Python Programming

Section 9 - Tkinter

UEE60411 Advanced Diploma of Computer Systems Engineering
UEENEED103A Evaluate and Modify Object Oriented Code

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Tkinter

Tkinter (Tk interface) is a standard interface in Python to the Tk GUI (graphical user interface) toolkit. Tkinter is available on both windows and Unix / Linux platforms.

To test if tkinter is installed and tunning on your system you can run
$python –m tkinter

from a command prompt or within vscode terminal.

Widgets must be imported from the tkinter library

```
from tkinter import *
```

Main window and main loop

A main window can be set up and configured followed by the main loop event handler
Tkinter01MainWindow.py

```
# ref video (min:sec) - https://www.youtube.com/watch?v=_lSNIrR1nZU
# ref - documentation https://docs.python.org/3/library/tkinter.html
# ref - documentation https://infohost.nmt.edu/tcc/help/pubs/tkinter/web/index.html
# ref - documentation http://www.tkdocs.com/tutorial/index.html


from tkinter import *

#main window (1:30 mins)
window = Tk()
window.title("Python Glossary")
window.configure(background="white")


# run the main loop
window.mainloop()
```

Tkinter

Adding a label widget and locating it on a grid layout

A label widget can be added to the window and positioned on a grid layout to a particular row column position (in this case row=0, column=0) within the window.

W E W E

(0,0)	(0,1)
(1,0)	(1,1)
(2,0)	(2,1)
(3,0)	(3,1)
(4,0)	(4,1)

W E W E

```
Label(window, image=photo, bg="white").grid(row=0,column=0,sticky=W)
```

The "sticky" option says how the widget would line up within the grid cell, using compass directions. So "W" (west) means anchor the widget to the left side of the cell, "WE" (west-east) means anchor it to both the left and right sides, etc.

The Label contains a photo image

```
photo = PhotoImage(file="C:/Users/sgale/OneDrive/2020-
Teaching/Python ADCSE1/code/tkinter/me.gif")
```

tkinter02MainWindowLabel.py

```
from tkinter import *

#main window (1:30 mins)
window = Tk()
window.title("Python Glossary")
window.configure(background="white")

#photo displayed with a Label  (2:00) - display your photo add me.gif into the sam
e folder as the .py file
photo = PhotoImage(file="C:/Users/sgale/OneDrive/2020-
Teaching/Python ADCSE1/code/tkinter/me.gif")
```

```
Label(window, image=photo, bg="white").grid(row=0,column=0,sticky=W) # using grid
(3:30  mins) layout , sticky W = West // OR E = East


# run the main loop

window.mainloop()
```

Adding labels and textbox widgets and a submit button with an event handler

An Entry (textbox) is used to capture a user entered string,

```
textbox = Entry(window, width=20, bg="white")
```

the Entry is positioned at (2,0) on the grid

```
textbox.grid(row=2, column=0,sticky=W)
```

A Button is used to process the entered text

```
Button(window, text="SUBMIT", width=6, command=onClickSubmitButton )
```

The event function will be executed when the Button is clicked and the command event is fired.

The event function is linked to the submit button using (command=)

```
def onClickSubmitButton():
```

The event function gets the text entered into the Entry (textbox) and inserts it into the Text widget (outputTextField).

```
def onClickSubmitButton():                      # submit button event handler
        userEnteredText = textbox.get()         # get the enterd text from the Entry text box
        outputTextField.delete(0.0, END)        # (14:30 mins)delete all of the output field
        outputTextField.insert(END, userEnteredText)  # (15:50 mins) output the user eneterd text
```

Tkinter

A Text widget (outputTextField) is used to display the submitted text and is located at (5,0) on the grid.

```
outputTextField = Text(window, width=75, height=6, wrap=WORD, background="white")
```

The complete code sample is below:

tkinter03TextEntrySubmit.py

```
from tkinter import *


# event functions (10:30 mins)
def onClickSubmitButton():                      # submit button event handler
        userEnteredText = textbox.get()         # get the enterd text from the Entry text box
        outputTextField.delete(0.0, END)        # (14:30 mins)delete all of the output field text
        outputTextField.insert(END, userEnteredText)  # (15:50 mins) output the user eneterd text
#main window (1:30 mins)
window = Tk()
window.title("Python Glossary")
window.configure(background="white")


# display text using - Label  (05:30 mins)
Label(window, text="Enter a string and press submit", bg="white", font="none 12 bold").grid(row=1,colu
mn=0,sticky=W) # using grid layout


# textbox for text entry - Entry (8:15 mins)
textbox = Entry(window, width=20, bg="white")
textbox.grid(row=2, column=0,sticky=W)          # grid position of textbox


# submit button - Button (9:30 mins) - calls onClickSubmitButton function when clicked
Button(window, text="SUBMIT", width=6, command=onClickSubmitButton ).grid (row=3,column=0, sticky = W)


#definitions - Label (11:50 mins)
Label(window, text="\n Your string", bg="white", font="none 12 bold").grid(row=4,column=0,sticky=W) #
using grid layout


# output textField - Text(12:40 mins)
```

```
outputTextField = Text(window, width=75, height=6, wrap=WORD, background="white")

outputTextField.grid(row=5, column=0,sticky=W)  # grid position of textField



# run the main loop

window.mainloop()
```

References

ref video (min:sec) - https://www.youtube.com/watch?v=_lSNIrR1nZU

ref - documentation https://docs.python.org/3/library/tkinter.html

ref - documentation https://infohost.nmt.edu/tcc/help/pubs/tkinter/web/index.html

ref - documentation http://www.tkdocs.com/tutorial/index.html

Activities

1. Reposition the submit Button widget so that it is next to the Entry widget (textbox) rather than underneath
2. Reposition the Text widget (outputTextField) so that it is next to the Label widget containing “Your string” rather than underneath
3. Convert the entered string (userEnteredText) to lowercase before being inserted into the Text widget (outputTextField
4. Upload your completed solution- **tkinter03TextEntrySubmitSOLUTION.py**