UNIX/Linux Fundamentals and Shell Scripting

Duration: 5 Days *(Face-to-Face & Remote-Live)*, or 35 Hours *(On-Demand)*

Price: CDN$3,275 *(Face-to-Face & Remote-Live)*, or CDN$1,995 *(On-Demand)*

Discounts: We offer multiple discount options. Click here for more info.

Delivery Options: Attend face-to-face in the classroom, remote-live or on-demand training.

Students Will Learn

- Navigating the file system
- Controlling file access
- File and directory naming rules and conventions
- Manipulating files and links
- Controlling the Terminal
- Working with `vi`
- Monitoring and controlling processes
- Using command line editing
- Command substitution, quoting and escaping
- Using backup commands
- Submitting and controlling print jobs
- Communicating over the network
- Remote access with password authentication
- Working with secure shells
- Using GNOME and KDE GUI environments
- How to write and run shell scripts
- Using conditional constructs to control script execution
- Manipulating strings
- Command-line processing
- Using regular expressions
- String processing utilities: `sed`, `grep` and `awk`
- Counting words, lines and characters
- Working with compression utilities
- Writing functions
- Using the `ksh` and `bash` commands
- Working with UNIX I/O streams

Course Description

This hands on course provides training on standard UNIX/Linux commands and utilities used for day to day tasks including file manipulation, program execution and control, and effective use of the shell and desktop environments. The course presents the concepts necessary to understand the way UNIX works as well as the system's most commonly used commands. Data manipulation utilities and shell syntax for synthesizing command pipelines are emphasized. Bourne shell, Bash shell and Korn shell programming techniques are

introduced so students will be able to read and modify existing shell scripts as well as create their own. Desktop environments are also introduced from a user's perspective, including common window managers, Open Office utilities and an introduction to configuration tools. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

Course Prerequisites

None

Course Overview

Introduction to UNIX

- Design Philosophy
- System Components
- The Shell and Command Entry
- Documentation

Basic User Commands

- Logging In and Logging Out
- Command Line Editing
- Navigating the File System
- Viewing and Copying Files
- Controlling the Terminal
- Sending and Receiving Mail

Text Editing

- Types of Editors
- From `ed` to `ex` to `vi`
- Basic Editor Tasks with `vi`
- Editing Multiple Files
- Named Buffers
- `vi` Startup File

UNIX Processes

- The UNIX Process Model
- Process States
- Monitoring and Controlling Processes

The File System

- File System Organization
- File Types
- File and Directory Naming Rules and Conventions
- Commands for Navigating the File System
- Introduction to Inodes
- Ownership, Permissions, and Dates
- Manipulating Files and Links
- Manipulating Directories
- Determining Disk Usage
- Other File System Utilities

Introduction to Shells: `sh`, `bash`, and `ksh`

- Shell Functions
- I/O Redirection and Pipes
- Command Separation and Grouping
- Background Execution
- Filename Expansion
- Shell Variables
- Command Substitution
- Quoting and Escaping Metacharacters
- Bash Shell Features
- Korn Shell Features
- Command Execution
- Startup Files
- Customizing the User Environment

Printing

- Printing Under AT&T UNIX
- Printing Under BSD UNIX

Multitasking and Batch Processing

- Multitasking
- Scheduled Execution Using `cron`
- The `at` and `batch` Commands

Shell Programming

Advanced Shell Features

- Shell Script Features and Capabilities
- Creating and Running a Script
- Working With Variables
- Environment Variables
- Working With Data Types
  - Formatting
  - Base Conversion
  - Setting Special Attributes
- Input/Output Techniques
- Conditional Constructs
  - `if/then`
  - `else/elif`
- Looping Constructs
  - `for, while, until`
- Math Operators
- Manipulating Strings
- Writing and Calling Functions
- Controlling Process Priorities
- Interpreting Command Line Arguments
- Making Scripts Interactive
- Special Shell Variables
- Advanced I/O with Streams
- Improving Performance of Scripts

Text Manipulation Utilities

- Editing a File from a Script
- Scripting with `ed` or `sed`
- UNIX and Linux Utilities to Manipulate Files
- Regular Expressions
- `grep` and `egrep`
- The Stream Editor `sed`
- Sorting in Scripts
- Generating Reports with `awk`
- Splitting Large Files
- Counting Words, Lines, and Characters
- Transforming File Contents
- Extracting Text Strings

File Processing Utilities

- Examining and Comparing Files
- Reporting Differences Between Files
- Comparing Files of Any Format
- Displaying Data in Octal and Hex
- Compressing Data
- Converting File Formats

Backing Up Files

- Backup Media
- UNIX Device Names
- `tar` and `cpio`
- File Transport and Conversion with `dd`

Networking Commands

- UNIX Network Applications
  - Remote Execution Commands
  - Remote Activity Reporting
  - Communicating with Remote Users
- Internet Applications
  - `ftp, tftp, telnet`
- Remote Access Control Mechanisms
- Using the Secure Shell `(ssh)`

Hands On Technology Transfer
The Best Way to Transfer Technology Skills

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