An Introduction to Tkinter

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Note: This is an supplemental subject component to Dave's Python training classes. Details at:

http://www.dabeaz.com/python.html

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Overview

- A brief introduction to Tkinter
- Some basic concepts that make it work
- Some GUI-related programming techniques
- This is not an exhaustive reference

Tkinter

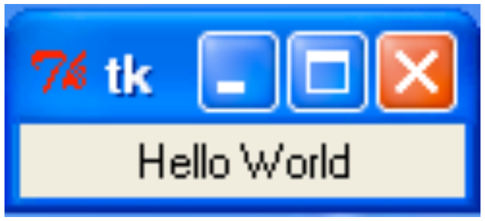
- The only GUI packaged with Python itself
- Based on Tcl/Tk. Popular open-source scripting language/GUI widget set developed by John Ousterhout (90s)
- Tk used in a wide variety of other languages (Perl, Ruby, PHP, etc.)
- Cross-platform (Unix/Windows/MacOS)
- It's small (~25 basic widgets)

Tkinter Hello World

- A very short example:

```
>>> from Tkinter import Label
>>> x = Label(None,text="Hello World")
>>> x.pack()
>>> x.mainloop()
```

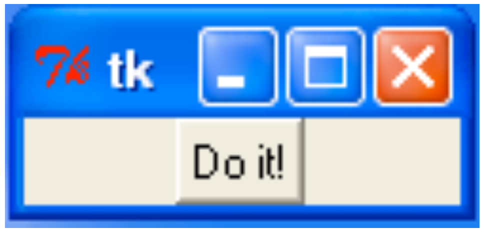
- Output (Windows)



Tkinter Hello World

- A more interesting example: A button

```
>>> def response():
...     print "You did it!"
...
>>> from Tkinter import Button
>>> x = Button(None,text="Do it!",command=response)
>>> x.pack()
>>> x.mainloop()
```



- Clicking on the button....

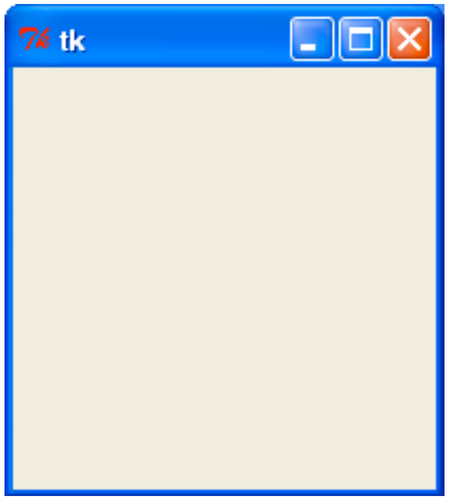
```
You did it!
You did it!
...
```

Tkinter in a nutshell

- Typical steps in using Tkinter
  - You create and configure widgets (labels, buttons, sliders, etc.)
  - You pack them (geometry)
  - You implement functions that respond to various GUI events (event handling)
  - You run an event loop

The Big Picture

- A GUI lives in at least one graphical window
- Here it is.... an empty window (no widgets)



- This window is known as the "root" window
- Usually only one root window per application

Root Window

- To create a new root window:

```
>>> from Tkinter import *
>>> root = Tk(className="ApplicationName")
>>>
```

- To start running the GUI, start its loop

```
>>> root.mainloop()
```

- This isn't very exciting. Just a blank window

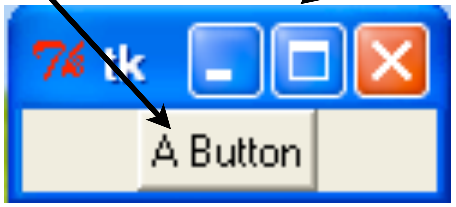
Widgets

- Widgets are graphical elements

```
>>> from Tkinter import *
>>> root = Tk()
>>> b= Button(root,text="A Button")
>>> b.pack()
```

The Widget

Parent that owns the widget



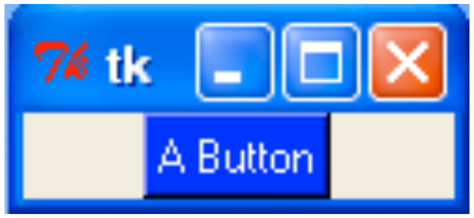
- All widgets belong to some window (parent)
- e.g., no free floating widgets

Widget Configuration

- Widgets have configuration options

```
>>> b = Button(root,text="A Button",bg="blue",fg="white")
```

configuration



- Widgets can later be reconfigured

```
>>> b.config(bg="red")       # Change background
```

- Get current settings with cget()

```
>>> b.cget("bg")
'red'
>>>
```

Widget Events

- Most widgets respond to various events

```
>>> def pressed():
...     print "You pressed it!"
...
>>> b = Button(root,text="A Button",command=pressed)
```

$\uparrow$ Event handler

- Types of events and handler protocol depend on the widget (e.g., different for buttons than for scrollbars)

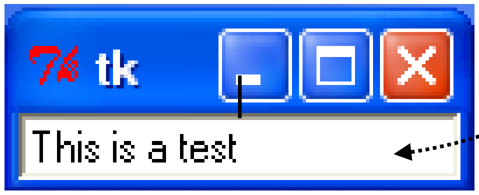
Widget State

- Widgets sometimes rely on "linked variables"

```
ivar = IntVar()
svar = StringVar()
dvar = DoubleVar()
bvar = BooleanVar()
```

- Example: Text entry

```
>>> svalue = StringVar()
>>> w = Entry(root,textvariable=svalue)
```

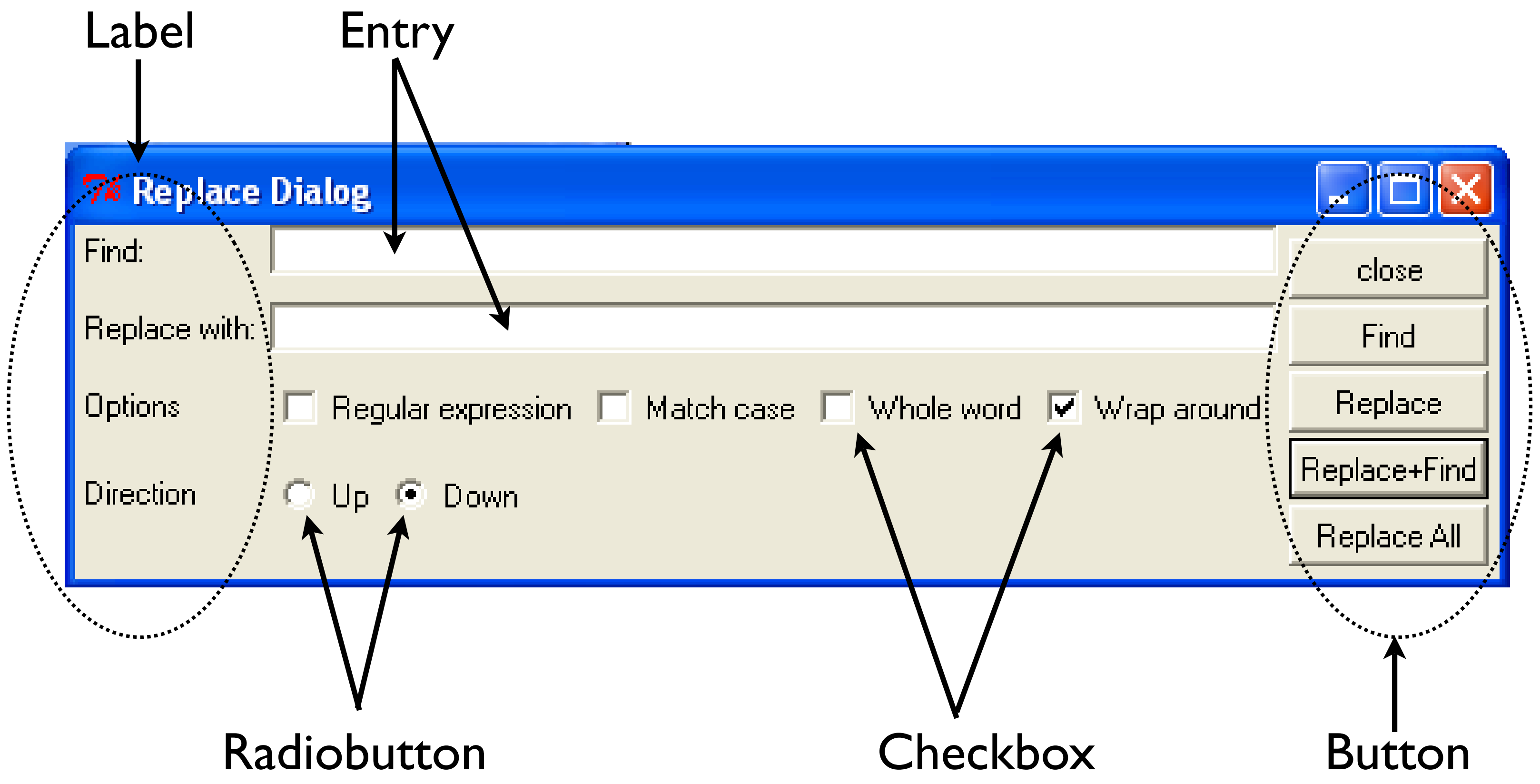


Holds current value of entry text

```
>>> svalue.get()
'This is a test'
>>>
```

Widgets as Building Blocks

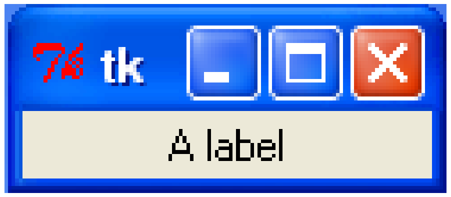
- Widgets are the basic building blocks



Widget Tour

- Labels:

```
>>> w = Label(root,text="A label")
```

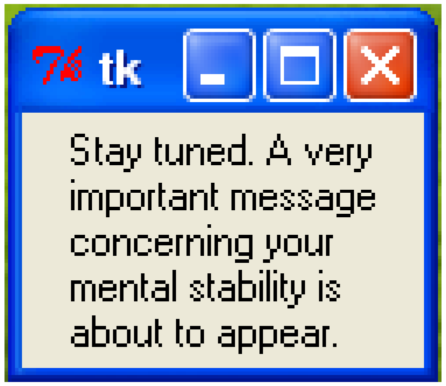


- Usually used for small text-labels

Widget Tour

- Messages

```
>>> w = Message(root,text="Stay tuned. A very important
message concerning your mental stability is about to
appear")
```



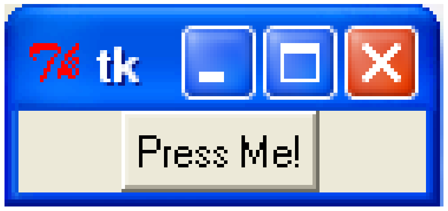
Stay tuned. A very important message concerning your mental stability is about to appear.

- Used for informative messages/dialogs

Widget Tour

- Buttons:

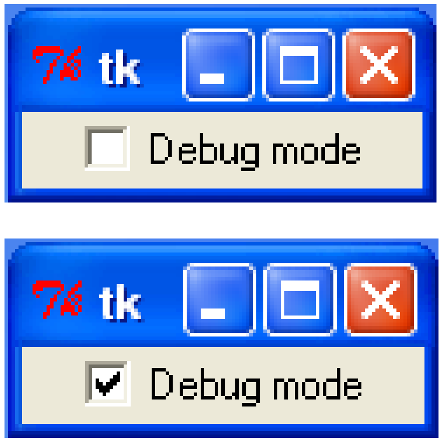
```
>>> def when_pressed():
...       print "Do something"
...
>>> w = Button(root,text="Press Me!",command=when_pressed)
```



Widget Tour

- Checkbutton

```
>>> debug_mode = IntVar(value=0)
>>> w = Checkbutton(root,text="Debug mode",
...                           variable=debug_mode)
...
>>>
```

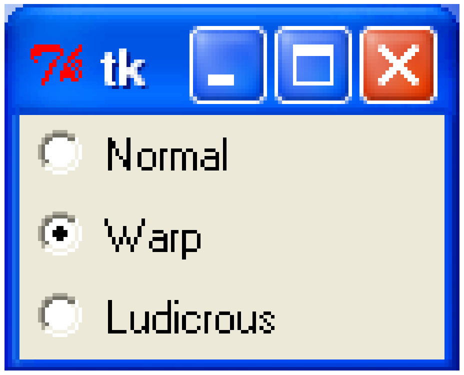


```
>>> debug_mode.get()
1
>>>
```

Widget Tour

- Radiobutton

```
>>> speed=StringVar()
>>> r1 = Radiobutton(root,text="Normal",variable=speed,
...                          value="normal")
>>> r2 = Radiobutton(root,text="Warp",variable=speed,
...                             value="warp")
>>> r3 = Radiobutton(root,text="Ludicrous",variable=speed,
...                             value="ludicrous")
```

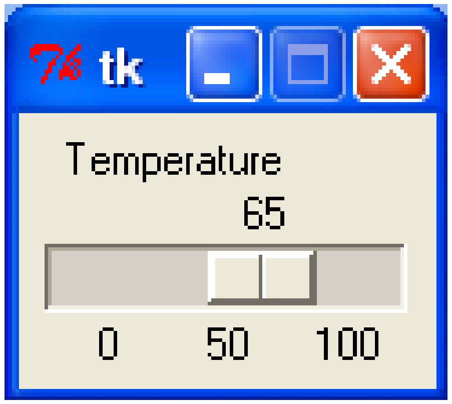


```
>>> speed.get()
'warp'
>>>
```

Widget Tour

- Scales/Sliders

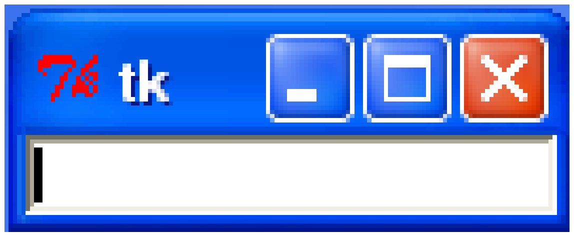
```
>>> temp = IntVar()
>>> def on_move(value):
...     print "moved", value
...
>>> w = Scale(root,label="Temperature",variable=temp,
...           from_=0,to=100,tickinterval=50,
...           orient='horizontal',command=on_move)
...
>>>
```

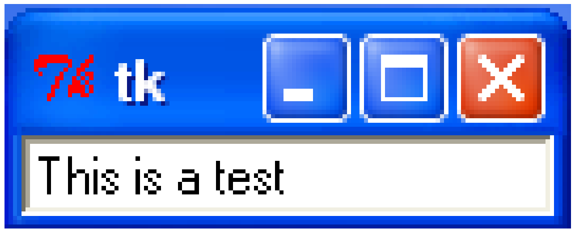


Widget Tour

- Text entry

```
>>> value = StringVar(root)
>>> w = Entry(root,textvariable=value)
```





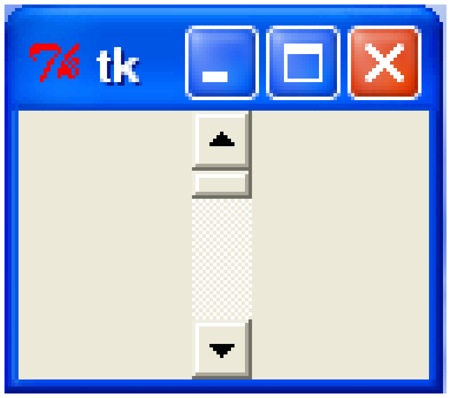
This is a test

```
>>> value.get()
'This is a test'
>>>
```

Widget Tour

- Scrollbar

```
>>> w = Scrollbar(root,orient="vertical")
```

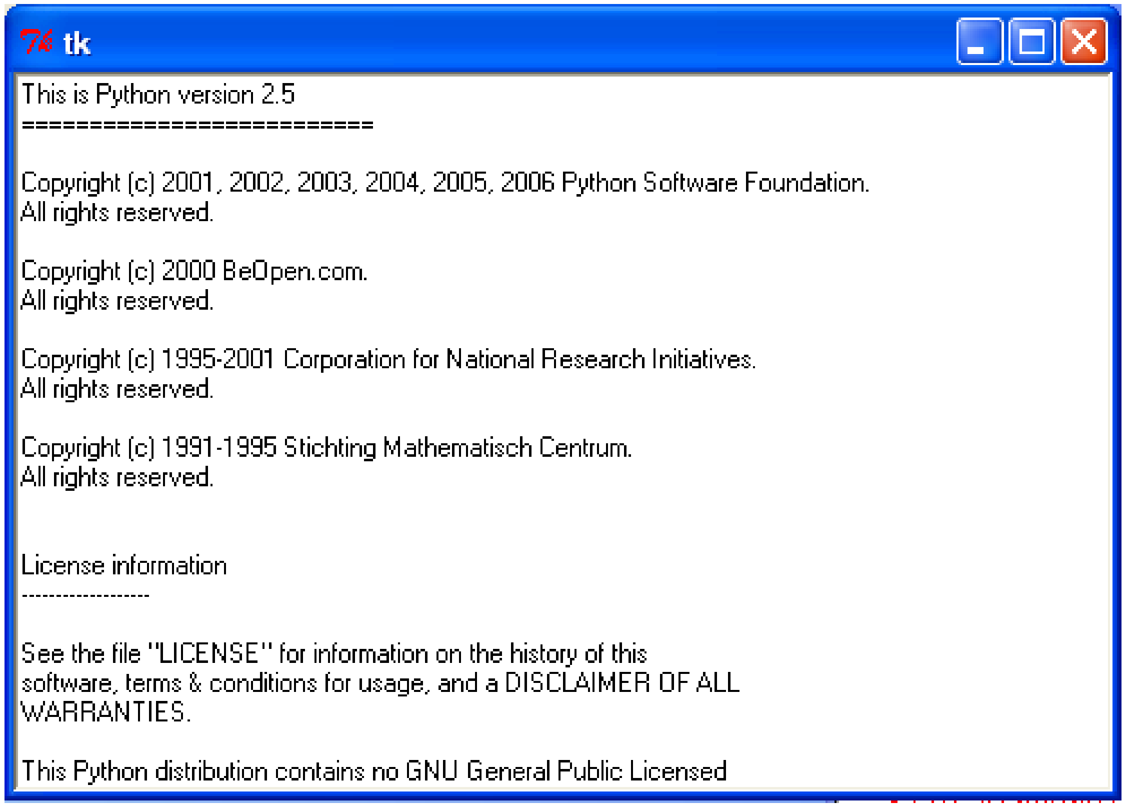


- Note: Have omitted many details

Widget Tour

- Text-widget

```
>>> sometext = open('README.TXT').read()
>>> w = Text(root,relief=SUNKEN)
>>> w.insert("1.0",sometext)
```



```
This is Python version 2.5
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```
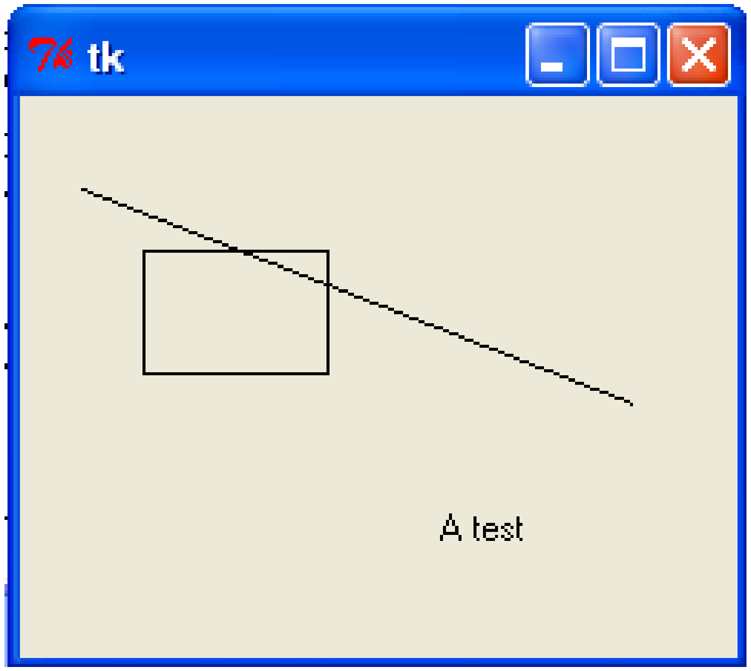

Widget Tour

- Canvas

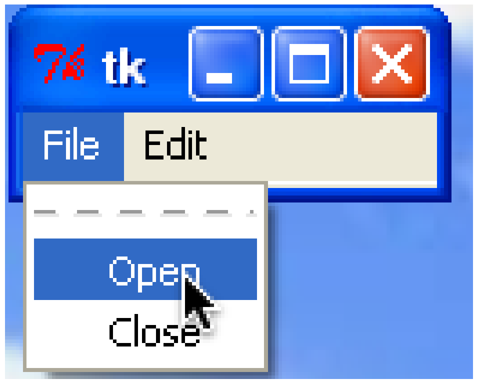
```
>>> w = Canvas(root,width=250,height=250)
>>> w.create_line(20,30,200,100)
>>> w.create_rectangle(40,50,100,90)
>>> w.create_text(150,140,text="A test")
>>>
```



Widget Tour

- Menus

```
>>> top = Menu(root)
>>> file = Menu(top)
>>> file.add_command(label='Open',command=open_cmd)
>>> file.add_command(label='Close',command=close_cmd)
>>> top.add_cascade(label="File",menu=file)
>>> edit = Menu(top)
>>> edit.add_command(label="Cut",command=cut_cmd)
>>> edit.add_command(label="Paste",command=paste_cmd)
>>> top.add_cascade(label="Edit",menu=edit)
>>> root.config(menu=top)
>>>
```

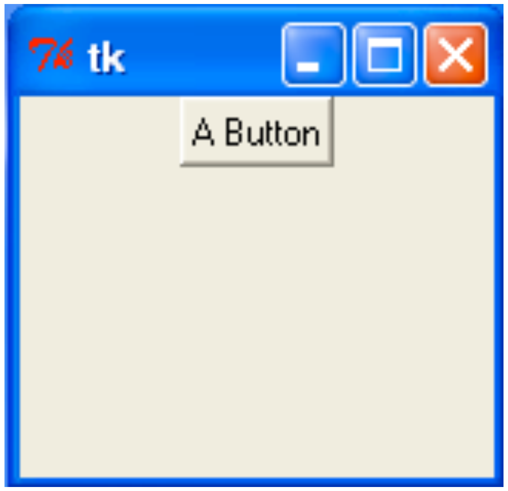


Commentary

- Have covered some of the basic widgets
- There are many more, but same idea
- For complete details: consult a Tk reference
- Next step: arranging them within a window

Packing

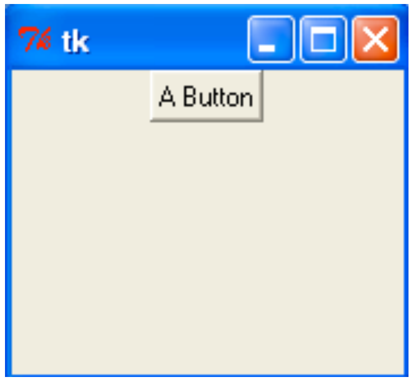
- Widgets have to be placed somewhere within a window (geometry)
- The pack() method does this
- By default, pack places a widget centered at the top of a window



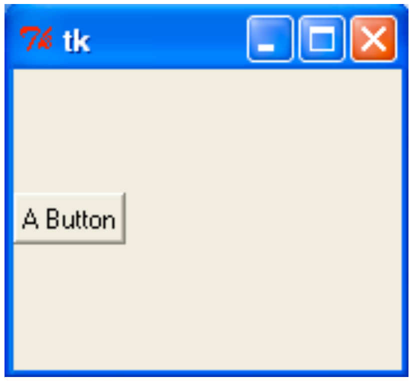
Choosing Sides

- You can pack a widget on any side

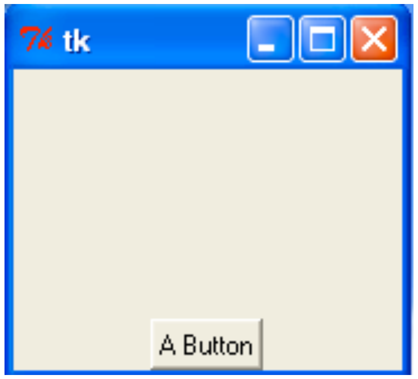
`w.pack(side=TOP)`



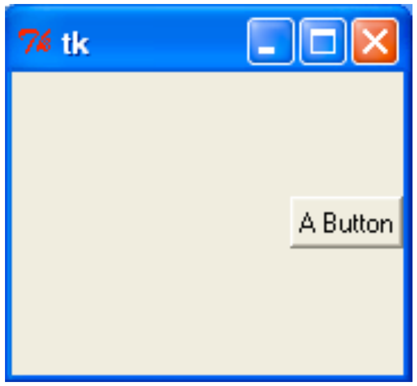
`w.pack(side=LEFT)`



`w.pack(side=BOTTOM)`



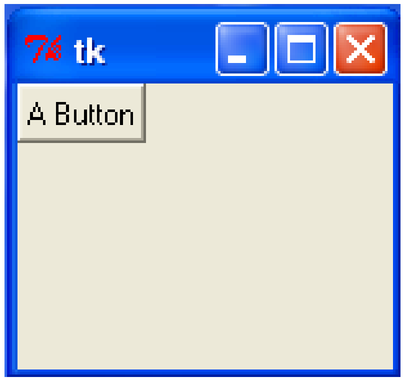
`w.pack(side=RIGHT)`



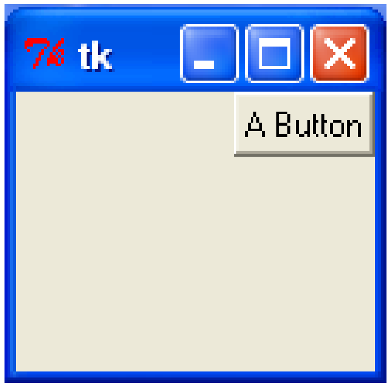
Anchoring

- A widget can also be anchored in its space

```
w.pack(side=TOP,anchor=W)
```



```
w.pack(side=TOP,anchor=E)
```



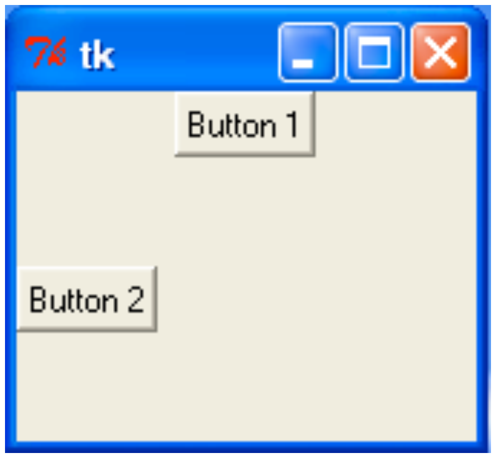
- Anchoring is "directional" (East,West,etc.)

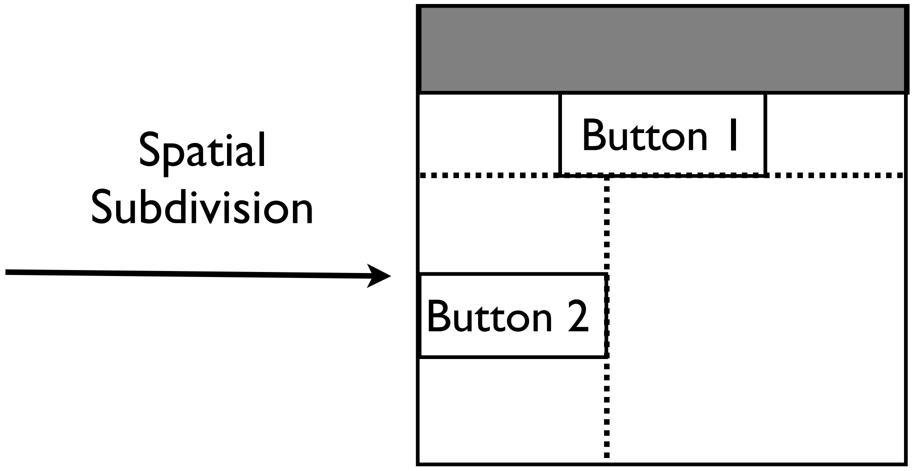
```
E,W,N,S,NW,NE,SW,SE
```

Multiple Widgets

- More than one widget can be packed

```
>>> root = Tk()
>>> b1 = Button(root,text="Button 1")
>>> b2 = Button(root,text="Button 2")
>>> b1.pack(side=TOP)
>>> b2.pack(side=LEFT)
>>> root.mainloop()
```





Pop Quiz

- Let's add a third button

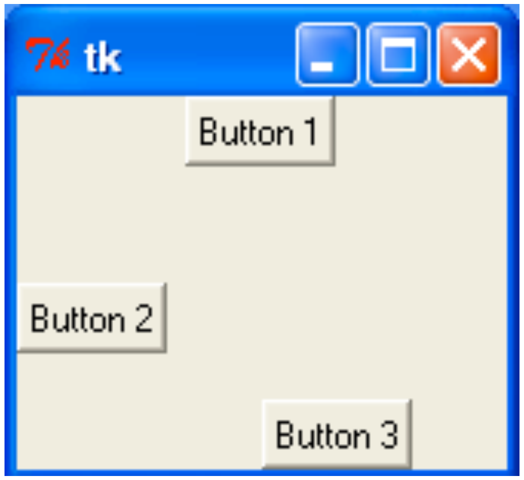
```
>>> root = Tk()
>>> b1 = Button(root,text="Button 1")
>>> b2 = Button(root,text="Button 2")
>>> b3 = Button(root,text="Button 3")
>>> b1.pack(side=TOP)
>>> b2.pack(side=LEFT)
>>> b3.pack(side=BOTTOM)
>>> root.mainloop()
```

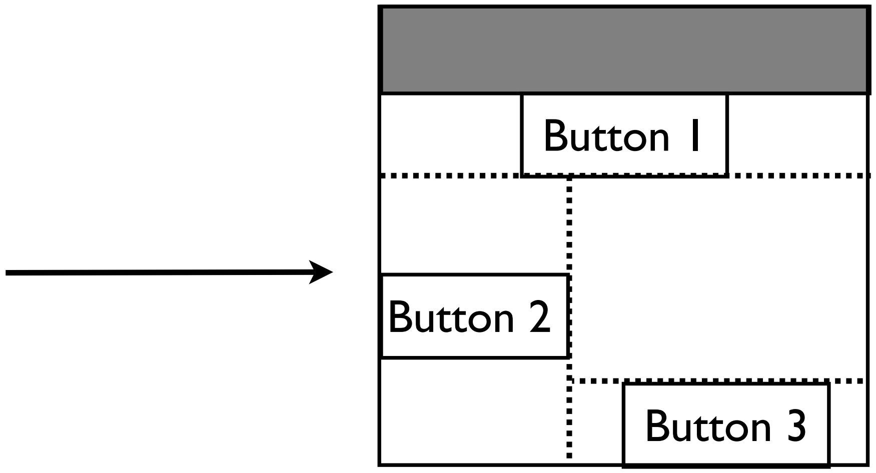
- ??????

Pop Quiz

- Let's add a third button

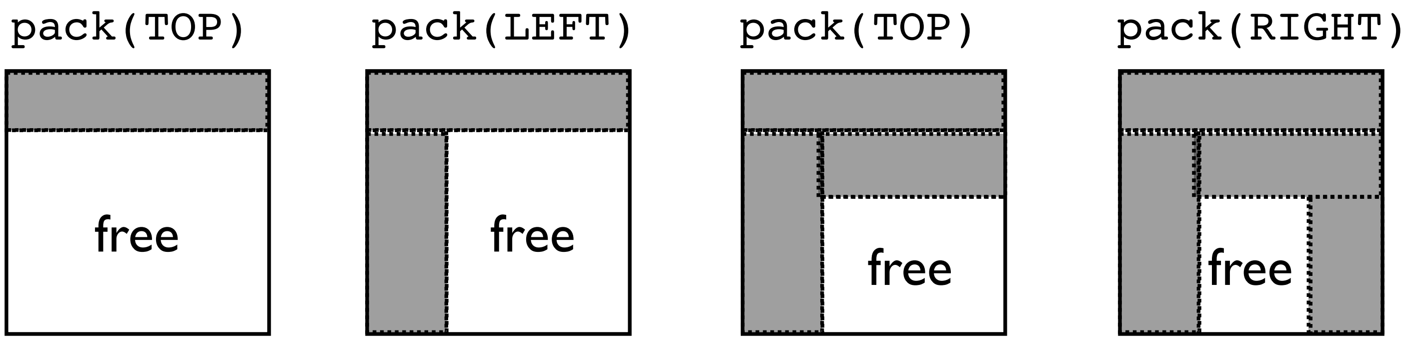
```
>>> root = Tk()
>>> b1 = Button(root,text="Button 1")
>>> b2 = Button(root,text="Button 2")
>>> b3 = Button(root,text="Button 3")
>>> b1.pack(side=TOP)
>>> b2.pack(side=LEFT)
>>> b3.pack(side=BOTTOM)
>>> root.mainloop()
```





Commentary: Packer

- Figuring out the Tk packer is probably the most mind-boggling aspect of Tk
- Keep in mind: It works hierarchically
- It packs things in order and carves up space



Filling/Expanding

- Filling: Widget expands to use all of the space that's been allocated to it
- Expanding: Widget expands to use all of its allocated space and adjacent free space
- Both specified by special options

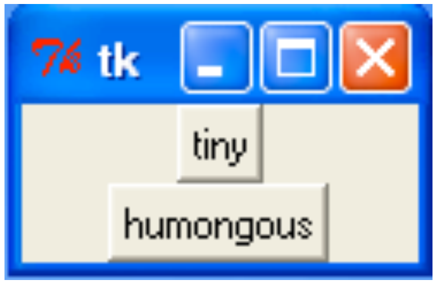
```
w.pack(side=SIDE,fill=X)
w.pack(side=SIDE,fill=Y)
w.pack(side=SIDE,fill=BOTH)
w.pack(side=SIDE,fill=FILL,expand=True)
```

Filling

- Consider two widgets:

```
>>> Button(root,text="tiny").pack()
>>> Button(root,text="humongous").pack()
>>>
```

- Result looks terrible

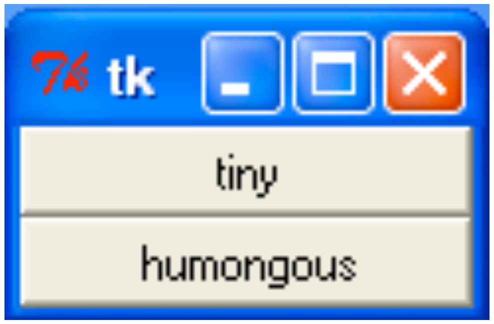


Filling

- Now, two widgets with filling

```
>>> Button(root,text="tiny").pack(fill=X)
>>> Button(root,text="humongous").pack(fill=X)
>>>
```

- Result looks better

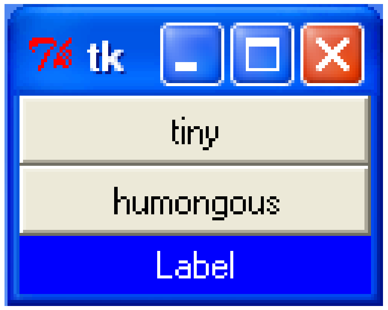


- Buttons fill out their horizontal space (X)

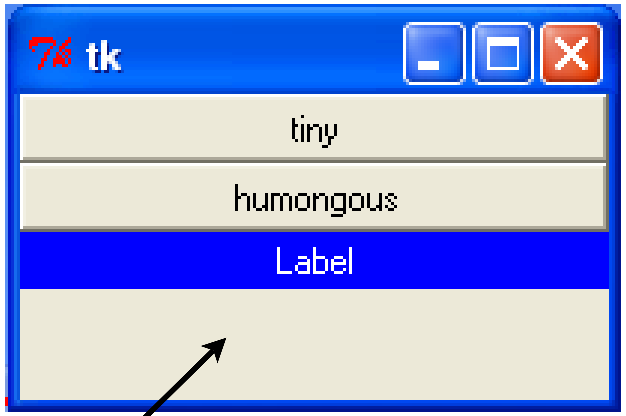
Expanding

- Now consider this example:

```
>>> Button(root,text="tiny").pack(fill=X)
>>> Button(root,text="humongous").pack(fill=X)
>>> w = Label(root,text="Label",bg="blue",fg="white")
>>> w.pack(fill=X)
```



Now, watch what happens if the window is expanded $\longrightarrow$

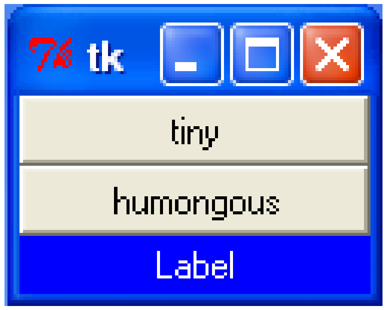


Note the empty space here

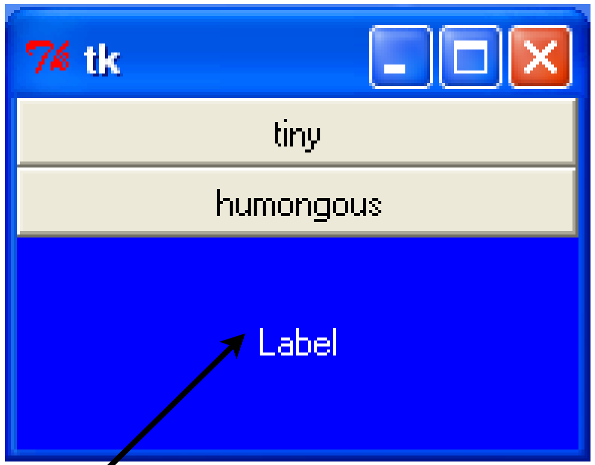
Expanding

- Expanding and filling

```
>>> Button(root,text="tiny").pack(fill=X)
>>> Button(root,text="humongous").pack(fill=X)
>>> w = Label(root,text="Label",bg="blue",fg="white")
>>> w.pack(fill=BOTH,expand=True)
```



Now, watch what happens if the window is expanded ⟶

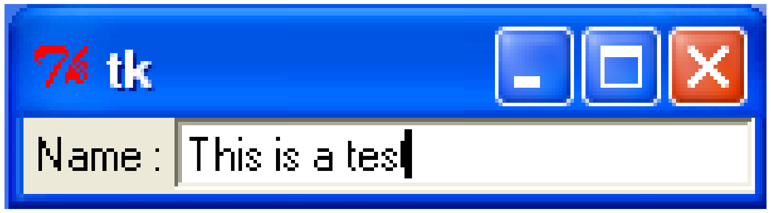


Label now takes up all remaining space

Frames

- Frames are like a sub-window
- A space to hold widgets
- Used to group widgets together

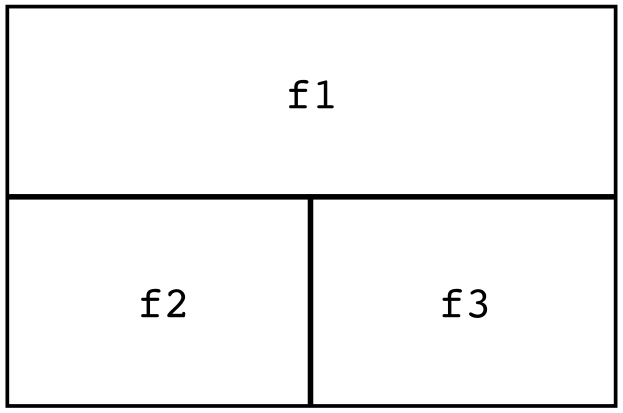
```
>>> root = Tk()
>>> f = Frame(root)
>>> Label(f,text="Name :").pack(side=LEFT)
>>> Entry(f).pack(side=RIGHT,fill=X,expand=True)
>>> f.pack()
>>> root.mainloop()
```



Using Frames

- Typically used to subdivide a window into logical components

```
>>> root = Tk()
>>> f1 = Frame(root)
>>> f2 = Frame(root)
>>> f3 = Frame(root)
>>> f1.pack(side=TOP)
>>> f2.pack(side=LEFT)
>>> f3.pack(side=RIGHT)
```



- Widgets are then placed into each frame
- Frame is used as the "parent" window

Frame Example

- An entry field widget

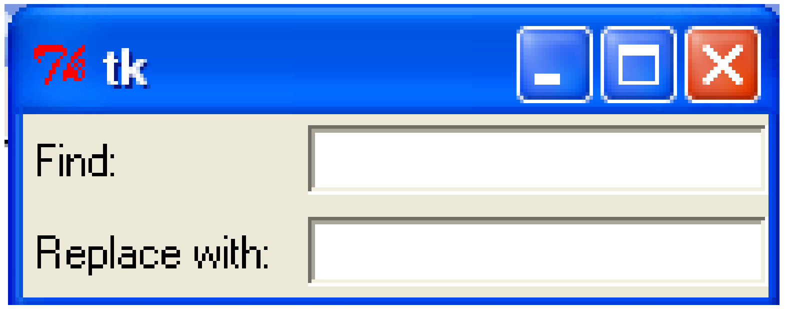
```
class EntryField(Frame):
    def __init__(self,parent,label,labelwidth=12):
        Frame.__init__(self,parent)
        l = Label(self,text=label,width=labelwidth,anchor=W)
        l.pack(side=LEFT,fill=X)
        Entry(self).pack(side=RIGHT,fill=X,expand=True)
```

- Creates an enclosing frame
- Packs two other widgets inside

Frame Example

- Example:

```
root = Tk()
find = EntryField(root,"Find:")
find.pack(side=TOP,fill=X,pady=3)
replace = EntryField(root,"Replace with:")
replace.pack(side=TOP,fill=X,pady=3)
```



Frame Example

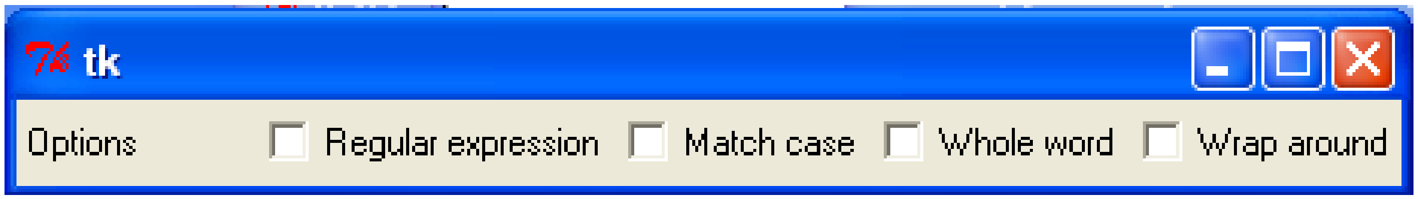
- Another widget: An option bar

```
class Optionbar(Frame):
    def __init__(self,parent,label,options,labelwidth=12):
       Frame.__init__(self,parent)
       l = Label(self,text=label,width=labelwidth,anchor=W)
       l.pack(side=LEFT)
       for option in options:
           cb = Checkbutton(self,text=option)
           cb.pack(side=LEFT,anchor=W,expand=True)
```

Frame Example

- Example:

```
root = Tk()
options =OptionBar(root,"Options",
    ["Regular expression","Match case","Whole word",
     "Wrap around"])
```



Frame Example

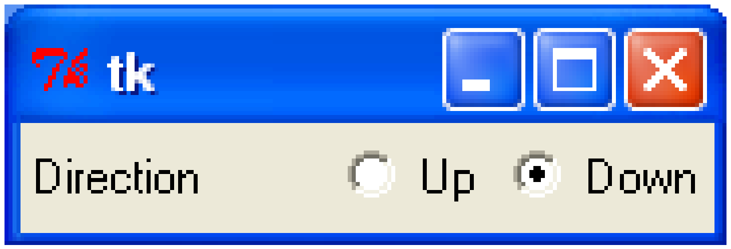
- Another widget: A radio button bar

```
class RadioChoice(Frame):
    def __init__(self,parent,label,choices,default
                 labelwidth=12):
       Frame.__init__(self,parent)
       l = Label(self,text=label,width=labelwidth,anchor=W)
       l.pack(side=LEFT)
       self.choice = StringVar(self,default)
       for choice in choices:
           rb = Radiobutton(self,text=choice,
                    variable=self.choice,value=choice)
           rb.pack(side=LEFT,anchor=W,expand=True)
```

Frame Example

- Example:

```
root = Tk()
options = RadioChoice(root,"Direction", ["Up","Down"],
                                        "Down")
```



Frame Example

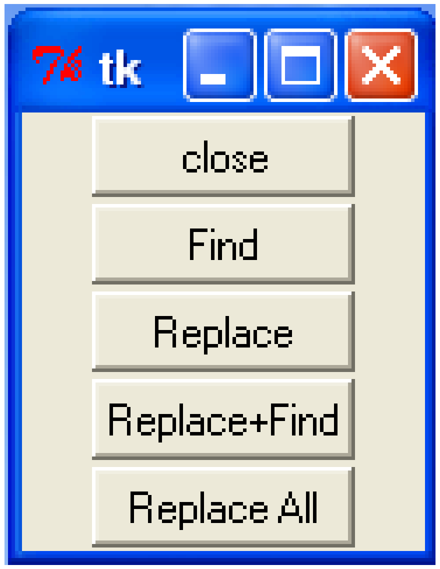
- Another widget: A series of buttons

```
class ButtonList(Frame):
    def __init__(self,parent,buttons):
        Frame.__init__(self,parent)
        for b in buttons:
            Button(self,text=b).pack(side=TOP,fill=X,pady=1)
```

Frame Example

- Example:

```
root = Tk()
buttons = ButtonList(root,["close","Find","Replace",
                           "Replace+Find","Replace All"])
buttons.pack()
```



Frame Example

- A Find/Replace Dialog

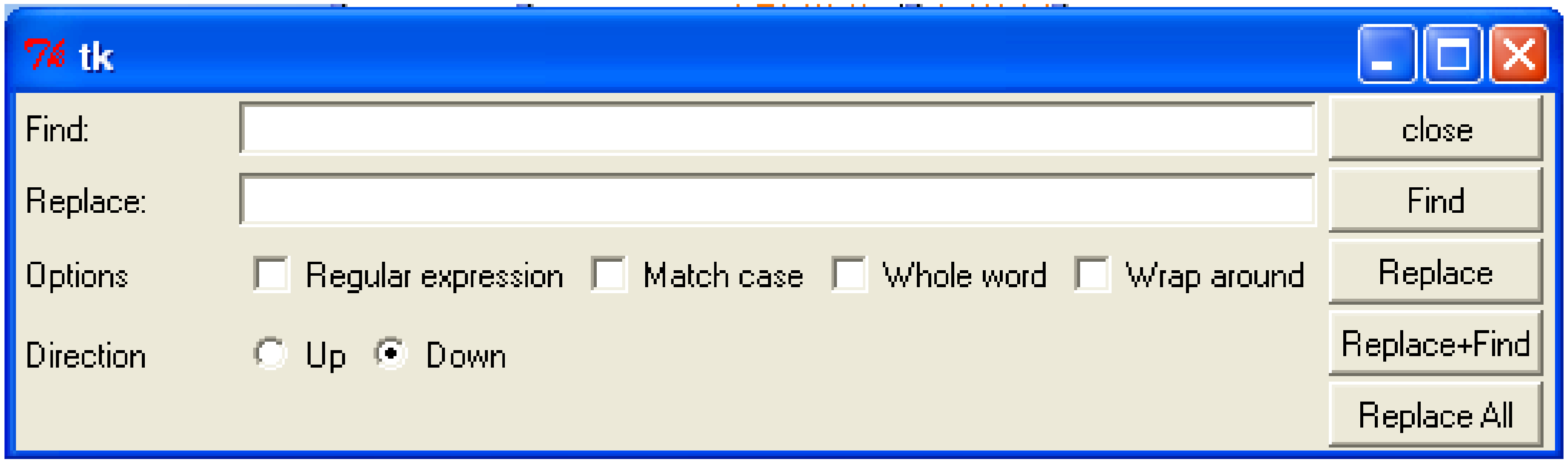
```
class FindReplace(Frame):
    def __init__(self,parent):
       Frame.__init__(self,parent)
       but = ButtonList(self,["close","Find","Replace",
                 "Replace+Find","Replace All"])
       but.pack(side=RIGHT,fill=X,padx=2)
       find = EntryField(self,"Find:")
       find.pack(side=TOP,fill=X,pady=3)
       replace = EntryField(self,"Replace:")
       replace.pack(side=TOP,fill=X,pady=3)
       opt = OptionBar(self,"Options",["Regular expression",
               "Match case","Whole word","Wrap around"])
       opt.pack(side=TOP,fill=X,pady=3)
       dir = RadioChoice(self,"Direction",["Up","Down"],"Down")
       dir.pack(side=TOP,anchor=W,pady=3)
```

- Uses widgets we created earlier

Frame Example

- Example:

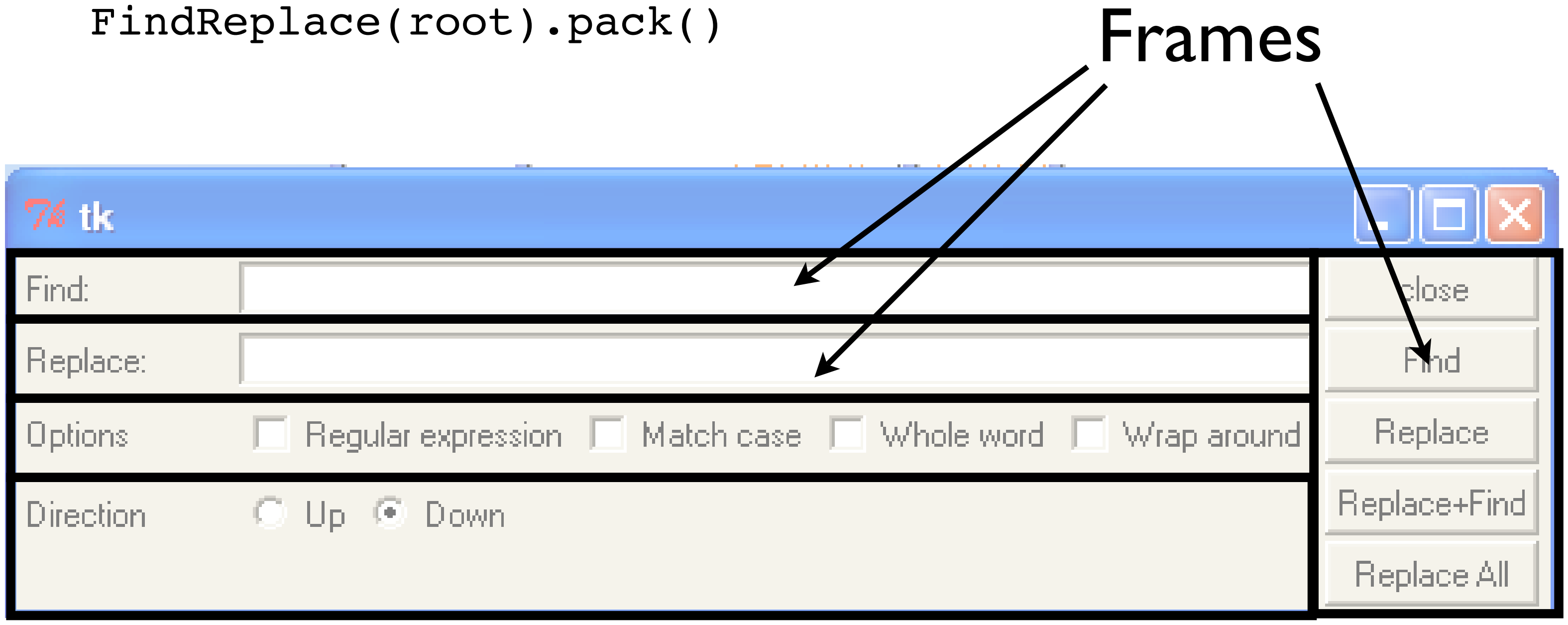
```
root = Tk()
FindReplace(root).pack()
```



Frame Example

- Example:

```
root = Tk()
FindReplace(root).pack()
```



Commentary

- Can see how GUI is built up from pieces
- I have omitted several key parts
  - Managing state
  - Callbacks

Maintaining State

- Widgets often need to store internal information
- Values of entry fields, button selections, etc.
- Other code needs to get that data
- Two approaches: Objects, Functions

Widgets as Objects

- Define each widget as a class (often inheriting from Frame)
- Store all state as attribute of the object
- Provide methods to access data as needed

Widgets as Objects

- Example: EntryField widget

```
class EntryField(Frame):
    def __init__(self,parent,label,labelwidth=12):
        Frame.__init__(self,parent)
        self.value = StringVar(self)
        l = Label(self,text=label,anchor=W,width=labelwidth)
        l.pack(side=LEFT)
        e = Entry(self,textvariable=self.value)
        e.pack(side=RIGHT,fill=X,expand=True)
    def get_value(self):
        return self.value.get()
```

Widgets as Objects

- Example: EntryField widget

```
class EntryField(Frame):
    def __init__(self,parent,label,labe
        Frame.__init__(self,parent)
        self.value = StringVar(self)
        l = Label(self,text=label,anchor=W,width=labelwidth)
        l.pack(side=LEFT)
        e = Entry(self,textvariable=self.value)
        e.pack(side=RIGHT,fill=X,expand=True)
    def get_value(self):
        return self.value.get()
```

Attribute is created to hold value of entry field

Widgets as Objects

- Example: EntryField widget

```
class EntryField(Frame):
    def __init__(self,parent,label,labelwidth=12):
        Frame.__init__(self,parent)
        self.value = StringVar(self)
        l = Label(self,text=label,anchor=W,width=labelwidth)
        l.pack(side=LEFT)
        e = Entry(self,textvariable=self.value)
        e.pack(side=RIGHT,fill=X,expand=True)
    def get_value(self):
        return self.value.get()
```

Method that returns the current value

Widgets as Objects

- Example: EntryField Widget Use

```
class FindReplace(Frame):
    def __init__(self,parent):
        Frame.__init__(self,parent)
        self.find = EntryField(self,"Find:")
        self.replace = EntryField(self,"Replace:")
        self.find.pack(side=TOP,fill=X)
        self.replace.pack(side=TOP,fill=X)
        Button(self,text="Go",command=self.do_it)
    def do_it(self):
        ftext = self.find.get_value()
        rtext = self.replace.get_value()
        print "Replacing '%s' with '%s'" % (ftext, rtext)
```

Widgets as Objects

- Example: EntryField Widget Use

```
class FindReplace(Frame):
    def __init__(self,parent):
        Frame.__init__(self,parent)
        self.find = EntryField(self,"Find:")
        self.replace = EntryField(self,"Replace:")
        self.find.pack(side=TO
        self.replace.pack(side
        Button(self,text="Go",
    def do_it(self):
        ftext = self.find.get_value()
        rtext = self.replace.get_value()
        print "Replacing '%s' with '%s'" % (ftext, rtext)
```

Invoked on button press

Value of entry fields retrieved

Widgets as Functions

- Write a function that simply creates a widget
- Store all state inside function using closures
- Return a function for accessing state
- This is a more sly approach

Widgets as Functions

- Example: EntryField function

```
def entryfield(parent,label,labelwidth=12,**packopts):
    f = Frame(parent)
    f.pack(**packopts)
    l = Label(f,text=label,width=labelwidth)
    l.pack(side=LEFT,anchor=W)
    value = StringVar(f)
    e = Entry(f,textvariable=value)
    e.pack(side=RIGHT,fill=X,expand=True)
    return lambda: value.get()
```

Widgets as Functions

- Example: EntryField function

Creates the same widgets as before

```
def entryfield(parent,label,labelwidt
    f = Frame(parent)
    f.pack(**packopts)
    l = Label(f,text=label,width=labelwidth)
    l.pack(side=LEFT,anchor=W)
    value = StringVar(f)
    e = Entry(f,textvariable=value)
    e.pack(side=RIGHT,fill=X,expand=True)
    return lambda: value.get()
```

Widgets as Functions

- Example: EntryField function

```
def entryfield(parent,label,labelwidth=12,**packopts):
    f = Frame(parent)
    f.pack(**packopts)
    l = Label(f,text=label,width=labelwidth)
    l.pack(side=LEFT,anchor=W)
    value = StringVar(f)
    e = Entry(f,textvariable=value)
    e.pack(side=RIGHT,fill=X,expand=True)
    return lambda: value.get()
```

A variable that holds state

A function that returns the state

Widgets as Functions

- Example: Using the EntryField function

```
def find_replace(ftext,rtext):
    print "Replacing '%s' with '%s'" % (ftext,rtext)

def find_replace_gui(parent):
    findv = entryfield(parent,"Find:",side=TOP,fill=X)
    replacev = entryfield(parent,"Replace",side=TOP,
                          fill=X)
    b = Button(parent,text="Go",
           command=lambda: find_replace(findv(),replacev())
    b.pack(side=TOP,fill=X)

root = Tk()
find_replace_gui(root)
```

Widgets as Functions

- Example: Using the EntryField function

```
def find_replace(ftext,rtext):
    print "Replacing '%s' with '%s'" % (ftext,rtext)

def find_replace_gui(parent):
    findv = entryfield(parent,"Find:",side=TOP,fill=X)
    replacev = entryfield(parent,"Replace",side=TOP,
                               fill=X)
    b = Button(parent,text="Go",
           command=lambda: find_replace(findv(),replacev()))
    b.pack(side=TOP,fill=X)

root = Tk()
find_replace_gui(root)
```

Functions that return entry value

Widgets as Functions

- Example: Using the EntryField function

```
def find_replace(ftext,rtext):
    print "Replacing '%s' with '%s'" % (ftext,rtext)

def find_replace_gui(parent):
    findv = entryfield(parent,"Find:",side=TOP,fill=X)
    replacev = entryfield(parent,"Replace",side=TOP,
                          fill=X)
    b = Button(parent,text="Go",
          command=lambda: find_replace(findv(),replacev())
    b.pack(side=TOP,fill=X)

root = Tk()
find_replace_gui(root)
```

On button press, values are retrieved and passed to function that performs work

Callback Handling

- Most TK widgets have some kind of callback
- Callback is often a simple function
- Example:

```
def button_press():
    print "Button pressed"

Button(root,text="Go",command=button_press)
```

- If callback takes arguments, need to use lambda or other functional trick

Callbacks and Lambda

- Using lambda to supply extra arguments

```
def button_press(which):
    print "You pressed", which

Button(root,text="Go",
   command=lambda:button_press('go'))
Button(root,text="Cancel",
   command=lambda:button_press('cancel'))
```

- Note: used this in find/replace example

Callback Alternatives

- Instead of lambda, may several alternatives
- Partial Function Evaluation

```
from functools import *
def button_press(which):
    print "You pressed", which

Button(root,text="Go",
   command=partial(button_press,'go'))
Button(root,text="Cancel",
   command=partial(button_press,'cancel'))
```

- Similar to lambda, but subtle differences

Callback Alternatives

- Callable object

```
def button_press(which):
    print "You pressed", which

class Pressed(object):
    def __init__(self,name):
        self.name = name
    def __call__(self):
        button_press(self.name)

Button(root,text="Go", command=Pressed('go'))
Button(root,text="Cancel", command=Pressed('cancel'))
```

- Uses fact that overriding __call__() lets an object be called like a function

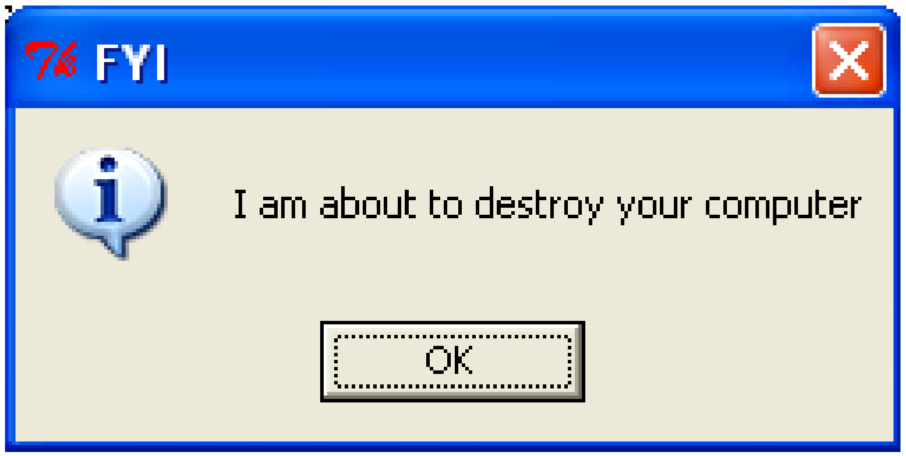
Pre-built Widgets

- Tkinter has a number of prebuilt widgets
- Standard dialogs
- Simple data entry
- Filename and color selection
- Useful if quickly putting something together

Standard Dialogs

- Informational dialog

```
>>> from tkMessageBox import *
>>> showinfo("FYI","I am about to destroy your computer")
```

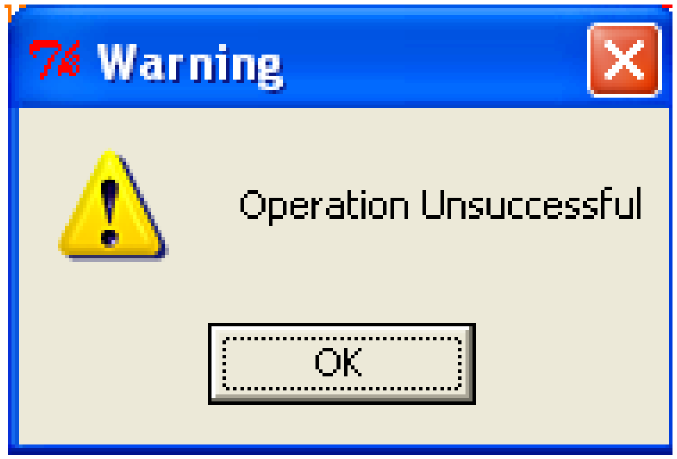


I am about to destroy your computer

Standard Dialogs

- Warning dialog

```
>>> from tkMessageBox import *
>>> showwarning("Warning","Operation Unsuccessful")
```

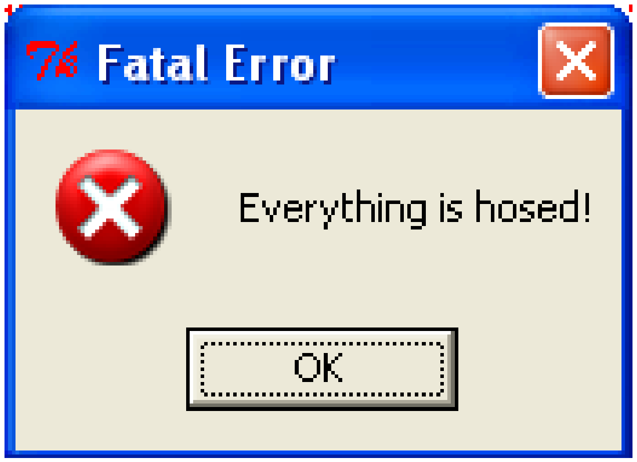


Operation Unsuccessful

Standard Dialogs

- Error dialog

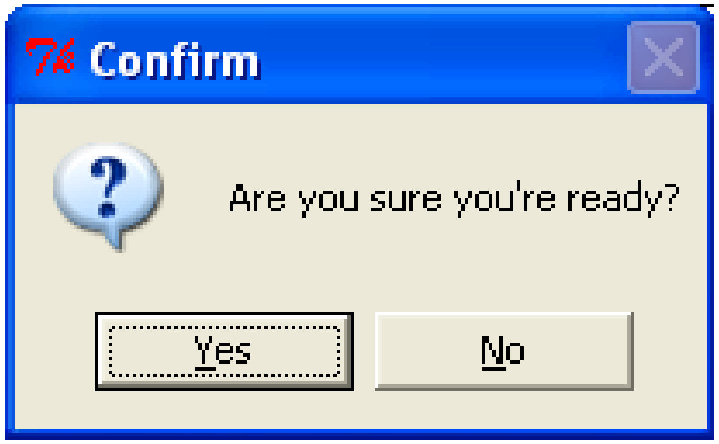
```
>>> from tkMessageBox import *
>>> showerror("Fatal Error","Everything is hosed!")
```



Standard Dialogs

- Yes/No dialog

```
>>> from tkMessageBox import *
>>> askyesno("Confirm","Are you sure you're ready?")
```



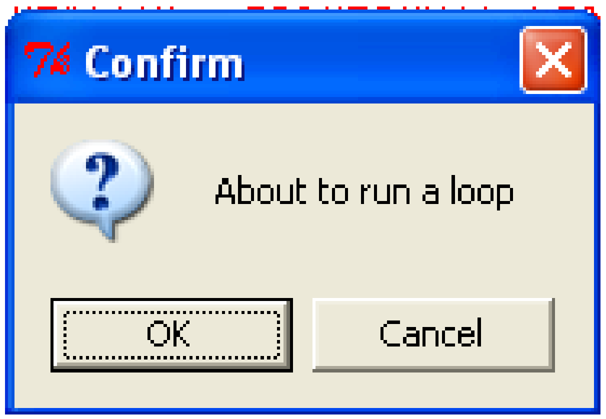
Are you sure you're ready?

- Returns True/False

Standard Dialogs

- Ok/Cancel Dialog

```
>>> from tkMessageBox import *
>>> askokcancel("Confirm","About to run a loop")
```

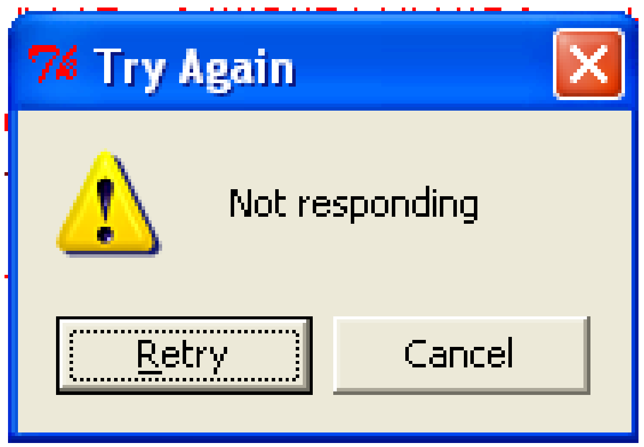


- Returns True/False

Standard Dialogs

- Retry/Cancel Dialog

```
>>> from tkMessageBox import *
>>> askretrycancle("Try Again","Not responding")
```

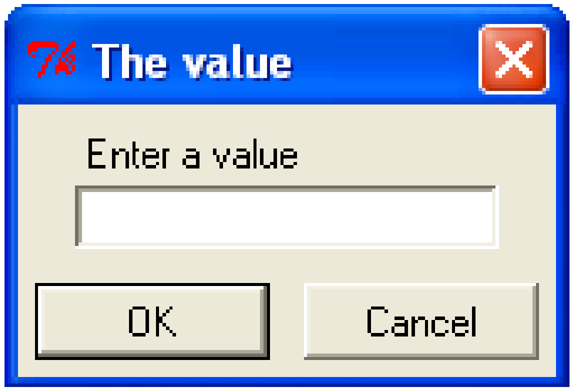


- Returns True/False

Entry Dialogs

- Enter string, integers, floats

```
>>> from tkSimpleDialog import *
>>> askinteger("The value","Enter a value")
42
>>>
```



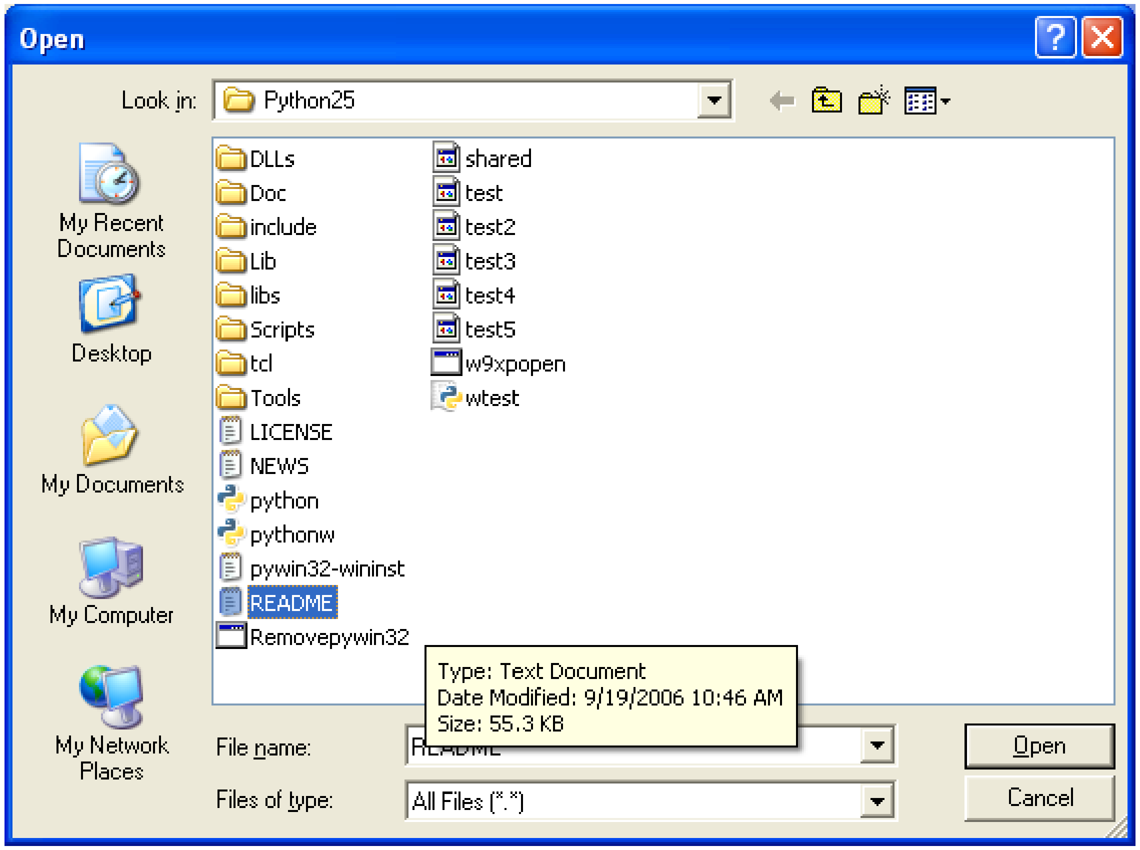
- Variants:

```
askinteger()
askfloat()
askstring()
```

Filename Dialog

- Select a filename for opening

```
>>> from tkFileDialog import *
>>> askopenfilename()
'C:/Python25/README.txt'
>>>
```

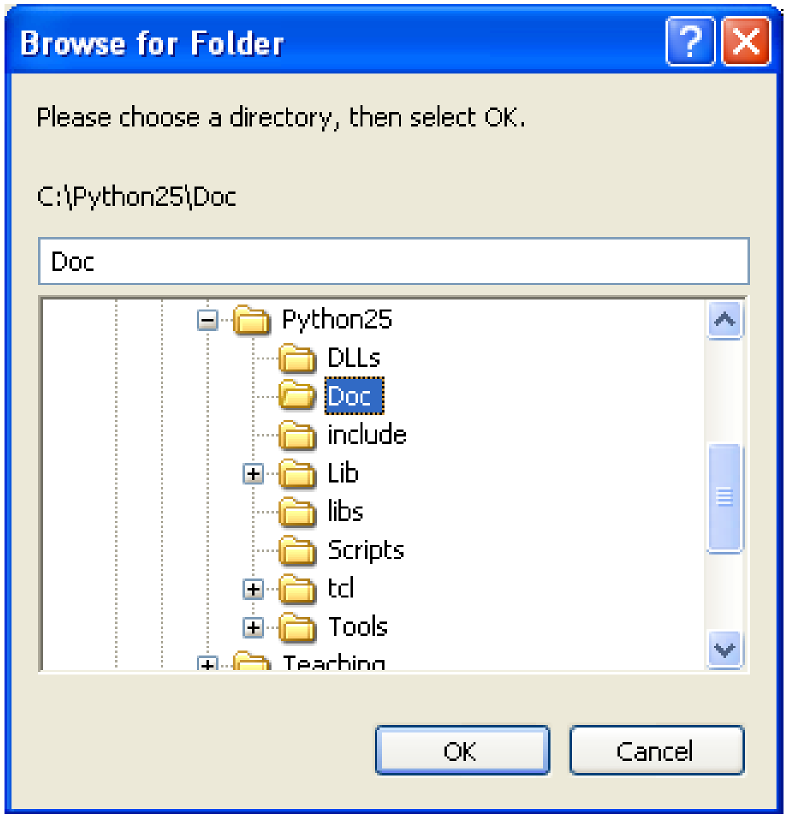


Type: Text Document
Date Modified: 9/19/2006 10:46 AM
Size: 55.3 KB

Directory Dialog

- Select a folder

```
>>> from tkFileDialog import *
>>> askdirectory()
'C:/Python25/Doc'
>>>
```


Please choose a directory, then select OK.

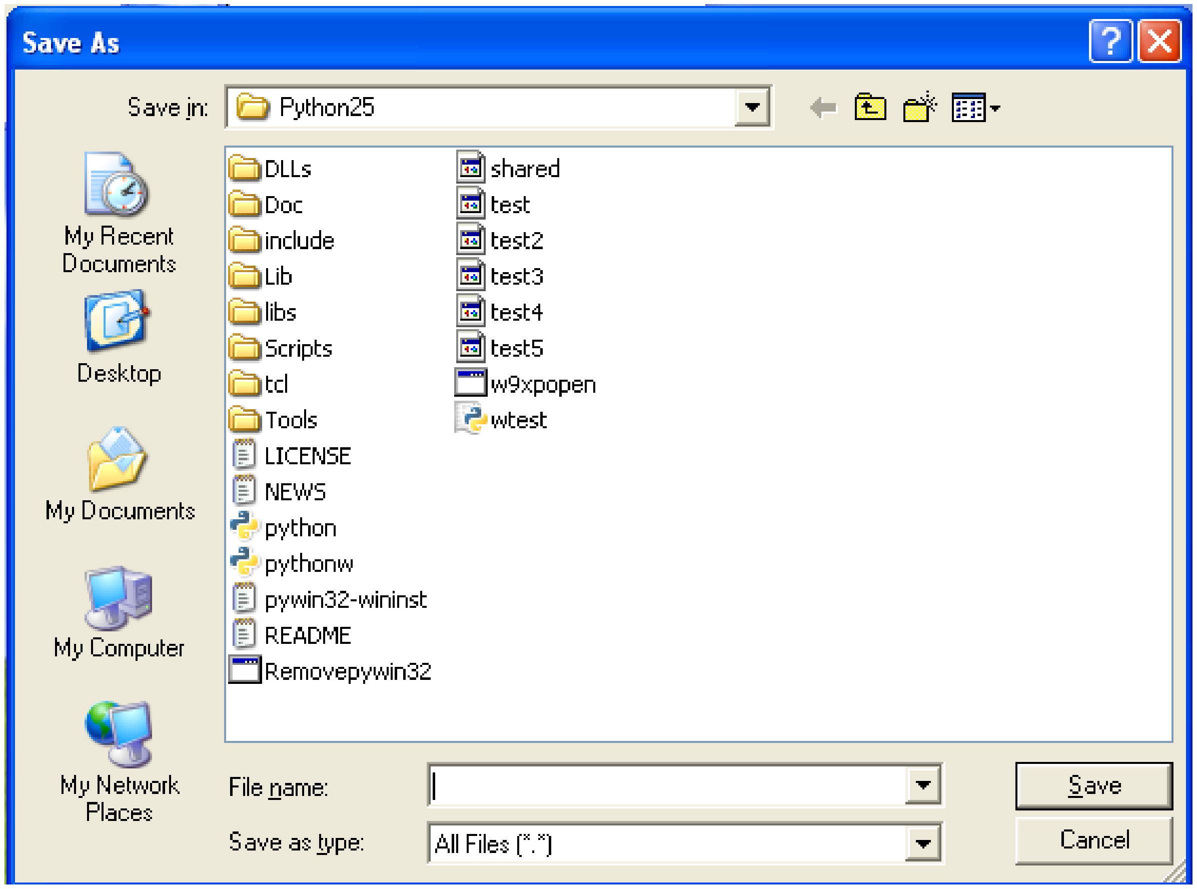
C:\Python25\Doc

Doc

Saveas Dialog

- Select a filename for saving

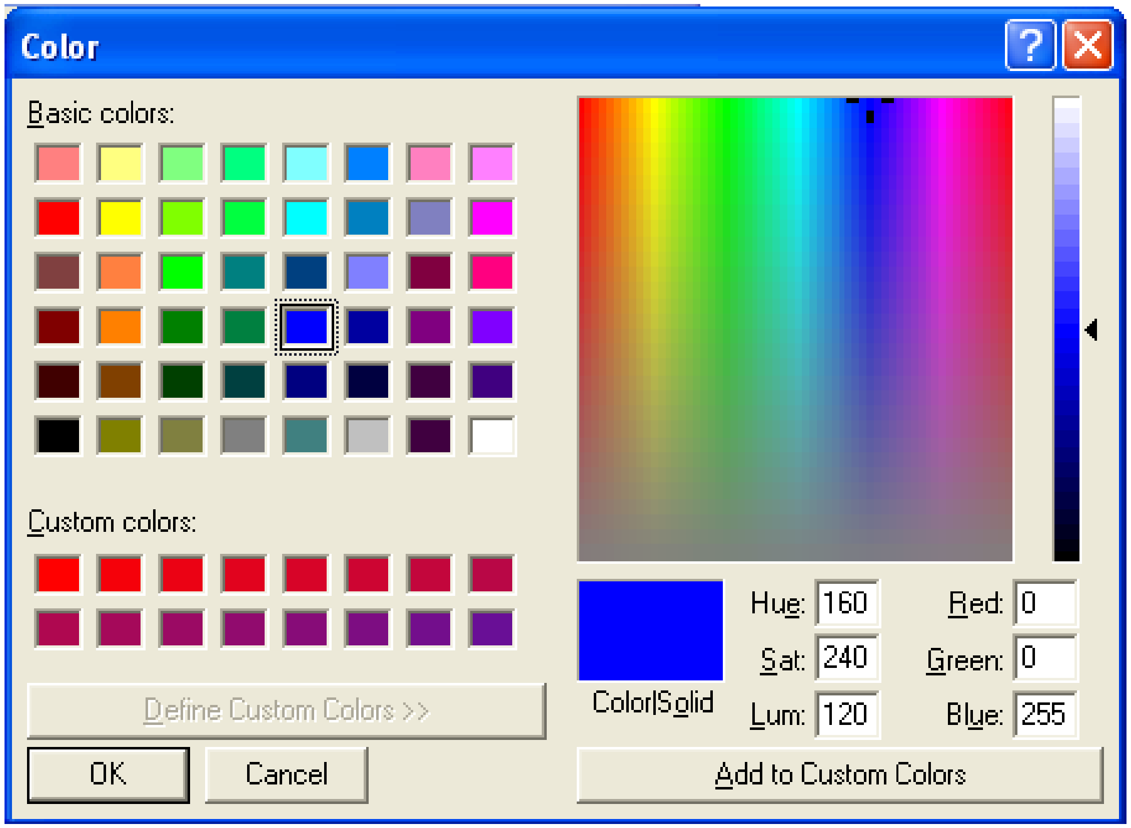
```
>>> from tkFileDialog import *
>>> asksaveasfilename()
```



Color Chooser

- Selecting a color

```
>>> from tkColorChooser import *
>>> askcolor()
((0,0,255),'#0000ff')
>>>
```



Hue: 160
Sat: 240
Lum: 120
Red: 0
Green: 0
Blue: 255

Commentary

- Using standard dialogs may be useful for simple scripts (especially if no command line)

```
from tkFileDialog import *
from tkSimpleDialog import *

filename = askopenfilename()
pat      = askstring("Pattern","Enter search regex")
output   = asksaveasfilename()

# Go run the program (whatever)
...
```

- Unsophisticated, but it works

Summary

- A high-level overview of using Tkinter
- Tour of popular widgets
- Some details on geometry, packing, etc.
- How to create more complex widgets
- Pre-built widgets
- Have omitted a lot of detail

More Information

- "Programming Python, 3rd Ed." by Mark Lutz (O'Reilly)
- "Python and Tkinter Programming" by John Grayson.
- "Practical Programming in Tcl and Tk, 4th Ed." by Brent Welch, Ken Jones, and Jeffrey Hobbs