GUIs and Event-driven Programming

GUIs and Event-driven Programming

with a brief introduction to tkinter

Showing Off Your Work

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You want your work to be usable for non-programmers

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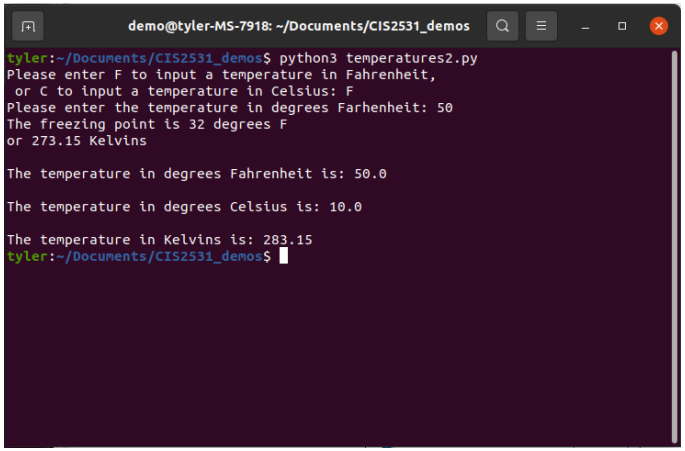

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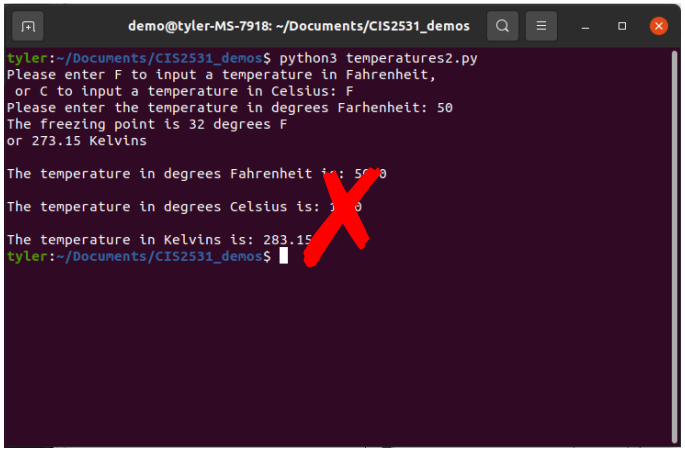

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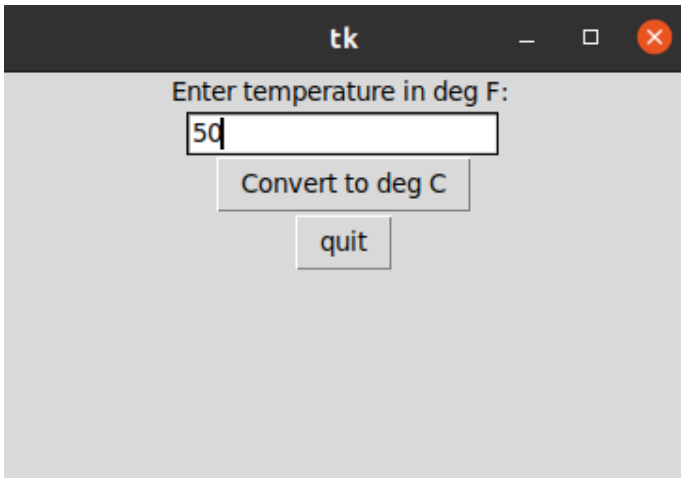

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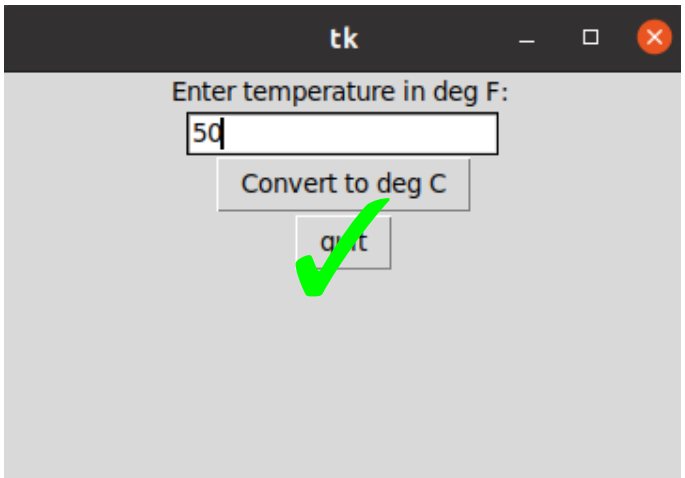

GUIs

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GUI = Graphical User Interface

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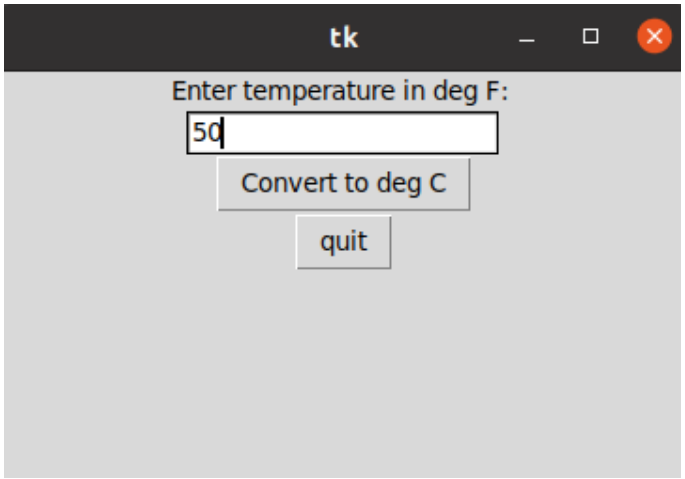

GUIs in Python

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How do you make a GUI in Python?

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- Need to draw the program window on screen

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- Need to detect what the user clicks and types into text boxes

GUIs in Python

How do you make a GUI in Python?

- Need to draw the program window on screen
- Need to detect what the user clicks and types into text boxes
- Need to run code dynamically based on things user clicks

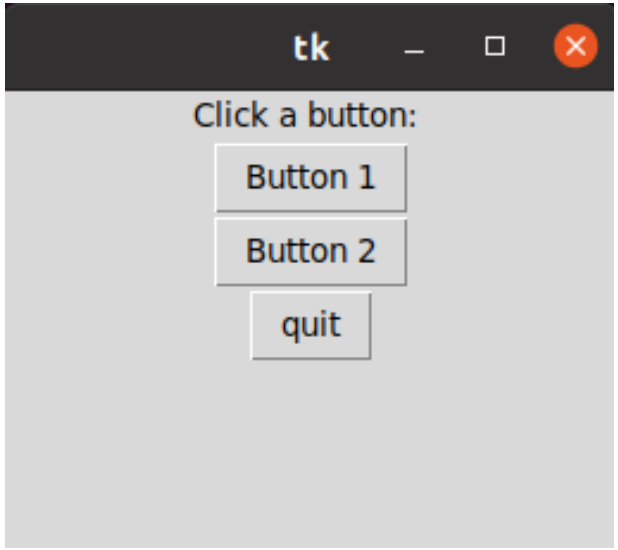
Event-Driven Programming

Event-Driven Programming

Instead of running code serially, run code based on clicks:

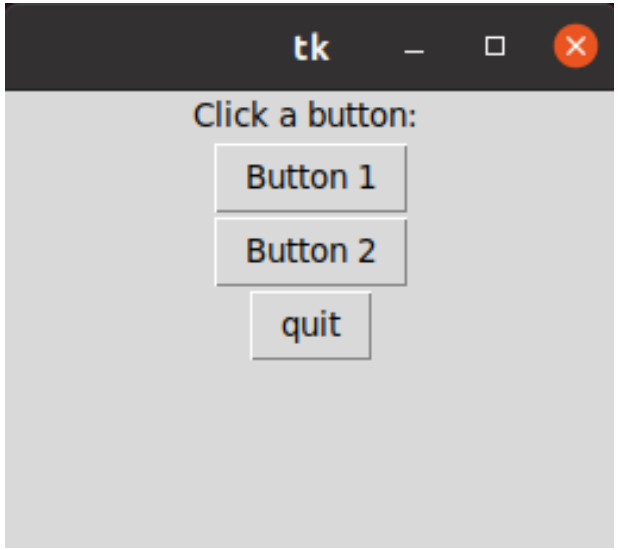
```
if [user clicks button 1]:
    run code for button 1
```

Execution Loop



Execution Loop

```
while True:
```



Execution Loop

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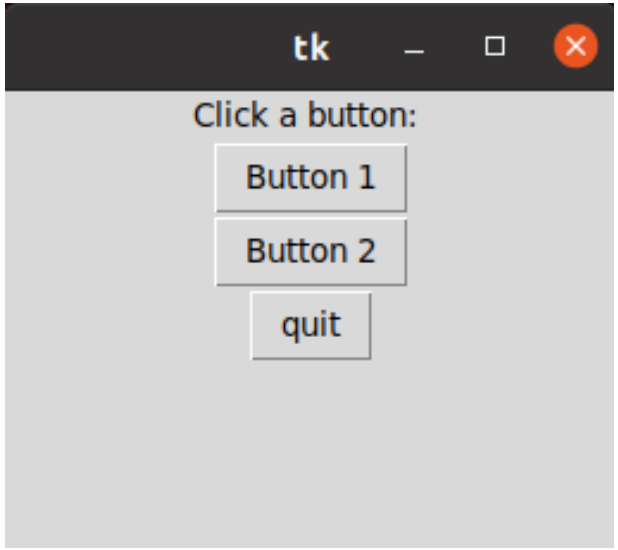
while True:

    if [clicked button 1]:
        button 1 code
```

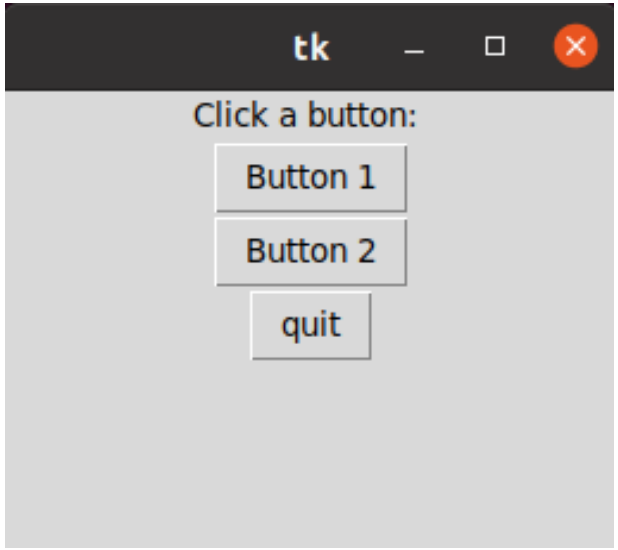


Execution Loop

```
while True:

    if [clicked button 1]:
        button 1 code

    if [clicked button 2]:
        button 2 code
```

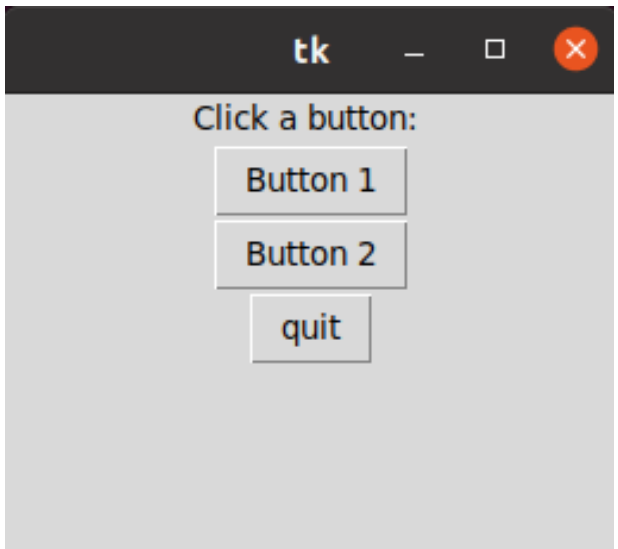


Execution Loop

```
# Main execution loop
while True:

    if [clicked button 1]:
        button 1 code

    if [clicked button 2]:
        button 2 code
```



tkinter

```
import tkinter
```

tkinter

```
import tkinter

main_window = tkinter.Tk()
```

tkinter

```
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main_window = tkinter.Tk()
tkinter.mainloop()
```

Buttons

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import tkinter
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def button1_code():
    tkinter.messagebox.showinfo("popup", "Hello World")
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command=button1_code)
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button1.pack()
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Labels

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import tkinter
import tkinter.messagebox

def button1_code():
    tkinter.messagebox.showinfo("popup", "Hello World")
    return

main_window = tkinter.Tk()
my_label=tkinter.Label(main_window,text="Click a button:")
```

Labels

```
import tkinter
import tkinter.messagebox

def button1_code():
    tkinter.messagebox.showinfo("popup", "Hello World")
    return

main_window = tkinter.Tk()
my_label=tkinter.Label(main_window,text="Click a button:")
button1=tkinter.Button(main_window,text="Button 1",
command=button1_code)
my_label.pack()
button1.pack()
tkinter.mainloop()
```

Text Entries

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main_window = tkinter.Tk()
my_label=tkinter.Label(main_window,text="Enter name:")
```

Text Entries

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import tkinter
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main_window = tkinter.Tk()
my_label=tkinter.Label(main_window,text="Enter name:")
my_entry = tkinter.Entry(main_window)
```

Text Entries

```
import tkinter
import tkinter.messagebox

main_window = tkinter.Tk()
my_label=tkinter.Label(main_window,text="Enter name:")
my_entry = tkinter.Entry(main_window)
button1=tkinter.Button(main_window,text="Say Hi",
command=button1_code)
my_label.pack()
my_entry.pack()
button1.pack()
tkinter.mainloop()

def button1_code():
    name = my_entry.get()
    tkinter.messagebox.showinfo("popup", f"Hello
{name}")
    return
```

tkinter review

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- `import tkinter`

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tkinter review

- `import tkinter`
- `import tkinter.messagebox`
- `my_win = tkinter.Tk()`
- `my_label = tkinter.Label(my_win, text="Hello")`
- `my_entry = tkinter.Entry(my_win)`
- `my_button = tkinter.Button(my_win, text="ClickMe", command=my_func)`

tkinter review

- `import tkinter`
- `import tkinter.messagebox`
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- `my_label.pack(); my_entry.pack(); my_button.pack()`

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`https://docs.python.org/3/library/tkinter.html`

Writing a GUI class

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def myGUI():

    def __init__(self):
        self.win1 = tkinter.Tk()
        self.l1=tkinter.Label(self.win1,text="Enter name:")
        self.e1 = tkinter.Entry(self.win1)
        self.b1=tkinter.Button(self.win1,text="Say
Hi",command=b1_code)
        return
```

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    def b1_code(self):
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Hi",command=b1_code)
        return

    def b1_code(self):
        name = self.e1.get()
        tkinter.messagebox.showinfo("popup", f"Hello {name}")
        return

    def run(self)
        self.l1.pack()
        self.e1.pack()
        self.b1.pack()
        tkinter.mainloop()
        return
```