PYTHON SCRIPTING

Duration: 15 hours

- ➢ Each session will have hands-on lab activities and quiz
- ➢ Programming challenges and reading assignments will be given as after class activities

Introduction (30 mins)
- ➢ Course Overview
- ➢ Python for system administration
- ➢ Python vs Bash

Python Basics (1 hour)
- ➢ Installing Python
- ➢ REPL
- ➢ Variables and Expressions
- ➢ Reading user input
- ➢ Printing output
- ➢ Using Comments
- ➢ Strings & Numbers

Data Types (1 hour)
- ➢ Boolean
- ➢ Lists
- ➢ Tuples
- ➢ Sets
- ➢ Dictionaries

Conditionals and Loops (1 hour)
- ➢ Parsing command-line arguments
- ➢ Conditionals and Comparisons
- ➢ Loops
- ➢ Logical Operators
- ➢ Iterators
- ➢ Generators
- ➢ Functions

More Python (1 hour)
- Modules
- Handling Errors
- Exceptions
- Exception Handling
- Raising exceptions
- Using standard library
- Working with environment variables

Working with Dates and Time (30 mins)
- The datetime module
- Formatting the time output
- Using timedelta objects
- Working with calendars

Working with Web Data (30 mins)
- Fetching Internet data
- Working with JSON data
- Parsing and processing HTML and XML

Command Line option and argument passing (30 mins)
- Argparse
- Argparse vs optparse
- Setting up a parser
- Defining arguments
- Parsing a command line
- Argument Actions

Automating Regular Administrative Activities (1 hour)
- Redirection, pipe, and input files
- Managing passwords
- Executing external commands
- Prompting for a password and validating
- Reading configuration files
- Logging
- Making backups
- Standard input and output
- String formatting
- Sending email

Managing Files, Directories, and Data (1 hour)
- ➢ Using the os module to work with directories
- ➢ Copying, moving, renaming, and deleting data
- ➢ Working with paths, directories, and files
- ➢ Comparing data
- ➢ Merging data
- ➢ Pattern matching files and directories
- ➢ Metadata: data about data
- ➢ Compressing and restoring
- ➢ Using a tarfile module to create TAR archives
- ➢ Using a tarfile module to examine the contents of TAR files

File Archiving, Encrypting, and Decrypting (30 mins)
- ➢ Creating and unpacking archives
- ➢ Tar archives
- ➢ ZIP creation
- ➢ File encryption and decryption

Text Processing and Regular Expressions (1 hour)
- ➢ Text wrapping
- ➢ Regular expressions
- ➢ Unicode strings

Working with Various Files (30 mins)
- ➢ Working with PDF files
- ➢ Working with Excel files
- ➢ Working with CSV files
- ➢ Working with txt files

Basic Network Socket Programming (30 mins)
- ➢ Sockets
- ➢ The http package
- ➢ The ftplib module
- ➢ The urllib package

Handling Emails (30 mins)
- ➢ Email message format
- ➢ Adding HTML and multimedia content
- ➢ POP3 and IMAP servers

Remote Monitoring of Hosts (30 mins)
- ➢ The telnetlib() module
- ➢ The subprocess.Popen() module
- ➢ SSH using fabric module
- ➢ SSH using Paramiko library
- ➢ SSH using Netmiko library

Building Graphical User Interfaces (30 mins)
- ➢ Introduction to GUI
- ➢ Using a library to create a GUI-based application
- ➢ Installing and using the Apache Log Viewer app

Working with Log Files (1 hour)
- ➢ Parsing complex log files
- ➢ The need for exceptions
- ➢ Tricks for parsing different files
- ➢ Error log
- ➢ Access log
- ➢ Parsing other log files

REST API Communication (30 mins)
- ➢ What is a RESTful API?
- ➢ Using standard libraries for RESTful API
- ➢ Working with JSON data

Database Administration (30 mins)
- ➢ MySQL database administration
- ➢ SQLite database administration