

upGrad
Campus 

Course: Python Projects - III
Project On: Introduction to GUI
Calculator

GUI Introduction

GUI stands for Graphical User Interface, and refers to computer programs that provide a visual means for users to interact with an underlying application or system. For example, the GUIs on our mobile phones allow us to interact with different functions through the display, which we can touch, tap, and swipe on.

Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with tkinter is the fastest and easiest way to create the GUI applications. Creating a GUI using tkinter is an easy task.



- To create a gui screen we need to follow some steps that we can see below:.
- Importing the tkinter library.
- Then Initialize the root window
- Then add number of widgets like label
 ,button etc.
- Then pack the widget
- Starting the event looping.

Creating simple screen

Code:

Code for a “Hello World” basic text window.

```
From tkinter import *  
root = Tk()                                #for creating the root window  
w = Label(root,text = “Hello, World!”)    #creating label with just words  
w.pack()                                  #putting the label to the window  
root.mainloop()                           #starting the event looping
```

Fig: Hello world code

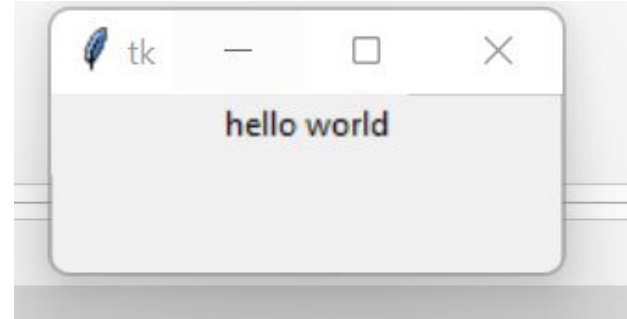


Fig: Output of code

- Here in the first line we import everything from the tkinter module. We create a root window in the second line. In the third line we specify the root and what labels we are deciding to put into the root. Here it is just a text. Then to pack the label to the window we use `w.pack()`. To start the execution with the event looping, we use `root.mainloop()`
- Geometry manager or Layout manager of tkinter uses
 - `pack()` method
 - `grid()` method
 - `place()` method

Pack- The `pack()` method in geometry manager organizes and place the widgets in blocks before putting them in the parent widget.

Fill- Fill is used to specify if it takes the space allocated to it or to change if extra space is allocated. Fill method used X and Y attribute to set the space in window.

Grid- This separates the parent widget into a table like structure with rows and columns in them with each part contributed to a widget. Grid method used row and column attribute to set the widget in window.

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- Button is a standard widget in python tkinter. If the button is clicked, some mouse action is started.
- They can also contain text and images like labels.
- While labels can display text in various fonts, a button can only display text in a single font.
- The text of a button can span more than one line.
- It contain the attribute like text which help to set text in button.
- With the help of width attribute ,button size can be change.
- With the help of command attribute you can add functionality in button.

Tkinter Variables

There are 4 type of tkinter variable as mentioned in below lines:

BooleanVar()-It used to store Binary values.

StringVar()-It used to store string values.

IntVar()-It used to store integer values.

DoubleVar()-It used to store float type values.

Methods

Geometry method can help to change the dimension of gui window.

Entry method can help to take input from user in gui screen.

Get method is used to get the data from tkinter variable.

- Partial functions allow us to fix a certain number of arguments of a function and generate a new function.

```
from functools import partial

# A normal function
def f(a, b, c, x):
    return 1000*a + 100*b + 10*c + x

# A partial function that calls f with
# a as 3, b as 1 and c as 4.
g = partial(f, 3, 1, 4)

# Calling g()
print(g(5))
```

3145

```
from functools import *

# A normal function
def add(a, b, c):
    return 100 * a + 10 * b + c

# A partial function with b = 1 and c = 2
add_part = partial(add, c = 2, b = 1)

# Calling partial function
print(add_part(3))
```

312

Please select operation -

- 1. Add
- 2. Subtract
- 3. Multiply
- 4. divide

number 1	<input type="text" value="2"/>
number 2	<input type="text" value="3"/>
operation	<input type="text" value="1"/>

Result = 5



All The Best!