

Bash Shell Scripting

1- The Linux Environment

- The Origin of Linux
- Files and File Systems
- Directories
- Inodes and Links
- Pipe and Socket Files
- Device Files
- Lab Session

2- Basics of Linux

- Command Basics
- Command-Line Editing
- Multiple Commands
- Multiline Commands
- Command History
- Directory Commands
- Basic file permissions
- Lab Session

3- Working with files and users

- Listing Files
- Getting Help
- Fixing the Display
- Working with Files
- Working with People
- Lab Session

4- Working with Shell

- What is a shell?
- Types of shell
- Shell features
- Shell Aliases
- Customizing Your Prompt
- Built-In Versus Linux Commands
- The Bash Hash Table
- The Set and Shopt Commands
- Key Binding
- Lab Session

5- Script Basics •

Which shell?

- Recommended shell

- Pseudo code before writing shell script
- Creating a Script
- Magic Sha–Bang
- How to execute a script
- Exit status
- Shell Debugging Features
- Lab Session

6- Variables

- Introduction to Variables
- Variable Assignment
- Displaying and using variables
- Variable Attributes
- Quoting Variables
- Escape Characters
- The eval Command
- Concatenation and sub-strings
- Lab Session

7- Array variables

- Creating array Variable
- Substituting and counting
- Using integer variables as element numbers
- Lab Session

8- User Input

- Reading user input
- Positional parameters
- Creating positional parameters
- Lab Session

9- Designing Program Output

- Variable attributes
- Formatted output with printf
- Terminal echo
- I/O Redirection
- Pipe and tee
- Lab Session

10- Managing input and output

- File descriptors
- Reading / writing using file descriptors
- Redirecting, parameter lists and 'here' documents
- Creating parameter lists from input lines

- Lab Session

11- Shell arithmetic

- Creating Integer Variables
- Using arithmetic operators and data
- Lab Session

12- Branching and logic testing

- Logic testing
- Conditional operators
- Multi-way branching and the 'case' statement
- Lab Session

13- Shell patterns

- Basic expressions
- Regular expressions
- Meta-characters
- Pattern combinations
- Using Character Classes
- The grep and egrep command
- Lab Session

14- Looping

- The 'while' loop
- The 'until' loop
- The 'for' loop
- Breaking out of a loop and continuing
- The 'select' loop
- Lab Session

15- The 'getopts' Command

- Processing arguments
- The getopts and OPTARG variable
- The OPTIND variable
- Lab Session

16- Functions

- Displaying current shell functions
- Declaring and using functions
- Variable scope
- Function recursion
- Lab Session

17- Traps, Signals and Script Control

- Common signals
- Running Scripts in Background Mode

- Scheduling your script
- Starting the Script at Boot Time
- The trap commands
- Lab Session

18- Introduction to 'awk'

- Record processing
- Pattern matching and relational expressions
- Command line arguments
- Lab Session

19- Introduction to 'sed'

- Substituting text
- Deleting and printing lines
- Reading and writing files
- Multiple 'sed' editor functions
- Lab Session

20- Writing Utility Scripts

- Creating Graphical Script
- User Management Script
- Directory Monitoring Script
- User Login Monitoring Script
- Email Report by Script

21- Expressions

- Basic if command
- let Features
- File test operators
- Arithmetic comparison operators
- String comparison operators
- Arithmetic comparison with double parentheses
- Parameter substitution and expansion
- Brackets and Extended brackets test construct
- Curly brackets construct
- Parentheses and double parentheses
- Regular expression
- Extended regular expression
- POSIX character classes
- Globbing options
- Here Documents
- Logical expressions

22- Compound Commands

- Command Status Codes

- if Command
- case Command
- while Loop
- until Loop
- for Loops
- Embedded let
- Grouping Commands

23- Shell Security

- The Basic Linux Security Model
- Knowing Who You Are (id)
- Transferring Ownership (chown/chgrp)
- Changing Access Rights (chmod)
- Default Access Rights (umask)
- setuid/setgid and Scripts
- The chroot Command
- Resource Limits (ulimit)
- Restricted Shells
- Secure File Deletion

24- Awk Progrming

- Getting Started
- The Structure of an A WK Program
- Running an A WK Program
- Computing and Printing
- Printing Line Numbers
- Putting Text in the Output
- Sorting the Output
- Selection by Text Content
- Combinations of Patterns
- BEGIN and END
- Computing with AWK
- Computing Sums and Averages
- String Concatenation
- Built-in Functions
- Counting Lines, Words, and Characters
- Control-Flow Statements
- Expressions as Patterns
- String-Matching Compound and Range Patterns
- Regular Expressions
- The printf Statement
- Output into Files