

Course Outline



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Advanced Perl Programming

Course Description:

Perl is a mature, extremely flexible, general-purpose language, which is especially well suited to textual manipulation and file processing. In addition to its brilliant built-in facilities, there are vast freely-accessible libraries of Perl code to help build almost every conceivable application. And it's available free-of-charge.

This nominally two-day course builds on Perl Introduction/Intermediate. It consolidates the constructs included in that course, explores more advanced use of arrays, hashes, and regular expressions, examines references and modules in detail, and extends these to the study of Perl's approach to object-oriented programming, and the somewhat related topics of ties and closures.

A large part of the course deals with Perl's approach to handling complex data structures, including implementing object-oriented programming in Perl.

The course extends consideration of the use of references and modules well beyond that provided in the course Perl Introduction/Intermediate, as well as exploring typeglobs. These techniques are then used to underpin detailed examination of object-oriented programming in Perl, including the tie function and closures. The last part of the course covers advanced and miscellaneous functions, constructs and issues not covered in depth in Perl Introduction/Intermediate.

The 'standard' topics in this course can be covered in two days. For one organisation, the optional topics can be covered in detail: that would require one or more further days; alternatively some 'standard' topics can be excluded or covered in less depth.

This course focuses on advanced language aspects of Perl. For an in-depth exploration of a range of applications for which Perl is typically applied see also Perl Applications. For one organisation selected aspects of these courses can be combined with Perl Introduction/Intermediate to address a very wide and flexible range of requirements.

Pre-requisites:

This course is for those who already have strong knowledge of Perl's techniques for handling control structures, data structures such as arrays and hashes, text file processing and regular expressions, as provided by the course Perl Introduction/Intermediate.

Course Content:

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- **Basic revisited (as required)**
 - Data types and their manipulation
 - Control structures and subroutines
 - Text manipulation
 - Input/output techniques
- **Reference basics revisited**
 - References and dereferencing
 - Two-dimensional structures
- **Further reference constructs**
 - Sorting arrays of references
 - Symbolic references
 - Variables or blocks as variable names
- **More complex data structures**
 - Selecting the appropriate data structure
 - Complex and nested data structures
 - Data::Dumper
 - Data serialisation
- **Typeglobs**
 - Typeglobs, local and my
 - Applying typeglob aliasing
 - Typeglobs and references
 - Typeglobs and filehandles
- **More on modules**
 - Module basics revisited
 - Specialised import lists
 - import function
 - Multiple packages in a module
 - Pragma
 - %INC hash
 - h2xs utility
 - Distributing modules
 - The blib pragma
 - Contributing to CPAN

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- **Standard Library examples**
 - Time modules
 - Benchmark.pm
 - Config.pm
- **The CPAN; example CPAN modules**
 - Installing CPAN modules
 - Mime::Lite
 - Net::SMTP
 - HTML::Template
 - GD
- **More advanced regular expressions**
 - Basic regular expressions revisited
 - Backreferences
 - Global and Perl-expression substitution
 - Advanced and cloistered modifiers
 - Extended regular expression sequences
 - study function
- **Object-oriented programming**
 - Background to object-orientation
 - Accessing object methods
 - Class methods and attributes
 - bless function
 - The -> notation and variations
 - Object-oriented wrappers for complex data
 - Perl-style inheritance, @ISA special array
 - Polymorphism
- **AUTOLOAD and its uses**
 - AUTOLOADing modules
 - SelfLoader, AutoLoader and related modules
 - The autouse pragma
 - Default functions and methods
 - UNIVERSAL package

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- **Ties and closures**
 - Introduction to the tie command
 - Private data via closures
 - Perl 5.10 state declaration

- **BEGIN, END and other special blocks**
 - BEGIN and END blocks
 - CHECK and INIT blocks
 - UNITCHECK blocks
 - eval blocks and eval function

- **Optional topics: On request, self-study material on selected topics can be included, covered in detail as time allows.**

- **Miscellaneous functions**
 - srand, rand
 - pack and unpack
 - Other bitwise operators and functions

- **Unicode support**
 - Unicode basics
 - UTF-8 versus other models
 - Perl and Unicode
 - The Unicode::UCD module
 - Unicode literals
 - Altered functions
 - Altered IO

- **Perl efficiency**
 - Efficiency techniques
 - Exception handling
 - The Error module
 - Benchmarking
 - Benchmark and Devel::DProf modules

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- **Perl security and integrity introduction**
 - Data Tainting
 - Race conditions
 - Opcodes and Opcode module
 - Safe and Penguin modules
- **Introduction to Perl & other Languages**
 - C from Perl
 - More on the h2xs utility
 - Principles of embedding Perl in C programs
- **Multiple and other processes**
 - The backtick operator
 - exec; fork
 - Pipes
 - Threads basics
 - Signals
- **Socket Basics**
 - Sockets in general
 - Perl and sockets
 - Low-level built-in socket functions
 - Built-in network functions
 - Socket module
 - IO::Socket module
 - Client and server sockets
 - IO::Socket::INET and IO::Socket::Unix modules

Course Duration:

2 Days

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