

# Automation using Python

## Module 1: Python Basics

- Introduction to Python
- Data Types
- Variables
- Data Structure
- Operations on Data Structure
- Inbuilt methods

## Module 2: Data Types and Variables

- Data Types
- Understanding Variables
- Getting User Input and Print statements
- Use quotes and escape character
- Lists
- Tuples
- Dictionaries
- Sets
- Different Methods on data structures
- String Indexing and Slicing Strings
- Concatenation and Repetition
- Common String Methods
- String Formatting
- Namespaces
- Formatted String Literals (f-strings and .format() method)
- Built-in String Functions

## Module 3: Functions and Modules

- Defining Functions
- Using Parameters and Return Values
- Using Arguments and Default Parameters
- Scope of Variables
- Modules and Packages
- Writing and Importing Modules

#### **Module 4: Flow Control**

- Python Operators
- If, else, elif clauses
- Loops – for and while loops
- Iteration

#### **Module 5: Introduction to Python Automation**

- Overview of Automation and its Benefits
- Introduction to Python Libraries for Automation
- Setting up the development environment.

#### **Module 6: File Handling and Manipulation**

- Working with files and directories
- Automating file operations
- File searching and filtering
- Opening Files
- The os and os.path modules
- Reading files
- Writing into a file
- Appending data into a file

#### **Module 7: Web Scraping and Data Extraction**

- Introduction to web scraping
- Using BeautifulSoup and Requests libraries for web scraping

#### **Module 8: GUI Automation**

- Introduction to GUI automation
- Automating mouse and keyboard actions
- Interacting with desktop applications

#### **Module 9: Database Automation**

- Introduction to database automation
- Connecting to databases using Python
- Automating database queries and data manipulation tasks

## **Module 10: Task Scheduling and Automation**

- Introduction to task scheduling
- Using cron jobs and task scheduler libraries
- Automating recurring tasks and processes

## **Module 11: Error Handling and Logging**

- Handling errors and exceptions in automation scripts
- Implementing logging for debugging and monitoring

## **Module 12: Parallel Execution in Python**

- Threading
- Multiprocessing for parallel execution
- Implementing automation best practices
- Performance optimization techniques

## **Module 13: Excel Automation**

- Introduction to Excel automation
- Reading and writing Excel files using pandas library
- Handling different Excel formats (e.g., .xls, .xlsx)
- Extracting data from Excel worksheets and ranges
- Automating data manipulation and analysis tasks with Excel files

## **Module 14: PDF Automation**

- Reading and extracting data from PDF files using PyPDF2 or pdfplumber library
- Automating PDF generation and manipulation tasks
- Converting PDF files to other formats (e.g., text, images)

## **Module 15: Image Processing with Python**

- Automating image manipulation tasks (e.g., resizing, cropping, filtering)
- Working with image recognition and OCR (Optical Character Recognition) for automation