



Python

Duration: 2 Months

Introduction To Python

- Why Python
- Application areas of python
- Python implementations
 - Cpython
 - Jython
 - Ironpython
 - 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
- String formatting

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
 - Positional arguments, keyword arguments
 - Default arguments, non-default arguments
 - 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

Object Oriented Programming

- Procedural v/s object oriented programming
- OOP principles
- Defining a class & object creation
- Object attributes
- Inheritance
- Encapsulation
- Polymorphism

Exception Handling

- Difference between syntax errors and exceptions
- Keywords used in exception handling
 - try, except, finally, raise, assert
- Types of except blocks

Regular Expressions(Regex)

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

GUI Programming

- Introduction to tkinter programming
- Tkinter widgets
 - Tk, label, Entry, Textbox, Button
 - Frame, messagebox, filedialog etc
- Layout managers
- Event handling
- Displaying image

Multi-Threading Programming

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

SQL

Introduction to Database

- Database Concepts
- What is Database Package?
- Understanding Data Storage
- Relational Database (RDBMS) Concept

SQL (Structured Query Language)

- SQL basics
- DML, DDL & DQL
- DDL: create, alter, drop
- SQL constraints:
 - Not null, unique,
 - Primary & foreign key, composite key
 - Check, default
- DML: insert, update, delete and merge
- DQL : select
- Select distinct
- SQL where
- SQL operators
- SQL like
- SQL order by
- SQL aliases
- SQL views
- SQL joins
 - Inner join
 - Left (outer) join
 - Right (outer) join
 - Full (outer) join

- Mysql functions
 - String functions
 - Char_length
 - Concat
 - Lower
 - Reverse
 - Upper
 - Numeric functions
 - Max, min, sum
 - Avg, count, abs
 - Date functions
 - Curdate
 - Curtime
 - Now

Python Database Connectivity

- Creating database connection
- Understanding Cursor
- Executing queries
- Parameterized queries

Project using tkinter and database connectivity

Partners :


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