



Python-Tkinter

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Agenda

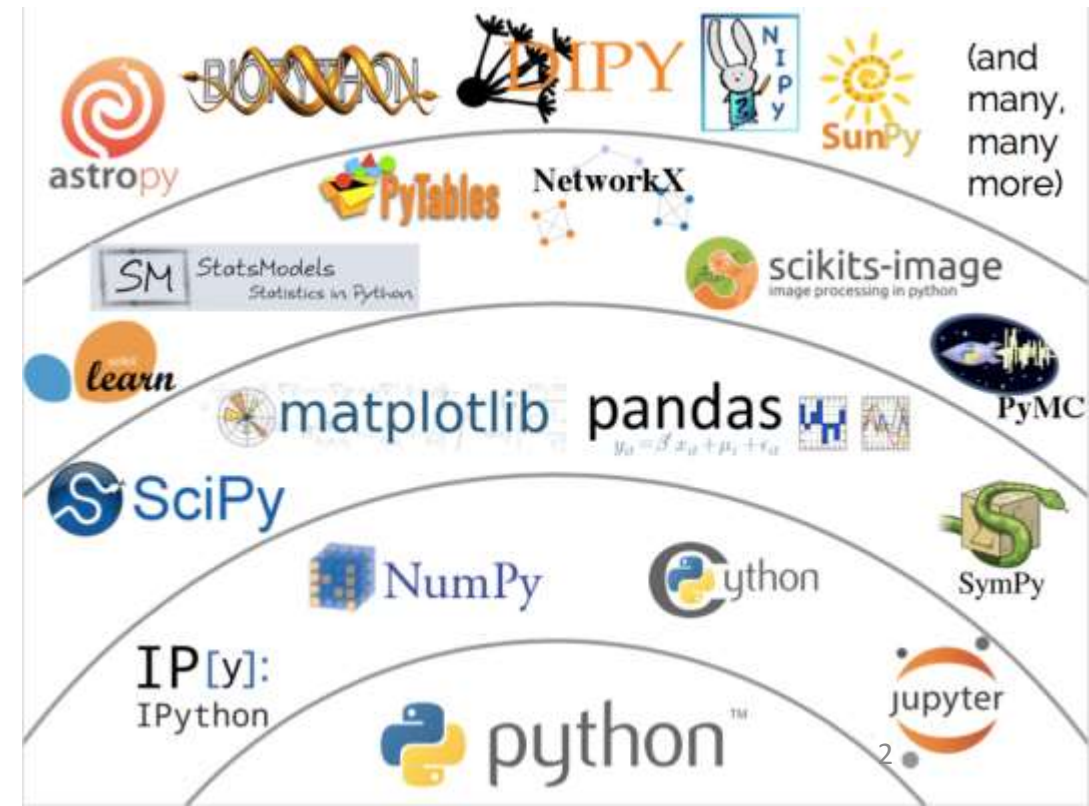
- Introduction – Tkinter
- History, usage
- Event driven programming
- GUI Toolkit – Button, textboxes, etc
- frames

Tkinter is an acronym for
"Tk interface"

Artificial Intelligence

Machine Learning

Deep Learning





Introduction

- Tkinter is the Python interface to the Tk GUI toolkit shipped with Python
- 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.

module in Python 2.x is 'Tkinter' and in Python 3.x is 'tkinter'.



History



- Tk was developed as a GUI extension for the Tcl scripting language by John Ousterhout. The first release was in 1991.
- Tk proved as extremely successful in the 1990's, because it is easier to learn and to use than other toolkits.
- Many programmers wanted to use Tk independently of Tcl.
- Many programming languages has developed binding with Tk, including Perl, Ada (called TASH), Python (called Tkinter), Ruby, and Common Lisp.

Source: google ,wiki.tcl.tk,
python-course.eu



Event Driven Programming

- **Event-driven program:** A program that responds to actions regardless of the order in which they occur
- **Event:** Something that happens involving a program's objects
- **Event handler:** Code that runs when a specific event occurs
- **Bind:** To associate an event with an event handler
- **Event loop:** A loop that checks for events and calls appropriate event handlers when they occur



Using Tkinter

- Creating a GUI application using Tkinter is an easy task. All you need to do is perform the following steps:
- **Example** : Import the *Tkinter* module :
 - Importing the module – tkinter
 - Create the main window (container)
 - Add any number of widgets to the main window
 - Apply the event Trigger on the widgets.

```
import Tkinter
top = Tkinter.Tk()
# Code to add widgets will go here...
top.mainloop()
```



Using Tkinter

- Two main methods for creating the Python application with GUI.

Tk(screenName=None, baseName=None, className='Tk', useTk=1)

`m=tkinter.Tk()` where m is the name of the main window object

mainloop()

- It is an infinite loop used to run the application, wait for an event to occur and process the event till the window is not closed.

`m.mainloop()`



Using Tkinter

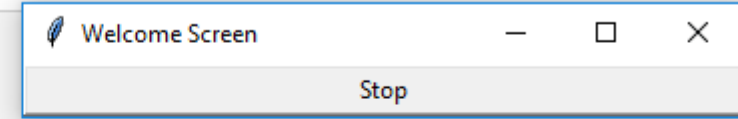
- For geometric configuration of the widgets in the parent windows, there are mainly three geometry manager classes :
- **pack() method** : It organizes the widgets in blocks before placing in the parent widget.
- **grid() method** : It organizes the widgets in grid (table-like structure) before placing in the parent widget.
- **place() method** : It organizes the widgets by placing them on specific positions directed by the programmer.



Button

- `w=Button(master, option=value)`
- Parameters :
 - **activebackground**: to set the background color when button is under the cursor.
 - **activeforeground**: to set the foreground color when button is under the cursor.
 - **bg**: to set the normal background color.
 - **command**: to call a function.
 - **font**: to set the font on the button label.
 - **image**: to set the image on the button.
 - **width**: to set the width of the button.
 - **height**: to set the height of the button.

```
import tkinter as tk
m=tkinter.Tk()
m.title('Welcome Screen')
button = tk.Button(m, text='Stop', width=50, command=m.destroy)
button.pack()
m.mainloop()
```





Label

- **Label:** display box where any text or image can be placed, which can be updated any time as per the code.

Label(master, option=value)

- **bg:** to set the normal background color.
- **bg** to set the normal background color.
- **command:** to call a function.
- **font:** to set the font on the button label.
- **image:** to set the image on the button.
- **width:** to set the width of the button.
- **height** to set the height of the button.



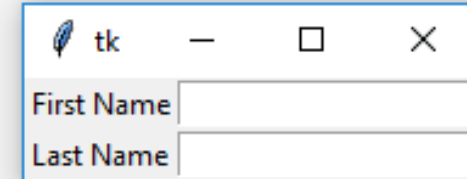
Entry

- **Entry** is used to input the single line text entry from the user.
- For multi-line text input, Text widget is used.

Entry(master, option=value)

- **bd**: to set the border width in pixels.
- **bg**: to set the normal background color.
- **cursor**: to set the cursor used.
- **command**: to call a function.
- **highlightcolor**: to set the color shown in the focus highlight.
- **width**: to set the width of the button.
- **height**: to set the height of the button.

```
from tkinter import *
master = Tk()
Label(master, text='First Name').grid(row=0)
Label(master, text='Last Name').grid(row=1)
e1 = Entry(master)
e2 = Entry(master)
e1.grid(row=0, column=1)
e2.grid(row=1, column=1)
mainloop()
```



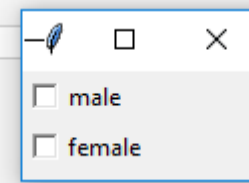


CheckBox

CheckBox (master,
option=value)

- **Title:** To set the title of the widget.
- **activebackground:** to set the background color when widget is under the cursor.
- **activeforeground:** to set the foreground color when widget is under the cursor.
- **bg:** to set the normal background
- **command:** to call a function.
- **font:** to set the font on the button label.
- **image:** to set the image on the widget.

```
from tkinter import *
master = Tk()
var1 = IntVar()
Checkbutton(master, text='male', variable=var1).grid(row=0, sticky=W)
var2 = IntVar()
Checkbutton(master, text='female', variable=var2).grid(row=1, sticky=W)
mainloop()
```

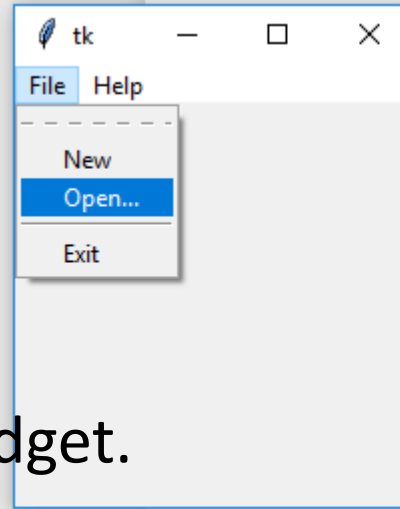




Menu

To create all kinds of menus used by the application.

- **title:** To set the title of the widget.
- **activebackground:** to set the background color when widget is under the cursor.
- **activeforeground:** to set the foreground color when widget is under the cursor.
- **bg:** to set the normal background color.
- **command:** to call a function.
- **font:** to set the font on the button label.
- **image:** to set the image on the widget.



```
from tkinter import *
root = Tk()
menu = Menu(root)
root.config(menu=menu)
filemenu = Menu(menu)
menu.add_cascade(label='File', menu=filemenu)
filemenu.add_command(label='New')
filemenu.add_command(label='Open...')
filemenu.add_separator()
filemenu.add_command(label='Exit', command=root.quit)
helpmenu = Menu(menu)
menu.add_cascade(label='Help', menu=helpmenu)
helpmenu.add_command(label='About')
mainloop()
```

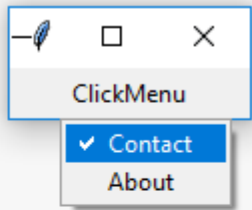


MenuButton

It is a part of top-down menu which stays on the window all the time.

- **activebackground**
- **activeforeground**
- **bg**: to set the normal background color.
- **bd**: to set the size of border around the indicator.
- **cursor**: To appear the cursor when the mouse over the menubutton.
- **image**: to set the image on the widget.
- **width**: to set the width of the widget.
- **height**: to set the height of the widget.
- **highlightcolor**: To set the color of the focus highlight when widget has to be focused.

```
from tkinter import *
top = Tk()
mb = Menubutton ( top, text = "ClickMenu")
mb.grid()
mb.menu = Menu ( mb, tearoff = 0 )
mb["menu"] = mb.menu
cVar = IntVar()
aVar = IntVar()
mb.menu.add_checkbutton ( label = 'Contact', variable = cVar )
mb.menu.add_checkbutton ( label = 'About', variable = aVar )
mb.pack()
top.mainloop()
```





```
import tkinter as tk

root = tk.Tk()
logo = tk.PhotoImage(file="nielit.png" )

w1 = tk.Label(root, image=logo).pack(side="right")

explanation = """National Institute of Electronics
& Information Technology (NIELIT),
(erstwhile DOEACC Society), an Autonomous
Scientific Society under the administrative
control of Ministry of Electronics & Information
Technology (MoE&IT), Government of India, was
set up to carry out Human Resource Development
and related activities ."""

w2 = tk.Label(root,
               justify=tk.LEFT,
               padx = 10,
               text=explanation).pack(side="left")
root.mainloop()
```





```
import tkinter as tk
```

```
root = tk.Tk()
```

```
logo = tk.PhotoImage(file="nielit.png" )
```

```
explanation = """National Institute of Electronics  
& Information Technology (NIELIT),  
(erstwhile DOEACC Society), an Autonomous  
Scientific Society under the administrative  
control of Ministry of Electronics & Information  
Technology (MoE&IT), Government of India, was  
set up to carry out Human Resource Development  
and related activities ."""
```

```
w = tk.Label(root,  
              compound = tk.CENTER,  
              text=explanation,  
              image=logo).pack(side="right")  
root.mainloop()
```

