CIS 112

Intro to Programming Using Python

Module 4 Part 1

Agenda for the Day!

- GUI programming
  - Geometry,
  - Tools and toolkits,
  - Conventions,

Geometry

Geometry (or how our app orients its widgets

- In Tkinter, "geometry" refers to the management and arrangement of widgets within the GUI window.
- It determines how widgets are positioned and sized relative to each other and the window itself.
- Tkinter provides three main geometry managers:
  - **Pack Geometry Manager:** The **pack()** method organizes widgets in blocks, either horizontally or vertically. When you call **pack()** on a widget, it is added to the window, and by default, it is placed below the previously packed widget (or to the right if packing horizontally).
  - **Grid Geometry Manager**: The **grid()** method arranges widgets in a grid-like structure, with rows and columns. You specify the row and column indices for each widget, as well as optional parameters to control its placement and alignment within the grid.
  - **Place Geometry Manager:** The **place()** method allows you to specify the exact position and size of a widget within the window using pixel coordinates. This manager gives you precise control over widget placement but can be more complex to use, especially when dealing with resizing and layout adjustments.

Toolkits

Toolkits!

- In addition to many other GUI frameworks in Python, Tkinter boasts many additional libraries or modules that extend the functionality of Tkinter by providing additional widgets, themes, or utilities.
- These toolkits are designed to make GUI development with Tkinter more efficient and offer additional features beyond what Tkinter provides out of the box.
- Some popular Tkinter toolkits include:
  - ttk (Themed Tkinter): This is an extension module for Tkinter that provides access to the Tk themed widget set. It includes themed versions of common Tkinter widgets (such as buttons, labels, and entry fields) that have a more modern and consistent appearance across different platforms.
  - Pillow: While not specifically a Tkinter toolkit, Pillow (Python Imaging Library) is often used in conjunction with Tkinter for working with images. Pillow provides a wide range of image processing capabilities, including opening, manipulating, and saving different image file formats.
  - ttkthemes: This is an extension package for ttk that provides additional themed widget styles. It includes a variety of pre-defined themes that you can apply to your Tkinter application to change its appearance.
  - Pygubu Designer: Pygubu is a RAD (Rapid Application Development) tool for building GUI applications with Tkinter. It allows you to design your GUI visually using a drag-and-drop interface and automatically generates the corresponding Python code.
  - TkinterDnD: TkinterDnD is an extension module that adds support for drag-and-drop functionality to Tkinter applications. It allows you to drag items (such as files or text) between widgets within your application or between your application and other applications.
  - tksheet: tksheet is a Python library that provides a spreadsheet-like table widget for Tkinter. It allows you to display and manipulate tabular data in a grid format, similar to a spreadsheet application.
- These toolkits can be installed using Python's package manager, such as pip, and integrated into your Tkinter applications to enhance their functionality and appearance.