Object Oriented Programming using Python (II)

Python GUI Programming

Prepared by: Ahmed E. Mezher

University of Information Technology and Communications

College of Business Informatics

Python GUI Programming (tkinter)

- Python provides various options for developing graphical user interfaces (GUIs) the most commonly one is **tkinter**

tkinter: is the Python interface to the Tk GUI toolkit shipped with Python.

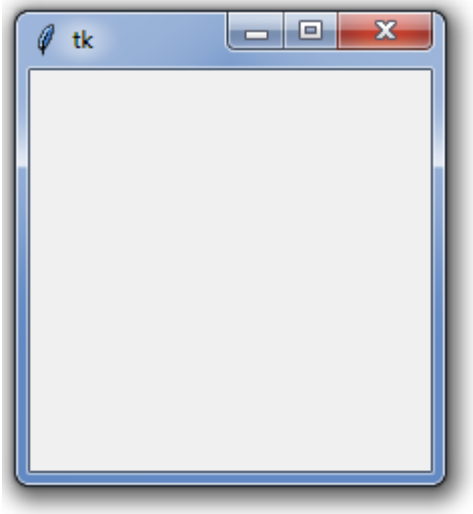
- **tkinter Programming**

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 widgets to the GUI application.
- Enter the main event loop to take action against each event triggered by the user.

```
from tkinter import *
form1=Tk()
# Code to add widgets will go here..
form1.mainloop()
```

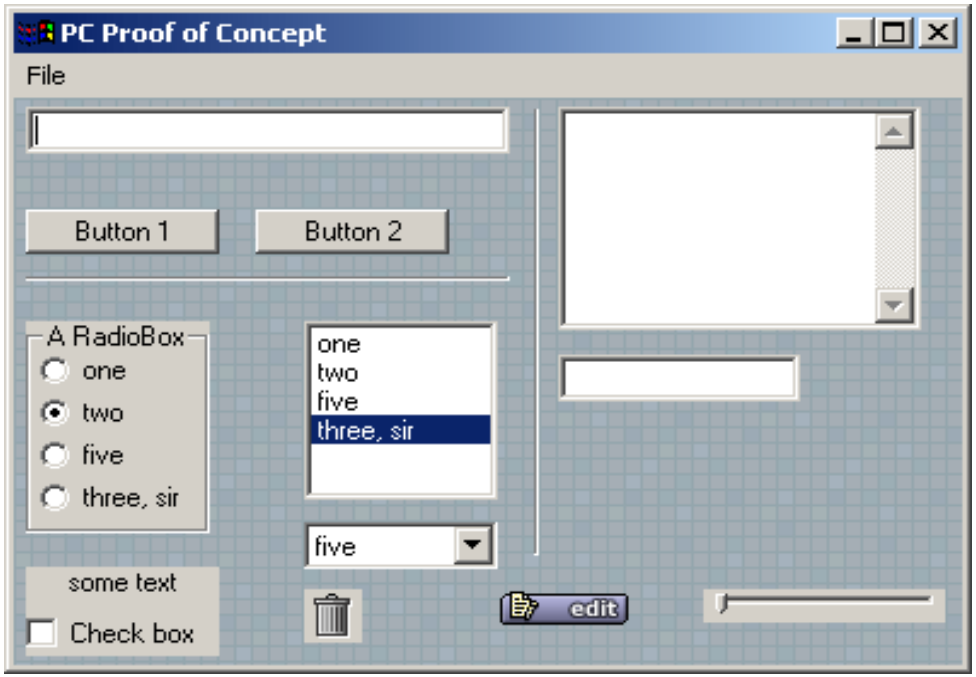


Form1.mainloop :start the event loop going

tkinter Widgets

tkinter provides various controls, such as buttons, labels and text boxes used in a GUI application. These controls are commonly called widgets.

There are currently many types of widgets in tkinter. We present these widgets as well as a brief description−



Tkinter Label

We will start our tutorial with one of the easiest widgets of Tk (Tkinter), i.e. a label. A Label is a Tkinter Widget class, which is used to display text or an image. The label is a widget that the user just views but not interact with.

```
from tkinter import *

root = Tk()

w = Label(root, text="Hello Tkinter!")
w.pack()

root.mainloop()
```

Under Windows it appears in the Windows look and feel:

Explanation

The Tkinter module, containing the Tk toolkit, has always to be imported. In our example, we import everything from Tkinter by using the asterisk symbol ("*") into our module's namespace:

```
from Tkinter import *
```

To initialize Tkinter, we have to create a Tk root widget, which is a window with a title bar and other decoration provided by the window manager. The root widget has to be created before any other widgets and there can only be one root widget.

```
root = Tk()
```

The next line of code contains the Label widget. The first parameter of the Label call is the name of the parent window, in our case "root". So our Label widget is a child of the root widget. The keyword parameter "text" specifies the text to be shown:

```
w = Label(root, text="Hello Tkinter!")
```

The pack method tells Tk to fit the size of the window to the given text.

```
w.pack()
```

The window won't appear until we enter the Tkinter event loop:

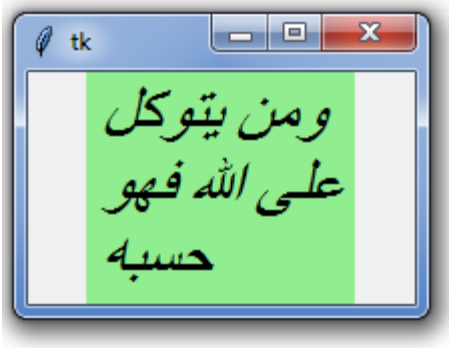
```
root.mainloop()
```

Our script will remain in the event loop until we close the window.

Message Widget

The widget can be used to display short text messages. The message widget is similar in its functionality to the Label widget, but it is more flexible in displaying text, e.g. the font can be changed while the Label widget can only display text in a single font. It provides a multiline object, that is the text may span more than one line. that the user just views but not interact with.

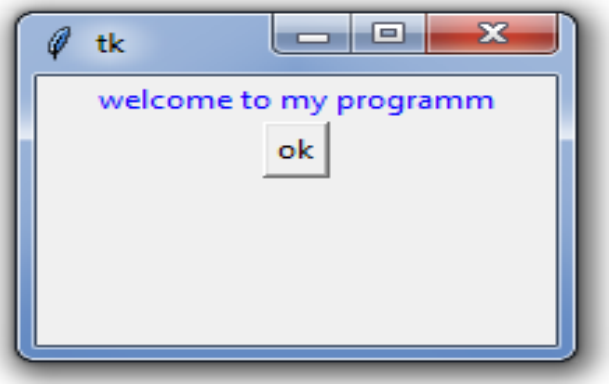
```
from tkinter import *
master = Tk()
whatever_you_do = "ومن يتوكل على الله فهو حسبه"
msg = Message(master, text = whatever_you_do)
msg.config(bg='lightgreen', font=('times', 24, 'italic'))
msg.pack( )
mainloop( )
```



tkinter Buttons

The Button widget is a standard Tkinter widget, which is used for various kinds of buttons. A button is a widget which is designed for the user to interact with, i.e. if the button is pressed by mouse click some action might be started. They can also contain text and images like labels.

```
from tkinter import *
form1=Tk()
text1=Label(form1,text="welcome to my programm",fg='blue')
text1.pack()
b1=Button(form1,text="ok",command=form1.destroy)
b1.pack()
form1.mainloop()
```



tkinter Buttons

```
from tkinter import *
form1=Tk()
form1.title('my form')
text1=Label(form1,text="welcome to my programm",fg='blue')
text1.pack()
b1=Button(form1,text="ok",command=form1.destroy)
b1.pack()

w = Label(form1, text="red", bg="red", fg="white")
w.pack(padx=5, pady=10, side=LEFT)
w = Label(form1, text="green", bg="green", fg="black")
w.pack(padx=5, pady=20, side=LEFT)
w = Label(form1, text="blue", bg="blue", fg="white")
w.pack(padx=5, pady=20, side=LEFT)

form1.mainloop()
```