Python Programming

(Fundamentals of ML/AI)

"Application Development using Python"

Python is one of the top 10 popular programming languages of decade. Python is a general purpose and high-level programming language. You can use Python for developing websites and web applications. Also, Python, as a high-level programming language, allows you to focus on core functionality of the application by taking care of common programming tasks. The simple syntax rules of the programming language further make it easier for you to keep the code base readable and application maintainable. There are also a number of reasons why you should prefer Python to other programming languages.

In this program, one would get to learn about Cores of Python programming with basics to advanced level of development. Also, in this module one would get to learn the professional approach of Development Environment including Testing of codes as well with lot of Projects discussed in detail.

Why should you learn from us?

- A Team built with Professional Trainers having an experience of delivering for more than 20K students
- An outreach of 300+ colleges pan India
- Associated with multiple Corporate as hiring partners
- Interactive Sessions with query solving for topic explanation.
- Daily 15 minutes Query Solving Session at the end of the class.

DURATION	**18 Days (36 Hours)**

Who can attend this program?

- Engineering Undergraduates/Computer Programming Pursuing
- Python/AI Hobbyists and Students willing to kick-start their career in AI/Machine Learning
- Knowledge of any computer programming is advantageous

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Project Titles

Projects (5+)

1. *CLI based Students Registration Portal*
2. *CLI based Email Client using Python*
3. *Voice Operated Personal Assistant*
4. *Chat Messenger based on CLI*
5. *ATM simulation*

Python Scripting & Application Development

Week 1 (12 Hours)	**Introduction** (2 Hours)	• Introduction with Module • Why Python? • **Basic Linux/Windows Commands** • Its importance & Future Aspects • Downloading & Installing Python with its IDEs • Setting up Environment for Python • Understanding its Command Line & Scripts • Simple Python Program
	Data & Types (6 Hours)	• Python Variables, Rules of Identifiers • Creating, Using and Printing a Variable in Python • Taking User Inputs from Python • Some Common Functions • **Python Keywords** • Interactive Mode & Script Mode Programming • Python Comments • **Python Operators:** Arithmetic, Assignment, Relational, Logical, Bitwise, Identity, Membership • **Python Braces:** (), {}, [] • **Python Data Types/Classes:** int, float, complex, str, list, tuple, dict, set, bool • **Numeric Data Types:** Creation, Modification, Use of Operators, Built-in Functions • Concept of Mutability • **String Data:** Creation, Accessing, Modification*, Use of Operators, Built-in Functions, Use of Triple Quotes • **List:** Creation, Accessing, Modification, Use of Operators, Built-in Functions • **Tuple:** Creation, Accessing, Modification, Use of Operators, Built-in Functions • **Dictionary**: Creation, Accessing, Modification, Use of Operators, Built-in Functions • Type Casting in Python

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		• **Set**: Creation, Accessing*, Modification, Use of Operators, Built-in Functions • **Boolean**: Creation, Use of Operators • Some Common Functions • **Exercise – 1**
	Control Statements in Python (2 Hours)	• *Concept of Indentation in Python* • *Python Suites: Simple, Nested, Ladder, Hybrid* • *Conditional IF: Use of if-elif-else in Python*
	Python Loops (2 Hours)	• **WHILE**: Use of while statement in Python • ***FOR** Loops: The for-loop behavior in Python* • *Using range() function* • *Use of break and continue* • *Some Common Functions* • **Exercise – 3**
Week 2 (12 Hours)	**Comprehensions** (2 Hours)	• Writing Python IF in one line • List Comprehension • Use of Conditionals • Nested Comprehensions • Shortcuts to Create Tuples • Dictionary Comprehension • Shortcuts to Create Dictionary • Set Comprehension • Tuple/? Comprehension** • Some Common Functions • ***Exercise – 4***
	User-defined Functions (4 Hours)	• Defining and calling a custom user defined Function • Types of Functions by parameters/arguments • Default Arguments • Arguments Skipping • Variable Length Arguments *args • Keyword Arguments **kwargs • Passing Functions as Arguments • Recursion • **Anonymous Functions:** Lambda Expressions • Use of map(), filter(), reduce() • ***exercise – 5***
	Modules & Packages (2 Hours)	• Python Library & Packages • Using Modules by: import, from-import, creating alias • Downloading a new module • Installing a module • Creating User-defined modules • Some Commonly used Modules in Python: time, os, datetime, calendar, math, random • Finding System Time, Showing Calendars • Generating Random Numbers • Performing Typical Mathematical Operations

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		• Creating files, directories • Prompting/Opening & Terminating Applications/Files • ***Exercise – 6***
	File Handling & Manipulation (3 Hours)	• Python Simple File Handling • Use of with-as Statement • json: Reading, Creating JSON Files • csv: Reading, Creating tsv, csv files • *Putting User Data in csv*
	Project (1 Hour)	• ***Project 1: "CLI based Students Registration Portal"***
Week 2 (12 Hours)	**Errors & Exception Handling** (2 Hours)	• Assertions in Python • Errors and Exceptions • Exception Handling: Try, except, finally • User Defined Exceptions • ***Exercise – 7***
	Project (1 Hour)	• ***Project 2: "CLI based Email Client using Python"***
	Socket programming (2 Hours)	• Concept of socket programming • creating UDP sockets • creating a whatsapp like chat application
Week 3 (12 Hours)	**Object Oriented Programming** (4 Hours)	• OOP Introduction • Classes, Objects, Methods; • Inheritance: Its types • Polymorphism • Overloading • Encapsulation • Overriding • ***Exercise – 8***
	Regex (2 Hours)	• Regular Expressions • RE Patterns • RE Syntax • Creating Custom Regular Expressions • ***Exercise – 9***
	Project	6. ***Project 3: "Voice Operated Personal Assistant "***
	Project	7. ***Project 4: "Chat Messenger based on CLI "***
	Project	• ***Project 5: "ATM Simulation"***