

## Shell Programming for UNIX System Administrators (Shell Scripting)

This course provides the necessary skills to write effective shell scripts to automate the administrative functions in a UNIX environment

\*Group rates available – Inquire for more details\*

**Duration:** 24 hours

**Upon completion of this course, students should be able to:**

- Identify features of Bourne and bash shells
- Write real world administration scripts
- Write reporting scripts
- Maintain existing scripts
- Use flow control constructs, such as branching and looping
- Customize system-wide shell initialization files
- Develop and debug scripts
- Use local and environmental variables and shell metacharacters in scripts
- Develop interactive scripts
- Write a script that uses functions
- Write scripts that uses functions & traps
- Access and process command-line arguments passed into a script
- Write sed scripts to perform noninteractive editing tasks
- Write awk scripts to manipulate individual fields within a record
- Write awk scripts to write reports based upon an input file
- Perform string manipulation and integer arithmetic on shell variables
- Develop a USAGE message to display when a script is invoked incorrectly
- Identify considerations for using functions
- Identify the features of signals
- Perform the action to trap signals
- Learn to download custom made scripts and use them

### **Prerequisites**

- The participants should be able to use basic UNIX commands and be familiar with vi editor

### **Included Labs**

Labs will be provided by the trainer

## **Course Content**

### **Lesson1 - UNIX Shells and Shell Scripts**

- Describe the role of shells in the UNIX environment
- Describe the standard shells
- Define the components of a shell script
- Write a simple shell script
- Set access permissions on a file
- Sequence the steps for scheduling processes using crontab
- Schedule a process by using the at command
- Writing and Debugging Scripts
- Start a script with #!
- Put comments in a script
- Change permissions on a script and execute the script
- Debug a script

### **Lesson 2 - The Shell Environment**

- Bourne and Korn shell variables
- Set and unset shell and environment variables
- Customize the user environment using the .profile file
- Perform arithmetic operations
- Create and use aliases
- Define the built-in aliases
- Customize the Bourne and Korn shell environments
- Use the tilde expansion and command substitution features of the Korn shell
- Use and describe regular expressions
- Usage of the grep command

### **Lesson 3 - The sed Editor and awk command**

- Use the sed editor to perform noninteractive editing tasks
- Use regular expression characters with the sed command
- Use awk commands from the command line
- Write simple awk programs to generate data reports from text files
- Write simple awk programs to generate numeric and text reports from text files
- Conditionals
- Use the exit status of a command as conditional control
- Use the "if" statement to test a condition
- Pass values using command-line arguments (positional parameters) into a script
- Create USAGE messages
- Place parameters on the command line
- Use conditional if, then, elif, else, and fi constructs
- Use exit, let, and test statements ([[ ]], " ")
- Apply the &&, ||, and ! Boolean logic operators

- Use the case statement

### Lesson 4 - Interactive Scripts

- Use the print and echo commands to display text
- Use the read command to interactively assign data to a shell variable
- Read user input into one or more variables, using one read statement
- Perform the action to parse a command line input by using the getopt command
- Use special characters, with print and echo, to make the displayed text more user friendly
- Create a "here" document
- Use file descriptors to read from and write to multiple files

### Lesson 5 - Loops

- Write scripts that use for, while, and until loops
- Write a script using the select statement
- Describe when to use loops within a script
- Generate argument lists using command, variable, and file-name substitution
- Advanced Variables, Parameters, and Argument Lists
- Declare strings, integers, and array variables
- Manipulate string variables
- Change the values of the positional parameters using the set statement within a script
- Use Korn shell arrays
- Set default values for parameters
- Use the Korn shell built-in let, print, set, and typeset statements

### Lesson 6 - Functions

- Create user-defined functions in a shell script
- Create, invoke, and display functions from the command line
- Pass arguments into a function
- Call functions from special (function) files that are saved in one or more function directories
- Describe where functions are available for use

### Lesson 7 - Traps

- Describe how the trap statement works
- Include trap statements in a script
- Use the trap statement to catch signals and handle errors
- Introduction to Korn Shell scripting
- Introduction to C Shell scripting
- Introduction to scripting using Perl
- Downloading sample scripts
- Project