

Computer Applications

Introduction to GUIs in Python

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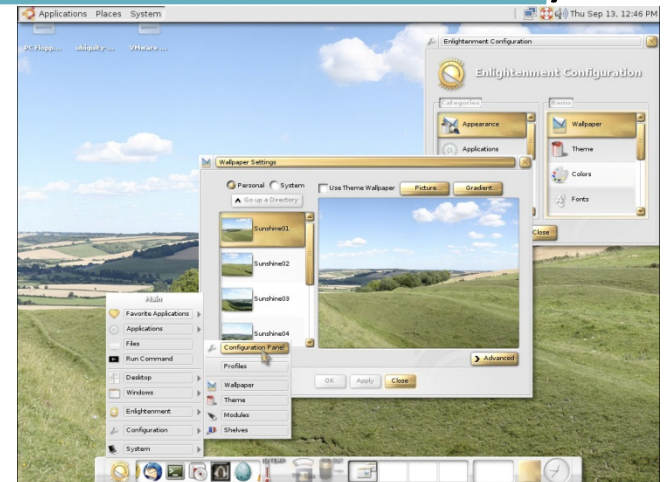
This week:

- Tkinter
- Controls
- Named arguments
- Events

What are GUIs?

- “Graphical User Interfaces” – as opposed to CLI
- Typically WIMP: windows, icons, menus, pointers
 - Touch interfaces are post-WIMP
- Pioneered at Xerox PARC (see “Mother of all demos”:
<http://www.youtube.com/watch?v=yJDv-zdHzMY>)

```
rtt min/avg/max/mdev = 49.820/49.820/49.820/0.000 ms
mars@marsmain /usr/portage/app-shells/bash $ grep -l /dev/sda /etc/fstab | cut --fields=3
/dev/sda1          /boot
/dev/sda2          none
/dev/sda3          /
mars@marsmain /usr/portage/app-shells/bash $ date
Sat Aug  8 02:42:24 MSD 2009
mars@marsmain /usr/portage/app-shells/bash $ lsmod
Module              Size  Used by
rndis_wlan          23424  0
rndis_host           8696  1 rndis_wlan
cdc_ether            5672  1 rndis_host
usbnet              18688  3 rndis_wlan,rndis_host,cdc_ether
parport_pc          38424  0
fglrx               2388128 20
parport              39648  1 parport_pc
iTCO_wdt             12272  0
i2c_i801              9380  0
mars@marsmain /usr/portage/app-shells/bash $
```



Tkinter

- A GUI library for Python
- Comes with the standard distribution of Python
- Official Python wiki page:
 - <https://wiki.python.org/moin/TkInter>
- Good tutorials:
 - http://www.tutorialspoint.com/python/python_gui_programming.htm
 - <http://effbot.org/tkinterbook/>

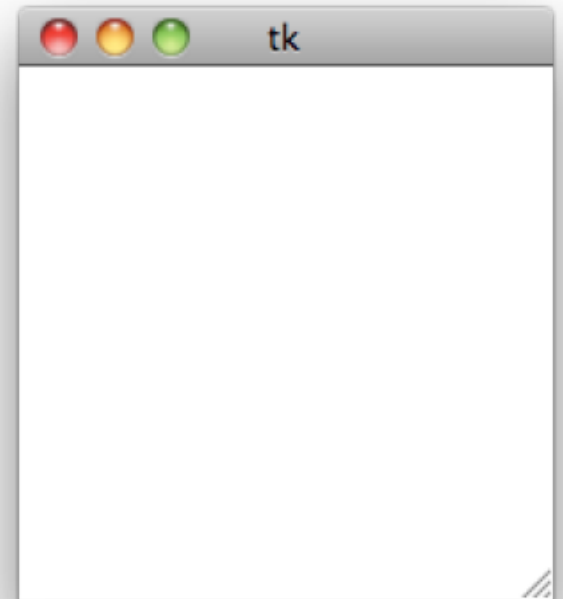
Tkinter basics

```
import Tkinter

# Create window
main_window = Tkinter.Tk()

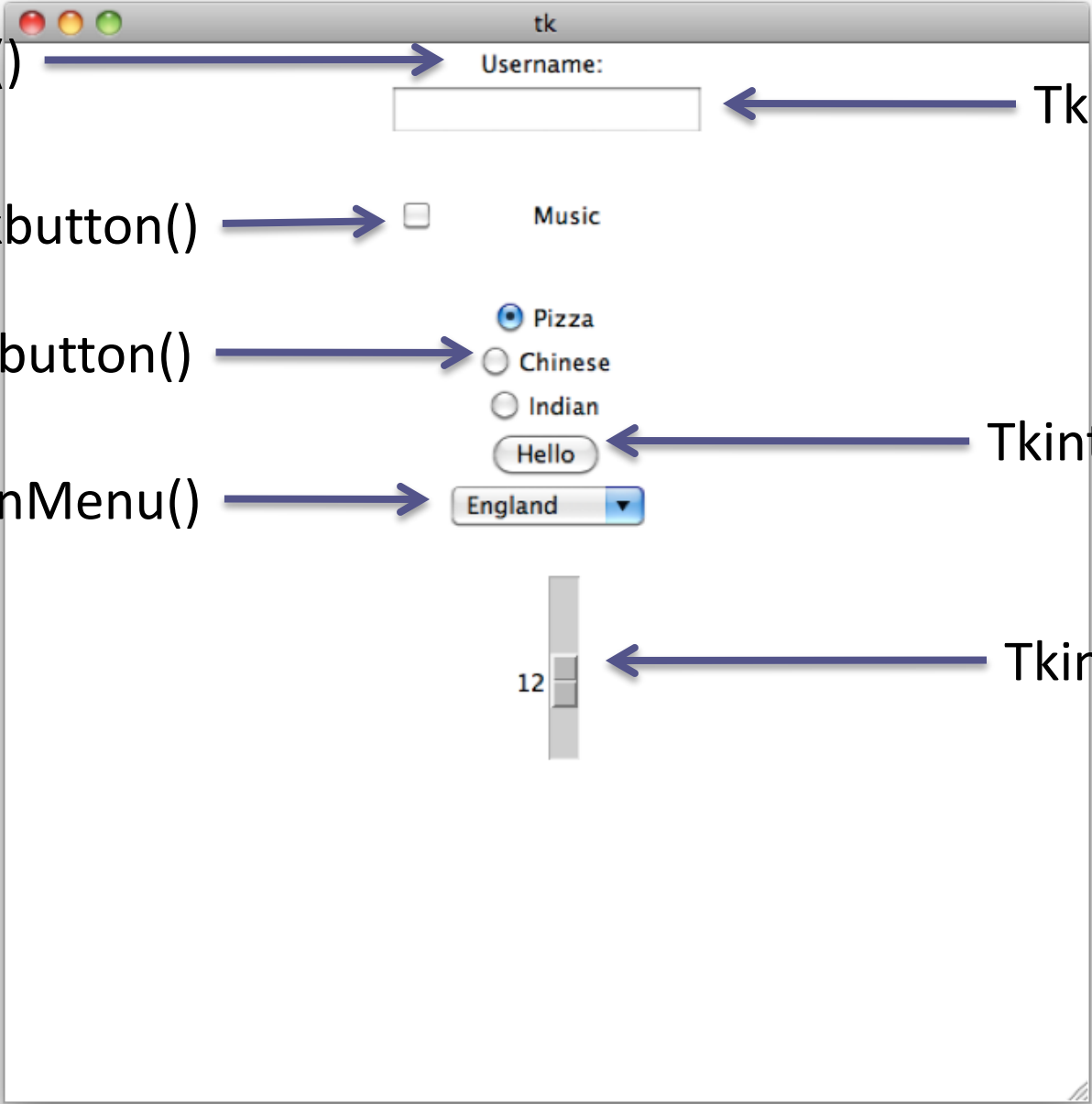
# add widgets
# ...

# Display window
main_window.mainloop()
```



Controls

- Input and output
- 2 important lines:
 - `button = Tkinter.Button(main_window)`
 - `button.pack()`
- Create and display



Tkinter.Label()

Username:

Tkinter.Entry()

Tkinter.Checkbutton()



Music

Tkinter.Radiobutton()



Pizza



Chinese



Indian

Hello

Tkinter.Button()

Tkinter.OptionMenu()

England

12

Tkinter.Scale()

Controls

- Another example
- `name = Tkinter.Entry(main_window)`
- `name.pack()`
- Only *have* to provide parent window
- http://www.tutorialspoint.com/python/python_gui_programming.htm

An Aside: Named arguments (1)

- Function arguments have been in order so far

```
def resistance(voltage, current):  
    return float(voltage)/float(current)
```

- `R = resistance(240, 5)`
- Can change order:
- `R = resistance(current=5, voltage=20)`

Named arguments (2)

- Can also set defaults

```
def resistance(voltage=240, current=1) :  
    return float(voltage) / float(current)
```

- `R = resistance(current=10)`
- `R = resistance(voltage=20)`

Controls with parameters

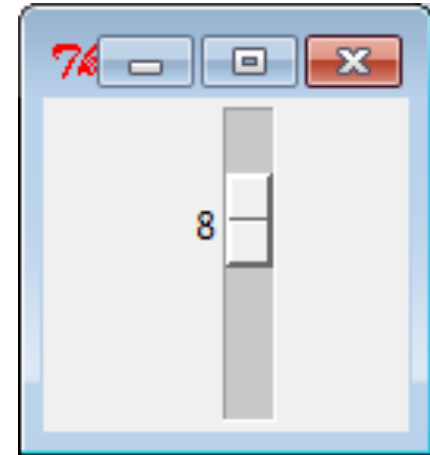


- Another example

```
go = Tkinter.Button(main_window,  
    text="Click Me!")  
go.pack()
```

- http://www.tutorialspoint.com/python/tk_button.htm

Controls with parameters



- Another example

```
voltage = Tkinter.Scale(main_window,  
    from_=5, to=15)  
voltage.pack()
```

- http://www.tutorialspoint.com/python/tk_button.htm

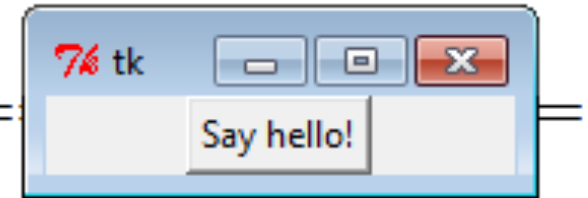
Events

- Using functions

```
>>>
```

```
>>>
```

```
Hello
```



```
def print_hello():  
    print "hello"
```

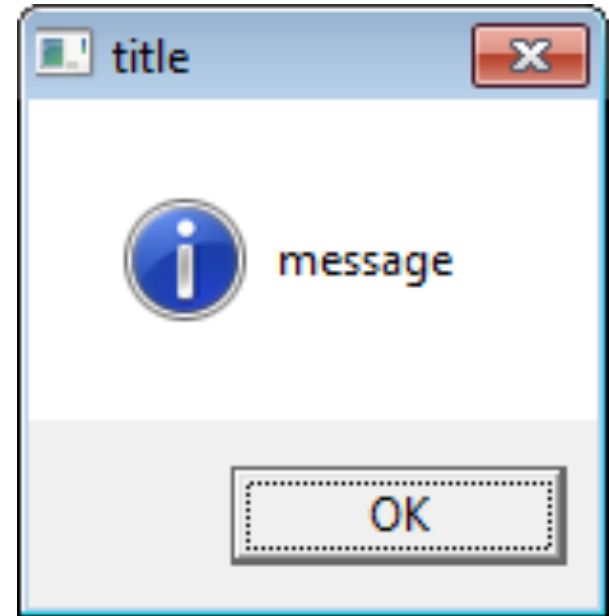
```
hello = Tkinter.Button(main_window,  
    text="Say Hello",  
    command=print_hello)
```

```
hello.pack()
```

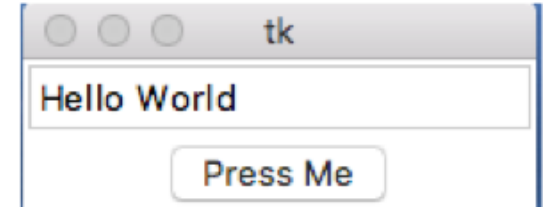
Message box

- To get a pop up message box

```
import tkinterMessageBox
tkinterMessageBox.showinfo("title",
    "message")
```



GETting Values



- Some Controls provide input values

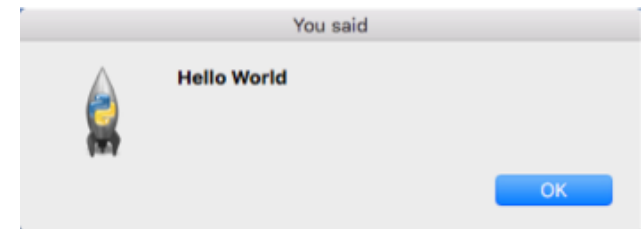
.....

```
name = Tkinter.Entry(main_window)
name.pack()
```

```
def res():
    tkMessageBox.showinfo("You said", name.get())
```

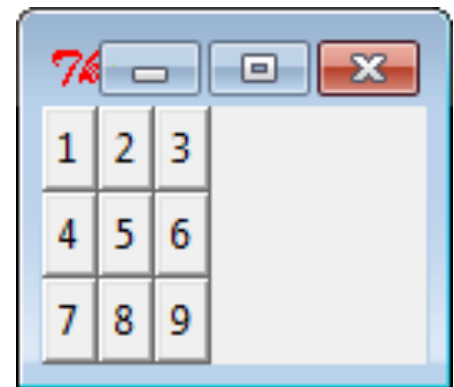
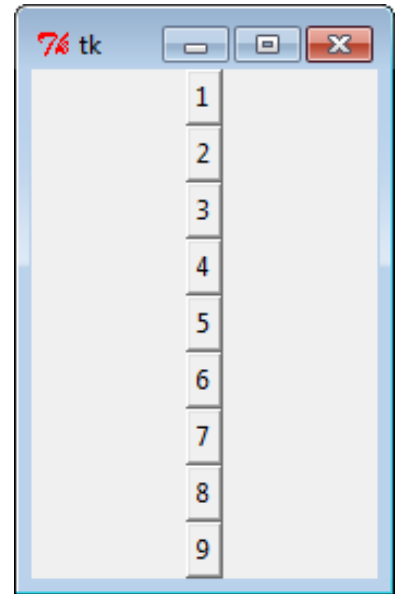
```
hello = Tkinter.Button(main_window, text="Press Me",
command=res)
hello.pack()
```

```
main_window.mainloop()
```



Layout

- `.pack()` adds it in next
- `.pack(side = RIGHT)` packs against right hand side
- `.grid(row=2, column=1)` puts at grid cell (2,1)



GUIs Summary

- Using Tkinter (import, create instance, mainloop())
- Initialise controls
- Add controls using .pack() or .grid()
- Use named arguments such as text to set the text and command to set the function to execute when clicked