UNIX/Linux Fundamentals and Shell Scripting

Duration: 35 hours

Prerequisites: None.

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. Upon completion, attendees will be able to productively use any UNIX-based system. The course presents the concepts necessary to understand the way UNIX works (processes, I/O streams, command line processing, etc.) 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.

Students Will Learn

- Introduction to UNIX
- UNIX Login Session
- Text Editing
- The File System
- UNIX Processes
- Introduction to Shell Syntax
- Backing Up Files
- Printing
- Communicating Over the Network
- UNIX GUI Fundamentals
- KDE Desktop
- GNOME Desktop
- Korn and Bash Shell Enhancements
- Writing Scripts
- Programming Logic
- Manipulating Strings
- Command-Line Processing
- Text File Manipulation
- Functions
- Compound Commands
- Process Management
- Advanced Customization of the Shell Environment
- Advanced I/O with Streams
- Security
- Performance and Porting Issues

Overview

Introduction to UNIX

Basic User Commands

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

- 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

- 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

Advanced Shell Features

- 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

`for, while, until`

- Math Operators

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)`

Related Bootcamps

Track	Duration	Price
Linux System Administrator	70 hours	$1,790
UNIX Software Developer	98 hours	$2,685

Contact Us

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