

PYTHON

Duration-2 Months

Introduction to Python

- Why Python
- Application areas of python
- Python implementations
 1. Cpython
 2. Jython
 3. Ironpython
 4. Pypy
- Python versions
- Installing python
- Python interpreter architecture
- Python byte code compiler
- Python virtual machine(pvm)

Writing and executing first Python Program

- Using interactive mode
- Using script mode
- General text editor and command window
- Idle editor and idle shell
- Understanding print() function
- How to compile python program explicitly

Python Language Fundamentals

- Character set
- Keywords
- Comments
- Variables
- Literals
- Operators
- Reading input from console
- Parsing string to int, float

Python Conditional Statements

- If statement
- If else statement
- If elif statement
- If elif else statement
- Nested if statement

Looping Statements

- While loop
- For loop
- Nested loops
- Pass, break and continue keywords

Standard Data Types

- Int, float, complex, bool, nonetype
- Str, list, tuple, range
- Dict, set, frozenset

String Handling

- What is string?
- String representations
- Unicode string
- String functions, methods
- String indexing and slicing

Python List

- Creating and accessing lists
- Indexing and slicing lists
- List methods Nested lists
- List comprehension

Python Tuple

- Creating tuple
- Accessing tuple
- Immutability of tuple

Python Set

- How to create a set
- Iteration over sets
- Python set methods
- Python frozenset

Python Dictionary

- Creating a dictionary
- Dictionary methods
- Accessing values from dictionary
- Updating dictionary
- Iterating dictionary
- Dictionary comprehension

Python Functions

- Defining a function
- Calling a function
- Types of functions
- Function arguments
 1. Positional arguments, keyword arguments
 2. Default arguments, non-default arguments
 3. Arbitrary arguments, keyword arbitrary arguments
- Function return statement
- Nested function
- Function as argument

- Function as return statement
- Decorator function Closure Map(), filter(), reduce(), any() functions
- Anonymous or lambda function

Modules & Packages

- Why modules
- Script v/s module
- Importing module
- Standard v/s third party modules
- Why packages
- Understanding pip utility

File I/O

- Introduction to file handling
- File modes
- Functions and methods related to file handling
- Understanding with block

Regular Expressions (Regex)

- Need of regular expressions
- Re module
- Functions /methods related to regex
- Meta characters & special sequences

Object Oriented Programming

- Procedural v/s Object Oriented Programming
- OOP Principles
- Defining a Class & Object Creation
- Inheritance
- Encapsulation

- Abstraction
- Garbage Collection
- Iterator & Generator

Exception Handling

- Difference between Syntax Errors and Exceptions
- Keywords used in Exception Handling try, except, finally, raise, assert
- Types of Except Blocks
- User-defined Exceptions

GUI Programming

- Introduction to Tkinter Programming
- Tkinter Widgets
- Layout Managers
- Event handling
- Displaying image

Multi-Threading Programming

- Multi-processing v/s Multi-threading
- Need of threads
- Creating child threads ssss
- Functions /methods related to threads
- Thread synchronization and locking

SQL Using MySQL

Introduction to RDBMS

- What is Relational Database Package?
- Difference between SQL & Database
- Installing MySQL Server database

Python Database Connectivity

- Database Drivers and connectors
- Creating connection object
- Understanding cursor object
- Executing SQL statements using cursor
- Fetching records from cursor
- Storing and retrieving Date and Time