**PYTHON GUI PRACTICE PROGRAM**

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1. Define TK and TCL and their role in building Tkinter?

**ANS:** This package provides various utilities that can be used when writing tests. It is compatible to Python versions 2.6 and 2.7. When testing code that modifies directories and files, it is useful to be able to create and inspect a sample tree of directories and files easily. The tl.testing.fs module provides support for creating a tree from a textual description, listing it in the same format and clean up after itself.

Tcl is bundled into Python in order to make Tk available as the Python module, Tkinter. Running python -m Tkinter from the command line should open a window demonstrating a simple Tk interface, letting you know that [Tkinter](https://docs.python.org/2/library/tkinter.html#module-Tkinter) is properly installed on your system, and also showing what version of Tcl/Tk is installed, so you can read the Tcl/Tk documentation specific to that version.

2. Elucidate the steps involved in GUI programming with examples.

**ANS:** Python provides various options for developing graphical user interfaces (GUIs). Most important are listed below.

**Tkinter** − Tkinter is the Python interface to the Tk GUI toolkit shipped with Python. We would look this option in this chapter.

**wxPython** − This is an open-source Python interface for wxWindows.

There are many other interfaces available, which you can find them on the net.

Tkinter is the standard GUI library for Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit.

Creating a GUI application using Tkinter is an easy task. All you need to do is perform the following steps −

Import the *Tkinter* module.

Create the GUI application main window.

Add one or more of the above-mentioned widgets to the GUI application.

Enter the main event loop to take action against each event triggered by the user.

3. Explain different types of widgets used in Tkinter.

**ANS:**

Ttk comes with 17 widgets, eleven of which already existed in tkinter: Button, Checkbutton, Entry, Frame, Label, LabelFrame, Menubutton, PanedWindow, Radiobutton, Scale and Scrollbar. The other six are new: [Combobox](https://docs.python.org/3.3/library/tkinter.ttk.html#tkinter.ttk.Combobox), [Notebook](https://docs.python.org/3.3/library/tkinter.ttk.html#tkinter.ttk.Notebook), [Progressbar](https://docs.python.org/3.3/library/tkinter.ttk.html#tkinter.ttk.Progressbar), Separator, Sizegrip and [Treeview](https://docs.python.org/3.3/library/tkinter.ttk.html#tkinter.ttk.Treeview). And all of them are subclasses of [Widget](https://docs.python.org/3.3/library/tkinter.ttk.html#tkinter.ttk.Widget).

The ttk.Combobox widget combines a text field with a pop-down list of values. This widget is a subclass of Entry.

Ttk Notebook widget manages a collection of windows and displays a single one at a time. Each child window is associated with a tab, which the user may select to change the currently-displayed window.

The ttk.Progressbar widget shows the status of a long-running operation. It can operate in two modes: 1) the determinate mode which shows the amount completed relative to the total amount of work to be done and 2) the indeterminate mode which provides an animated display to let the user know that work is progressing.

The ttk.Separator widget displays a horizontal or vertical separator bar. It has no other methods besides the ones inherited from ttk.Widget.

The ttk.Sizegrip widget (also known as a grow box) allows the user to resize the containing toplevel window by pressing and dragging the grip.This widget has neither specific options nor specific methods, besides the ones inherited from ttk.Widget.

The ttk.Treeview widget displays a hierarchical collection of items. Each item has a textual label, an optional image, and an optional list of data values. The data values are displayed in successive columns after the tree label. The order in which data values are displayed may be controlled by setting the widget option displaycolumns. The tree widget can also display column headings. Columns may be accessed by number or symbolic names listed in the widget option columns. Each item is identified by an unique name.

4. What is Geometry Manager (GM)? Explain the role of GM in GUI programming.

**ANS:** The geometry manager is used to manage the geometry of the window and other frames. We can use it to handle the position and size of the window and frames. The layout widgets are used for this purpose. This plays a significant role in the development of a GUI.