UNIX and Linux Essentials

Oracle IT Infrastructure

DURATION	MODULES	COURSE CODE
3 Days	**9 Lectures**	**—**

Course Overview

After completing this course, you should be able to: Explain the UNIX and Linux environments Work with Files and Directories Use the vim Editor Use Features Within the bash Shell Use Basic File Permissions Perform Basic Process Control Use Advanced Shell Features in Shell Scripts Archive, Compress, and Perform Remote File Transfers

What You Will Learn

Course Introduction

- Lesson Objectives
- Course Objectives
- Course Schedule
- Introductions
- Practice Environment
- Summary
- Practice 1: Overview

Introduction to the UNIX and Linux Environments

- Objectives
- Lesson Agenda
- Multiuser, Multitasking, Time-Sharing Operating Systems
- UNIX and Linux OS Structure
- UNIX and Linux OS Structure: The Kernel
- UNIX and Linux OS Structure: The File System
- The File System
- The root Directory “/”
- File Types
- UNIX and Linux OS Structure: Processes
- UNIX and Linux OS Structure: The Shell
- Shells, a User Command Interface to the Kernel

- Quiz
- User Accounts
- Components of a User Account
- Changing User Account Login Credentials
- Changing User Account Login Credentials: Examples
- Changing Ownership of a Login Session to Another User or Role
- User’s Home Directory
- Quiz
- UNIX Variants
- Linux Distributions
- The Desktop Environment
- Logging On to Oracle Linux Using the Desktop Login Screen
- Oracle Linux Desktop
- Logging Out
- Lesson Agenda
- Executing Commands from the Command Line
- Command-Line Syntax
- Using UNIX Commands
- Using Commands with Options
- Using Commands with Options on Oracle Linux
- Using Commands with Arguments
- Using Commands with Options and Arguments
- Using Multiple Commands on the Command Line
- Quiz
- Using the Man Pages
- Displaying the man Pages
- Scrolling Through the Man Pages
- Searching the Man Pages
- Searching the Man Pages: By Section
- Searching the Man Pages: By Keyword
- Accessing Online Product Documentation
- Quiz
- Summary
- Practice 2: Overview

Working with Files and Directories

- Objectives
- Lesson Agenda
- Viewing Directories
- Determining the Current Directory
- Displaying the Directory Content
- Displaying the Directory Content with Options
- Quiz
- Displaying File Types
- Changing Directories

- Changing Directories by Using Relative or Absolute Path Name
- Home Directory
- Returning to Your Home Directory
- Quiz
- Lesson Agenda
- Viewing File
- Viewing File Content: cat Command
- Viewing File Content: more Command
- Viewing File Content: less Command
- Viewing File Content: head Command
- Viewing File Content: tail Command
- Viewing File Content: wc Command
- Viewing File Content Differences: diff Command
- Quiz
- Lesson Agenda
- Copying Files and Directories
- Copying Multiple Files
- Copying Files: cp Command Options
- Copying Files Recursively: -r or -R Option
- Preventing Copy Overrides: -i Option
- Moving and Renaming Files and Directories
- Moving a File to Another Directory
- Moving a Directory and Its Content
- Renaming Files and Directories
- Quiz
- Lesson Agenda
- Creating Files
- Creating Directories
- Removing Files
- Removing Directories
- Removing Empty Directories
- Types of Links: Symbolic and Hard
- Creating Symbolic Links
- Creating Hard Links
- Removing Both Symbolic and Hard Links
- Quiz
- Lesson Agenda
- Regular Expressions
- Regular Expressions Wild Cards
- Creating Patterns Using Regular Expressions
- Searching Files and Directories
- Searching Files and Directories: find Command
- Using Expressions with the find Command
- Searching Files and Directories: Linux Also Has a locate Command
- Searching Within Files: grep Command
- Searching Within Files: grep Command on Linux

- Quiz
- Summary
- Practice 3: Overview

Using the vim Editor

- Objectives
- Agenda
- vim Editor: Introduction
- Accessing the vim Editor
- vim Editor: Overview
- vim Editor Modes
- Switching Between the Two Most Common Modes
- Agenda
- Viewing Files in Read-Only Mode
- Moving the Cursor Within the vim Editor
- Inserting and Appending Text
- Text-Deletion Commands
- Edit Commands
- Quiz
- Searching for and Substituting (Replacing) Text Within a File
- Copy-and-Paste Commands
- Save and Quit Commands
- Session Customization
- Session Customization Commands
- Quiz
- Summary
- Practice 4: Overview

Using Features Within the Bash Shell

- Objectives
- Lesson Agenda
- Shell Expansions
- Brace Expansion
- Tilde Expansion
- Parameter Expansion
- Command Substitution
- Path Name Expansion and File Name Generation
- Asterisk (*) Expansion Symbol
- Question Mark (?) Expansion Symbol
- Square Bracket ([]) Expansion Symbols
- Quiz
- Lesson Agenda
- Shell Metacharacters
- Command Communication Channels
- File Descriptors

- Redirection Metacharacters
- Redirecting Standard Input (stdin)
- Redirecting Standard Output (stdout)
- Redirecting Standard Error (stderr)
- Pipe Symbol
- Using the Pipe Symbol
- Redirecting Standard Output (stdout) by Using the tee Command
- Quoting Symbols
- Quiz
- Lesson Agenda
- Variables: Introduction
- Displaying Local Shell Variables
- Displaying Global Environment Shell Variables
- Setting and Unsetting Shell Variables
- Default Bash Shell Variables
- Customizing Bash Shell Variables: PS1
- Customizing Shell Variables: PATH
- Quiz
- Lesson Agenda
- Command History: Introduction
- Displaying Previously Executed Commands
- Use the ! Command to Re-execute a Command Line from History
- Use the !! Command to Repeat the Last Command
- Searching the History Entries
- Using the ! Command to Search for and Execute History Entries
- Editing Commands on the Command Line
- Invoking File Name Completion
- File Name Completion with More Than a Single Solution
- Lesson Agenda
- User Initialization Files
- Default User Initialization Files for the Bash Shell
- Configuring the ~/.bashrc File
- Rereading the ~/.bashrc File
- Quiz
- Summary
- Practice 5: Overview

Using Basic File Permissions

- Objectives
- Lesson Agenda
- Securing Files and Directories
- File and Directory Permissions (ACL)
- Viewing Permission Categories
- Permission Groups
- Permission Sets

- Interpreting File and Directory Permissions
- Determining File or Directory Access Permissions
- Interpreting the ls –n Command
- Determining Permissions
- Quiz
- Lesson Agenda
- Changing Ownership on Files or Directories
- Changing Both Username and Group Ownership
- Changing Group Ownership
- Quiz
- Lesson Agenda
- Changing Permissions
- Changing Permissions: Symbolic Mode
- Special File Permissions: Setuid, Setgid, and Stick Bit
- Changing Permissions: Octal Mode
- Quiz
- Lesson Agenda
- umask: A Bash Shell Built-in Command
- Determining the umask Octal Value
- Applying the umask Value
- Changing the umask Value
- Summary
- Practice 6: Overview

Performing Basic Process Control

- Objectives
- Agenda
- Process: Overview
- Attributes of a Process
- Process States
- Process Subsystems
- Agenda
- Listing System Processes
- Listing All Processes
- Listing Process Trees in Oracle Linux
- Quiz
- Terminating a Process
- Terminating a Process: kill Command
- Common Signals and Their Uses
- Terminating a Process: kill Command
- Terminating a Process: pgrep and pkill Commands
- Terminating a Process: pkill Command
- Forcefully Terminating a Process: Signal 9 (SIGKILL)
- Quiz
- Summary
- Practice 7: Overview

Using Advanced Shell Features in Shell Scripts

- Objectives
- Agenda
- Jobs in the Bash Shell
- Job Control Commands
- Running a Job in the Background
- Bringing a Background Job to the Foreground
- Quiz
- The alias Command
- Command Sequence
- Predefined Aliases
- User-Defined Aliases
- Deactivating an Alias
- Removing an Alias
- Quiz
- Shell Functions
- Defining a Function
- Invoking a Function
- Shell Options
- Activating the noclobber Shell Option
- Deactivating the noclobber Shell Option
- Quiz
- Agenda
- Shell Scripts
- Determining the Shell to Interpret and Execute a Shell Script
- Creating a Shell Script
- Executing a Shell Script
- Comments in a Shell Script
- Positional Parameters in a Shell Script
- Quiz
- Checking the Exit Status
- The test Command
- Integer/Arithmetic Test Comparison Operators
- String Test Comparison Operators
- File Test Comparison Operators
- Using the test Command in an if Statement
- How to Test/Debug a Shell Script
- Conditional Expressions
- The && Operator
- The || Operator
- The if Statement
- The if Statement Additional Syntax
- The case Statement
- Looping Constructs
- The for Loop Statement

- Shifting Positional Parameters in a Loop
- The while (True) Loop Statement
- The until (True) Loop Statement
- Quiz
- Summary
- Practice 8: Overview

Archiving, Compressing, and Performing Remote File Transfers

- Objectives
- Agenda
- File Archival: Introduction
- The tar Command
- Common tar Command Options
- Creating a tar Archive
- Viewing the Table of of a tar Archive
- Extracting a tar Archive
- Quiz
- Agenda
- File Compression
- Compressing a File: gzip Command
- Uncompressing a File: gunzip Command
- Viewing a Compressed File: zcat Command
- Archiving and Compressing Multiple Files: zip Command
- Viewing and Uncompressing Archive Files: unzip Command
- Compressing a File: bzip2 Command
- Uncompressing a File: bunzip2 Command
- Viewing a Compressed File: bzcat Command
- Quiz
- Agenda
- Computer Networking: Introduction
- Layout of a Basic Network
- OpenSSH and Remote Network Connections
- Using Secure Shell (ssh) for Remote Login
- Copying Files and Directories Between a Local and Remote Host: scp
- Command
- Reversing the Direction and Copying Files from a Remote Host to a Local
- Host
- Copying Local Directories to and from a Remote Host
- Quiz
- File Transfer Protocol (FTP): Introduction
- Using OpenSSH’s sftp to Transfer Files Either Remotely or Locally
- Determining the File Type and the Destination to Which the File Is Being
- Transferred
- Converting a File’s Format Based on the Destination
- Using sftp Commands
- Transferring Files by Using sftp

- Transferring Multiple Files by Using sftp
- Quiz
- Summary
- Practice 9: Overview