*Your skill will accomplish
what the force of many cannot*

Search

PerlMonks

| [Log in](#) | [Create a new user](#) | [The Monastery Gates](#)
| [Seekers of Perl Wisdom](#) | [Meditations](#) | [Cool Uses For Perl](#)
| [Obfuscation](#) | [Tutorials](#) | [Poetry](#) | [Illuminations](#) | [Reviews](#)
| [Perl News](#) | [Donate](#) | [Recent Threads](#) | [Newest Nodes](#)
| [Super Search](#) | [PerlMonks Discussion](#) | [What's New](#)

Tutorials

([[id://954]](#)=[superdoc](#): [print](#) [w/replies](#), [xml](#))

[Need Help??](#)

This [section](#) is an ever-growing online textbook, from which you can learn the basics of Perl, or some nifty stuff you haven't seen before.

Should I post here?

While you can post directly to the [Tutorials](#) section, this has certain drawbacks. A generally better approach is to follow this procedure:

1. Write up your draft tutorial and put it in your scratchpad; broadcast requests for comments in the [chatterbox](#) and elsewhere.
   After revising,
2. Post it as a new [Meditation](#), with "RFC" in the title. Later, if it is generally acclaimed to be worthy of [Tutorials](#), but needs more work first, then make the necessary revisions and
3. Post the final version as a [Tutorials](#) node.

Since ideally the [Tutorials](#) section has a high value-to-noise ratio, tutorial documents should be in as finished a state as possible before being posted to that section. (Not that it's the end of the world if they aren't.)

If you would be interested in writing a Tutorial but aren't sure what to write about, or if you have an idea for a Tutorial but can't commit to writing it — check out the **[Tutorials Quest](#)**!

Also of interest: [How does editing work in the Tutorials section?](#)

If you have [Tutorials](#)-related questions or requests, you may [/msg](#) them to [Pedagogues](#).

Log In

Username: [   ]

Password: [   ]

☐ remember me Login

[What's my password?](#)
[Create A New User](#)

Domain Nodelet

[www](#).[com](#) | [www](#).[net](#) |
www.[org](#)

Chatterbox

and all is quiet...

Refresh

[How do I use this?](#) ·
[Last hour](#) · *[Other CB clients](#)*

Other Users

Others chanting in the Monastery: (4)
[GrandFather](#)
[eyepopslikeamosquito](#)
[Tux](#)
[chatterbot](#)
As of 2024-02-04 05:08 GMT

Sections

[Seekers of Perl Wisdom](#)
[Cool Uses for Perl](#)
[Meditations](#)
[PerlMonks Discussion](#)
[Categorized Q&A](#)
[Tutorials](#)
[Obfuscated Code](#)
[Perl Poetry](#)
[Perl News](#)
[about](#)

All of the following categories are **Perl** related, with the exception of the first one, which is **PerlMonks** related, and the last one.

Tutorial Categories

- [New Tutorials](#)
- [Understanding and Using PerlMonks](#)
- [Getting Started with Perl](#)
- [Getting Deeper Into Perl](#)
- [Strings](#)
- [Subroutines](#)
- [Input and Output](#)
- [Modules: How to Create, Install, and Use](#)
- [Web Programming](#)
- [Win32](#)
- [XML Technologies](#)
- [Pattern Matching, Regular Expressions, and Parsing](#)

- [Database Programming](#)
- [Object Oriented Programming](#)
- [User Interfaces](#)
- [Testing and QA Tutorials](#)
- [Debugging and Optimization](#)
- [Threads, Multi-Processing, and Inter-Process Communication](#)
- [Network Programming](#)
- [Miscellaneous Modules](#)
- [Miscellaneous Perl Tutorials](#)
- [Non-English Tutorials](#)
- [Other Topics](#)

New Tutorials *(Top)*

Understanding and Using PerlMonks *(Top)*

Here are some tutorials to help you get started with various aspects of using PerlMonks — affectionately known as the "Monastery".

(Also check out this [related section](#) in the Code Catacombs)

- [PerlMonks for the Absolute Beginner](#) by [jdporter](#)
- [Welcome to the Monastery! Make yourself at home.](#) by [newrisedesigns](#)
- [How (Not) To Ask A Question](#) by [jeffa](#)
- [How to RTFM](#) by [Masem](#)
- [How to ask questions the smart way](#) by [yitzchak](#)
- [Why questions go unanswered](#) by [yitzchak](#)

Getting Started with Perl   *(Top)*

Here are some accessible tutorials for those who are just
starting out:

- [Perl Babysteps 1: Your First Simple Script](#) by [webfiend](#)
- [Perl documentation documentation](#) by [brian d foy](#)
- [Searching Perl Documentation](#) by [blazar](#)
- [The basics](#)
- [Common Beginner Mistakes](#) by [chromatic](#)
- [Introductory Perl Tutorial Course for Windows](#) by [pedagogues](#)
- [Robert Pepper's Perl Tutorial](#) by [pedagogues](#)
- [Data Types and Variables](#)
  - [the basic datatypes, three](#)
  - [Data Type: Scalar](#)
    - [Scalars: How They Work (about numbers, text strings, and binary strings)](#) by [vroom](#)
  - [Data Type: Array](#)
    - [Arrays: A Tutorial/Reference](#) by [jdporter](#)
    - [Multidimensional Arrays](#) by [CharlesClarkson](#)
  - [Data Type: Hash](#)
    - [Not Exactly a Hash Tutorial](#) by [planetscape](#)
    - [Hash Keys (strings or numbers?)](#) by [robot tourist](#)
    - [The Uniqueness of hashes.](#) by [injunjoel](#)
  - [True and False (aka Booleans)](#)
    - [True or False? A Quick Reference Guide](#) by [bobf](#)
  - [References](#)
    - [intro to references](#) by [busunsl](#)
    - [References quick reference](#) by [tye](#)
    - [Arrays and hashes only with references](#) by [grizzley](#)
- [Context in Perl](#)
  - [Context tutorial](#) by [kyle](#)
- [Operators](#)
  - [Operators: arithmetic and otherwise](#)
  - [The Scalar Range Operator](#) by [pbeckingham](#)
  - [Flipin good, or a total flop?](#) by [GrandFather](#)
  - [Precedence for Idiots](#) by [Melly](#)
- [Flow Control Structures](#)
  - [Control statements and looping](#)
  - [Implementing Dispatch Tables](#) by [Roy Johnson](#)
- [Special Variables, Options, and Pragmas](#)
  - [Why you should use strict](#) by [waxmop](#)
  - [Use strict and warnings](#) by [runrig](#)
  - [Perl White Magic - Special Variables and Command Line Switches](#) by [cog](#)

- Perl Special Variables Quick Reference by davido
        - Uncommon* but Useful Perl Command Line Options for One-liners by Sol-Invictus
        - Some things that will make your life easier as a Perl coder
    - Perl Installation
        - Installing Perl on a Windows PC by giricredwolf
        - Install Perl Locally -- If this works for Catalyst, it'll work for anything! by tphyahoo
        - Install parallel Perl on Debian by ybiC
    - Documenting Code
        - POD in 5 minutes by Juerd
        - The Dynamic Duo --or-- Holy Getopt::Long, Pod::UsageMan! by ybiC

Getting Deeper Into Perl   *(Top)*

- Variables and Scoping
    - Variable Scoping in Perl: the basics by arturo
    - Lexical vs. Package Variables (With a little local thrown in) by dsb
    - Lexical scoping like a fox by broquaint
    - Of Symbol Tables and Globs by broquaint
    - The difference between my and local by cLive ;-)
    - 'our' is not 'my' by Ovid
    - Coping with Scoping by pedagogues
    - Seven Useful Uses of <tt>local</tt> by pedagogues
- Files and Directories
    - Beginners guide to File::Find by spurperl
    - Directory Recursion by count0
    - File Locking by turnstep
    - Navigating and Reading Directories by Sherlock
    - Paths in Perl by tachyon
    - Using Temporary Files in Perl by rob_au
- List Processing, Filtering, and Sorting
    - Complex sorting by vroom
    - Map: The Basics by jeffa
    - Resorting to Sorting by japhy
    - Getting Matching Items From An Array by Limbic~Region
    - Understanding transformation sorts (ST, GRT), the details by 5mi11er
    - A brief tutorial on Perl's native sorting facilities. by BrowserUk
- Perl Idioms Explained

- Perl Idioms Explained - $|++ by broquaint
- Perl Idioms Explained - keys %{{map{$_=>1}@list}} by broquaint
- Perl Idioms Explained - ${\$obj->method} and @{[sort @list]} by broquaint
- Perl Idioms Explained - my $string = do { local $/; <FILEHANDLE> }; by jeffa
- Perl Idioms Explained - @ary = $str =~ m/(stuff)/g by tachyon
- Perl Idioms Explained - && and || "Short Circuit" operators by davido
- Perl Idioms Explained - !!expr by broquaint
- Perl Idioms Explained - my ($foo, $bar) = @{shift(@_)} {qw/ -foo -bar /} by Roger
- Perl Idioms Explained - my $count = () = /.../g by japhy

Strings *(Top)*

Related Q&A

- quotes in Perl by apotheon
- Understanding Split and Join by davido
- chop() and chomp() by Parham
- Using (s)printf() by reptile
- Pack/Unpack Tutorial (aka How the System Stores Data) by pfaut
- How to reverse a (Unicode) string by moritz

Subroutines *(Top)*

Related Q&A

- (Subroutine) Arguments explained (sort of.) by Andrew Levenson
- Closure on Closures by broquaint
- Recursion: The Towers of Hanoi problem by DigitalKitty
- How A Function Becomes Higher Order by Limbic~Region
- How To: Make An Iterator by Limbic~Region
- Creating Nested Functions by ikegami
- Far More than Everything You've Ever Wanted to Know about Prototypes in Perl -- by Tom Christiansen by liverpole

Input and Output *(Top)*

Related Q&A

- Basic Input and Output
- File Input and Output
- Parsing your script's command line by grinder
- read() by Parham
- Suffering from Buffering by pedagogues

Modules: How to Create, Install, and Use   *(Top)*

- Installing Modules
    - A Guide to Installing Modules by tachyon
    - A guide to installing modules for Win32 by holli
    - A guide to installing modules for Win32 (2022 Edition) by pryrt
    - Compiling C/C++ based Modules under ActiveState using MinGW by syphilis
    - Installing Modules on a Web Server by sulfericacid
    - Installing CPAN on a Windows system by GrandFather
    - Installing perl modules via webmin by silent11
    - Embedded Perl: Installing Perl and Mojolicious on Arduino Yún / OpenWRT ChaosCalmer by ait
    - Installing DBD::Oracle on Mac (El Capitaine) by Sandy
- Using Modules
    - Including files by Juerd
    - Use modules with an import list on the command line by Ovid
    - Everything you wanted to know about Module Version Numbers and Checking by John M. Dlugosz
    - A Practical Guide to Compiling C based Modules under ActiveState using Microsoft C++ by tachyon
    - Module::Compile (or: what's this PMC thingy?) by Juerd
- Creating and Distributing Modules
    - Simple Module Tutorial by tachyon
    - How to make a CPAN Module Distribution by tachyon
    - José's Guide for creating Perl modules by cog
    - HowTo build and distribute a PPMed module for Win32 by idnopheq

---

Web Programming   *(Top)*

Related Code

See also: merlyn's WebTechniques Perl columns.

- [Working with HTML](#)
  - [HTML::CalendarMonthSimple cookbook recipe](#) by [boo_radley](#)
  - [HTML::TokeParser Tutorial](#) by [crazyinsomniac](#)
  - [Change URIs in Text to HTML-Links](#) by [strat](#)
  - [Highly Orthogonal Web Application Development with HTML_Tree](#) by [princepawn](#)
  - [HTML::Tree(Builder) in 6 minutes](#) by [trs80](#)
- [Framework, Templating, and Content Management Systems](#)
  - [HTML::Template Tutorial](#) by [jeffa](#)
  - [Using HTML::Template](#) by [Ovid](#)
  - [Choosing a Templating System](#) by [perrin](#)
  - [Template with optional PHP execution](#) by [Flame](#)
  - [Catalyst Models Definitive Guide](#) by [ait](#)
  - [Catalyst: Using Chained for URL Dispatching and Sane Method Organization](#) by [stonecolddevin](#)
  - [Javascript Frameworks and Perl](#)
    - [Using Perl, jQuery, and JSON for Web development](#) by [bradcathey](#)
- [CGI Programming](#)
  - [Setting up Perl/CGI with Windows](#) by [Ovid](#)
  - [CGI Help Guide](#) by [tachyon](#)
  - [Troubleshooting Perl CGI scripts](#) by [brian d foy](#)
  - [Easier Linux/Unix remote CGI Debugging](#) by [Hero Zzyzzx](#)
  - [CGI Programming 101](#) by [pedagogues](#)
  - [Security in CGI Programming](#) by [pedagogues](#)
  - [A Tutorial for CGI::Application](#) by [bradcathey](#)
  - [Ovid's CGI Course](#) by [pedagogues](#)
- [Web Client Programming](#)
  - [Getting more out of LWP::Simple](#) by [Dog and Pony](#)
  - [Web Client Programming with Perl](#) by [pedagogues](#)
  - [Using WWW::Selenium To Test Or Automate An Ajax Website](#) by [Limbic~Region](#)
  - [WWW::Mechanize Basics](#) by [PerlSufi](#)

[Win32](#) *([Top](#))*

Related [Code](#)

- [A guide to installing modules for Win32](#) by [holli](#)
- [A Practical Guide to Compiling C based Modules under ActiveState using Microsoft C++](#) by [tachyon](#)
- [Calling .NET Assemblies with Win32::OLE](#) by [InfiniteSilence](#)
- [Creating COM and DCOM objects with Perl](#) by [JamesNC](#)
- [HowTo build and distribute a PPMed module for Win32](#) by [idnopheq](#)

- [Installing Perl on a Windows PC](#) by [giricredwolf](#)
- [Schedule Win32 Perl Scripts with AT](#) by [ybiC](#)
- [Shipping standalone perl apps on Win32](#) by [crenz](#)
- [Using Win32::OLE and Excel - Tips and Tricks](#) by [cacharbe](#)
- [Win32 Execution: UNiX Style (NT)](#) by [emcb](#)
- [(Not Quite Perl) Running Scripts from Right-Click Context Menu in Windows](#) by [svsingh](#)
- [How to install Win32::OLE under Linux?](#) by [dpavlin](#)
- [Microsoft Project and Perl](#) by [dws](#)

XML Technologies   *([Top](#))*

- [XML::Parser Tutorial](#) by [OeufMayo](#)
- [Does your XML::Simple code pass the strict test?](#) by [grantm](#)
- [Stepping up from XML::Simple to XML::LibXML](#) by [grantm](#)
- [Adding elements using XML::Simple](#) by [grantm](#)
- [Adjacency List Processing in XML::Twig](#) by [princepawn](#)
- [Using Perl XPath for converting Infopath XML files to Word Documents](#) by [karthik4perl](#)
- [XML::Generator::DBI Tutorial](#) by [jeffa](#)
- [XML for Perl developers by IBM DeveloperWorks](#) by [pedagogues](#)
- [Two XML Processing tutorials by mirod](#) by [pedagogues](#)

Pattern Matching, Regular Expressions, and Parsing   *([Top](#))*

Related [Q&A](#)

- [Character Class Abbreviations](#)
- [Common Regex Gotchas](#) by [chromatic](#)
- [Don't Use Regular Expressions To Parse IP Addresses!](#) by [ybiC](#)
- [Extended Patterns of Regular Expressions](#) by [OM_Zen](#)
- [How will my regular expression match?](#) by [hv](#)
- [Parsing with Regexes and Beyond](#) by [moritz](#)
- [Quantifiers in regular expressions](#)
- [Regexp do's and don'ts](#) by [muba](#)
- [Regular Expressions Tutorial, the Basics (for BEGINNERS)](#) by [brusimm](#)
- [A regex tutorial by Carl Franklin and Gary Wisniewski](#) by [pedagogues](#)
- [String matching and Regular Expressions](#)
- [Using Look-ahead and Look-behind](#) by [Roy Johnson](#)

Database Programming   *(Top)*

Related Q&A and Code

- Accessing Microsoft SQL Server from Linux using DBD::Sybase by CleverFox
- Class::DBI Intro by trs80
- DBI recipes by gmax
- The fine art of database programming by gmax
- Handling huge BLOB fields with DBI and MySQL by gmax
- Reading from a database by stephen
- Speeding up the DBI by gmax
- Tricks with DBI by btrott
- Web Logs Using DBI by btrott
- Databases made easy by GrandFather

Object Oriented Programming   *(Top)*

Related Q&A

- Perl Object Oriented Meta-Tutorial by btrott
- Tutorial: Introduction to Object-Oriented Programming by jreades
- A simple example OO script for total beginners by bl0rf
- Blessables -- What Can You Make Into Objects? by chromatic
- Often Overlooked OO Programming Guidelines by Ovid
- Using can With Inheritance by btrott
- Object Oriented configuration values by trs80
- Object Serialization Basics by chromatic
- Objects with Private Variables by btrott
- Perl Singletons by sheridan3003
- The tie()s That Bind by KM
- Tie: Creating Special Objects by btrott
- Undoable Objects by chromatic
- It's a dog, but what kind? (polymorphism , in Perl OO) by blue_cowdawg
- Basic Objects with Overloaded Operators by perlmonkey
- Overloading '=' by dchetlin
- Perl Design Patterns: About Objects by pedagogues
- perldoc perlobj: Objects by pedagogues
- perldoc perlootut: Object-Oriented Programming in Perl Tutorial by pedagogues

---

User Interfaces   *(Top)*

Related Q&A and Code

- Using GD output for HTML imagemaps -- GD::Graph::Map recipe by boo_radley
- Tips and Pointers using ncurses with perl by odie
- Flash graphics with perl: installing ming by Sol-Invictus
- Beginning Perl/Tk by perl.j
- Tk Tutorial, Featuring Your Very Own "Perl Sig/OBFU Decoder Ring" by hiseldl
- Gtk Tutorials
  - Glade/Gtk review/tutorial by jepri
  - Drawing with Perl/Gtk2 by zentara
  - Gtk-Perl Tutorial by pedagogues
  - Gtk2-Perl Study Guide by pedagogues
- wxPerl Tutorials
  - wxPerl Tutorial one :: The basics by boo_radley
  - wxPerl image handling (short & sweet). by boo_radley
  - wxPerl tutorial 3 -- by boo_radley
  - Wx ControlTutorial : Wx::ProgressDialog by boo_radley

Testing and QA Tutorials   *(Top)*

- Automated software testing: emulation of interfaces using Test::MockObject by IlyaM
- Mocking accessors with Test::MockObject by ait
- Tools that may improve the overall quality of a module by SBECK
- Basic Testing Tutorial by hippo

Debugging and Optimization   *(Top)*

- Benchmarking Your Code by turnstep
- Profiling your code. by kyle
- Debugging Perl scripts which use fork() by IlyaM
- Common Causes for "Modification of a read-only value attempted" by imp
- Basic debugging checklist by toolic
- Using Test-Point Callbacks for Automated Diagnostics in Testing by ait

---

Threads, Multi-Processing, and Inter-Process Communication   *(Top)*

- [Working with other processes and programs](#) by [vroom](#)
- [Things you need to know before programming Perl ithreads](#) by [liz](#)
- [Debugging Perl scripts which use fork()](#) by [IlyaM](#)
- [Using select and IO::Select](#) by [duff](#)
- [Threads: why locking is required when using shared variables](#) by [ikegami](#)
- [Perl's Warn and Die Signals](#) by [Adam](#)
- [Introduction to Parallel::ForkManager](#) by [biosysadmin](#)
- [An introduction to POE](#) by [RMGir](#)
- [Reading from more than one socket at once](#) by [ahunter](#)

Network Programming   *([Top](#))*

Related [Q&A](#) and [Code](#)

- [Managing your IP space with Perl](#) by [fokat](#)
- [A Simple Socket Server Using 'inetd'](#) by [samizdat](#)
- [MP3 server with IO::Socket](#) by [perlmonkey](#)
- [Using the SNMP module from the Net-SNMP library](#) by [Rhys](#)
- [Beginners guide to Net::FTP](#) by [spurperl](#)
- [Perl and Net::Pcap](#) by [rob_au](#)
- [Using Net::LDAP to access and update LDAP directories](#) by [araqnid](#)

Miscellaneous Modules   *([Top](#))*

- [Getting started with DateTime](#) by [monsterzero](#)
- [Getting Started with GnuPG and GPG](#) by [derby](#)
- [Getting Started with Inline::C](#) by [derby](#)
- [Lingua::Romana::Perligata - Basica Basicum Basicus](#) by [benn](#)
- [A Beginner's Guide to Using Mail::Audit and Mail::SpamAssassin](#) by [shockme](#)
- [Introduction to Tree::DAG_Node](#) by [gmax](#)
- [The Perl Data Language (PDL): A Quick Reference Guide](#) by [lin0](#)
- [Text::Table Tutorial](#) by [biohisham](#)
- [Parse::RecDescent](#)
  - [Operator Associativity and Eliminating Left-Recursion in Parse::RecDescent](#) by [ikegami](#)
  - [Random Tips on Parse::RecDescent](#) by [hsmyers](#)
  - [Some Parse::RecDescent Tutorials](#) by [idnopheq](#)
- [How do I send email through GMail?](#) by [stevieb](#)

Miscellaneous Perl Tutorials *(Top)*

- Perl and Bioinformatics by biohisham
- Character Encodings in Perl - offsite tutorial by moritz by pedagogues
- perlunitut: Unicode in Perl by Juerd
- Writing highly obfuscated code in Perl by marko
- PerlGuts Illustrated by pedagogues

Non-English Tutorials *(Top)*

- (lang: de) Referenzen by busunsl
- (lang: lt) CGI/Perl Script Security by mr2
- (lang: nl) Objecten voor beginners by Juerd
- Criando uma conta no PerlMonks (now sitefaqlet) by monsieur_champs
- Eu preciso de ajuda! Quem pode me ajudar? (now sitefaqlet) by monsieur_champs
- Antes que você escreva... by monsieur_champs
- Benvindo ao Mosteiro! Sinta-se em Casa (PT_BR) by monsieur_champs
- Spanish translation of pack/unpack tutorial by Hue-Bond
- POD en 5 minutos by Hue-Bond
- Ámbito de variables en Perl: lo básico by Hue-Bond

Other Topics *(Top)*

Topics which aren't really about Perl, but which are of interest to the Perl programmer.

- Big-O Notation - What is it good for? by Limbic~Region
- An informal introduction to O(N) notation by dws
- A Beginning Guide To Evolutionary Algorithms by blokhead
- LZW Demystified by demerphq
- Learn vi/vim in 50 lines and 15 minutes by tachyon
- Using CVS for revision control by trs80
- Introduction to Technical Writing/Documentation by ailie
- Exploring Programming Language Architecture in Perl by pedagogues
- Database design with UML and SQL by pedagogues

PerlMonks parthenogenetically spawned by Tim Vroom.
PerlMonks went on a couple dates, and then decided to shack up with The Perl Foundation.

Wonderful Web Servers and Bandwidth Generously Provided by pair Networks
Built with the Perl programming language.