Python Programming - Detailed Course Content (Basic + Advanced)

Python is a programming language that lets you work more quickly and integrate your systems more effectively. You can learn to use Python and see almost immediate gains in productivity and lower maintenance costs.
Python is a remarkably powerful dynamic programming language that is used in a wide variety of application domains. Python is often compared to Tcl, Perl, Ruby, Scheme or Java.

Introduction to Python

- History of Python
- Features of Python
- Versions of Python
- Applications of Python
- Scripting vs Programming Language
- Interactive Mode vs Script Mode
- Installing Python
- Writing First Python Program
- Executing First Python Program using Interactive Mode
- Executing First Python Program using Script Mode

Python Basic

- Introduction
- Keywords
- Identifiers
- Comments
- Data Type
- Variables
- print(),type(),id() functions
- Operators
- Receiving input from keyboard
- Working with input() function
- Type conversion functions

Python Operators

- Assignment Operators
- Arithmetic Operators
- Short-hand Operator
- Relational Operators
- Logical Operators
- Bitwise Operators
- Identity Operators
- Membership Operators

Decision Making Statements

- if Statement
- if - else Statement
- elif Statement
- Nested Decision Making Statement

Looping Statements

- For Loop
- While Loop
- else with loop
- pass, break and continue
- Nested Loops

Functions

- Defining a Function
- Calling a Function
- Types of Functions
- Formal and actual Arguments
- Named and keyword arguments
- Default and Positional Arguments
- *args and **kwargs Arguments
- Lambda function
- Local and Global Variables

Modules & Packages

- Need of modules
- Creating a module and Importing Module
- Different ways of importing
- Working with Built-in Modules like math,sys,os,datetime,random.
- Creating a Package and Using a package

Object Oriented Programming

- Procedural vs Object Oriented Programming
- Features of OOP
- Defining a Class
- Variables and Methods in a Class
- Creating Objects
- Constructor
- Instance vs Class Member
- Abstraction, Encapsulation, Inheritance
- Data Hiding
- Polymorphism

- Operator Overloading
- Method Overriding
- Abstract method and class
- Properties

Python Built-in Data Types

Strings

- Creating Strings
- Strings Immutability
- String Indexing and Slicing
- String Formatting
- String Functions and String Operators
- String Joining and Splitting

List

- Creating and Accessing Lists
- List Mutability
- List operators and Methods
- Generating List using range()
- Searching in List
- User defined type List
- Converting String into List
- Converting List into String
- Nested Lists

Tuples

- Creating Tuple
- Tuple indexing, slicing and functions
- Tuple operators and Methods
- Nested Tuples
- Converting String and List to Tuple
- Converting Tuple to String and List

Set

- Creating a Set
- Normal and frozen Set
- Creating and modify Empty Set
- Add, removing and discarding elements to Set
- Converting String, List and Tuple to Set
- Converting Set into String, List and Tuple

Directory

- Creating Directory and Directory mutability
- Adding and Deleting keys value pairs
- Looping through Directory
- Extracting only keys and only values from Directory
- Creating Dictionary from List and Tupler
- Dictionary comprehension Iterators, Generators, r
- Decorator

Exception Handling

- Errors and Exceptions
- Exception Handling
- Try, Except, Finally
- User-defined Exceptions

File Handling

- Creating, Opening and Closing a File
- Writing and Appending to a File
- seek() and tell() methods
- readline() and readlines() methods
- Working with Characters and Words in file.
- The with Statement

Database

- Introduction to Databases
- Creating Database Connections
- Inserting, Fetching, Updating and Deleting data
- Transactions(Commit and Rollback)
- Handling Errors

GUI Programming

- Introduction to Tkinter Programming
- Tkinter Widgets (Label, Button, Entry, ComboBox,
- RadioButton, CheckBox, ListBox, TreeView, Frame)

Widgets Event Handling

Projects

1. Rock Paper Scissor
2. Website Blocker
3. Build a Twitter Bot
4. Number Guessing Game
5. Dice Rolling Simulator
6. YouTube Video Downloader
7. Text-based Adventure Game
8. Contact Book
9. Random Password Generator
10. Convert Text to Speech

Thank You!