MATRIX COMPUTERS

Python

Director

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PYTHON

Prerequisites: Basic Knowledge of C, C++ programming is better.

Fees: ₹ Duration: 75 hours

- ☑ **Introduction to Python**
  - ❋ What is Python
  - ❋ The application areas of Python
  - ❋ Download and install Python
  - ❋ Execute Python program from command prompt and using IDLE
  - ❋ Save programs with .py extension and execute it from prompt
- ☑ **Python Basics**
  - ❋ Data types and variables
  - ❋ Operators and operator precedence
  - ❋ Data type conversions
  - ❋ Command line argument
  - ❋ Data input
  - ❋ Comments
  - ❋ Import modules
- ☑ **Python Flow Control**
  - ❋ If statement
  - ❋ If.. elif.. else statement
  - ❋ While loop
  - ❋ For loop
  - ❋ Break & continue
  - ❋ Else clause
- ☑ **Introduction to Python IDE**
  - ❋ PyCharm
- ☑ **Python Sequences**
  - ❋ Range
  - ❋ String
  - ❋ List
  - ❋ Tuple
  - ❋ Dictionary
  - ❋ Set
- ☑ **Shallow and deep copy**
- ☑ **Functions and modules**
  - ❋ What is function
  - ❋ Define a function
  - ❋ Pass arguments
  - ❋ Arguments with default values

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- Arbitrary arguments
- Local and global variables
- Return a value from function
- Return multiple values
- Documentation Strings
- Python built in functions
- Mathematical functions
- Random number functions
- Mathematical constants

☑ **Python Modules**

- What is module?
- Import module using import statement
- Use from… import statement
- Use from … import* statement
- Location modules
- PYTHONPATH variable
- Namespaces and scoping
- Dir(), globals(), locals() and reload()

☑ **File Handling**

- Reading
- Writing
- File manipulations
- Directories

☑ **Exception Handling**

- What is exception?
- Python built-in exceptions
- Try
- Except
- Finally
- Raise exceptions
- User defined exception
- Assertions

☑ **Python classes and objects**

- Class definition
- Creating objects
- Constructors
- Accessing attributes
- Built-in class attributes
- Destructors
- Inheritance
- Overriding
- Overloading

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- Data hiding

☑ **Regular Expressions**

- Match()
- Search()
- Search and replace
- Modifiers
- Patterns
- Character classes
- Repetitions

☑ **Database programming**

- With SQLite
- Installing SQLite browser
- Creating database
- CRUD operations With MySQL
- MySql datatypes
- CRUD operations

☑ **Python Graphics**

- Turtle

☑ **Python GUI Programming with Tkinter**

- Widgets
- Geometry managers / layout managers
- Variable classes
- Events and binds

☑ **Packages**

- Creating packages
- Installing packages using PIP

☑ **Functional Programming**

- Iterators
- Generators
- The lambda construct
- Comprehensions
- Map, reduce and filter

☑ **Sockets Programming**

- The Socket
- Module Server
- Socket Methods
- Client Socket Methods
- General Socket Methods

☑ **Numpy Module**

- N-dimensional data structure
- Creating arrays
- Indexing arrays by slicing

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- Basic operations and manipulations

☑ **Pandas Module**

- Pandas Basic
- Pandas Series
- Pandas DataFrame

☑ **Matploatlib Module**

- Types of Graph
- Data Visualization
- Handling Array
- Handling DataFrame

☑ **MetaProgramming in Python**

- Function Decorator
- Class Decorator
- Type Class
- Inner Classes

☑ **Project (Any 2 – 3 projects from the list)**

- Calculator
- Notepad
- Analog Clock
- Tic Tac Toe
- Library Management
- Restaurant Management System
- Class Attendance Management System

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