PYTHON PROGAMMING

Python 3: Scripting, NumPy, Pandas, OS, openpyxl and Django

Duration: 5 Days

Pre-requisites: Any higher-level programming (C++, Java, C#...) or scripting language (JS, TS…)

Day 1:

Module 1 Introduction to Python, Data Types, Quotations

- Python Interpreter and its Environment
- Python 3.x: Background, Relevance
- Numbers
- Strings
- Declaration of variables

Module 2 Conditional statements/Control Structures

- If Statements
- While construct
- For Statements
- Break and continue Statements, and else clauses on Loops
- Pass Statements

Module 3 Python basic data structures

- Arrays, Lists and Tuples
- Dictionary and Sets
- List and array slicing

Module 4 Functions

- Local variables
- Default Argument Values
- Returning Values
- Keyword & Positional Arguments
- Arbitrary Argument Lists
- Documentation Strings
- Unpacking Argument Lists (unknown number of parameters)
- Lambda Expressions

Module 5 Functional Programming

- Lambda Forms
- list comprehension
- isalpha
- map
- apply
- reduce
- filter

Day 2:

Module 6 File handling and other OS interactions

- Creating and Opening a File
- Reading from a file, writing to a file (variations)
- Closing a File
- Handling csv files

Module 7 Modules

- Executing modules as scripts
- The Module Search Path
- Building modules
- Running a module from the command line
- 'Compiled' Python files(.pyc)
- Standard Modules
- The dir() Function

Module 8 Introduction to OOP

- Class Definition Syntax
- Implication of **self**
- Class Objects, Instance Objects, Method Objects; Instantiation
- Constructor & Deconstructor
- Inheritance
- Data Member – Class variable/Instance Variable

Module 9 Exceptions

- Handling Exceptions
- try-except
- else clause
- finally, clause
- Raising Exceptions
- User-defined Exceptions

Day 3:

Module 10 Supplementary Topics

- closure
- basic debugging
- pickle (binary files)
- File compression & decompression
- OS, SYS and PPRINT modules

Module 11 Regular expressions

- What is regular expression?
- Matching characters
- Compiling regular expressions
- Metacharacters like quantifiers, anchors, character classes, alternator etc.
- Strings and Slices
- Modifying Strings
- Use of triple quotes
- Repetition
- Group extraction and Substitution

Module 12 MS Excel – Python interface

- Which module is needed?
- Installation of module
- Read and Write operations covering different Python data structures

Day 4 & 5:

Module 13 REST API access

* working with JSON
* using urllib3
* accessing URLs with urllib3
* using requests module
* GET, POST using requests module

Module 14 PANDAS

* Getting Started
* Series
* Data Frames
* Read CSV
* Read JSON
* Analyzing Data

Module 15 NUMPY

* Getting Started
* Creating Arrays
* Array Indexing
* Array Slicing
* Data Types
* Copy vs View
* Array Shape
* Array Reshape
* Array Iterating
* Array Join
* Array Split
* Array Search
* Array Sort
* Array Filter