GUI and OOP

Dr. Liat Cohen

GUI is Related to OOP?

- Introduction to GUI (Graphical User Interfaces)
  - Key components:
    - Windows
    - Buttons
    - Text fields
- GUI design aligns with OOP principles due to its need for modularity, reusability, and encapsulation.

GUI is Related to OOP?

- OOP
  - Key principles:
    - Encapsulation
    - Inheritance
    - Polymorphism
    - Abstraction
  - Advantages:
    - Modularity
    - Code reusability
    - Scalability
- GUI design aligns with OOP principles due to its need for modularity, reusability, and encapsulation.

How GUI and OOP Align

- GUIs are composed of components (e.g., buttons, labels) that can be represented as objects.
- Each GUI component has:
  - State (e.g., button text, color)
  - Behavior (e.g., on-click actions)
- OOP principles applied:
  - Encapsulation: GUI components manage their own state and behavior.
  - Inheritance: Base classes for generic components; derived classes for specialized ones.
  - Polymorphism: Different components can respond differently to the same event.

Tkinter

- Tkinter: A built-in Python library for creating GUIs.
- Features:
    - Lightweight and easy to use.
    - Object-oriented structure.
- Commonly used widgets:
    - Button
    - Label
    - Entry
    - Frame

Advantages of Using OOP with GUI

- Clean and modular code.

- Easier debugging and testing.

- Simplifies adding new features.

- Promotes code reuse.