

Graphical Interface Development with Python Tinker

Prerequisites: Knowledge of Python Programming

Module 1: Higher Order Functions

- Map, Filter, Lambda
- Extended arguments (*args and **kwargs)
- Decorators
- Using Imports
- Unpacking Sequences in Function Calls
- Creating Modules and Packages
- `__name__` variable

Module 2: Exception Handling

- Try-Except Block
- The Else Clause
- The Finally Clause
- Exception Hierarchy

Module 3: OOPs in Python

- Introduction to Object-Oriented Python
- Creating Classes, Methods, and Objects
- Using Constructor and Attributes
- Using Class Attributes and Static Methods
- Understanding Object Encapsulation
- Private Attributes and Methods
- Controlling Attribute Access
- Creating and Accessing Properties

Module 4: Playing with Data

- Relational Databases
- CSV
- JSON
- Overview of Data Serialization
- Importance of Data Interchange Formats
- Understanding JSON syntax and structure
- Encoding Python Data to JSON - Serialization
- Decoding JSON to Python Data – Deserialization

Module 5: Numpy

- Introduction to NumPy
- Installation
- NumPy Arrays (numpy.array)
- Array Indexing and Slicing
- Array Shape and Reshaping
- Array Operations (Sum, Mean, etc.) o
- numpy.arange and numpy.linspace
- Data Type Promotion
- Formation of 1D, 2D and 3D arrays
- Exploring dimension type, shape and size of array
- Exploring dimension type, shape and size of array
- Indexing of NumPy Arrays
- Slicing of NumPy Arrays

Module 6: Pandas

- Introduction to Pandas
- Series
- DataFrames
- Missing Data
- Merging Joining and Concatenating
- Operations
- Data Input and Output
- Groupby()

Module 7: Tkinter

- Introduction to GUI Development
- Introduction to Tkinter
- First Step to creating Tkinter Applications
- Geometry Manager
- Grid Layout •
- Develop an app based on Tkinter

Module 8: Introduction to Machine Learning

- Jupyter Notebook Overview
- Python for Data Visualization
- Matplotlib
- What is ML
- Supervised ML

- Unsupervised ML
- Linear Regression Model
- Logistic Regression Model
- Decision Trees

Module 9: Project

- Use Python to develop a bill generator for a shopping mall
- Pizza Ordering Kiosk using Tkinter