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Metamedia

Course: Comprehensive Perl

Introduction

This is a comprehensive course on Perl programming, covering various topics ranging from the basics to intermediate and advanced topics including web-based programming, database programming, object oriented programming, and advanced Perl programming techniques.

Emphasis of this course is placed on the carefully designed hands-on exercises, which follow many parts of the lessons. Instead of elaborating in-depth details to students at once, our instructor first discuss the core concept of each topic, and let students do exercises to see the real usage and verify their conceptual understanding. Then the instructor will review the topic again and discuss further advanced details. With this technique, students are ready to use what they learned in the real working environment, and know where and how to go further themselves in case of advanced applications.

Length

- 9 days OR 15 days

Prerequisite

Students of this course should have at least one year of experience of programming in some computer languages, such as Basic, UNIX shell scripts, Pascal, C, C++, Java, and PHP. Students should also have basic familiarity with the UNIX programming environment, including how to use a UNIX shell and an editor program to create files. Attendees need not have experience with Perl.

Course outline

1. Basic Perl Programming (3 days)
    - Overview of Perl (0.5 day)
        - What is Perl?
        - What's good about Perl?
        - Where to get Perl?
        - Perl versions
        - How to program Perl?
        - Set up the programming environment
        - Exercises
        - Basic Perl syntax
        - Conditions, loop commands
        - Variables, types, initialization
        - Exercises
    - Text processing using Perl (0.5 day)

        - Inputs and outputs
        - Regular expressions
        - Backtracking
        - Printing text
        - Error handling
        - Optimizations
        - Exercises
    - Arrays, Files (0.5 day)
        - Perl arrays
        - Separating fields
        - Array operations
        - Command-line arguments: @ARGV; $0
        - File handles and file operations
        - Error diagnosis with $!
        - Exercises
    - Hashes (0.5 day)
        - Simple database: Hashes
        - Keys
        - Report generation
        - Using printf and sprintf for formatting
        - Sorting
        - Exercises
    - Subroutines (0.5 day)
        - Perl subroutines
        - Subroutine arguments, shift
        - Recursive Subroutines
        - Pass-by reference
        - Context
        - Exercises
    - Various other topics (0.5 days)
        - Getting Help, finding documentations
        - Advance hashes
        - Date and Time functions
        - The Perl debugger
        - Running external commands
        - Network communications
        - Exercises
2. Object Oriented Programming in Perl (4 days)
    - OOP concept (1 day)
        - Basic OOP
        - Benefits of OOP
        - Object, class, encapsulation
        - Inheritance and polymorphism
        - OOP Program Design

        - UML
        - Exercises
    - Object-Oriented Perl (1 day)
        - References
        - Perl classes and objects
        - Methods
        - Packages
        - Modules
        - Exercises
    - Using Perl modules (1 day)
        - Networking
        - E-mail
        - WWW
        - Graphics
        - GUI (Windows)
        - Databases (DBM)
        - Exercises
    - OOP Workshop (1 day)
        - Exercises on OOP programming
        - Solutions discussion
3. Web-based Perl Programming (1 days)
    - CGI programming (0.5 day)
        - What is CGI?
        - How CGI works?
        - Simple CGI program
        - HTTP headers and environment variables
        - URL encoding
        - CGI Security
        - Exercises
    - CGI Programming in Perl I (0.5 day)
        - Basic HTML and HTML form
        - Accepting Input to CGI scripts
        - Cgi-lib.pl and CGI.pm
        - Writing a CGI application
        - Exercises
4. Perl Programming & Database (1 days)
    - Perl and Databases (0.5 day)
        - Associated arrays
        - Hashes, Tie, and DB
        - Relational database
        - Overview of SQL
        - Designing databases
        - Using PostgreSQL and phpPgAdmin
        - Exercises

- Perl Database Programming (0.5 day)
  - DBI
  - Connecting to the database
  - Sending queries
  - Retrieving data
  - Parameters in Queries
  - Optimizations
  - Exercises

5. Advanced Object-Oriented Programming in Perl (3 days) (Only in 15-day course)
   - Writing modules (1 day)
     - Class design
     - Implementing inheritance
     - Automatic tool for creating modules
     - Exercises
   - Finishing modules (1 day)
     - Debugging and test
     - Documentation
     - Installing modules
     - Distributing modules
     - CPAN
     - Exercises
   - Module Programming Workshop (1 day)
     - Exercises on writing Perl modules
     - Solutions discussion
6. Advanced Perl Programming (3 days) (Only in 15-day course)
   - Various Perl best pracices
   - Insite-out Perl classes
   - Advanced debugging
   - Advanced regular expressions
   - Complex data structure
   - Typeglobs and Symbol Tables
   - Autoloading
   - Error handling
   - Perl security
   - Other topics related to recent technology

Note:

- 1 day = 6 hours, 0.5 day = 3 hours, break time not included.
- Minimum 8 persons. Training materials are included. Training facilities are not included.
- Slides handouts are provided. Text books (not provided) are recommended for references and reviewing.