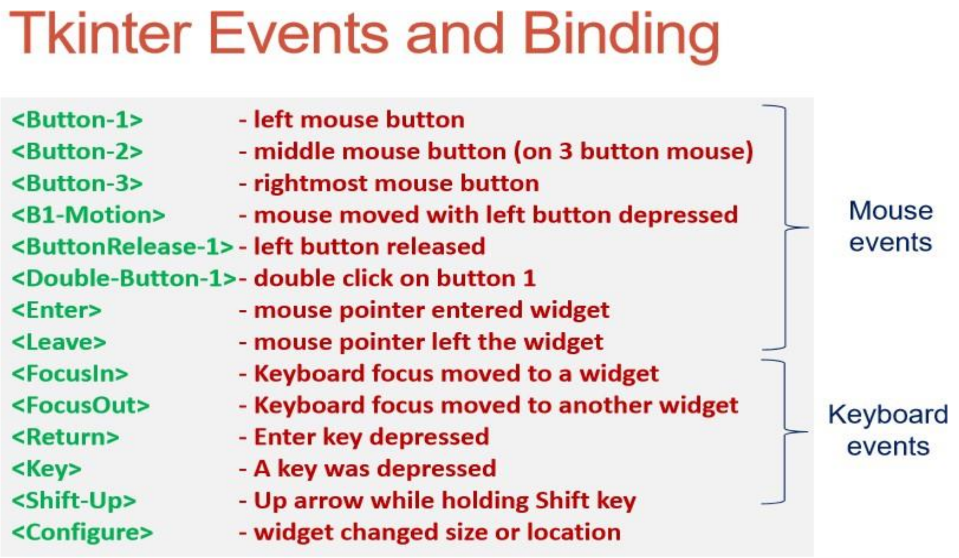
Name : Shawn Louis Batch : B Roll No : 31

Experiment No: 8

Topic:	Program To Demonstrate GUI Programming in Python using tkinter.
Prerequisite:	Knowledge of some programming language like C, Java
Mapping With COs:	CSL405.4, CSL405.5
Objective:	To build any realtime GUI Application With Tkinter.
Outcome:	Students will have the skills to build more complex applications and/or move to a more advanced toolkit.
Bloom's Taxonomy :	Apply
Theory/ Steps/ Algorithm/ Procedure:	The primary GUI toolkit we will be using is Tk, Python's default GUI. We'll access Tkfrom its Python interface called Tkinter (short for "Tkinterface"). •Tkis not the latest and greatest, nor does it have the most robust set of GUI building blocks, but it is fairly simple to use, and with it, you can build GUIs that run on most platforms. There are basically five main steps that are required to get your GUI up running: 1.Import the Tkintermodule (or from Tkinterimport *). 2.Create a top-level windowing object that contains your entire GUI applicati 3.Build all your GUI components (and functionality) on top (or within) of top-level windowing object. 4.Connect these GUI components to the underlying application code. 5.Enter the main event loop.  Tkinter Events and Binding <Button-1> - left mouse button <Button-2> - middle mouse button (on 3 button mouse) <Button-3> - rightmost mouse button <B1-Motion> - mouse moved with left button depressed <ButtonRelease-1> - left button released <Double-Button-1> - double click on button 1 <Enter> - mouse pointer entered widget <Leave> - mouse pointer left the widget <FocusIn> - Keyboard focus moved to a widget <FocusOut> - Keyboard focus moved to another widget <Return> - Enter key depressed <Key> - A key was depressed <Shift-Up> - Up arrow while holding Shift key <Configure> - widget changed size or location Mouse events Keyboard events

Event Handling

•Event sources (widgets) can specify their handlers •command handlers •callbacks

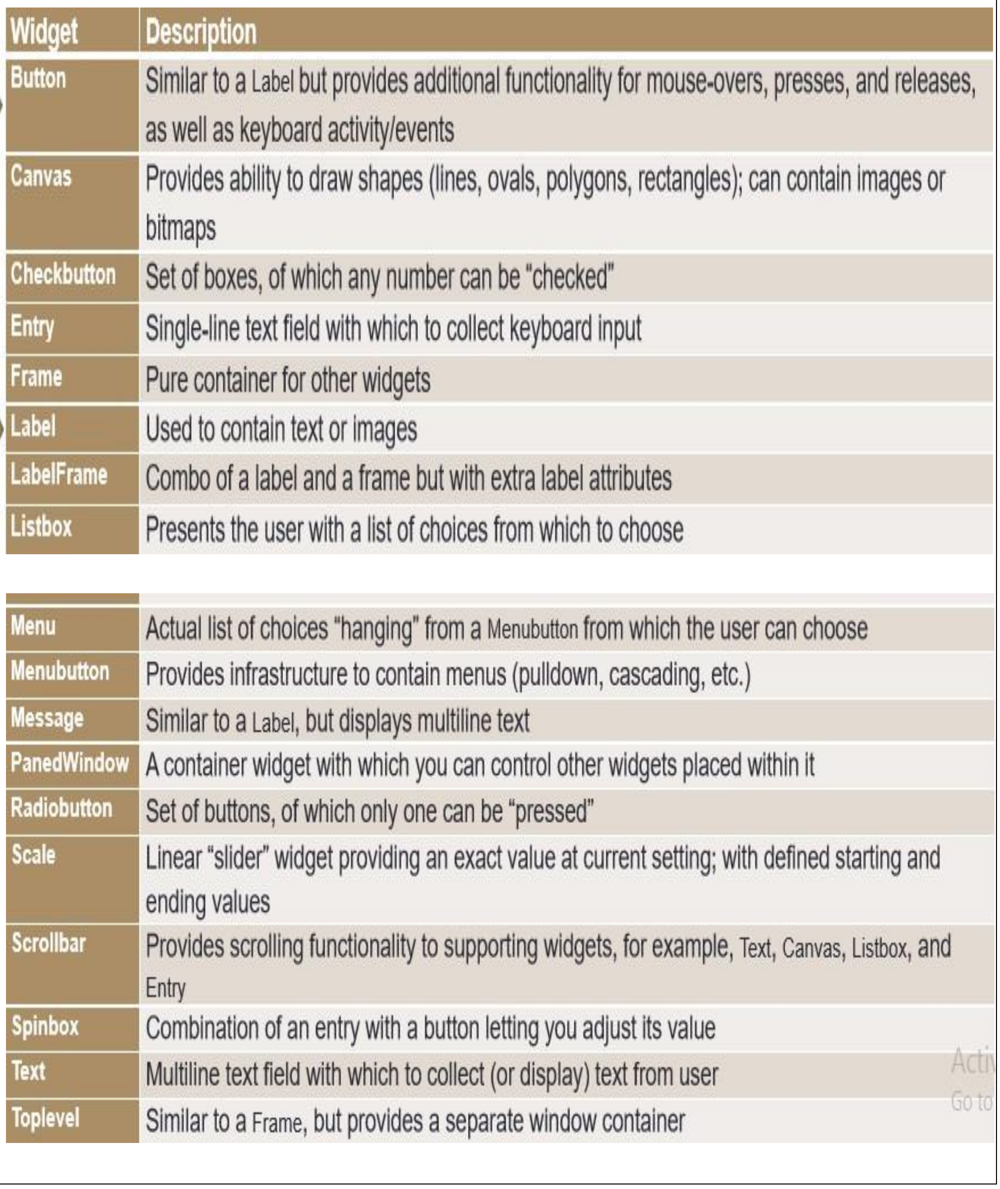
Command Handlers:
use the 'command=' keyword followed by the command you want executed

Callbacks

•A callback is the name of the function that is to be run in response of an event

•Callbacks can be defined as a free standing functionin our program or as a classmember.

TkWidgets

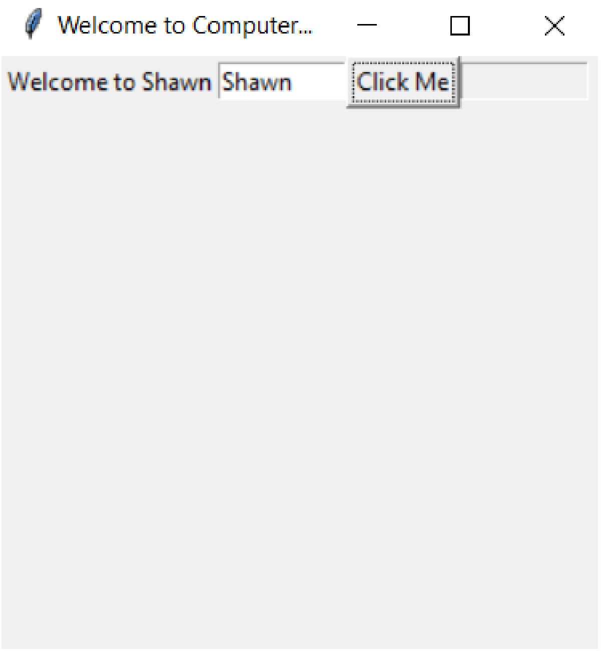


Widget	Description
Button	Similar to a Label but provides additional functionality for mouse-overs, presses, and releases, as well as keyboard activity/events
Canvas	Provides ability to draw shapes (lines, ovals, polygons, rectangles); can contain images or bitmaps
Checkbutton	Set of boxes, of which any number can be "checked"
Entry	Single-line text field with which to collect keyboard input
Frame	Pure container for other widgets
Label	Used to contain text or images
LabelFrame	Combo of a label and a frame but with extra label attributes
Listbox	Presents the user with a list of choices from which to choose
Menu	Actual list of choices "hanging" from a Menubutton from which the user can choose
Menubutton	Provides infrastructure to contain menus (pulldown, cascading, etc.)
Message	Similar to a Label, but displays multiline text
PanedWindow	A container widget with which you can control other widgets placed within it
Radiobutton	Set of buttons, of which only one can be "pressed"
Scale	Linear "slider" widget providing an exact value at current setting; with defined starting and ending values
Scrollbar	Provides scrolling functionality to supporting widgets, for example, Text, Canvas, Listbox, and Entry
Spinbox	Combination of an entry with a button letting you adjust its value
Text	Multiline text field with which to collect (or display) text from user
Toplevel	Similar to a Frame, but provides a separate window container

Experiments:

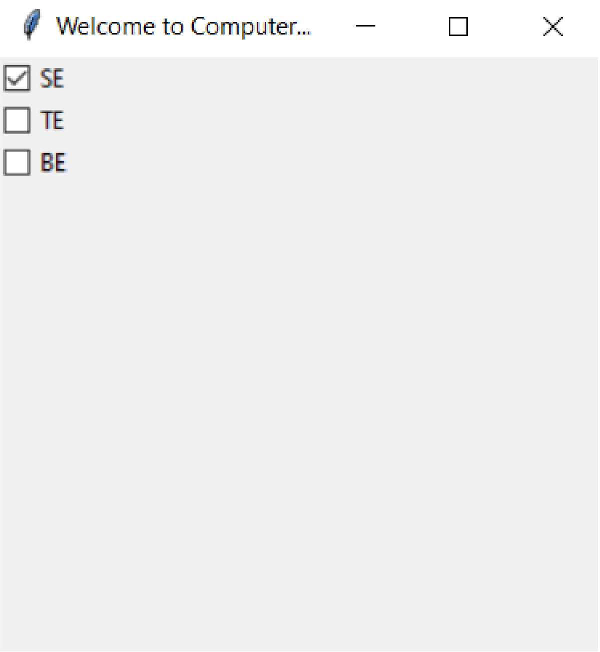
1. Practice all the small exercises mentioned in the reference material on Moodle. (File Name: Reference for Expt 8 - tkinter python GUI)

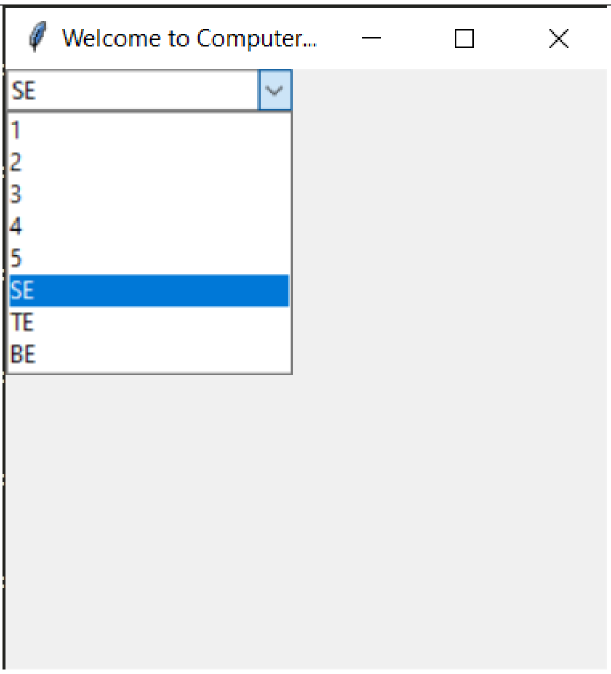
```
from tkinter import *
def clicked():
    res = "Welcome to " + txt.get()
    lbl.configure(text= res)
window = Tk()
window.title("Welcome to Computer Dept")
window.geometry('300x300')
lbl = Label(window, text="Hello")
lbl.grid(column=0, row=0)
txt = Entry(window,width=10)
txt.focus()      #set focus (no need to click)
txt.grid(column=1, row=0)
txt1 = Entry(window,width=10, state='disabled')
txt1.grid(column=3, row=0)
btn = Button(window, text="Click Me", command=clicked)
btn.grid(column=2, row=0)
window.mainloop()
```



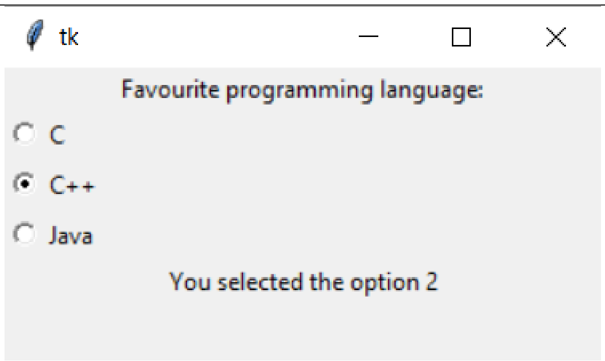
Welcome to Shawn Shawn

```
from tkinter import *
from tkinter.ttk import *

window = Tk()
window.title("Welcome to Computer Dept")
window.geometry('300x300')

combo = Combobox(window)
combo['values']= (1, 2, 3, 4, 5, "SE", "TE", "BE")
combo.current(5) #set the selected item
combo.grid(column=0, row=0)
```

	`window.mainloop()`
	
	
	☑ SE
	□ TE
	□ BE
	`from tkinter import *`
	`from tkinter.ttk import *`
	
	`window = Tk()`
	`window.title("Welcome to Computer Dept")`
	`window.geometry('300x300')`
	
	`chk_state1 = BooleanVar()`
	`chk_state1.set(True) #set check state`
	`chk1 = Checkbutton(window, text='SE', var=chk_state1)`
	`chk1.grid(column=0, row=0)`
	
	`chk_state2 = BooleanVar()`
	`chk_state2.set(False) #set check state`
	`chk2 = Checkbutton(window, text='TE', var=chk_state2)`
	`chk2.grid(column=0, row=1)`
	
	`chk_state3 = BooleanVar()`
	`chk_state3.set(False) #set check state`
	`chk3 = Checkbutton(window, text='BE', var=chk_state3)`
	`chk3.grid(column=0, row=2)`
	
	`window.mainloop()`



```
from tkinter import *

def selection():
 selection = "You selected the option " +
str(radio.get())
 label.config(text = selection)

top = Tk()
top.geometry("300x150")
radio = IntVar()
lbl = Label(text = "Favourite programming language:")
lbl.pack()
R1 = Radiobutton(top, text="C", variable=radio, value=1,
 command=selection)
R1.pack( anchor = W )

R2 = Radiobutton(top, text="C++", variable=radio,
value=2,
 command=selection)
R2.pack( anchor = W )

R3 = Radiobutton(top, text="Java", variable=radio,
value=3,
 command=selection)
R3.pack( anchor = W)

label = Label(top)
label.pack()
top.mainloop()
```

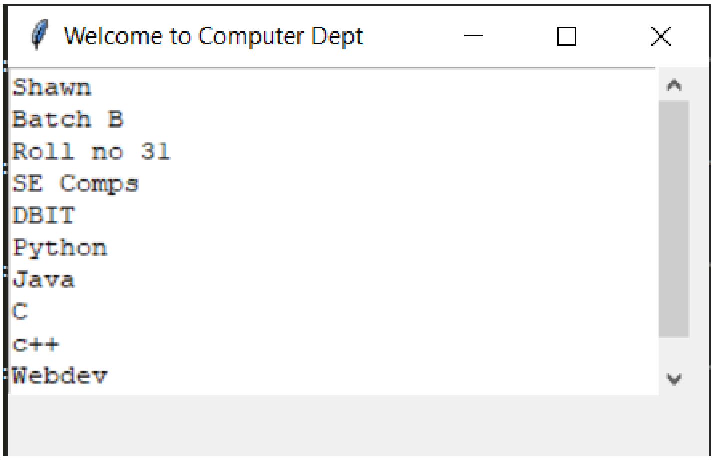


Favourite programming language:

○ C
● C++
○ Java

You selected the option 2

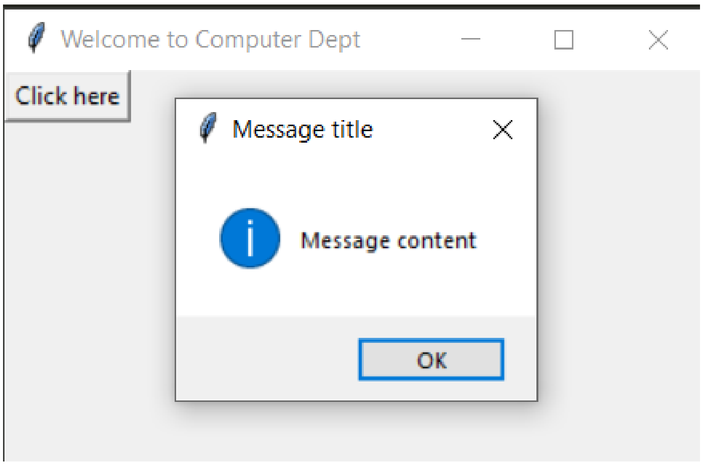
```
from tkinter import *
from tkinter import scrolledtext
window = Tk()
window.title("Welcome to Computer Dept ")
window.geometry('350x200')
txt = 
scrolledtext.ScrolledText(window,width=40,height=10)
txt.insert(INSERT,'Shawn\nBatch B\nRoll no 31\nSE 
Comps\nDBIT\nPython\nJava\nC\nc++\nWebdev\nGamedev')

txt.grid(column=0,row=0)
window.mainloop()
```



```
Shawn
Batch B
Roll no 31
SE Comps
DBIT
Python
Java
C
c++
Webdev
```

```
from tkinter import *
from tkinter import messagebox
window = Tk()
window.title("Welcome to Computer Dept ")
window.geometry('350x200')
def clicked():
    #messagebox.showinfo('Message title', 'Message 
content')
    #messagebox.showwarning('Message title', 'Message 
content') #shows warning message
    #messagebox.showerror('Message title', 'Message 
content') #shows error message
    messagebox.askquestion('Message title','Message 
content')
    #messagebox.askyesno('Message title','Message 
content')
```

```
    #messagebox.askyesnocancel('Message title','Message content')
    #messagebox.askokcancel('Message title','Message content')
    #messagebox.askretrycancel('Message title','Message content')
btn = Button(window,text='Click here', command=clicked)
btn.grid(column=0,row=0)
window.mainloop()
```

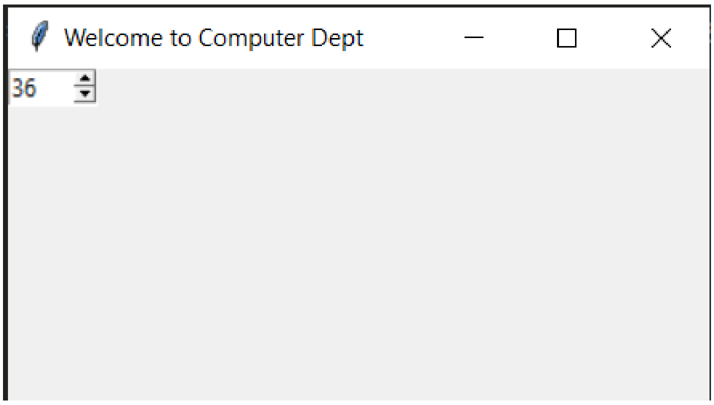


Welcome to Computer Dept

Message title

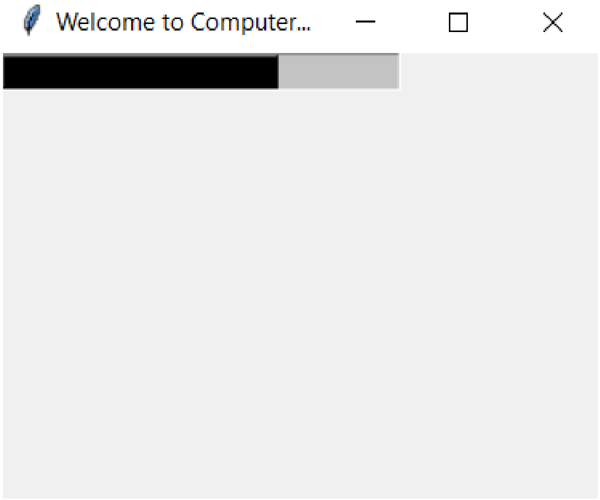
Message content

```
from tkinter import *
window = Tk()
window.title("Welcome to Computer Dept ")
window.geometry('350x200')

var =IntVar()
var.set(36)
spin = Spinbox(window, from_=0, to=100, width=5, textvariable=var)

#spin = Spinbox(window, from_=0, to=100, width=5)
#spin = Spinbox(window, values=(3, 8, 11), width=5)


spin.grid(column=0,row=0)
window.mainloop()
```

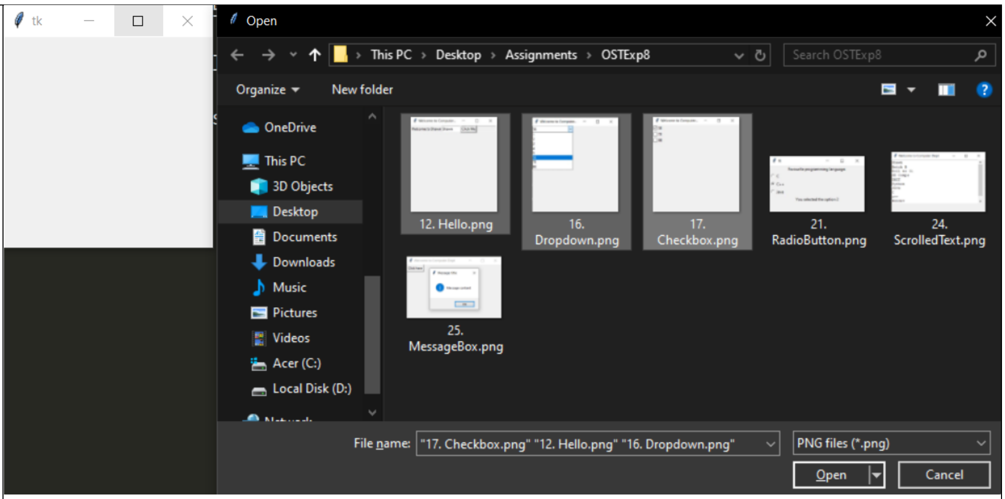


Welcome to Computer Dept

```
from tkinter import *
from tkinter.ttk import Progressbar
from tkinter import ttk
window = Tk()
window.title("Welcome to Computer Dept")
window.geometry('300x300')
style = ttk.Style()
style.theme_use('default')
style.configure("black.Horizontal.TProgressbar",
background='black')
bar = Progressbar(window, length=200,
style='black.Horizontal.TProgressbar')
bar['value'] = 70
bar.grid(column=0, row=0)
window.mainloop()
```



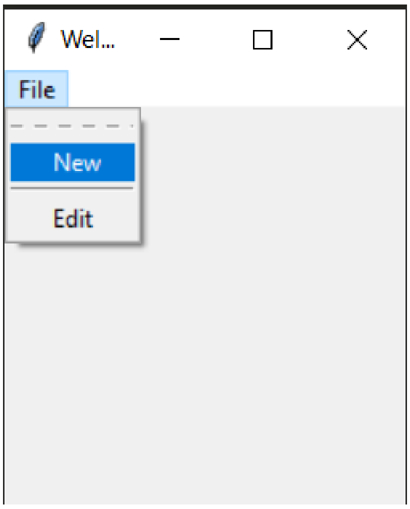
```
from tkinter import filedialog
from os import path


#direc = filedialog.askdirectory()
file =
filedialog.askopenfilenames(initialdir="C:/Users/shawn/D
esktop/Assignments/OSTExp8", filetypes = (("PNG
files","*.png"),("all files","*.*")))


print(file)
```



File name: "17. Checkbox.png" "12. Hello.png" "16. Dropdown.png"

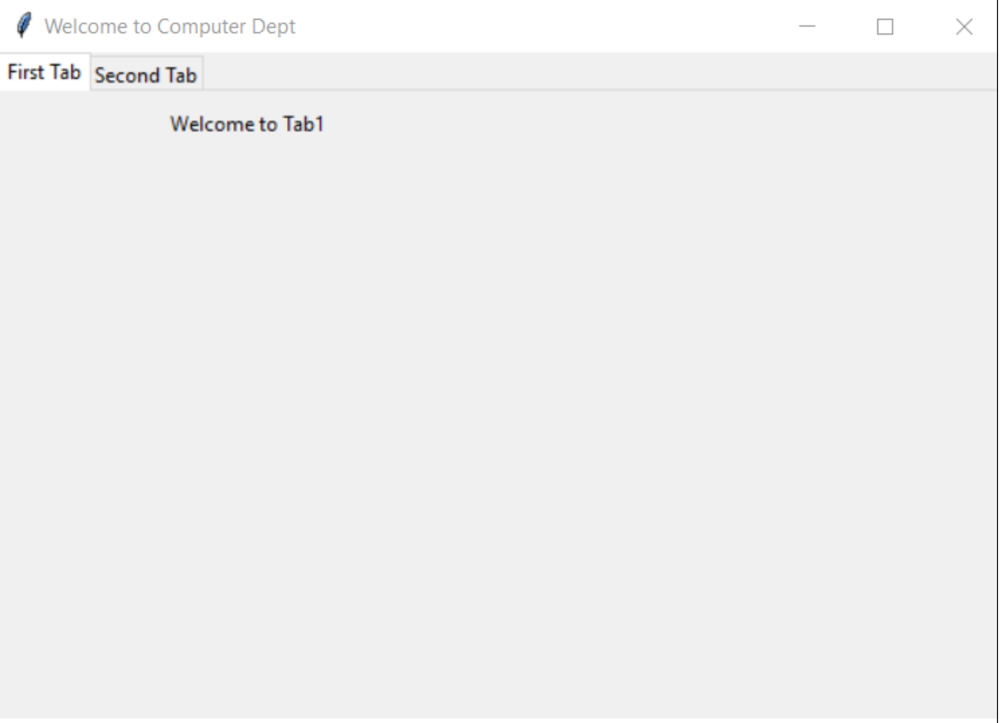
PNG files (*.png)

```
from tkinter import *
from tkinter import Menu
window = Tk()
window.title("Welcome to Computer Dept")
menu = Menu(window)
new_item = Menu(menu)
#new_item = Menu(menu, tearoff=0)
new_item.add_command(label='New')
new_item.add_separator()
new_item.add_command(label='Edit')
menu.add_cascade(label='File', menu=new_item)
new_item = Menu(menu, tearoff=0)


window.config(menu=menu)

window.mainloop()
```



```
from tkinter import *
from tkinter import ttk

window = Tk()
window.title("Welcome to Computer Dept ")
window.geometry("600x400")
```

```
tab_control = ttk.Notebook(window)

tab1 = ttk.Frame(tab_control)
tab2 = ttk.Frame(tab_control)

tab_control.add(tab1, text='First Tab')
tab_control.add(tab2, text='Second Tab')

lbl1 = Label(tab1, text= 'Welcome to Tab1', padx = 100,
pady = 10)
lbl1.grid(column=0, row=0)

lbl2 = Label(tab2, text= 'welcome to Tab2')
lbl2.grid(column=0, row=0)

tab_control.pack(expand=1, fill='both')

window.mainloop()
```



2. Build any realtime GUI Application With Tkinter:

- Try to incorporate maximum components in your application which you practiced in above exercise 1.

- Example: Restaurant Bill Generation

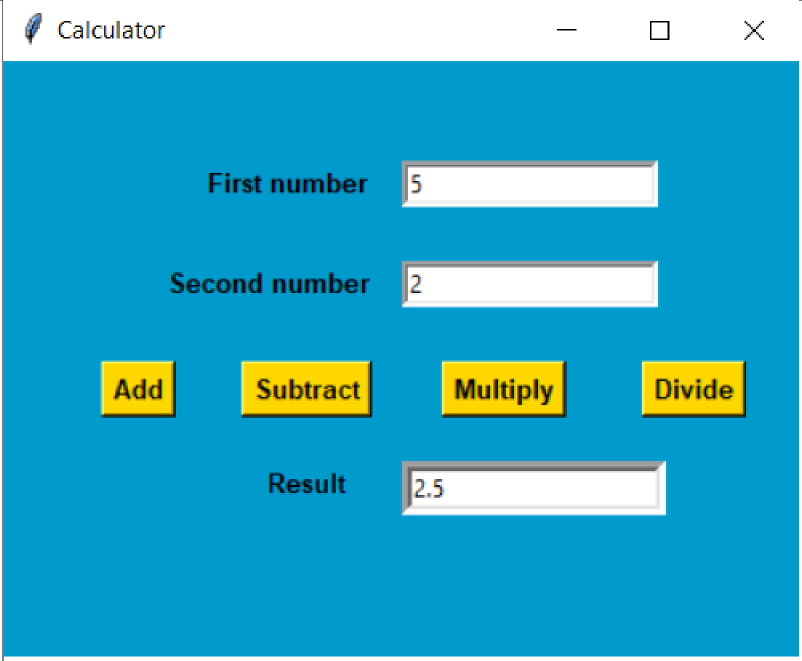
App Online Shopping App

Online Railway Reservation

Etc.

(Note: Students can come up with their own ideas and implement it, above topics are few examples.)

```
from tkinter import *
from tkinter import font

def add():
    t3.delete(0, 'end')
    num1=int(t1.get())
    num2=int(t2.get())
    result=num1+num2
    t3.insert(END, str(result))

def sub():
    t3.delete(0, 'end')
    num1=int(t1.get())
    num2=int(t2.get())
    result=num1-num2
    t3.insert(END, str(result))

def multiply():
    t3.delete(0, 'end')
    num1=int(t1.get())
    num2=int(t2.get())
    result=num1*num2
    t3.insert(END, str(result))
def divide():
     t3.delete(0, 'end')
     num1=int(t1.get())
     num2=int(t2.get())
     result=num1/num2
     t3.insert(END, str(result))
win=Tk()
#mywin=MyWindow(window)
win.title('Calculator')
win.geometry("400x300+10+10")
win.configure(bg='DeepSkyBlue3')

"""init"""
myfont=font.Font(family='Helvetica', size=10,
weight='bold')
lbl1=Label(win, text='First number')
lbl1.configure(bg='DeepSkyBlue3', font=myfont)
lbl2=Label(win, text='Second number')
lbl2.configure(bg='DeepSkyBlue3', font=myfont)
lbl3=Label(win, text='Result')
lbl3.configure(bg='DeepSkyBlue3', font=myfont)

t1=Entry(bd=3)
t2=Entry(bd=3)
t3=Entry(bd=5)


b1=Button(win, text='Add', command=add, font=myfont)
b2=Button(win, text='Subtract', command=sub,
font=myfont)
b3=Button(win, text='Multiply', command=multiply,
font=myfont)
b4=Button(win, text='Divide', command=divide,
font=myfont)

b1.configure(bg='gold')
b2.configure(bg='gold')
b3.configure(bg='gold')
b4.configure(bg='gold')

lbl1.place(x=100, y=50)
t1.place(x=200, y=50)

lbl2.place(x=80, y=100)
t2.place(x=200, y=100)

b1.place(x=50, y=150)
b2.place(x=120, y=150)
b3.place(x=220, y=150)
b4.place(x=320, y=150)


lbl3.place(x=130, y=200)
t3.place(x=200, y=200)

win.mainloop()
```

	 Calculator First number 5 Second number 2 Result 2.5
Deliverables:	All scripting code executed with their output.
Conclusion:	Thus we have successfully able to develop GUI application using Tkinter.
References:	https://realpython.com/python-gui-tkinter/ https://www.tutorialspoint.com/python/python_gui_programming.htm

Don Bosco Institute of Technology
Department of Computer Engineering

Academic year – 2019-20

Open Source Technology Lab

Assessment Rubric for Experiment No.: 8

Performance Date :
Submission Date :

Title of Experiment : Program To Demonstrate GUI Programming in Python using tkinter

Year and Semester : 2nd Year and IVth Semester

Batch : Computer

Name of Student : **Shawn Louis**

Roll No. : **31**

Performance	**Poor**	**Satisfactory**	**Good**	**Excellent**	**Total**
	2 points	3 points	4 points	5 points	
Results and Documentations	**Poor**	**Satisfactory**	**Good**	**Excellent**	
	2 points	3 points	4 points	5 points	
Timely Submission	**Submission beyond 14 days of the deadline**	**Late submission till 14 days**	**Late submission till 7 days**	**Submission on time**	
	2 points	3 points	4 points	5 points	

Signature

(Sana Shaikh)