Graphical User Interface (GUI)

```
import tkinter as tk

# create instance
win = tk.Tk()

# add title
win.title("Python GUI")

# adding Label
tk.Label(win, text="A Label").grid(column=0, row=0)

# button click event function
def click_me():
    action.configure(text="*** I have been clicked! ****")

# adding a button
action = tk.Button(win, text="Click Me!", command=click_me)
action.grid(column=1, row=0)

# start GUI
win.mainloop()
```

Tkinter is Python's de-facto standard GUI (Graphical User Interface) package. It **is** a thin object-oriented layer on top of Tcl/**Tk**. **Tkinter is** not the only GUI Programming toolkit for **Python**. It **is** however the most commonly used one.

Example 1

```
from tkinter import * # import all definitions from tkinter

window = Tk() # Create a window
label = Label(window, text = "Welcome to Python") # Create a label
button = Button(window, text = "Click Me") # Create a button
label.pack() # Place the label in the window
button.pack() # Place the button in the window

window.mainloop() # Create an event loop
```

Example 2

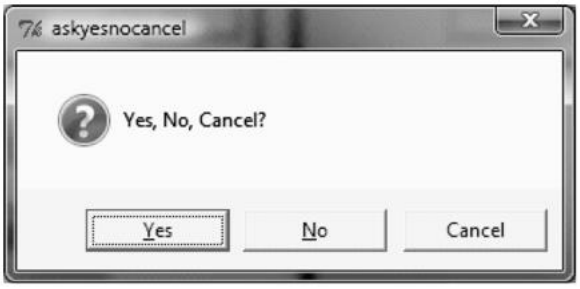
```
from tkinter import *

window = Tk()
window.title("Welcome to GUI app")
window.geometry('350x200')
lbl = Label(window, text="Hello")
lbl.grid(column=0, row=0)
txt = Entry(window,width=10)
txt.grid(column=1, row=0)

def clicked():
    res = "Welcome to " + txt.get()
    lbl.configure(text= res)

btn = Button(window, text="Click Me", command=clicked)
btn.grid(column=2, row=0)

window.mainloop()
```

Example 3

```
from tkinter import *
from tkinter.ttk import *

window = Tk()
window.title("Welcome to GUI app")
selected = IntVar() # create integer variable

rad1 = Radiobutton(window,text='First', value=1, variable=selected)
rad1.grid(column=0, row=0)

rad2 = Radiobutton(window,text='Second', value=2, variable=selected)
rad2.grid(column=1, row=0)

rad3 = Radiobutton(window,text='Third', value=3, variable=selected)
rad3.grid(column=2, row=0)

def clicked():
   print(selected.get())

btn = Button(window, text="Click Me", command=clicked)
btn.grid(column=3, row=0)

window.mainloop()
```

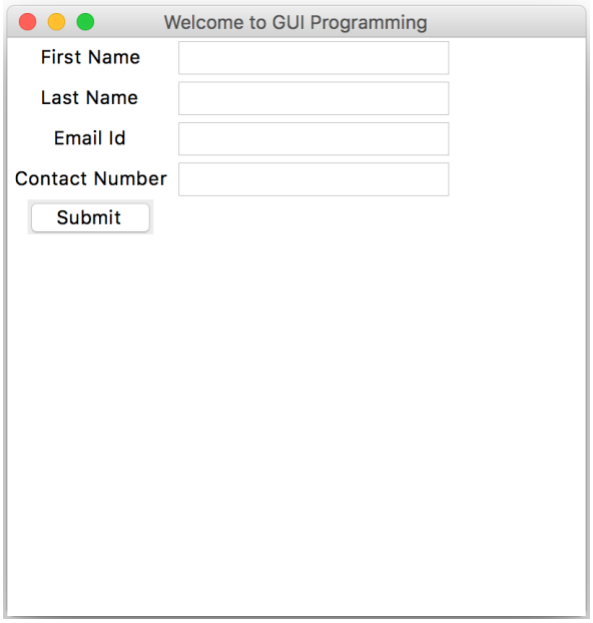
Example 3

```
import tkinter.messagebox
import tkinter.simpledialog
import tkinter.colorchooser

tkinter.messagebox.showwarning("showwarning", "This is a warning")

tkinter.messagebox.showerror("showerror", "This is an error")

isYes = tkinter.messagebox.askyesno("askyesno", "Continue?")
print(isYes)

isOK = tkinter.messagebox.askokcancel("askokcancel", "OK?")
print(isOK)

isYesNoCancel = tkinter.messagebox.askyesnocancel("askyesnocancel", "Yes, No, Cancel?")
print(isYesNoCancel)

name = tkinter.simpledialog.askstring("askstring", "Enter your name")
print(name)

age = tkinter.simpledialog.askinteger("askinteger", "Enter your age")
print(age)

weight = tkinter.simpledialog.askfloat("askfloat", "Enter your weight")
print(weight)
```



Example 4

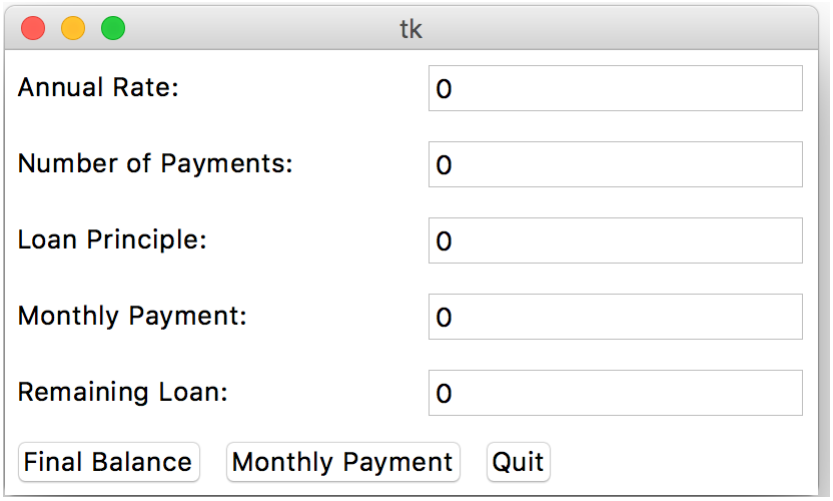
```
from tkinter import *
from tkinter import ttk
from tkinter import messagebox

window = Tk()
window.title("Welcome to GUI Programming")
window.geometry('400x400')
window.configure(background = "grey");

a = Label(window ,text = "First Name").grid(row = 0,column = 0)
a1 = Entry(window).grid(row = 0,column = 1)

b = Label(window ,text = "Last Name").grid(row = 1,column = 0)
b1 = Entry(window).grid(row = 1,column = 1)

c = Label(window ,text = "Email Id").grid(row = 2,column = 0)
c1 = Entry(window).grid(row = 2,column = 1)

d = Label(window ,text = "Contact Number").grid(row = 3,column = 0)
d1 = Entry(window).grid(row = 3,column = 1)

def ThankYou():
    messagebox.showinfo("Submited", "Thank You!")

btn = ttk.Button(window, text="Submit", command=ThankYou).grid(row=4,column=0)
window.mainloop()
```



Example 5

```
# Retrieved from https://www.python-course.eu/tkinter_entry_widgets.php
from tkinter import *
fields = ('Annual Rate', 'Number of Payments', 'Loan Principle', 'Monthly Payment', 'Remaining Loan')

def monthly_payment(entries):
        # period rate:
        r = (float(entries['Annual Rate'].get()) / 100) / 12
        print("rate =", r)

        # principal loan:
        loan = float(entries['Loan Principle'].get())
        n =  float(entries['Number of Payments'].get())
        remaining_loan = float(entries['Remaining Loan'].get())
        q = (1 + r)** n
        monthly = r * ( (q * loan - remaining_loan) / ( q - 1 ))
        monthly = ("%8.2f" % monthly).strip()
        entries['Monthly Payment'].delete(0,END)
        entries['Monthly Payment'].insert(0, monthly )
        print("Monthly Payment: %f" % float(monthly))

def final_balance(entries):
        # period rate:
        r = (float(entries['Annual Rate'].get()) / 100) / 12
        print("r", r)
        # principal loan:
```

```
        loan = float(entries['Loan Principle'].get())
        n =  float(entries['Number of Payments'].get())
        q = (1 + r)** n
        monthly = float(entries['Monthly Payment'].get())
        q = (1 + r)** n
        remaining = q * loan  - ( (q - 1) / r) * monthly
        remaining = ("%8.2f" % remaining).strip()
        entries['Remaining Loan'].delete(0,END)
        entries['Remaining Loan'].insert(0, remaining )
        print("Remaining Loan: %f" % float(remaining))

def makeform(root, fields):
        entries = {}
        for field in fields:
          row = Frame(root)
          lab = Label(row, width=22, text=field+": ", anchor='w')
          ent = Entry(row)
          ent.insert(0,"0")
          row.pack(side=TOP, fill=X, padx=5, pady=5)
          lab.pack(side=LEFT)
          ent.pack(side=RIGHT, expand=YES, fill=X)
          entries[field] = ent
        return entries

root = Tk()
ents = makeform(root, fields)
root.bind('<Return>', (lambda event, e=ents: fetch(e)))
b1 = Button(root, text='Final Balance',command=(lambda e=ents: final_balance(e)))
b1.pack(side=LEFT, padx=5, pady=5)
b2 = Button(root, text='Monthly Payment',command=(lambda e=ents: monthly_payment(e)))
b2.pack(side=LEFT, padx=5, pady=5)
b3 = Button(root, text='Quit', command=root.quit)
b3.pack(side=LEFT, padx=5, pady=5)

# start the program
root.mainloop()
```


tk
Annual Rate:
0
Number of Payments:
0
Loan Principle:
0
Monthly Payment:
0
Remaining Loan:
0
Final Balance
Monthly Payment
Quit