVIDUAL RESULTS

Result types

Version, Plan, Pragma, Test, Comment, Bailout, Unknown

Common type methods

"plan" methods

"pragma" methods

"comment" methods

"bailout" methods

"unknown" methods

"test" methods

TOTAL RESULTS

Individual Results

Pragmas

Summary Results

"ignore_exit"

Misplaced plan, No plan, More than one plan, Test numbers out of sequence

CALLBACKS

"test", "version", "plan", "comment", "bailout", "yaml", "unknown", "ELSE", "ALL",

"EOF"

TAP GRAMMAR

BACKWARDS COMPATIBILITY

Differences

TODO plans, 'Missing' tests

SUBCLASSING

Parser Components

option 1, option 2

ACKNOWLEDGMENTS

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Vandiver, Cosimo Streppone, Ville Skytt?

AUTHORS

BUGS

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TAP::Parser::Aggregator - Aggregate TAP::Parser results

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

Summary methods

failed, parse_errors, passed, planned, skipped, todo, todo_passed, wait, exit

Failed tests, Parse errors, Bad exit or wait status

See Also

TAP::Parser::Grammar - A grammar for the Test Anything Protocol.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

TAP GRAMMAR

SUBCLASSING

SEE ALSO

TAP::Parser::Iterator - Base class for TAP source iterators

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

SUBCLASSING

Example

SEE ALSO

TAP::Parser::Iterator::Array - Iterator for array-based TAP sources

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

ATTRIBUTION

SEE ALSO

TAP::Parser::Iterator::Process - Iterator for process-based TAP sources

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

ATTRIBUTION

SEE ALSO

TAP::Parser::Iterator::Stream - Iterator for filehandle-based TAP sources

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

ATTRIBUTION

SEE ALSO

TAP::Parser::IteratorFactory - Figures out which SourceHandler objects to use for a given

Source

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

SUBCLASSING

Example

AUTHORS

ATTRIBUTION

SEE ALSO

TAP::Parser::Multiplexer - Multiplex multiple TAP::Parsers

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

See Also

TAP::Parser::Result - Base class for TAP::Parser output objects

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Boolean methods

"is_plan", "is_pragma", "is_test", "is_comment", "is_bailout", "is_version",
"is_unknown", "is_yaml"

SUBCLASSING

Example

SEE ALSO

TAP::Parser::Result::Bailout - Bailout result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string"

Instance Methods

TAP::Parser::Result::Comment - Comment result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string"

Instance Methods

TAP::Parser::Result::Plan - Plan result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string", "raw"

Instance Methods

TAP::Parser::Result::Pragma - TAP pragma token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string", "raw"

Instance Methods

TAP::Parser::Result::Test - Test result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

Instance Methods

TAP::Parser::Result::Unknown - Unknown result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string", "raw"

TAP::Parser::Result::Version - TAP syntax version token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string", "raw"

Instance Methods

TAP::Parser::Result::YAML - YAML result token.

VERSION

DESCRIPTION

OVERRIDDEN METHODS

"as_string", "raw"

Instance Methods

TAP::Parser::ResultFactory - Factory for creating TAP::Parser output objects

SYNOPSIS

VERSION

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

SEE ALSO

TAP::Parser::Scheduler - Schedule tests during parallel testing

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Rules data structure

By default, all tests are eligible to be run in parallel. Specifying any of your own rules removes this one, "First match wins". The first rule that matches a test will be the one that applies, Any test which does not match a rule will be run in sequence at the end of the run, The existence of a rule does not imply selecting a test. You must still specify the tests to run, Specifying a rule to allow tests to run in parallel does not make the run in parallel. You still need specify the number of parallel "jobs" in your Harness object

Instance Methods

TAP::Parser::Scheduler::Job - A single testing job.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

Attributes

TAP::Parser::Scheduler::Spinner - A no-op job.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

SEE ALSO

TAP::Parser::Source - a TAP source & meta data about it

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

AUTHORS

SEE ALSO

TAP::Parser::SourceHandler - Base class for different TAP source handlers

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

AUTHORS

SEE ALSO

TAP::Parser::SourceHandler::Executable - Stream output from an executable TAP source

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

SEE ALSO

TAP::Parser::SourceHandler::File - Stream TAP from a text file.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

CONFIGURATION

SUBCLASSING

SEE ALSO

TAP::Parser::SourceHandler::Handle - Stream TAP from an IO::Handle or a GLOB.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

SEE ALSO

TAP::Parser::SourceHandler::Perl - Stream TAP from a Perl executable

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

Example

SEE ALSO

TAP::Parser::SourceHandler::RawTAP - Stream output from raw TAP in a scalar/array ref.

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

SUBCLASSING

SEE ALSO

TAP::Parser::YAMLish::Reader - Read YAMLish data from iterator

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

AUTHOR

SEE ALSO

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TAP::Parser::YAMLish::Writer - Write YAMLish data

VERSION

SYNOPSIS

DESCRIPTION

METHODS

Class Methods

Instance Methods

a reference to a scalar to append YAML to, the handle of an open file, a reference
to an array into which YAML will be pushed, a code reference

AUTHOR

SEE ALSO

COPYRIGHT

Term::ANSIColor - Color screen output using ANSI escape sequences

SYNOPSIS

DESCRIPTION

Supported Colors

Function Interface

color(ATTR[, ATTR ...]), colored(String, ATTR[, ATTR ...]), colored(ATTR-REF,
String[, String...]), uncolor(ESCAPE), colorstrip(String[, String ...]),
colorvalid(ATTR[, ATTR ...]), coloralias(ALIAS[, ATTR ...])

Constant Interface

The Color Stack

Supporting CLICOLOR

DIAGNOSTICS

Bad color mapping %s, Bad escape sequence %s, Bareword "%s" not allowed while "strict
subs" in use, Cannot alias standard color %s, Cannot alias standard color %s in %s,
Invalid alias name %s, Invalid alias name %s in %s, Invalid attribute name %s, Invalid
attribute name %s in %s, Name "%s" used only once: possible typo, No comma allowed
after filehandle, No name for escape sequence %s

ENVIRONMENT

ANSI_COLORS_ALIASES, ANSI_COLORS_DISABLED, NO_COLOR

COMPATIBILITY

RESTRICTIONS

NOTES

AUTHORS

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SEE ALSO

Term::Cap - Perl termcap interface

SYNOPSIS

DESCRIPTION

METHODS

Tgetent, OSPEED, TERM

Tpad, \$string, \$cnt, \$FH

Tputs, \$cap, \$cnt, \$FH

Tgoto, \$cap, \$col, \$row, \$FH

Trequire

EXAMPLES

COPYRIGHT AND LICENSE

AUTHOR

SEE ALSO

Term::Complete - Perl word completion module

SYNOPSIS

DESCRIPTION

<tab>, ^D, ^U, , <bs>

DIAGNOSTICS

BUGS

AUTHOR

Term::ReadLine - Perl interface to various "readline" packages. If no real package is found, substitutes stubs instead of basic functions.

SYNOPSIS

DESCRIPTION

Minimal set of supported functions

"ReadLine", "new", "readline", "addhistory", "IN", "OUT", "MinLine", "findConsole",

Attribs, "Features"

Additional supported functions

"tkRunning", "event_loop", "ornaments", "newTTY"

EXPORTS

ENVIRONMENT

Test - provides a simple framework for writing test scripts

SYNOPSIS

DESCRIPTION

QUICK START GUIDE

Functions

```
"plan(...)", "tests => number", "todo => [1,5,14]", "onfail => sub { ... }",  
"onfail => \&some_sub"
```

_to_value

"ok(...)"

"skip(skip_if_true, args...)"

TEST TYPES

NORMAL TESTS, SKIPPED TESTS, TODO TESTS

ONFAIL

BUGS and CAVEATS

ENVIRONMENT

NOTE

SEE ALSO

AUTHOR

Test2 - Framework for writing test tools that all work together.

DESCRIPTION

WHAT IS NEW?

Easier to test new testing tools, Better diagnostics capabilities, Event driven,
More complete API, Support for output other than TAP, Subtest implementation is
more sane, Support for threading/forking

GETTING STARTED

Test2, This describes the namespace layout for the Test2 ecosystem. Not all the namespaces
listed here are part of the Test2 distribution, some are implemented in Test2::Suite.

Test2::Tools::

Test2::Plugin::

Test2::Bundle::

Test2::Require::

Test2::Formatter::

Test2::Event::

Test2::Hub::

Test2::IPC::

Test2::Util::

Test2::API::

Test2::

SEE ALSO

CONTACTING US

SOURCE

MAINTAINERS

Chad Granum <exodist@cpan.org>

AUTHORS

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Test2::API - Primary interface for writing Test2 based testing tools.

INTERNALS NOTE

DESCRIPTION

SYNOPSIS

WRITING A TOOL

TESTING YOUR TOOLS

OTHER API FUNCTIONS

MAIN API EXPORTS

context(...)

\$ctx = context(), \$ctx = context(%params), level => \$int, wrapped => \$int, stack

=> \$stack, hub => \$hub, on_init => sub { ... }, on_release => sub { ... }

release(\$;\$)

release \$ctx,; release \$ctx, ...;

context_do(&@)

no_context(&,\$)

no_context { ... },; no_context { ... } \$hid;

intercept(&)

run_subtest(...)

\$NAME, \&CODE, \$BUFFERED or \%PARAMS, 'buffered' => \$bool, 'inherit_trace' =>

\$bool, 'no_fork' => \$bool, @ARGS, Things not effected by this flag, Things that are effected by this flag, Things that are formatter dependant

OTHER API EXPORTS

STATUS AND INITIALIZATION STATE

\$bool = test2_init_done(), \$bool = test2_load_done(), test2_set_is_end(),
test2_set_is_end(\$bool), \$bool = test2_get_is_end(), \$stack = test2_stack(), \$bool
= test2_is_testing_done(), test2_ipc_disable, \$bool = test2_ipc_diabled,
test2_ipc_wait_enable(), test2_ipc_wait_disable(), \$bool =
test2_ipc_wait_enabled(), \$bool = test2_no_wait(), test2_no_wait(\$bool), \$fh =
test2_stdout(), \$fh = test2_stderr(), test2_reset_io()

BEHAVIOR HOOKS

test2_add_callback_exit(sub { ... }), test2_add_callback_post_load(sub { ... }),
test2_add_callback_testing_done(sub { ... }),
test2_add_callback_context_acquire(sub { ... }),
test2_add_callback_context_init(sub { ... }),
test2_add_callback_context_release(sub { ... }),
test2_add_callback_pre_subtest(sub { ... }), @list =
test2_list_context_acquire_callbacks(), @list =
test2_list_context_init_callbacks(), @list =
test2_list_context_release_callbacks(), @list = test2_list_exit_callbacks(), @list
= test2_list_post_load_callbacks(), @list = test2_list_pre_subtest_callbacks(),
test2_add_uuid_via(sub { ... }), \$sub = test2_add_uuid_via()

IPC AND CONCURRENCY

\$bool = test2_has_ipc(), \$ipc = test2_ipc(), test2_ipc_add_driver(\$DRIVER),
@drivers = test2_ipc_drivers(), \$bool = test2_ipc_polling(),
test2_ipc_enable_polling(), test2_ipc_disable_polling(), test2_ipc_enable_shm(),
test2_ipc_set_pending(\$uniq_val), \$pending = test2_ipc_get_pending(), \$timeout =
test2_ipc_get_timeout(), test2_ipc_set_timeout(\$timeout)

MANAGING FORMATTERS

\$formatter = test2_formatter, test2_formatter_set(\$class_or_instance), @formatters
= test2_formatters(), test2_formatter_add(\$class_or_instance)

OTHER EXAMPLES

SEE ALSO

MAGIC

SOURCE

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Test2::API::Breakage - What breaks at what version

DESCRIPTION

FUNCTIONS

%mod_ver = upgrade_suggested(), %mod_ver = Test2::API::Breakage->upgrade_suggested(),

%mod_ver = upgrade_required(), %mod_ver = Test2::API::Breakage->upgrade_required(),

%mod_ver = known_broken(), %mod_ver = Test2::API::Breakage->known_broken()

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Test2::API::Context - Object to represent a testing context.

DESCRIPTION

SYNOPSIS

CRITICAL DETAILS

you MUST always use the context() sub from Test2::API, You MUST always release the context when done with it, You MUST NOT pass context objects around, You MUST NOT store or cache a context for later, You SHOULD obtain your context as soon as possible in a given tool

METHODS

\$ctx->done_testing;, \$clone = \$ctx->snapshot(), \$ctx->release(),

\$ctx->throw(\$message), \$ctx->alert(\$message), \$stack = \$ctx->stack(), \$hub =

\$ctx->hub(), \$dbg = \$ctx->trace(), \$ctx->do_in_context(\&code, @args);,

\$ctx->restore_error_vars(), \$! = \$ctx->errno(), \$? = \$ctx->child_error(), \$@ =

\$ctx->eval_error()

EVENT PRODUCTION METHODS

```
$event = $ctx->pass(), $event = $ctx->pass($name), $true =  
$ctx->pass_and_release(), $true = $ctx->pass_and_release($name), my $event =  
$ctx->fail(), my $event = $ctx->fail($name), my $event = $ctx->fail($name,  
@diagnostics), my $false = $ctx->fail_and_release(), my $false =  
$ctx->fail_and_release($name), my $false = $ctx->fail_and_release($name,  
@diagnostics), $event = $ctx->ok($bool, $name), $event = $ctx->ok($bool, $name,  
\@on_fail), $event = $ctx->note($message), $event = $ctx->diag($message), $event =  
$ctx->plan($max), $event = $ctx->plan(0, 'SKIP', $reason), $event =  
$ctx->skip($name, $reason);, $event = $ctx->bail($reason), $event =  
$ctx->send_ev2(%facets), $event = $ctx->build_e2(%facets), $event =  
$ctx->send_ev2_and_release($Type, %parameters), $event = $ctx->send_event($Type,  
%parameters), $event = $ctx->build_event($Type, %parameters), $event =  
$ctx->send_event_and_release($Type, %parameters)
```

HOOKS

INIT HOOKS

RELEASE HOOKS

THIRD PARTY META-DATA

SOURCE

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Test2::API::Instance - Object used by Test2::API under the hood

DESCRIPTION

SYNOPSIS

```
$pid = $obj->pid, $obj->tid, $obj->reset(), $obj->load(), $bool = $obj->loaded,  
$arrayref = $obj->post_load_callbacks, $obj->add_post_load_callback(sub { ... } ),  
$hashref = $obj->contexts(), $arrayref = $obj->context_acquire_callbacks, $arrayref =  
$obj->context_init_callbacks, $arrayref = $obj->context_release_callbacks, $arrayref =  
$obj->pre_subtest_callbacks, $obj->add_context_init_callback(sub { ... } ),  
$obj->add_context_release_callback(sub { ... } ), $obj->add_pre_subtest_callback(sub {
```

```

... }), $obj->set_exit(), $obj->set_ipc_pending($val), $pending =
$obj->get_ipc_pending(), $timeout = $obj->ipc_timeout,,
$obj->set_ipc_timeout($timeout);, $drivers = $obj->ipc_drivers,
$obj->add_ipc_driver($DRIVER_CLASS), $bool = $obj->ipc_polling,
$obj->enable_ipc_polling, $obj->disable_ipc_polling, $bool = $obj->no_wait, $bool =
$obj->set_no_wait($bool), $arrayref = $obj->exit_callbacks,
$obj->add_exit_callback(sub { ... }), $bool = $obj->finalized, $ipc = $obj->ipc,
$obj->ipc_disable, $bool = $obj->ipc_disabled, $stack = $obj->stack, $formatter =
$obj->formatter, $bool = $obj->formatter_set(), $obj->add_formatter($class),
$obj->add_formatter($obj), $obj->set_add_uuid_via(sub { ... }), $sub =
$obj->add_uuid_via()

```

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Test2::API::InterceptResult - Representation of a list of events.

DESCRIPTION

SYNOPSIS

METHODS

CONSTRUCTION

```

$events = Test2::API::InterceptResult->new(@EVENTS), $events =
Test2::API::InterceptResult->new_from_ref(\@EVENTS), $clone = $events->clone()

```

NORMALIZATION

```

@events = $events->event_list, $hub = $events->hub, $state = $events->state, $new
= $events->upgrade, $events->upgrade(in_place => $BOOL), $new =
$events->squash_info, $events->squash_info(in_place => $BOOL)

```

FILTERING

```

in_place => $BOOL, args => \@ARGS, $events->grep($CALL, %PARAMS),
$events->asserts(%PARAMS), $events->subtests(%PARAMS), $events->diags(%PARAMS),
$events->notes(%PARAMS), $events->errors(%PARAMS), $events->plans(%PARAMS),
$events->causes_fail(%PARAMS), $events->causes_failure(%PARAMS)

```


MAPPING

```
$arrayref = $events->map($CALL, %PARAMS), $arrayref = $events->flatten(%PARAMS),  
$arrayref = $events->briefs(%PARAMS), $arrayref = $events->summaries(%PARAMS),  
$arrayref = $events->subtest_results(%PARAMS), $arrayref =  
$events->diag_messages(%PARAMS), $arrayref = $events->note_messages(%PARAMS),  
$arrayref = $events->error_messages(%PARAMS)
```

SOURCE

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Test2::API::InterceptResult::Event - Representation of an event for use in testing other test tools.

DESCRIPTION

SYNOPSIS

METHODS

!!! IMPORTANT NOTES ON DESIGN !!!

ATTRIBUTES

```
$hashref = $event->facet_data, $class = $event->result_class
```

DUPLICATION

```
$copy = $event->clone
```

CONDENSED MULTI-FACET DATA

```
$bool = $event->causes_failure, $bool = $event->causes_fail, STRING_OR_EMPTY_LIST  
= $event->brief, $hashref = $event->flatten, $hashref =  
$event->flatten(include_subevents => 1), always present, Present if the event has  
a trace facet, If an assertion is present, If a plan is present:, If amnesty  
facets are present, If Info (note/diag) facets are present, If error facets are  
present, Present if the event is a subtest, If a bail-out is being requested,  
$hashref = $event->summary()
```

DIRECT ARBITRARY FACET ACCESS

```
@list_of_facets = $event->facet($name), $undef_or_facet = $event->the_facet($name)
```

TRACE FACET

```
@list_of_facets = $event->trace, $undef_or_hashref = $event->the_trace,  
$undef_or_arrayref = $event->frame, $undef_or_string = $event->trace_details,  
$undef_or_string = $event->trace_package, $undef_or_string = $event->trace_file,  
$undef_or_integer = $event->trace_line, $undef_or_string = $event->trace_subname,  
$undef_or_string = $event->trace_tool, $undef_or_string = $event->trace_signature
```

ASSERT FACET

```
$bool = $event->has_assert, $undef_or_hashref = $event->the_assert,  
@list_of_facets = $event->assert, EMPTY_LIST_OR_STRING = $event->assert_brief
```

SUBTESTS (PARENT FACET)

```
$bool = $event->has_subtest, $undef_or_hashref = $event->the_subtest,  
@list_of_facets = $event->subtest, EMPTY_LIST_OR_OBJECT = $event->subtest_result
```

CONTROL FACET (BAILOUT, ENCODING)

```
$bool = $event->has_bailout, $undef_hashref = $event->the_bailout,  
EMPTY_LIST_OR_HASHREF = $event->bailout, EMPTY_LIST_OR_STRING =  
$event->bailout_brief, EMPTY_LIST_OR_STRING = $event->bailout_reason
```

PLAN FACET

```
$bool = $event->has_plan, $undef_or_hashref = $event->the_plan, @list_if_hashrefs  
= $event->plan, EMPTY_LIST_OR_STRING $event->plan_brief
```

AMNESTY FACET (TODO AND SKIP)

```
$event->has_amnesty, $event->the_amnesty, $event->amnesty,  
$event->amnesty_reasons, $event->has_todos, $event->todos, $event->todo_reasons,  
$event->has_skips, $event->skips, $event->skip_reasons, $event->has_other_amnesty,  
$event->other_amnesty, $event->other_amnesty_reasons
```

ERROR FACET (CAPTURED EXCEPTIONS)

```
$event->has_errors, $event->the_errors, $event->errors, $event->error_messages,  
$event->error_brief
```

INFO FACET (DIAG, NOTE)

```
$event->has_info, $event->the_info, $event->info, $event->info_messages,  
$event->has_diags, $event->diags, $event->diag_messages, $event->has_notes,  
$event->notes, $event->note_messages, $event->has_other_info, $event->other_info,  
$event->other_info_messages
```

SOURCE

MAINTAINERS

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Test2::API::InterceptResult::Hub - Hub used by InterceptResult.

SOURCE

MAINTAINERS

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Test2::API::InterceptResult::Squasher - Encapsulation of the algorithm that squashes diags

into assertions.

DESCRIPTION

SOURCE

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Test2::API::Stack - Object to manage a stack of Test2::Hub instances.

INTERNALS NOTE

DESCRIPTION

SYNOPSIS

METHODS

```
$stack = Test2::API::Stack->new(), $hub = $stack->new_hub(), $hub =  
$stack->new_hub(%params), $hub = $stack->new_hub(%params, class => $class), $hub =  
$stack->top(), $hub = $stack->peek(), $stack->cull, @hubs = $stack->all,  
$stack->clear, $stack->push($hub), $stack->pop($hub)
```

SOURCE

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Test2::Event - Base class for events

DESCRIPTION

SYNOPSIS

METHODS

GENERAL

```
$trace = $e->trace, $bool_or_undef = $e->related($e2), $e->add_amnesty({tag =>
$TAG, details => $DETAILS});, $uuid = $e->uuid, $class = $e->load_facet($name),
@classes = $e->FACET_TYPES(), @classes = Test2::Event->FACET_TYPES()
```

NEW API

```
$hashref = $e->common_facet_data();, $hashref = $e->facet_data(), $hashref =
$e->facets(), @errors = $e->validate_facet_data();, @errors =
$e->validate_facet_data(%params);, @errors = $e->validate_facet_data(\%facets,
%params);, @errors = Test2::Event->validate_facet_data(%params);, @errors =
Test2::Event->validate_facet_data(\%facets, %params);, require_facet_class =>
$BOOL, about => {...}, assert => {...}, control => {...}, meta => {...}, parent =>
{...}, plan => {...}, trace => {...}, amnesty => [{...}, ...], errors => [{...},
...], info => [{...}, ...]
```

LEGACY API

```
$bool = $e->causes_fail, $bool = $e->increments_count, $e->callback($hub), $num =
$e->nested, $bool = $e->global, $code = $e->terminate, $msg = $e->summary,
($count, $directive, $reason) = $e->sets_plan(), $bool = $e->diagnostics, $bool =
$e->no_display, $id = $e->in_subtest, $id = $e->subtest_id
```

THIRD PARTY META-DATA

SOURCE

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Test2::Event::Bail - Bailout!

DESCRIPTION

SYNOPSIS

METHODS

`$reason = $e->reason`

SOURCE

MAINTAINERS

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Test2::Event::Diag - Diag event type

DESCRIPTION

SYNOPSIS

ACCESSORS

`$diag->message`

SOURCE

MAINTAINERS

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Test2::Event::Encoding - Set the encoding for the output stream

DESCRIPTION

SYNOPSIS

METHODS

`$encoding = $e->encoding`

SOURCE

MAINTAINERS

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Test2::Event::Exception - Exception event

DESCRIPTION

SYNOPSIS

METHODS

`$reason = $e->error`

CAVEATS

SOURCE

MAINTAINERS

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Test2::Event::Fail - Event for a simple failed assertion

DESCRIPTION

SYNOPSIS

SOURCE

MAINTAINERS

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Test2::Event::Generic - Generic event type.

DESCRIPTION

SYNOPSIS

METHODS

```
$e->facet_data($data), $data = $e->facet_data, $e->callback($hub),  
$e->set_callback(sub { ... }), $bool = $e->causes_fail, $e->set_causes_fail($bool),  
$bool = $e->diagnostics, $e->set_diagnostics($bool), $bool_or_undef = $e->global,  
@bool_or_empty = $e->global, $e->set_global($bool_or_undef), $bool =  
$e->increments_count, $e->set_increments_count($bool), $bool = $e->no_display,  
$e->set_no_display($bool), @plan = $e->sets_plan, $e->set_sets_plan(\@plan), $summary  
= $e->summary, $e->set_summary($summary_or_undef), $int_or_undef = $e->terminate,  
@int_or_empty = $e->terminate, $e->set_terminate($int_or_undef)
```

SOURCE

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Test2::Event::Note - Note event type

DESCRIPTION

SYNOPSIS

ACCESSORS

\$note->message

SOURCE

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Test2::Event::Ok - Ok event type

DESCRIPTION

SYNOPSIS

ACCESSORS

\$rb = \$e->pass, \$name = \$e->name, \$b = \$e->effective_pass

SOURCE

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Test2::Event::Pass - Event for a simple passing assertion

DESCRIPTION

SYNOPSIS

SOURCE

MAINTAINERS

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Test2::Event::Plan - The event of a plan

DESCRIPTION

SYNOPSIS

ACCESSORS

\$num = \$plan->max, \$dir = \$plan->directive, \$reason = \$plan->reason

SOURCE

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Test2::Event::Skip - Skip event type

DESCRIPTION

SYNOPSIS

ACCESSORS

\$reason = \$e->reason

SOURCE

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Test2::Event::Subtest - Event for subtest types

DESCRIPTION

ACCESSORS

\$arrayref = \$e->subevents, \$bool = \$e->buffered

SOURCE

MAINTAINERS

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Test2::Event::TAP::Version - Event for TAP version.

DESCRIPTION

SYNOPSIS

METHODS

```
$version = $e->version
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::Event::V2 - Second generation event.

DESCRIPTION

SYNOPSIS

USING A CONTEXT

USING THE CONSTRUCTOR

METHODS

```
$fd = $e->facet_data(), $about = $e->about(), $trace = $e->trace()
```

MUTATION

```
$e->add_amnesty({...}), $e->add_hub({...}), $e->set_uuid($UUID),
```

```
$e->set_trace($trace)
```

LEGACY SUPPORT METHODS

causes_fail, diagnostics, global, increments_count, no_display, sets_plan,
subtest_id, summary, terminate

THIRD PARTY META-DATA

SOURCE

MAINTAINERS

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AUTHORS

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Test2::Event::Waiting - Tell all procs/threads it is time to be done

DESCRIPTION

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet - Base class for all event facets.

DESCRIPTION

METHODS

```
$key = $facet_class->facet_key(), $bool = $facet_class->is_list(), $clone =  
$facet->clone(), $clone = $facet->clone(%replace)
```

SOURCE

MAINTAINERS

Chad Granum <exodist@cpan.org>

AUTHORS

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Test2::EventFacet::About - Facet with event details.

DESCRIPTION

FIELDS

```
$string = $about->{details}, $string = $about->details(), $package =  
$about->{package}, $package = $about->package(), $bool = $about->{no_display}, $bool =  
$about->no_display(), $uuid = $about->{uuid}, $uuid = $about->uuid(), $uuid =  
$about->{eid}, $uuid = $about->eid()
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet::Amnesty - Facet for assertion amnesty.

DESCRIPTION

NOTES

FIELDS

```
$string = $amnesty->{details}, $string = $amnesty->details(), $short_string =  
$amnesty->{tag}, $short_string = $amnesty->tag(), $bool = $amnesty->{inherited}, $bool  
= $amnesty->inherited()
```

SOURCE

MAINTAINERS

Chad Granum <exodist@cpan.org>

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Test2::EventFacet::Assert - Facet representing an assertion.

DESCRIPTION

FIELDS

```
$string = $assert->{details}, $string = $assert->details(), $bool = $assert->{pass},  
$bool = $assert->pass(), $bool = $assert->{no_debug}, $bool = $assert->no_debug(),  
$int = $assert->{number}, $int = $assert->number()
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet::Control - Facet for hub actions and behaviors.

DESCRIPTION

FIELDS

```
$string = $control->{details}, $string = $control->details(), $bool =  
$control->{global}, $bool = $control->global(), $exit = $control->{terminate}, $exit =  
$control->terminate(), $bool = $control->{halt}, $bool = $control->halt(), $bool =  
$control->{has_callback}, $bool = $control->has_callback(), $encoding =  
$control->{encoding}, $encoding = $control->encoding(), $phase = $control->{phase},  
$phase = $control->phase()
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet::Error - Facet for errors that need to be shown.

DESCRIPTION

NOTES

FIELDS

```
$string = $error->{details}, $string = $error->details(), $short_string =  
$error->{tag}, $short_string = $error->tag(), $bool = $error->{fail}, $bool =  
$error->fail()
```

SOURCE

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Test2::EventFacet::Hub - Facet for the hubs an event passes through.

DESCRIPTION

FACET FIELDS

```
$string = $trace->{details}, $string = $trace->details(), $int = $trace->{pid}, $int =  
$trace->pid(), $int = $trace->{tid}, $int = $trace->tid(), $hid = $trace->{hid}, $hid  
= $trace->hid(), $huuid = $trace->{huuid}, $huuid = $trace->huuid(), $int =  
$trace->{nested}, $int = $trace->nested(), $bool = $trace->{buffered}, $bool =  
$trace->buffered()
```

SOURCE

MAINTAINERS

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Test2::EventFacet::Info - Facet for information a developer might care about.

DESCRIPTION

NOTES

FIELDS

```
$string_or_structure = $info->{details}, $string_or_structure = $info->details(),  
$structure = $info->{table}, $structure = $info->table(), $short_string =  
$info->{tag}, $short_string = $info->tag(), $bool = $info->{debug}, $bool =  
$info->debug(), $bool = $info->{important}, $bool = $info->important
```

SOURCE

MAINTAINERS

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Test2::EventFacet::Info::Table - Intermediary representation of a table.

DESCRIPTION

SYNOPSIS

ATTRIBUTES

```
$header_oref = $t->header(), $rows_oref = $t->rows(), $bool = $t->collapse(), $aref =  
$t->no_collapse(), $str = $t->as_string(), $href = $t->as_hash(), %args =  
$t->info_args()
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet::Meta - Facet for meta-data

DESCRIPTION

METHODS AND FIELDS

```
$anything = $meta->{anything}, $anything = $meta->anything()
```

SOURCE

MAINTAINERS

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AUTHORS

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Test2::EventFacet::Parent - Facet for events contains other events

DESCRIPTION

FIELDS

\$string = \$parent->{details}, \$string = \$parent->details(), \$hid = \$parent->{hid},
\$hid = \$parent->hid(), \$arrayref = \$parent->{children}, \$arrayref =
\$parent->children(), \$bool = \$parent->{buffered}, \$bool = \$parent->buffered()

SOURCE

MAINTAINERS

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Test2::EventFacet::Plan - Facet for setting the plan

DESCRIPTION

FIELDS

\$string = \$plan->{details}, \$string = \$plan->details(), \$positive_int =
\$plan->{count}, \$positive_int = \$plan->count(), \$bool = \$plan->{skip}, \$bool =
\$plan->skip(), \$bool = \$plan->{none}, \$bool = \$plan->none()

SOURCE

MAINTAINERS

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Test2::EventFacet::Render - Facet that dictates how to render an event.

DESCRIPTION

FIELDS

\$string = \$render->[#]->{details}, \$string = \$render->[#]->details(), \$string =
\$render->[#]->{tag}, \$string = \$render->[#]->tag(), \$string = \$render->[#]->{facet},
\$string = \$render->[#]->facet(), \$mode = \$render->[#]->{mode}, \$mode =

\$render->[#]->mode(), calculated, replace

SOURCE

MAINTAINERS

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Test2::EventFacet::Trace - Debug information for events

DESCRIPTION

SYNOPSIS

FACET FIELDS

```
$string = $trace->{details}, $string = $trace->details(), $frame = $trace->{frame},  
$frame = $trace->frame(), $int = $trace->{pid}, $int = $trace->pid(), $int =  
$trace->{tid}, $int = $trace->tid(), $id = $trace->{cid}, $id = $trace->cid(), $uuid =  
$trace->{uuid}, $uuid = $trace->uuid(), ($pkg, $file, $line, $subname) = $trace->call,  
@caller = $trace->full_call, $warning_bits = $trace->warning_bits
```

DISCOURAGED HUB RELATED FIELDS

```
$hid = $trace->{hid}, $hid = $trace->hid(), $huuid = $trace->{huuid}, $huuid =  
$trace->huuid(), $int = $trace->{nested}, $int = $trace->nested(), $bool =  
$trace->{buffered}, $bool = $trace->buffered()
```

METHODS

```
$trace->set_detail($msg), $msg = $trace->detail, $str = $trace->debug,  
$trace->alert($MESSAGE), $trace->throw($MESSAGE), ($package, $file, $line, $subname) =  
$trace->call(), $pkg = $trace->package, $file = $trace->file, $line = $trace->line,  
$subname = $trace->subname, $sig = trace->signature
```

SOURCE

MAINTAINERS

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Test2::Formatter - Namespace for formatters.

DESCRIPTION

CREATING FORMATTERS

The number of tests that were planned, The number of tests actually seen, The number of tests which failed, A boolean indicating whether or not the test suite passed, A boolean indicating whether or not this call is for a subtest

SOURCE

MAINTAINERS

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Test2::Formatter::TAP - Standard TAP formatter

DESCRIPTION

SYNOPSIS

METHODS

```
$bool = $tap->no_numbers, $tap->set_no_numbers($bool), $arrayref = $tap->handles,  
$tap->set_handles(\@handles);, $encoding = $tap->encoding, $tap->encoding($encoding),  
$tap->write($e, $num)
```

SOURCE

MAINTAINERS

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Test2::Hub - The conduit through which all events flow.

SYNOPSIS

DESCRIPTION

COMMON TASKS

SENDING EVENTS

ALTERING OR REMOVING EVENTS

LISTENING FOR EVENTS

POST-TEST BEHAVIORS

SETTING THE FORMATTER

METHODS


```
$hub->send($event), $hub->process($event), $old = $hub->format($formatter), $sub =  
$hub->listen(sub { ... }, %optional_params), $hub->unlisten($sub), $sub =  
$hub->filter(sub { ... }, %optional_params), $sub = $hub->pre_filter(sub { ... },  
%optional_params), $hub->unfilter($sub), $hub->pre_unfilter($sub), $hub->follow_op(sub  
{ ... }), $sub = $hub->add_context_acquire(sub { ... });,  
$hub->remove_context_acquire($sub);, $sub = $hub->add_context_init(sub { ... });,  
$hub->remove_context_init($sub);, $sub = $hub->add_context_release(sub { ... });,  
$hub->remove_context_release($sub);, $hub->cull(), $pid = $hub->pid(), $tid =  
$hub->tid(), $hud = $hub->hid(), $uuid = $hub->uuid(), $ipc = $hub->ipc(),  
$hub->set_no_ending($bool), $bool = $hub->no_ending, $bool = $hub->active,  
$hub->set_active($bool)
```

STATE METHODS

```
$hub->reset_state(), $num = $hub->count, $num = $hub->failed, $bool = $hub->ended,  
$bool = $hub->is_passing, $hub->is_passing($bool), $hub->plan($plan), $plan =  
$hub->plan, $bool = $hub->check_plan
```

THIRD PARTY META-DATA

SOURCE

MAINTAINERS

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Test2::Hub::Interceptor - Hub used by interceptor to grab results.

SOURCE

MAINTAINERS

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Test2::Hub::Interceptor::Terminator - Exception class used by Test2::Hub::Interceptor

SOURCE

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Test2::Hub::Subtest - Hub used by subtests

DESCRIPTION

TOGGLES

\$bool = \$hub->manual_skip_all, \$hub->set_manual_skip_all(\$bool)

SOURCE

MAINTAINERS

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AUTHORS

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Test2::IPC - Turn on IPC for threading or forking support.

SYNOPSIS

DISABLING IT

EXPORTS

cull()

SOURCE

MAINTAINERS

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Test2::IPC::Driver - Base class for Test2 IPC drivers.

SYNOPSIS

METHODS

\$self->abort(\$msg), \$self->abort_trace(\$msg)

LOADING DRIVERS

WRITING DRIVERS

METHODS SUBCLASSES MUST IMPLEMENT

\$ipc->is_viable, \$ipc->add_hub(\$hid), \$ipc->drop_hub(\$hid), \$ipc->send(\$hid,
\$event);, \$ipc->send(\$hid, \$event, \$global);, @events = \$ipc->cull(\$hid),

```
$ipc->waiting()
```

METHODS SUBCLASSES MAY IMPLEMENT OR OVERRIDE

```
$ipc->driver_abort($msg)
```

SOURCE

MAINTAINERS

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Test2::IPC::Driver::Files - Temp dir + Files concurrency model.

DESCRIPTION

SYNOPSIS

ENVIRONMENT VARIABLES

```
T2_KEEP_TEMPDIR=0, T2_TEMPDIR_TEMPLATE='test2-XXXXXX'
```

SEE ALSO

SOURCE

MAINTAINERS

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Test2::Tools::Tiny - Tiny set of tools for unfortunate souls who cannot use Test2::Suite.

DESCRIPTION

USE Test2::Suite INSTEAD

EXPORTS

```
ok($bool, $name), ok($bool, $name, @diag), is($got, $want, $name), is($got, $want,
$name, @diag), isnt($got, $do_not_want, $name), isnt($got, $do_not_want, $name,
@diag), like($got, $regex, $name), like($got, $regex, $name, @diag), unlike($got,
$regex, $name), unlike($got, $regex, $name, @diag), is_deeply($got, $want, $name),
is_deeply($got, $want, $name, @diag), diag($msg), note($msg), skip_all($reason), todo
$reason => sub { ... }, plan($count), done_testing(), $warnings = warnings { ... },
$exception = exception { ... }, tests $name => sub { ... }, $output = capture { ... }
```

SOURCE

MAINTAINERS

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Test2::Transition - Transition notes when upgrading to Test2

DESCRIPTION

THINGS THAT BREAK

Test::Builder1.5/2 conditionals

Replacing the Test::Builder singleton

Directly Accessing Hash Elements

Subtest indentation

DISTRIBUTIONS THAT BREAK OR NEED TO BE UPGRADED

WORKS BUT TESTS WILL FAIL

Test::DBIx::Class::Schema, Device::Chip

UPGRADE SUGGESTED

Test::Exception, Data::Peek, circular::require, Test::Module::Used,

Test::Moose::More, Test::FITesque, Test::Kit, autouse

NEED TO UPGRADE

Test::SharedFork, Test::Builder::Clutch, Test::Dist::VersionSync, Test::Modern,

Test::UseAllModules, Test::More::Prefix

STILL BROKEN

Test::Aggregate, Test::Wrapper, Test::ParallelSubtest, Test::Pretty,

Net::BitTorrent, Test::Group, Test::Flatten, Log::Dispatch::Config::TestLog,

Test::Able

MAKE ASSERTIONS -> SEND EVENTS

LEGACY

TEST2

ok(\$bool, \$name), diag(@messages), note(@messages), subtest(\$name, \$code)

WRAP EXISTING TOOLS

LEGACY

TEST2

USING UTF8

LEGACY

TEST2

AUTHORS, CONTRIBUTORS AND REVIEWERS

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SOURCE

MAINTAINER

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Test2::Util - Tools used by Test2 and friends.

DESCRIPTION

EXPORTS

```
($success, $error) = try { ... }, protect { ... }, CAN_FORK, CAN_REALLY_FORK,  
CAN_THREAD, USE_THREADS, get_tid, my $file = pkg_to_file($package), $string =  
ipc_separator(), $string = gen_uid(), ($ok, $err) = do_rename($old_name, $new_name),  
($ok, $err) = do_unlink($filename), ($ok, $err) = try_sig_mask { ... }, SIGINT,  
SIGALRM, SIGHUP, SIGTERM, SIGUSR1, SIGUSR2
```

NOTES && CAVEATS

Devel::Cover

SOURCE

MAINTAINERS

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AUTHORS

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Test2::Util::ExternalMeta - Allow third party tools to safely attach meta-data to your
instances.

DESCRIPTION

SYNOPSIS

WHERE IS THE DATA STORED?

EXPORTS

```
$val = $obj->meta($key), $val = $obj->meta($key, $default), $val =  
$obj->get_meta($key), $val = $obj->delete_meta($key), $obj->set_meta($key, $val)
```

META-KEY RESTRICTIONS

SOURCE

MAINTAINERS

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Test2::Util::Facets2Legacy - Convert facet data to the legacy event API.

DESCRIPTION

SYNOPSIS

AS METHODS

AS FUNCTIONS

NOTE ON CYCLES

EXPORTS

```
$bool = $e->causes_fail(), $bool = causes_fail($f), $bool = $e->diagnostics(), $bool =  
diagnostics($f), $bool = $e->global(), $bool = global($f), $bool =  
$e->increments_count(), $bool = increments_count($f), $bool = $e->no_display(), $bool  
= no_display($f), ($max, $directive, $reason) = $e->sets_plan(), ($max, $directive,  
$reason) = sets_plan($f), $id = $e->subtest_id(), $id = subtest_id($f), $string =  
$e->summary(), $string = summary($f), $undef_or_int = $e->terminate(), $undef_or_int =  
terminate($f), $uuid = $e->uuid(), $uuid = uuid($f)
```

SOURCE

MAINTAINERS

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Test2::Util::HashBase - Build hash based classes.

SYNOPSIS

DESCRIPTION

THIS IS A BUNDLED COPY OF HASHBASE

METHODS

PROVIDED BY HASH BASE

```
$it = $class->new(%PAIRS), $it = $class->new(\%PAIRS), $it =
```

```
$class->new(\@ORDERED_VALUES)
```

HOOKS

```
$self->init()
```

ACCESSORS

READ/WRITE

```
foo(), set_foo(), FOO()
```

READ ONLY

```
set_foo()
```

DEPRECATED SETTER

```
set_foo()
```

NO SETTER

NO READER

CONSTANT ONLY

SUBCLASSING

GETTING A LIST OF ATTRIBUTES FOR A CLASS

```
@list = Test2::Util::HashBase::attr_list($class), @list =  
$class->Test2::Util::HashBase::attr_list()
```

SOURCE

MAINTAINERS

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Test2::Util::Trace - Legacy wrapper fro Test2::EventFacet::Trace.

DESCRIPTION

SOURCE

MAINTAINERS

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Test::Builder - Backend for building test libraries

SYNOPSIS

DESCRIPTION

Construction

new, create, subtest, name, reset

Setting up tests

plan, expected_tests, no_plan, done_testing, has_plan, skip_all, exported_to

Running tests

ok, is_eq, is_num, isnt_eq, isnt_num, like, unlike, cmp_ok

Other Testing Methods

BAIL_OUT, skip, todo_skip, skip_rest

Test building utility methods

maybe_regex, is_fh

Test style

level, use_numbers, no_diag, no_ending, no_header

Output

diag, note, explain, output, failure_output, todo_output, reset_outputs, carp, croak

Test Status and Info

no_log_results, current_test, is_passing, summary, details, todo, find_TODO, in_todo,
todo_start, "todo_end", caller

EXIT CODES

THREADS

MEMORY

EXAMPLES

SEE ALSO

INTERNALS

LEGACY

EXTERNAL

AUTHORS

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Test::Builder::Formatter - Test::Builder subclass of Test2::Formatter::TAP

DESCRIPTION

SYNOPSIS

SOURCE

MAINTAINERS

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Test::Builder::IO::Scalar - A copy of IO::Scalar for Test::Builder

DESCRIPTION

COPYRIGHT and LICENSE

Construction

new [ARGS...]

open [SCALARREF]

opened

close

Input and output

flush

getc

getline

getlines

print ARGS..

read BUF, NBYTES, [OFFSET]

write BUF, NBYTES, [OFFSET]

sysread BUF, LEN, [OFFSET]

syswrite BUF, NBYTES, [OFFSET]

Seeking/telling and other attributes

autoflush

binmode

clearerr

eof

seek OFFSET, WHENCE

sysseek OFFSET, WHENCE

tell

use_RS [YESNO]

setpos POS

getpos

sref

WARNINGS

VERSION

AUTHORS

Primary Maintainer

Principal author

Other contributors

SEE ALSO

Test::Builder::Module - Base class for test modules

SYNOPSIS

DESCRIPTION

Importing

Builder

SEE ALSO

Test::Builder::Tester - test testsuites that have been built with Test::Builder

SYNOPSIS

DESCRIPTION

Functions

test_out, test_err

test_fail

test_diag

test_test, title (synonym 'name', 'label'), skip_out, skip_err

line_num

color

BUGS

AUTHOR

MAINTAINERS

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NOTES

SEE ALSO

Test::Builder::Tester::Color - turn on colour in Test::Builder::Tester

SYNOPSIS

DESCRIPTION

AUTHOR

BUGS

SEE ALSO

Test::Builder::TodoDiag - Test::Builder subclass of Test2::Event::Diag

DESCRIPTION

SYNOPSIS

SOURCE

MAINTAINERS

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Test::Harness - Run Perl standard test scripts with statistics

VERSION

SYNOPSIS

DESCRIPTION

FUNCTIONS

runtests(@test_files)

execute_tests(tests => \@test_files, out => *FH)

EXPORT

ENVIRONMENT VARIABLES THAT TAP::HARNESS::COMPATIBLE SETS

"HARNESS_ACTIVE", "HARNESS_VERSION"

ENVIRONMENT VARIABLES THAT AFFECT TEST::HARNESS

"HARNESS_PERL_SWITCHES", "HARNESS_TIMER", "HARNESS_VERBOSE", "HARNESS_OPTIONS",

"j<n>", "c", "a<file.tgz>", "fPackage-With-Dashes", "HARNESS_SUBCLASS",

"HARNESS_SUMMARY_COLOR_SUCCESS", "HARNESS_SUMMARY_COLOR_FAIL"

Taint Mode

SEE ALSO

BUGS

AUTHORS

LICENCE AND COPYRIGHT

Test::More - yet another framework for writing test scripts

SYNOPSIS

DESCRIPTION

I love it when a plan comes together

done_testing

Test names

I'm ok, you're not ok.

ok

is, isnt

like

unlike

cmp_ok

can_ok

isa_ok

new_ok

subtest

pass, fail

Module tests

require_ok

use_ok

Complex data structures

is_deeply

Diagnostics

diag, note

explain

Conditional tests

SKIP: BLOCK

TODO: BLOCK, todo_skip

When do I use SKIP vs. TODO?

Test control

BAIL_OUT

Discouraged comparison functions

eq_array

eq_hash

eq_set

Extending and Embedding Test::More

builder

EXIT CODES

COMPATIBILITY

subtests, "done_testing()", "cmp_ok()", "new_ok()" "note()" and "explain()"

CAVEATS and NOTES

utf8 / "Wide character in print", Overloaded objects, Threads

HISTORY

SEE ALSO

ALTERNATIVES

ADDITIONAL LIBRARIES

OTHER COMPONENTS

BUNDLES

AUTHORS

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BUGS

SOURCE

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Test::Simple - Basic utilities for writing tests.

SYNOPSIS

DESCRIPTION

ok

EXAMPLE

CAVEATS

NOTES

HISTORY

SEE ALSO

Test::More

AUTHORS

MAINTAINERS

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Test::Tester - Ease testing test modules built with Test::Builder

SYNOPSIS

DESCRIPTION

HOW TO USE (THE EASY WAY)

HOW TO USE (THE HARD WAY)

TEST RESULTS

ok, actual_ok, name, type, reason, diag, depth

SPACES AND TABS

COLOUR

EXPORTED FUNCTIONS

HOW IT WORKS

CAVEATS

SEE ALSO

AUTHOR

LICENSE

Test::Tester::Capture - Help testing test modules built with Test::Builder

DESCRIPTION

AUTHOR

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Test::Tester::CaptureRunner - Help testing test modules built with Test::Builder

DESCRIPTION

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Test::Tutorial - A tutorial about writing really basic tests

DESCRIPTION

Nuts and bolts of testing.

Where to start?

Names

Test the manual

Sometimes the tests are wrong

Testing lots of values

Informative names

Skipping tests

Todo tests

Testing with taint mode.

FOOTNOTES

AUTHORS

MAINTAINERS

Chad Granum <exodist@cpan.org>

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Test::use::ok - Alternative to Test::More::use_ok

SYNOPSIS

DESCRIPTION

SEE ALSO

MAINTAINER

Chad Granum <exodist@cpan.org>

CC0 1.0 Universal

Text::Abbrev - abbrev - create an abbreviation table from a list

SYNOPSIS

DESCRIPTION

EXAMPLE

Text::Balanced - Extract delimited text sequences from strings.

SYNOPSIS

DESCRIPTION

General Behaviour in List Contexts

[0], [1], [2]

General Behaviour in Scalar and Void Contexts

A Note About Prefixes

Functions

"extract_delimited", "extract_bracketed", "extract_variable", [0], [1], [2],

"extract_tagged", "reject => \$listref", "ignore => \$listref", "fail => \$str", [0],

[1], [2], [3], [4], [5], "gen_extract_tagged", "extract_quotelike", [0], [1], [2],

[3], [4], [5], [6], [7], [8], [9], [10], "extract_quotelike", [0], [1], [2], [3],

[4], [5], [6], [7..10], "extract_codeblock", "extract_multiple",

"gen_delimited_pat", "delimited_pat"

DIAGNOSTICS

C<Did not find a suitable bracket: "%s">, C<Did not find prefix: /%s/>,
C<Did not find opening bracket after prefix: "%s">, C<No quotelike
operator found after prefix: "%s">, C<Unmatched closing bracket: "%c">,
C<Unmatched opening bracket(s): "%s">, C<Unmatched embedded quote (%s)>,
C<Did not find closing delimiter to match '%s'>, C<Mismatched closing
bracket: expected "%c" but found "%s">, C<No block delimiter found after
quotelike "%s">, C<Did not find leading dereferencer>, C<Bad identifier
after dereferencer>, C<Did not find expected opening bracket at %s>,
C<Improperly nested codeblock at %s>, C<Missing second block for quotelike
"%s">, C<No match found for opening bracket>, C<Did not find opening tag:
/%s/>, C<Unable to construct closing tag to match: /%s/>, C<Found invalid
nested tag: %s>, C<Found unbalanced nested tag: %s>, C<Did not find closing
tag>

EXPORTS

Default Exports, Optional Exports, Export Tags, ":ALL"

KNOWN BUGS

FEEDBACK

AVAILABILITY

INSTALLATION

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VERSION

DATE

HISTORY

Text::ParseWords - parse text into an array of tokens or array of arrays

SYNOPSIS

DESCRIPTION

EXAMPLES

0, 1, 2, 3, 4, 5

SEE ALSO

AUTHORS

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Text::Tabs - expand and unexpand tabs like unix expand(1) and unexpand(1)

SYNOPSIS

DESCRIPTION

EXPORTS

expand, unexpand, \$tabstop

EXAMPLE

SUBVERSION

BUGS

LICENSE

Text::Wrap - line wrapping to form simple paragraphs

SYNOPSIS

DESCRIPTION

OVERRIDES

EXAMPLES

SUBVERSION

SEE ALSO

AUTHOR

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Thread - Manipulate threads in Perl (for old code only)

DEPRECATED

HISTORY

SYNOPSIS

DESCRIPTION

FUNCTIONS

\$thread = Thread->new(\&start_sub), \$thread = Thread->new(\&start_sub, LIST), lock

VARIABLE, async BLOCK;, Thread->self, Thread->list, cond_wait VARIABLE, cond_signal

VARIABLE, cond_broadcast VARIABLE, yield

METHODS

join, detach, equal, tid, done

DEFUNCT

lock(\&sub), eval, flags

SEE ALSO

Thread::Queue - Thread-safe queues

VERSION

SYNOPSIS

DESCRIPTION

Ordinary scalars, Array refs, Hash refs, Scalar refs, Objects based on the above

QUEUE CREATION

->new(), ->new(LIST)

BASIC METHODS

->enqueue(LIST), ->dequeue(), ->dequeue(COUNT), ->dequeue_nb(), ->dequeue_nb(COUNT),
->dequeue_timed(TIMEOUT), ->dequeue_timed(TIMEOUT, COUNT), ->pending(), ->limit,
->end()

ADVANCED METHODS

->peek(), ->peek(INDEX), ->insert(INDEX, LIST), ->extract(), ->extract(INDEX),
->extract(INDEX, COUNT)

NOTES

LIMITATIONS

SEE ALSO

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Thread::Semaphore - Thread-safe semaphores

VERSION

SYNOPSIS

DESCRIPTION

METHODS

->new(), ->new(NUMBER), ->down(), ->down(NUMBER), ->down_nb(), ->down_nb(NUMBER),
->down_force(), ->down_force(NUMBER), ->down_timed(TIMEOUT), ->down_timed(TIMEOUT,
NUMBER), ->up(), ->up(NUMBER)

NOTES

SEE ALSO

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Tie::Array - base class for tied arrays

SYNOPSIS

DESCRIPTION

TIEARRAY classname, LIST, STORE this, index, value, FETCH this, index, FETCHSIZE this, STORESIZE this, count, EXTEND this, count, EXISTS this, key, DELETE this, key, CLEAR this, DESTROY this, PUSH this, LIST, POP this, SHIFT this, UNSHIFT this, LIST, SPLICE this, offset, length, LIST

CAVEATS

AUTHOR

Tie::File - Access the lines of a disk file via a Perl array

SYNOPSIS

DESCRIPTION

"recsep"

"autochomp"

"mode"

"memory"

"dw_size"

Option Format

Public Methods

"flock"

"autochomp"

"defer", "flush", "discard", and "autodefer"

"offset"

Tying to an already-opened filehandle

Deferred Writing

Autodeferring

CONCURRENT ACCESS TO FILES

CAVEATS

SUBCLASSING

WHAT ABOUT "DB_File"?

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WARRANTY

THANKS

TODO

Tie::Handle - base class definitions for tied handles

SYNOPSIS

DESCRIPTION

TIEHANDLE classname, LIST, WRITE this, scalar, length, offset, PRINT this, LIST, PRINTF this, format, LIST, READ this, scalar, length, offset, READLINE this, GETC this, CLOSE this, OPEN this, filename, BINMODE this, EOF this, TELL this, SEEK this, offset, whence, DESTROY this

MORE INFORMATION

COMPATIBILITY

Tie::Hash, Tie::StdHash, Tie::ExtraHash - base class definitions for tied hashes

SYNOPSIS

DESCRIPTION

TIEHASH classname, LIST, STORE this, key, value, FETCH this, key, FIRSTKEY this, NEXTKEY this, lastkey, EXISTS this, key, DELETE this, key, CLEAR this, SCALAR this

Inheriting from Tie::StdHash

Inheriting from Tie::ExtraHash

"SCALAR", "UNTIE" and "DESTROY"

MORE INFORMATION

Tie::Hash::NamedCapture - Named regexp capture buffers

SYNOPSIS

DESCRIPTION

SEE ALSO

Tie::Memoize - add data to hash when needed

SYNOPSIS

DESCRIPTION

Inheriting from Tie::Memoize

EXAMPLE

BUGS

AUTHOR

Tie::RefHash - Use references as hash keys

VERSION

SYNOPSIS

DESCRIPTION

EXAMPLE

THREAD SUPPORT

STORABLE SUPPORT

SEE ALSO

SUPPORT

AUTHORS

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Tie::Scalar, Tie::StdScalar - base class definitions for tied scalars

SYNOPSIS

DESCRIPTION

TIESCALAR classname, LIST, FETCH this, STORE this, value, DESTROY this

Tie::Scalar vs Tie::StdScalar

MORE INFORMATION

Tie::StdHandle - base class definitions for tied handles

SYNOPSIS

DESCRIPTION

Tie::SubstrHash - Fixed-table-size, fixed-key-length hashing

SYNOPSIS

DESCRIPTION

CAVEATS

Time::HiRes - High resolution alarm, sleep, gettimeofday, interval timers

SYNOPSIS

DESCRIPTION

gettimeofday (), usleep (\$useconds), nanosleep (\$nanoseconds), ualarm (\$useconds
[, \$interval_useconds]), tv_interval, time (), sleep (\$floating_seconds), alarm (\$floating_seconds
[, \$interval_floating_seconds]), setitimer (\$which, \$floating_seconds [, \$interval_floating_seconds]),
getitimer (\$which), clock_gettime (\$which), clock_getres (\$which), clock_nanosleep (\$which,
\$nanoseconds, \$flags = 0), clock(), stat, stat FH, stat EXPR, lstat, lstat FH, lstat
EXPR, utime LIST

EXAMPLES

C API

DIAGNOSTICS

useconds or interval more than ...

negative time not invented yet

internal error: useconds < 0 (unsigned ... signed ...)

useconds or uinterval equal to or more than 1000000

unimplemented in this platform

CAVEATS

SEE ALSO

AUTHORS

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Time::Local - Efficiently compute time from local and GMT time

VERSION

SYNOPSIS

DESCRIPTION

FUNCTIONS

"timelocal_posix()" and "timegm_posix()"

"timelocal_modern()" and "timegm_modern()"

"timelocal()" and "timegm()"

"timelocal_nocheck()" and "timegm_nocheck()"

Year Value Interpretation

Limits of time_t

Ambiguous Local Times (DST)

Non-Existent Local Times (DST)

Negative Epoch Values

IMPLEMENTATION

AUTHORS EMERITUS

BUGS

SOURCE

AUTHOR

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Time::Piece - Object Oriented time objects

SYNOPSIS

DESCRIPTION

USAGE

Local Locales

Date Calculations

Truncation

Date Comparisons

Date Parsing

YYYY-MM-DDThh:mm:ss

Week Number

Global Overriding

CAVEATS

Setting \$ENV{TZ} in Threads on Win32

Use of epoch seconds

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SEE ALSO

BUGS

Time::Seconds - a simple API to convert seconds to other date values

SYNOPSIS

DESCRIPTION

METHODS

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Bugs

Time::gmtime - by-name interface to Perl's built-in gmtime() function

SYNOPSIS

DESCRIPTION

NOTE

AUTHOR

Time::localtime - by-name interface to Perl's built-in localtime() function

SYNOPSIS

DESCRIPTION

NOTE

AUTHOR

Time::tm - internal object used by Time::gmtime and Time::localtime

SYNOPSIS

DESCRIPTION

AUTHOR

UNIVERSAL - base class for ALL classes (blessed references)

SYNOPSIS

DESCRIPTION

```
"$obj->isa( TYPE )", "CLASS->isa( TYPE )", "eval { VAL->isa( TYPE ) }", "TYPE", $obj,  
"CLASS", "VAL", "$obj->DOES( ROLE )", "CLASS->DOES( ROLE )", "$obj->can( METHOD )",  
"CLASS->can( METHOD )", "eval { VAL->can( METHOD ) }", "VERSION ( [ REQUIRE ] )"
```

WARNINGS

EXPORTS

Unicode::Collate - Unicode Collation Algorithm

SYNOPSIS

DESCRIPTION

Constructor and Tailoring

UCA_Version, alternate, backwards, entry, hangul_terminator, highestFFFF,
identical, ignoreChar, ignoreName, ignore_level2, katakana_before_hiragana, level,
long_contraction, minimalFFFE, normalization, overrideCJK, overrideHangul,
overrideOut, preprocess, rearrange, rewrite, suppress, table, undefChar,
undefName, upper_before_lower, variable

Methods for Collation

```
"@sorted = $Collator->sort(@not_sorted)", "$result = $Collator->cmp($a, $b)",  
"$result = $Collator->eq($a, $b)", "$result = $Collator->ne($a, $b)", "$result =  
$Collator->lt($a, $b)", "$result = $Collator->le($a, $b)", "$result =  
$Collator->gt($a, $b)", "$result = $Collator->ge($a, $b)", "$sortKey =  
$Collator->getSortKey($string)", "$sortKeyForm = $Collator->viewSortKey($string)"
```

Methods for Searching

```
"$position = $Collator->index($string, $substring[, $position])", "($position,  
$length) = $Collator->index($string, $substring[, $position])", "$match_ref =  
$Collator->match($string, $substring)", "($match) = $Collator->match($string,
```



```
$substring)", "@match = $Collator->gmatch($string, $substring)", "$count =  
$Collator->subst($string, $substring, $replacement)", "$count =  
$Collator->gsubst($string, $substring, $replacement)"
```

Other Methods

```
"%old_tailoring = $Collator->change(%new_tailoring)", "$modified_collator =  
$Collator->change(%new_tailoring)", "$version = $Collator->version()",  
"UCA_Version()", "Base_Unicode_Version()"
```

EXPORT

INSTALL

CAVEATS

Normalization, Conformance Test

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SEE ALSO

Unicode Collation Algorithm - UTS #10, The Default Unicode Collation Element Table
(DUCET), The conformance test for the UCA, Hangul Syllable Type, Unicode Normalization
Forms - UAX #15, Unicode Locale Data Markup Language (LDML) - UTS #35

Unicode::Collate::CJK::Big5 - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language
(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::GB2312 - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language
(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::JISX0208 - weighting JIS KANJI for Unicode::Collate

SYNOPSIS

DESCRIPTION

SEE ALSO

Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::Korean - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language

(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::Pinyin - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language

(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::Stroke - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language

(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::CJK::Zhuyin - weighting CJK Unified Ideographs for Unicode::Collate

SYNOPSIS

DESCRIPTION

CAVEAT

SEE ALSO

CLDR - Unicode Common Locale Data Repository, Unicode Locale Data Markup Language

(LDML) - UTS #35, Unicode::Collate, Unicode::Collate::Locale

Unicode::Collate::Locale - Linguistic tailoring for DUCET via Unicode::Collate

SYNOPSIS

DESCRIPTION

Constructor

Methods

"\$Collator->getlocale", "\$Collator->locale_version"

A list of tailorable locales

A list of variant codes and their aliases

INSTALL

CAVEAT

Tailoring is not maximum, Collation reordering is not supported

Reference

AUTHOR

SEE ALSO

Unicode Collation Algorithm - UTS #10, The Default Unicode Collation Element Table

(DUCET), Unicode Locale Data Markup Language (LDML) - UTS #35, CLDR - Unicode Common

Locale Data Repository, Unicode::Collate, Unicode::Normalize

Unicode::Normalize - Unicode Normalization Forms

SYNOPSIS

DESCRIPTION

Normalization Forms

```
"$NFD_string = NFD($string)", "$NFC_string = NFC($string)", "$NFKD_string =  
NFKD($string)", "$NFKC_string = NFKC($string)", "$FCD_string = FCD($string)",  
"$FCC_string = FCC($string)", "$normalized_string = normalize($form_name,  
$string)"
```

Decomposition and Composition

```
"$decomposed_string = decompose($string [, $useCompatMapping])",  
"$reordered_string = reorder($string)", "$composed_string = compose($string)",  
"($processed, $unprocessed) = splitOnLastStarter($normalized)", "$processed =  
normalize_partial($form, $unprocessed)", "$processed = NFD_partial($unprocessed)",  
"$processed = NFC_partial($unprocessed)", "$processed =  
NFKD_partial($unprocessed)", "$processed = NFKC_partial($unprocessed)"
```

Quick Check

```
"$result = checkNFD($string)", "$result = checkNFC($string)", "$result =  
checkNFKD($string)", "$result = checkNFKC($string)", "$result =  
checkFCD($string)", "$result = checkFCC($string)", "$result = check($form_name,  
$string)"
```

Character Data

```
"$canonical_decomposition = getCanon($code_point)", "$compatibility_decomposition
= getCompat($code_point)", "$code_point_composite = getComposite($code_point_here,
$code_point_next)", "$combining_class = getCombinClass($code_point)",
"$may_be_composed_with_prev_char = isComp2nd($code_point)", "$is_exclusion =
isExclusion($code_point)", "$is_singleton = isSingleton($code_point)",
"$is_non_starter_decomposition = isNonStDecomp($code_point)",
"$is_Full_Composition_Exclusion = isComp_Ex($code_point)", "$NFD_is_NO =
isNFD_NO($code_point)", "$NFC_is_NO = isNFC_NO($code_point)", "$NFC_is_MAYBE =
isNFC_MAYBE($code_point)", "$NFKD_is_NO = isNFKD_NO($code_point)", "$NFKC_is_NO =
isNFKC_NO($code_point)", "$NFKC_is_MAYBE = isNFKC_MAYBE($code_point)"
```

EXPORT

CAVEATS

Perl's version vs. Unicode version, Correction of decomposition mapping, Revised
definition of canonical composition

AUTHOR

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SEE ALSO

```
<http://www.unicode.org/reports/tr15/>,
<http://www.unicode.org/Public/UNIDATA/CompositionExclusions.txt>,
<http://www.unicode.org/Public/UNIDATA/DerivedNormalizationProps.txt>,
<http://www.unicode.org/Public/UNIDATA/NormalizationCorrections.txt>,
<http://www.unicode.org/review/pr-29.html>, <http://www.unicode.org/notes/tn5/>
```

Unicode::UCD - Unicode character database

SYNOPSIS

DESCRIPTION

code point argument

charinfo()

code, name, category, combining, bidi, decomposition, decimal, digit, numeric,
mirrored, unicode10, comment, upper, lower, title, block, script

charprop()

Block, Decomposition_Mapping, Name_Alias, Numeric_Value, Script_Extensions

charprops_all()

charblock()

charscript()

charblocks()

charscripts()

charinrange()

general_categories()

bidirectional_types()

compexcl()

casefold()

code, full, simple, mapping, status, * If you use this "I" mapping, * If you exclude
this "I" mapping, turkic

all_casefolds()

casespec()

code, lower, title, upper, condition

namedseq()

num()

prop_aliases()

prop_values()

prop_value_aliases()

prop_invlist()

prop_invmap()

"s", "sl", "correction", "control", "alternate", "figment", "abbreviation", "a", "al",
"ae", "ale", "ar", "n", "ad"

search_invlist()

Unicode::UCD::UnicodeVersion

Blocks versus Scripts

Matching Scripts and Blocks

Old-style versus new-style block names

Use with older Unicode versions

AUTHOR

User::greent - by-name interface to Perl's built-in getgr*() functions

SYNOPSIS

DESCRIPTION

NOTE

AUTHOR

User::pwent - by-name interface to Perl's built-in getpw*() functions

SYNOPSIS

DESCRIPTION

System Specifics

NOTE

AUTHOR

HISTORY

March 18th, 2000

XSLoader - Dynamically load C libraries into Perl code

VERSION

SYNOPSIS

DESCRIPTION

Migration from "DynaLoader"

Backward compatible boilerplate

Order of initialization: early load()

The most hairy case

DIAGNOSTICS

"Can't find '%s' symbol in %s", "Can't load '%s' for module %s: %s", "Undefined
symbols present after loading %s: %s"

LIMITATIONS

KNOWN BUGS

BUGS

SEE ALSO

AUTHORS

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AUXILIARY DOCUMENTATION

Here should be listed all the extra programs' documentation, but they don't all have manual pages yet:

h2ph

h2xs

perlbug

pl2pm

pod2html

pod2man

splain

xsubpp

AUTHOR

Larry Wall <larry@wall.org>, with the help of oodles of other folks.

perl v5.34.0

2023-11-23

PERLTOC(1)