Unix Training Course Curriculum

Prerequisites

- Basic understanding of computer systems
- Familiarity with any operating system
- Basic knowledge of computer networks
- No prior Unix/Linux experience required

Lab Setup Requirements

- Virtual Machine with Ubuntu 22.04 LTS or later
- Minimum system requirements:
  - 4GB RAM
  - 20GB disk space
  - 2 CPU cores
- Internet connection for package installation
- SSH client (PuTTY for Windows, Terminal for macOS/Linux)
- Text editor (Vim, Nano, or VS Code)

Course Duration: 3 Days

Day 1: Environment, Tools, and System Management

- Introduction to Unix/Linux
  - History and evolution
  - Different distributions
  - Unix philosophy
- Getting Started
  - Terminal basics
  - Command structure
  - Basic navigation
- Essential Commands and File System
  - Basic commands (`ls`, `cd`, `pwd`, `mkdir`, `touch`, `rm`, `cp`, `mv`)
  - File system hierarchy
  - File operations
  - File searching (`find`, `locate`)
  - Text processing (`grep`, `sed`, `awk`, `sort`, `uniq`)
- System Administration Basics
  - File permissions (`chmod`, `chown`, `chgrp`)
  - User and group management
  - Process management (`ps`, `top`, `kill`)
  - Package management
  - System monitoring
- Lab Exercise: System administration tasks

Day 2: Networking and Scripting

- Basic Networking Concepts
  - Network configuration
  - Essential commands (`ifconfig`/`ip`, `ping`, `netstat`, `traceroute`)
  - Network services (`ssh`, `scp`, `sftp`, `curl`, `wget`)
  - Firewall basics and `iptables`
  - Network security best practices
- Shell Scripting Fundamentals
  - Shell types and basic syntax
  - Variables and control structures
  - Functions and command substitution
  - Input/output handling
  - Error handling
  - Scripting best practices
- Lab Exercise: Network configuration and basic scripting

Day 3: Security and Automation

- Security and Authentication
  - Encryption basics (symmetric and asymmetric)
  - `gpg` and `openssl` usage
  - SSH key management and configuration
  - OAuth concepts
  - Authentication best practices
  - Secure file transfer
- System Automation and Advanced Topics
  - `cron` and `at` for scheduling
  - Systemd services
  - Backup strategies
  - Best practices review
  - Final project implementation
  - Q&A session