LECTURE 23: GUI PROGRAMMING WITH TKINTER

QUIZ 3

- Quiz 3 next Tuesday(Dec 04)

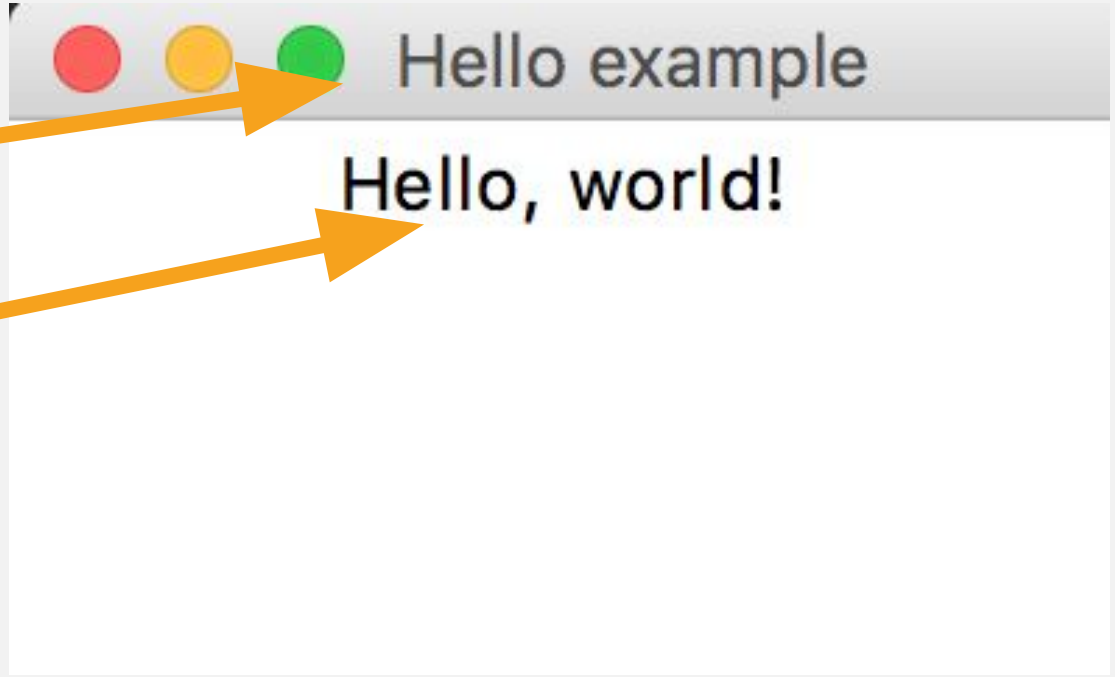
GUI PROGRAMMING

- GUI: Graphical User Interface
- Type of interface that allows users to interact with computers using visual elements rather than text commands
  - Use windows, menus, buttons, text boxes, scrollbars
- Python uses a library called “Tkinter” to create GUI components
  - Alternatives? WxPython, PyQT, Kivy ….

A SIMPLE GUI

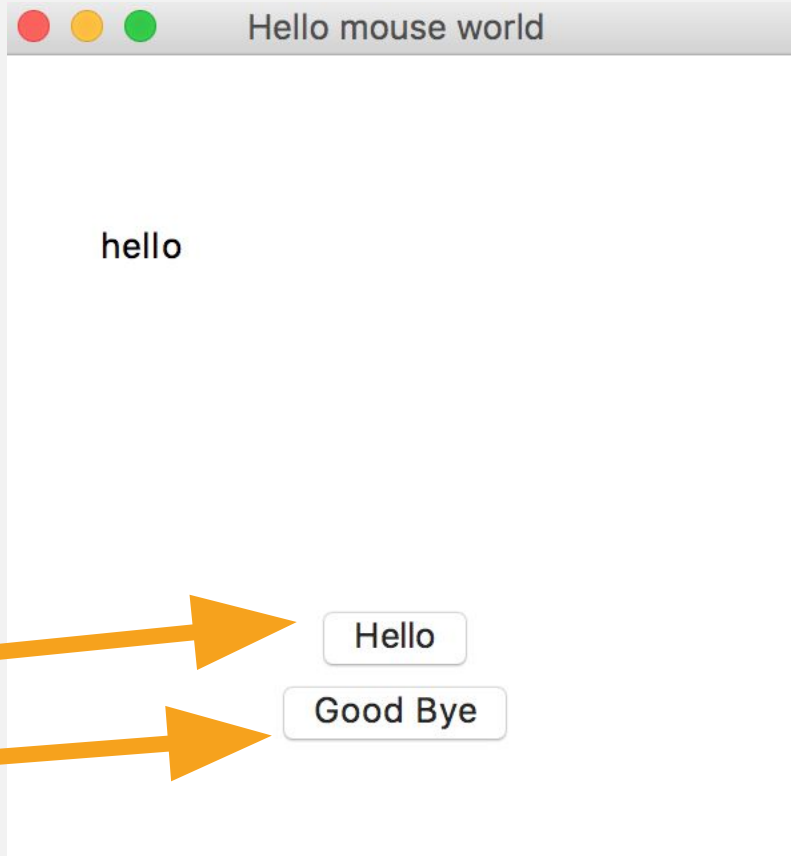
- See helloworld.py

```
import Tkinter

root = Tkinter.Tk()
root.title("Hello example")
root.geometry("200x100")

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

root.mainloop()
```



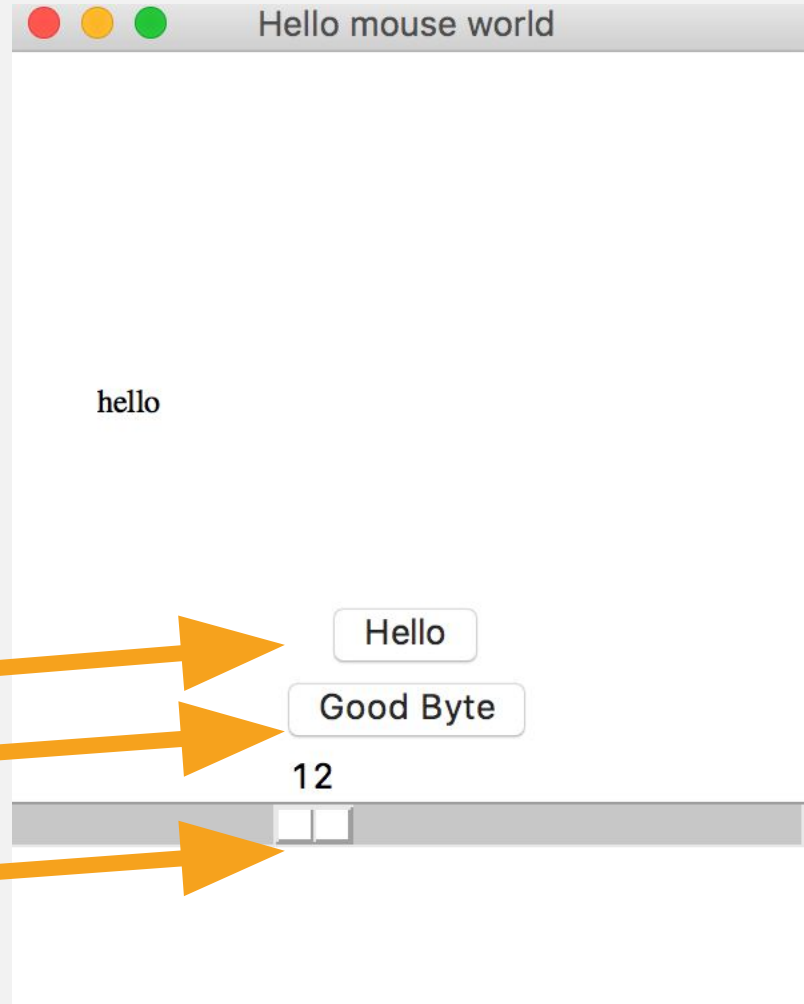
HELLOMOUSEWORLD.PY

```
def sayHello():
    global text
    text = "hello"

def sayGoodbye():
    global text
    text = "goodbye"

def buttonPressed(evt):
    if evt.widget == canvas:
        canvas.create_text(evt.x, evt.y, text=text)

hellob = Button(root, text="Hello", command=sayHello)
goodbyeb = Button(root, text="Good Bye", command=sayGoodbye)
root.bind("<Button-1>", buttonPressed)
```



SLIDER.PY

```
size = 10                  # variable that will be set by slider

def sayHello():
    global text
    text = "hello"

def sayGoodbye():
    global text
    text = "goodbye"

def updateSize(svalue):  # call back for slider
    global size
    size = int(svalue)

def buttonPressed(evt):  # added font type and size at the end of create
    if evt.widget == canvas:
        canvas.create_text(evt.x, evt.y, text=text, font=("Times",size))

hellob = Button(root, text="Hello", command=sayHello)
goodbyeb = Button(root, text="Good Byte", command=sayGoodbye)
root.bind("<Button-1>", buttonPressed)

# new to the slider program
slide = Scale(root, from_=5,to=24,orient=HORIZONTAL,command=updateSize)
slide.set(12)              # set initial size
```



SLIDER IMPLEMENTATION

- The slider's callback function takes a string argument; which is the value of the slider/scale
- The function set sets the initial value of the slider
  - The function get(not shown) retrieves the value of the slider
- To draw the text with the given size, add the "font" argument in canvas.create_text

THE MENU WIDGET

- Menu allows us to create various kinds of menus that can be used by our applications
- Syntax to create one(See drop-down-menu.py):
  - w = Menu(master, option,...)

SLIDER MENU

- See slider-menu.py

PACK VS GRID VS PLACE

- Three techniques
  - pack (Order of pack() calls)
  - grid (Place on a hypothetical grid)
    - gui-database.py uses grid
  - place(Place on a specific x, y location)

PACK EXAMPLE

- See pack-example.py

GRID EXAMPLE

- See grid-example.py

CHANGING VISUAL PROPERTIES

- Actual set of properties depends on the element
- For label:
  - fg: Set foreground color
  - bg: Set background color
  - image: Display an image
  - underline: Put an underline below nth letter
  - justify
  - ...
- See appearance.py

ONE MORE EXAMPLE: GUI DATABASE

- See gui-database.py
- Use shelve as a persistent dictionary
  - import shelve
- We use radio buttons to choose between find/insert/delete

FIN!