Python

SECTION - I

- ### 1. Overview

- Why do we need Python?
- Program structure

- ### 2. Environment Setup

- Python Installation
- Execution Types
- What is an interpreter?
- Interpreters vs Compilers
- Using the Python Interpreter
- Interactive Mode
- Running python files
- Working with Python shell
- Integrated Development Environments (IDES)
- Interactive Mode Programming
- Script Mode Programming

- ### 3. Basic Concepts

- **Basic Operators**
- Types of Operator
- Python Arithmetic Operators
- Python Comparison Operators
- Python Assignment Operators
- Python Bitwise Operators
- Python Logical Operators
- Python Membership Operators (in, not in)
- Python Identity Operators (is, is not)
- Python Operators Precedence

- ### 4. Basic Concepts

- **Data Types**
- Variables
- Assigning Values to Variables
- Multiple Assignment
- Python Numbers
- Python Strings
- Accessing Values in Strings
- String Special Operators
- String Formatting Operator
- Triple Quotes
- Built-in String Operations
- **Python Lists**
- Accessing Values in Lists
- Updating Lists
- Delete List Elements
- Basic List Operations
- Indexing, Slicing, and Matrixes
- Built-in List Functions & Methods
- **Python Tuples**
- Accessing Values in Tuples
- Updating Tuples
- Delete Tuple Elements
- Basic Tuples Operations
- Indexing, Slicing, and Matrixes
- No Enclosing Delimiters
- Built-in Tuple Functions
- **Python Dictionary**
- Accessing Values in Dictionary
- Updating Dictionary
- Delete Dictionary Elements
- Properties of Dictionary Keys
- Built-in Dictionary Functions & Methods

SECTION - II

- **1. Functions**

- Defining a Function

- Syntax
- Calling a Function
- Pass by reference vs value
- Function Arguments
- Required arguments
- Keyword arguments
- Default arguments
- Variable-length arguments
- The return Statement
- Scope of Variables
- Global vs. Local variables

2. Python Modules and Packages

- Framework vs Packages
- Folium Introduction
- Why are modules used?
- Creating modules
- The import Statement
- The from...import Statement
- The from...import * Statement
- Locating Modules
- The PYTHONPATH Variable
- Namespaces and Scoping
- The dir( ) Function
- The globals() and locals() Functions
- The reload() Function
- Packages in Python

3. Basic OOPs Concept

- Creating class in Python
- Documented String
- Private Identifier
-
- Constructor
- Inheritance

- Polymorphism

- **4. Decorator, Iterator and Generator**

- **5. Anonymous Function**

- Lambda
- Map
- Filter
- Reduce

SECTION -III

- **1. File Manipulation**

- Opening Text File
- Working with a File on Python
- The open function
- File modes
- The file object attributes
- close() method
- write() method
- read() method
- Files: Input
- Files: Output
- Reading files
- Renaming & deleting files
- Writing into a file
- remove() method

- **2. Python GUI**

- Basic Operations using Tkinter
- Buttons and Textbox
- Menu Bar
- Message Box and Radio Button
- Checkbox and Event Creating
- Creating Application in GUI

- ## 3. SQL and Python

- Overview of SQLite
- Integrating Python with SQLite

- ## 4. NoSQL and Python

- Overview of NoSQL
- Integrating Python with NoSQL

- ## 5. Project Demonstration Tkinter with SQL

- **Project Demonstration Tkinter with SQL**

- ## 6. Other Concepts

- Errors and Exception Handling
- Standard exceptions
- Assertions in Python
- The assert Statement
- What is Exception?
- Handling an exception
- Syntax
- The except Clause with No Exceptions
- The except Clause with Multiple Exceptions
- The try-finally Clause
- Argument of an Exception
- Example with Tkinter Application
- Regular Expression
- Powerful Utilities
- Multithreading
- List Comprehensive
- Shallow and Deep Copy
- Unit testing