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Core Python Syllabus

Duration: 45 Days

Introduction to Python

- What is Python
- Unique features of Python
- Install Python and Environment Setup
- First Python Program
- Python Identifiers, Keywords and Indentation
- Comments and document interlude in Python
- Python Data Types
- What are variables
- Command line arguments
- Getting User Input

STRING MANIPULATION

- Introduction to Python String
- Accessing Individual Elements
- String Operators
- String Slices
- String Functions and Methods

OPERATORS

- Arithmetic Operators
- Relational Operators
- Logical Operators
- Membership Operators
- Identity Operators
- Bitwise Operators
- Assignment Operators
- Operators Precedence

- Evaluating Expression
- Type Casting

Program Control Flow

- **Conditional Statements**
 - The if Statement
 - The if-else Statement
 - The if-elif Statement
 - Nested Statements
- **Looping and Iteration**
 - The while loop
 - The for loop
 - Loop else statement
 - Nested Loops
 - Break and Continue

List & Tuples in Python

- Introduction
- Lists in Python
- More about Lists
- Tuple in Python
- More about Tuple

Python Dictionaries and Sets

- Sets
- Python Sets Examples
- Python Dictionaries
- More on Dictionaries

Input and Output in Python

- Reading and writing text files
- writing Text Files
- Appending to Files
- Using Pickle to Write Binary Files
- F-Strings & String formatting in Python

Introduction to Function

- Built-in functions (Eg- map, zip, reduce, filter etc.)
- user defined functions
- Defining and calling Function
- The anonymous/Lambda Functions
- Python packages functions
- Modules & Packages
- Function Caching in Python
- Scope of variables
- Recursion

Python Classes

- Overview of OOP
- The self variable
- Constructor
- Types Of Variables
- Namespaces
- Creating Classes and Objects
- Inheritance
- Types of Methods
 - Instance Methods
 - Static Methods
 - Class Methods
- Accessing attributes
- Built-In Class Attributes
- Destroying Objects
- Abstract classes and Interfaces
- Abstract Methods and Abstract class
- Interface in Python
- Abstract classes and Interfaces

Exceptions

- Errors in Python
- Compile-Time Errors
- Runtime Errors
- Logical Errors
- What is Exception
- Handling an exception
- try....except...else
- try-finally clause
- Argument of an Exception
- Python Standard Exceptions
- Raising an exceptions
- User-Defined Exceptions

Python Regular Expressions

- What are regular expressions
- The match Function
- The search Function
- Matching vs searching
- Search and Replace
- Extended Regular Expressions

Advanced Concepts*

- Decorators
- Generators
- Iterators
- Co-routines
- Comprehensions
- Create Your own package
- Create Command Line Utility
- Create Virtual Environment

Python Multithreaded Programming

- What is multithreading?
- Difference between a Process and Thread
- Uses of Thread
- Starting a New Thread
- The Threading Module
- Thread Synchronization
- Deadlock of Threads
- Avoiding Deadlocks
- Daemon Threads

Using Databases in Python

- Python MySQL Database Access
- Install the MySQLdb and other Packages
- Create Database Connection
- CREATE, INSERT, READ Operation