Tkinter

This Tkinter tutorial introduces you to the exciting world of GUI programming in Python.

Tkinter is pronounced as tea-kay-inter. Tkinter is the Python interface to Tk, which is the GUI toolkit for Tcl/Tk.

Tcl (pronounced as tickle) is a scripting language often used in testing, prototyping, and GUI development. Tk is an open-source, cross-platform widget toolkit used by many different programming languages to build GUI programs.

Python implements the Tkinter as a module. Tkinter is a wrapper of C extensions that use Tcl/Tk libraries.

Tkinter allows you to develop desktop applications. It's a very good tool for GUI programming in Python.

Tkinter is a good choice because of the following reasons:

- Easy to learn.

- Use very little code to make a functional desktop application.

- Layered design.

- Portable across all operating systems including Windows, macOS, and Linux.

- Pre-installed with the standard Python library.

This tutorial assumes that you already have Python 3.x installed on your computer. If it's not the case, you need to install Python (https://www.pythontutorial.net/getting-started/install-python/) first.

Section 1. Tkinter Fundamentals

- Tkinter Hello, World! (https://www.pythontutorial.net/tkinter/tkinter-hello-world/) – show you how to develop the first Tkinter program called Hello, World!

- Window (https://www.pythontutorial.net/tkinter/tkinter-window/) – learn how to manipulate various attributes of a Tkinter window including title, size, location, resizability, transparency, and stacking order.

- Tk Themed Widgets (https://www.pythontutorial.net/tkinter/tkinter-ttk/) – introduce you to Tk themed widgets.

- Setting options for a widget (https://www.pythontutorial.net/tkinter/tkinter-options/) – learn various ways to set options for a widget.

- Command Binding (https://www.pythontutorial.net/tkinter/tkinter-command/) – learn how to respond to events using command bindings.

- Event Binding (https://www.pythontutorial.net/tkinter/tkinter-event-binding/) – show you how to use the `bind()` method to bind an event of a widget.

- Label (https://www.pythontutorial.net/tkinter/tkinter-label/) – learn how to use the Label widget to show a text or image on a frame or window.

- Button (https://www.pythontutorial.net/tkinter/tkinter-button/) – walk you through the step of creating buttons.

- Entry (https://www.pythontutorial.net/tkinter/tkinter-entry/) – learn how to create a textbox using the Entry widget.

Section 2. Layout Managements

Geometry managers allow you to specify the positions of widgets inside a top-level or parent window.

- pack (https://www.pythontutorial.net/tkinter/tkinter-pack/) – show you how to use the pack geometry manager to arrange widgets on a window.

- grid (https://www.pythontutorial.net/tkinter/tkinter-grid/) – learn how to use the grid geometry manager to place widgets on a container.

- place (https://www.pythontutorial.net/tkinter/tkinter-place/) – show you how to use the place geometry manager to precisely position widgets within its container using the (x, y) coordinate system.

Section 3. Ttk & Tkinter Widgets

Tkinter provides you with some commonly used widgets, which allow you to start developing applications more quickly.

- Frame (https://www.pythontutorial.net/tkinter/tkinter-frame/) – learn how to use the Frame widget to group other widgets.

- Text (https://www.pythontutorial.net/tkinter/tkinter-text/) – show a multi-line text input field.

- Scrollbar (https://www.pythontutorial.net/tkinter/tkinter-scrollbar/) – learn how to link a scrollbar to a scrollable widget e.g., a Text widget.

- ScrolledText (https://www.pythontutorial.net/tkinter/tkinter-scrolledtext/) – show you how to create a scrolled text widget that consists of Text and vertical scrollbar widgets.

- Separator (https://www.pythontutorial.net/tkinter/tkinter-separator/) – use a separator widget to separate fields.

- Checkbox (https://www.pythontutorial.net/tkinter/tkinter-checkbox/) – show how to create a checkbox widget.

- Radio Button (https://www.pythontutorial.net/tkinter/tkinter-radio-button/) – learn how to use radio buttons to allow users to select one of a number of mutually exclusive choices.

- Combobox (https://www.pythontutorial.net/tkinter/tkinter-combobox/) – walk you through the steps of creating a combobox widget.

- Listbox (https://www.pythontutorial.net/tkinter/tkinter-listbox/) – show you how to display a list of single-line text items on a Listbox.

- PanedWindow (https://www.pythontutorial.net/tkinter/tkinter-panedwindow/) – show you how to use the PanedWindow to divide the space of a frame or a window.

- Slider (https://www.pythontutorial.net/tkinter/tkinter-slider/) – learn how to create a slider by using the Tkinter Scale widget.

- Spinbox (https://www.pythontutorial.net/tkinter/tkinter-spinbox/) – show you how to use a Spinbox.

- Sizegrip (https://www.pythontutorial.net/tkinter/tkinter-sizegrip/) – guide you on how to use the Sizegrip widget to allow users to resize the entire application window.

- LabelFrame (https://www.pythontutorial.net/tkinter/tkinter-labelframe/) – show you how to group related widgets in a group using the `LabelFrame` widget.

- Progressbar (https://www.pythontutorial.net/tkinter/tkinter-progressbar/) – show you how to use the progressbar widget to give feedback to the user about the progress of a long-running task.

- Notebook (https://www.pythontutorial.net/tkinter/tkinter-notebook/) – guide you on how to use the Notebook widget to create tabs.

- Treeview (https://www.pythontutorial.net/tkinter/tkinter-treeview/) – walk you through the steps of creating treeview widgets that display tabular and hierarchical data.

- Canvas (https://www.pythontutorial.net/tkinter/tkinter-canvas/) – introduce you to the Canvas widget.

- Cursors (https://www.pythontutorial.net/tkinter/tkinter-cursors/) – show you how to change the mouse cursor when it is over a widget.

Section 4. Tkinter Examples

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- Tkinter example (https://www.pythontutorial.net/tkinter/tkinter-example/) – show you how to build a simple application that converts a temperature from Fahrenheit to Celsius.

Section 5. Object-Oriented Programming with Tkinter

- Creating an object-oriented window (https://www.pythontutorial.net/tkinter/tkinter-object-oriented-window/) – learn how to define an object-oriented window.

- Creating an object-oriented frame (https://www.pythontutorial.net/tkinter/tkinter-object-oriented-frame/) – show you how to define an object-oriented Frame.

- Developing a full Tkinter object-oriented application (https://www.pythontutorial.net/tkinter/tkinter-object-oriented-application/) – show you how to develop a full Tkinter object-oriented application.

- Switching between frames (https://www.pythontutorial.net/tkinter/tkraise/) – guide you on how to switch between frames in a Tkinter application.

Section 6. Dialogs and Menus

- Displaying a message box (https://www.pythontutorial.net/tkinter/tkinter-messagebox/) – show you how to display various message boxes including information, warning, and error message boxes.

- Displaying a Yes/No Dialog (https://www.pythontutorial.net/tkinter/tkinter-askyesno/) – show you how to use the `askyesno()` function to display a yes/no dialog.

- Display an OK/Cancel Dialog (https://www.pythontutorial.net/tkinter/tkinter-askokcancel/) – show you how to use the `askokcancel()` function to display an OK/Cancel dialog.

- Display a Retry/Cancel Dialog (https://www.pythontutorial.net/tkinter/tkinter-askretrycancel/) – show you how to use the `askretrycancel()` function to display a Retry/Cancel dialog.

- Show an Open File Dialog (https://www.pythontutorial.net/tkinter/tkinter-open-file-dialog/) – display an open file dialog to allow users to select one or more files.

- Displaying the Native Color Chooser (https://www.pythontutorial.net/tkinter/tkinter-color-chooser/) – show you how to display the native color-chooser dialog.

- Menu (https://www.pythontutorial.net/tkinter/tkinter-menu/) – learn how to add a menu bar and menus to a window.

- Menubutton (https://www.pythontutorial.net/tkinter/tkinter-menubutton/) – show you how to the Menubutton widget.

- OptionMenu (https://www.pythontutorial.net/tkinter/tkinter-optionmenu/) – Walk you through the steps of creating an OptionMenu widget that provides a list of options in a drop-down menu.

Section 7. Tkinter Themes and Styles

- Changing the ttk theme (https://www.pythontutorial.net/tkinter/tkinter-theme/) – how to change the default ttk theme to the new one.

- Modifying ttk style (https://www.pythontutorial.net/tkinter/ttk-style/) – show you how to change the appearance of widgets by modifying or extending the ttk style.

- Understanding ttk elements (https://www.pythontutorial.net/tkinter/ttk-elements/) – help you understand ttk elements and how to use them to change the appearance of widgets.

- Modifying the appearance of a widget based on its states (https://www.pythontutorial.net/tkinter/ttk-style-map/) – show you how to dynamically change the appearance of a widget based on its specific state.

Section 8. Tkinter Asynchronous Programming

- Scheduling a task with the after() method (https://www.pythontutorial.net/tkinter/tkinter-after/) – how to use the `after()` method to schedule a task that will run after a timeout has elapsed.

- Developing multithreading Tkinter Applications (https://www.pythontutorial.net/tkinter/tkinter-thread/) – show you how to use the threading module to develop a multithreading Tkinter application.

- Displaying a progressbar while a thread is running (https://www.pythontutorial.net/tkinter/tkinter-thread-progressbar/) – walk you through the steps of connecting a progressbar with a running thread.

Section 9. Advanced Tkinter Programming

- Tkinter MVC (https://www.pythontutorial.net/tkinter/tkinter-mvc/) – structure a tkinter application using the MVC design pattern.

- Tkinter validation (https://www.pythontutorial.net/tkinter/tkinter-validation/) – show you how to use the Tkinter validation to validate user inputs.

- Tkinter & Matplotlib (https://www.pythontutorial.net/tkinter/tkinter-matplotlib/) – show you how to display a bar chart from the matplotlib in Python.