PYTHON / DATA PRE-PROCESSING / PYTEST TRAINING COURSE CONTENT

Introduction to Python

- What is Python?
- Why should we learn Python?
- Installing Python
- Installation & walkthrough of Visual Studio Code Editor for Python Programming
- Different ways of execution of Python scripts
- Understanding Python Syntax, Indentation, Code Execution, Comments
- Memory management while running Python Scripts

Variables and Data types

- Python Variables
- Python Numbers
- Python Strings
- Python Lists
- Python Tuples
- Python Dictionaries
- Python Sets
- Python Arrays
- Python Operators

Conditional Statements and Loops in Python

- Python If…Else, If Elif else Loop
- Python While else Loops
- Python For else Loops
- Global vs Local variable in Python

Control Statements in Python

- Return Statement
- Continue Statement
- Break statement
- Pass statement

Functions

- Functions Concept in Python
- creating a function
- calling a python function
- Arguments in function –Formal and Actual Arguments
- Types of Actual Arguments – Positional, Keyword, Default, Variable length, Keyword variable length
- Built-in functions – Filter, Map, Reduce
- Function Recursion
- Decorators
- Generators in Python
- Iterators in Python
- Search algorithms in Python – Binary\Selection\Bubble

Modules and Packages

- Importing Modules
- Creating Module
- Use a Module using pip commands.
- Understanding PyPI repository
- modularizing your project with modules
- Built-in Modules
- Special functions (name__ , __inti__ , __str__, __new__, __dict__)
- Multithreading in Python

Classes and Objects

- Understanding Class and Object - Conceptual
- __init__ - Understanding role of constructor
- Types of variables and methods in Class
- What is an Inner Class in Python?
- Class Inheritance – Single level, Multi-level and Multiple
- Method Resolution Order
- Abstraction in Python
- Polymorphism – Duck Typing, Method Overloading, Method Overriding, Operator Overloading
- Encapsulation in Python

File and Exception Handling

- File handling\Read files
- Write\Create files
- Delete files
- Try…except…finally statement

Python Libraries

- Essential Python Libraries
- Anaconda Installation & Setup
- Jupyter Lab\Notebook Overview (Anaconda Distribution)

Numpy Arrays

- Create multi-dimensional arrays
- Numpy Data Types
- Array attributes
- Indexing and Slicing
- Manipulate array shapes

Introduction to Pandas

- Introduction to Python Pandas
- Basics of Pandas Dataframe and Series
- Multiple ways of creating Pandas Dataframe
- Read/Write Static files (Excel / CSV)
- Handling missing data using fillna / dropna / interpolate methods
- Handle missing data using Pandas replace method
- Perform Split-Apply-Combine operation using Pandas GroupBy method
- Concatenate Dataframes
- Merge Dataframes
- Perform Pivot operation using Pivot table
- Reshape Dataframe using melt operation
- Perform Stack-Unstack operations on multiple Dataframes
- Crosstab operation on Pandas Dataframes
- Read-write data from database using read_sql , to_sql methods

Python Regular Expressions

- Match function
- Search function
- Match vs String function
- Search and Replace
- Extended Regular Expression
- Wildcards

Pytest Framework

Introduction to Pytest

- What is Pytest used for?
- Types of Testing
- PyTest Inputs and Outputs
- Creating Simple Tests Files in PyTest
- Creating Tuples to Tests
- Using Tuples to Test Multiple Components
- Understanding PyTest Output description
- How to use PyTest Options

Writing Test Functions

- Writing Test Functions with PyTest
- Create Test Project
- Test Functions: Add Tests
- Test Functions: API Exceptions

Testing Test Functions

- Using the Assert Statement
- Exceptions
- Running Test Functions
- Skipping Tests
- Expected Fail Tests
- Running Subsets
- Parameterized Testing

PyTest Fixtures

- Introduction to Fixtures
- Using and Sharing Fixtures
- Tracing Fixture execution
- Using Fixture for test data
- Using Multiple Fixtures
- Specifying Fixture Scope
- Create Global Pytest fixture with Conftest.py
- Fixture Specialization and Autouse
- Renaming and Parameterizing Fixtures
- Introduction to Markers
- Run your Tests with Markers and in Parallel Mode

Built-In Fixtures

- PyTest Built-In Fixtures
- impdir and tmpdir-factory fixtures
- Using Pytest config Fixtures
- Using cache Fixture
- Using capsys Fixture
- Using recwarn Fixture
- Using monkeypatch Fixture
- Creating Custom Fixture and Fixture Factory

PyTest Configuration

- PyTest Configuration
- Command Line and Markers
- Specifying Test Directory Locations
- Filename Collisions

Reporting

- PyTest HTML Report Generation using pytest-html module
- Custom Reporting in pytest