UNIX Training Shell Scripting Course Contents

Introduction to the Unix Operating System
- A brief history of Unix
- The Unix kernel
- The UNIX file system
- Getting started navigating the file system
- The file system structure, Directories and files
- Pathnames
- Exercise: Navigating the file system
- Exercise: Logging on to the system

Unix Basic Commands
- Command line syntax
- Basic Unix commands
- Basic file handling commands
- Directory handling commands
- Filename wildcard characters
- Exercise: Manipulating files and directories

Redirection and Pipes
- Input redirection
- Output redirection
- Pipes
- Exercise: Using redirection and pipe facilities

Introduction to The vi Editor
- Overview of the vi editor
- Basic functions
- Switching to input mode
- Other useful commands
- Exercises: Using the vi editor

Searching and Replacing Text
- Replacing text
- Using sed for search and replace
- Searching for text with grep
- Linking files
- Exercises: Searching and Replacing Text

Recalling and Editing Commands
- Overview
- The bash shell
- The korn shell
- Exercises: Recall and Edit Commands

File Permissions and Access Control
- Users and user groups
- File access permissions
- Changing file attributes
- Switching users and user groups
- Linking files
- Exercise: Setting and access permissions

Processes
- What is a process?

- Monitoring processes
- Killing processes
- Background processes
- Job Control
- Grouping commands
- Exercise: Monitoring and controlling processes

More Basic Commands
- The wc (word count) command
- The find command
- The cut command
- The sort command
- The finger command
- Exercise: Using file handling commands

The User Environment
- Customising the .profile or .bash_profile
- Customising the .kshrc or .bashrc
- Exercise: Setting up an environment

Getting Started
- What is a shell script?
- Development guidelines
- Creating and editing shell scripts
- Naming and storing shell scripts
- Executing shell scripts
- Exercise: Write a simple shell script

Using Variables
- Environment variables
- Local variables
- Assigning values to variables
- Assessing variable values
- Using quotes
- Delimiting variable names
- Echo control sequences
- Exercise: Add variables to a script

Integer Arithmetic
- Using the expr command
- Using the (( )) notation
- Exercise: Add integer arithmetic to a shell script

Handling Run Time Data
- The read command
- Command line arguments
- Exercise: Writing a generic shell script
- Exercise: Writing an interactive shell script

Condition Execution
- The if statement
- The test command
- Other test notations
- Default and substitute variables
- Exit status codes
- Exercise: Adding validation to previous scripts

Loop Constructs

- The while loop
- The until loop
- The for loop
- The while true and until false loops
- Loop control commands
- Exercise: Enhancing the previously written scripts
- Exercise: Writing a guess-the-number game

Multi-Branch Decisions

- The case statement
- Menu driven applications
- Exercise: Developing and writing a menu system

Functions

- What is a function?
- Syntax
- Examples
- Exercise: Add a function to a script

Interrupt Handling

- Interrupt signals
- Trapping interrupts
- Exercise: Adding traps to the menu script

Additional Features and Facilities

- The exec commands
- The includes notation
- More about loops
- Arrays
- Here Documents
- Exercise: Create a here script

Redirection, Pipes and Filters

- Standard I/O and redirection
- Pipes
- Command separation
- Conditional execution
- Grouping Commands
- UNIX filters
- The tee command

Backup and Restore Utilities

- Archive devices
- The cpio command
- The tar command
- The dd command

Background Job Scheduling

- Starting background jobs
- Background tasks and the nohup command
- Process priorities and the nice command
- Job control
- Scheduling jobs with the at command
- Scheduling jobs with the cron command

Regular Expression Notation

- Regular expressions

- Extended regular expressions

Searching Files for Patterns
- The grep family of commands
- The grep command
- The fgrep command
- The egrep command

The Stream Editor - sed
- Introduction and command line syntax
- The sed program structure
- sed program processing
- Use sed commands
- sed addresses
- sed instructions
- Hold and get functions
- Advanced flow control

Commands for Comparing Files
- Compare two files with the cmp command
- Compare two files with the comm command
- Compare two files with the diff and sdiff commands
- Compare large files with the bdiff command

File Manipulation Commands
- The file command
- The head command
- The tail command
- The cut command
- The paste command
- The pr command
- The split and csplit commands

Identify and Translate Characters
- od - octal dump
- Use cat to display non-printing characters
- The expand and unexpand commands
- The tr command

Sorting Files
- The sort command
- Specify sort keys with -k
- Sort by column positions
- The uniq command

Introduction to the Pattern Scanning Utility - awk
- Introduction and command line syntax
- The awk program structure
- Use regular expressions
- Operators
- Simple patterns
- Extended patterns
- Comments
- Special patterns (BEGIN and END)
- Program variables
-
  - Built-in variables
  - User defined variables

- Mathematical operators
- Enhanced printing
- Handling user variables

awk Program Control Structures

- Program control structures
- The if construct
- The while and do ... while constructs
- The basic for construct
- Associative array handling
- Functions
-
  - Built in functions
  - The system function
  - The getline function