Intermediate Python

Duration: 3 days / 24 hours
Prerequisites: Working Knowledge of Python Programming

Module 1: Python Deep Dive

- List Comprehension and Zip
- Nested Data and Nested Iteration
- Deep and Shallow Copies
- Processing JSON Results

Module 2: Modules and Packages

- Initialization code
- Namespaces
- Executing modules as scripts
- Documentation
- Packages and name resolution
- Naming conventions
- Using imports

Module 3: Functions

- Extended Keyword Arguments (*args, **kwargs)
- Lambda Functions
- Recursion
- Introduction to Higher-Order Functions
- map(), filter(), reduce()
- Decorators
- Iterables and Iterators
- Generators
- Generator Expressions
- Itertools

Module 4: OOPS in Python

- Introduction to Object-Oriented Python
- Understanding Object Encapsulation
- Private Attributes and Methods
- @staticmethod and @classmethod
- Controlling Attribute Access
- Creating and Accessing Properties
- Combining Objects
- Using Inheritance to Create New Classes
- Altering Behavior of Inherited Methods
- Multiple Inheritance
- Understanding Polymorphism

Module 5: Programmer Tools

- Using pylint
- Testing code
- Using unittest
- Debugging
- Context Managers
- Profiling and benchmarking

Module 6: Data Analytics using Python

- Introduction to Data Analytics
- Introduction to pandas
    - What is pandas?
    - pandas vs Excel/SQL
    - Creating a DataFrame from a dictionary
    - Basic DataFrame inspection methods
- Accessing and Filtering Data
    - Accessing data (Columns, Rows)
    - Conditional filtering
- Grouping and Aggregation
    - groupby() basics
    - Aggregation functions [.mean(), .std(), .count()]
- Creating New Columns
    - Mathematical operations on columns
    - Creating flags using conditions
- Merging Data Frames

Module 7. Mini Project and Coding Challenges