

This course gives an introduction to the writing of Linux shell scripts using the Bash shell. The course is suitable as preparation for the RHCSA and CompTIA Linux+ examinations.

An editor will be used to create and test shell scripts which will cover the use of variables and arrays, select statements, loop constructs, sub-scripts and functions. Although based on Ubuntu, the commands and principles learnt may be applied to all other versions of Linux, including Red Hat, CentOS and SUSE and to all versions of Unix including Solaris and AIX.

The course takes the format of a workshop, with a mix of lecture, working examples and practical exercises. Although the content may be customised, at least 2 days are normally needed to cover the core elements.

Full course notes are provided along with sample files and free software tools for use in accessing a Linux server.

Linux Shell Scripting Course Outline

Day 1

Overview

- Aims and Objectives
- Schedule and Introductions
- Pre-requisites
- Responsibilities

Shell Programming

- Creating and testing shell scripts
- Script file creation and permissions (chmod +x)
- \$PATH variable and script location
- Login files and the . (dot) command
- Parameter passing and the read command
- Output formatting
- Shell selection
- Script debugging
- Review exercise

Special Characters and Variables

- Quotation marks (" , ' , `)
- Using \$(...)
- System, special, and user variables
- Variable management (unset, declare)
- Script variables and scope

- Variable constructs and brackets usage
- Regular expressions
- Command substitution and subshells

Selection

- if statements and conditional testing
- File attributes and the test command
- [] syntax and logical constructs
- Multiple tests and elif
- Numeric testing with (())
- String testing
- case statements
- Input validation
- Review exercise

Day 2

Iteration and Looping

- Computations (let, expr)
- while and until loops
- for loops and sequence generation
- Parameter handling with shift
- File operations and pipe handling
- Review exercise

Menu Creation

- Implementing menus with case statements
- Loop constructs
- Output control (sleep, read, exit, break)
- Shell forking
- Signal handling with trap
- Text formatting with tput
- select menus

Functions and Arrays

- Function creation and management
- Return values
- Array operations
- String handling
- Review exercises

Day 3 (Optional Advanced Topics)

Sed Batch Editor

- Stream editing fundamentals
- Regular expressions
- Basic operations (d, p, n)
- Text substitution and pattern replacement
- File handling
- Flow control

Awk Utility

- Pattern matching and regular expressions
- Script creation and debugging
- Built-in functions
- Parameter handling
- Arrays and control flow
- Examples

Advanced Commands

- eval usage and features
- Argument handling with getopt
- Script debugging techniques

Appendix A - Linux Revision

- Shell customization
- Command features
- I/O operations
- Process management
- Text processing
- File permissions

Course Review

- Course summary
- Reference materials
- Basic command review
- Editor basics (vim, nano)