Introduction to Scripting: Python PowerShell and Bash

Course Duration: 5 days (8hrs/day)

Prerequisites: None

Course Description: This course is designed for beginners who want to learn the fundamentals of scripting using three popular languages: Python, PowerShell, and Bash. Scripting is an essential skill for automating tasks, managing systems, and streamlining workflows in various computing environments. Throughout this course, students will gain hands-on experience writing scripts, understanding syntax, and executing commands in each language. By the end of the course, students will have the foundational knowledge to create basic scripts and automate simple tasks using Python, PowerShell, and Bash.

Python Version: 3.7 or higher
PowerShell Version: 7.x

Lab Requirement: Koenig DC

Course Outline:

1: Introduction to Scripting

- Overview of scripting languages
- Importance of scripting in automation
- Setting up the development environment (Python, PowerShell, Bash)
- Introduction to basic concepts (variables, data types, control structures)

2: Getting Started with Python

- Installing Python
- Writing and running Python scripts
- Variables and data types in Python
- Basic input/output operations
- Conditional statements and loops in Python

3: Python Functions and Modules

- Defining and calling functions
- Function parameters and return values
- Scope of variables
- Introduction to Python modules and libraries
- Importing and using modules

4: Working with Files in Python

- Reading from and writing to files
- File handling operations (open, close, read, write)
- Handling exceptions in file operations
- Practical exercises with file manipulation

5: Introduction to PowerShell

- What is PowerShell and its use cases
- Installing PowerShell
- PowerShell basics: cmdlets, aliases, and parameters
- PowerShell scripting environment

6: PowerShell Commands and Pipelines

- Exploring common PowerShell cmdlets
- Working with pipelines and filtering data
- Combining cmdlets for complex operations
- Practical exercises with PowerShell commands

7: PowerShell Scripting Fundamentals

- Writing scripts in PowerShell
- Variables and data types in PowerShell
- Control structures in PowerShell (if-else, loops)
- Error handling and debugging in PowerShell scripts

8: Introduction to Bash Scripting

- What is Bash and its role in scripting
- Installing Bash (for non-Linux systems)
- Basics of shell scripting
- Writing and running Bash scripts

9: Bash Scripting Essentials

- Variables and data types in Bash
- Input/output operations in Bash scripts
- Conditional statements and loops in Bash
- Practical exercises with Bash scripting

10: Advanced Bash Scripting

- Functions in Bash scripts
- Command-line arguments and options
- Working with files and directories in Bash
- Error handling and debugging techniques