Softpro India Computer Technologies (P) Ltd.
A Company Founded by Technocrats from IIT Kanpur & IET Lucknow
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SOFTPRO GROUP LEGACY OF 22+ YEARS
ESTD. 2004

LEARNX

SYLLABUS *of*

VIRTUAL INTERNSHIP

PYTHON WITH TKINTER FRAMEWORK

PRESENTED BY
SOFTPRO INDIA

Learning Objectives

By the end of this training program, students will have developed a solid foundation in Core Python programming and Tkinter-based GUI development, enabling them to design, develop, and deploy functional desktop applications.

. Understanding Python Fundamentals

- Understand the relevance of Python in software development, automation, data science, and GUI-based systems.
- Install and configure Python along with IDEs like VS Code, IDLE, or PyCharm.
- Write, execute, and debug basic Python programs following standard syntax and indentation rules.
- Apply comments, documentation, and readable code conventions for professional projects.

. Data, Variables, and Operators

- Work with various data types: numeric, string, list, tuple, dictionary, and set.
- Understand dynamic typing, type casting, and variable management.
- Use arithmetic, relational, logical, and assignment operators effectively.
- Develop small data-driven applications such as profit–loss checkers or unit converters.

. Conditional and Looping Constructs

- Implement if-else decision-making for dynamic program control.
- Use for and while loops to manage repetitive tasks.
- Employ loop control statements (break, continue, pass) for fine-tuned logic flow.
- Build nested conditions and loops to simulate real-world logical flows (menu systems, pattern printing, etc.).

. Data Structures in Python

- Work with lists, tuples, sets, and dictionaries for flexible data organization.
- Use list comprehension and dictionary comprehension for concise data handling.
- Implement nested and hybrid data structures for multi-level data storage.
- Develop logical storage systems like student databases, product catalogs, or billing systems.

. Modular & Functional Programming

- Create and call functions to structure reusable code modules.
- Understand parameters, arguments, return values, and scope.
- Write recursive and lambda-based functions for compact logic.
- Apply modularisation to develop large, maintainable applications.

. File Handling & Exception Management

- Perform file operations — read, write, append, and update text or CSV files.
- Handle runtime errors with try-except-finally and raise custom exceptions.
- Implement persistent storage for GUI applications (like login, attendance, or record systems).
- Log activities and maintain data integrity through secure file operations.

. Object-Oriented Programming Concepts

- Define and use classes, objects, constructors, and methods.
- Apply inheritance, polymorphism, encapsulation, and abstraction in project design.
- Build re-usable models for students, employees, or customers.
- Structure applications with class-based modular architecture.

. GUI Programming with Tkinter

- Learn the Tkinter framework and understand the concept of event-driven programming.
- Create GUI components like Label, Entry, Button, Frame, and Textbox.
- Manage window layouts using pack(), grid(), and place().
- Connect the Tkinter front-end with the Python back-end functions.

10. Advanced GUI Components and Interaction

- Use advanced widgets: Combobox, Radiobutton, Checkbutton, Listbox, Scrollbar.
- Integrate Menu Bars, Dialog Boxes, Message Boxes, and File Dialogs.
- Add images, icons, and themes to improve user interface design.
- Create multi-window navigation systems with modular GUI design.

1. Tkinter Integration with Logic & Data

- Integrate Python logic into GUI components for full application flow.
- Validate form inputs and handle user events dynamically.
- Perform CRUD operations (Create, Read, Update, Delete) from GUI using CSV or text data.
- Manage data persistence with structured UI input/output.

12. Mini Projects & Real-World Practice

Apply all learned concepts into mini-projects for practical experience:

- Student Management System (with add, edit, search, delete options)
- Billing / Inventory System (file handling + GUI)
- Login & Registration App (authentication logic)
- Simple Notepad Clone (open, save, text manipulation)

- **Practice project planning, documentation, and testing techniques.**

Overall Outcome

- By completing this 40-hour program, trainees will evolve from **beginners to professional Python programmers** capable of designing, developing, and deploying **real-world desktop applications using Tkinter.** They will be equipped with **industry-level coding discipline, GUI design expertise, and project implementation confidence,** making them **job-ready and innovation-driven professionals**