

GUI CALCULATOR

```
from tkinter import *
```

```
#Create a calculator class
```

```
class Calculator:
```

```
    def __init__(self, master):
```

```
        """
```

```
        Method that initializes the object's attributes
```

```
        """
```

```
        #Assign reference to the main window of the application
```

```
        self.master = master
```

```
        #Add a name to our application
```

```
        master.title("Python Calculator")
```

```
        #Create a line where we display the equation
```

```
        self.equation = Entry(master, width=36, borderwidth=5)
```

```
        #Assign a position for the equation line in the grey application window
```

```
        self.equation.grid(row=0, column=0, columnspan=4, padx=10, pady=10)
```

```
        #Execute the .createButton() method
```

```
        self.createButton()
```

```
    def createButton(self):
```

```
        """
```

```
        Method to create a button
```

```
        INPUT: nothing
```

```
        OUTPUT: creates a button
```

```
        """
```

```
        #We first create each button one by one with the value we want
```

```
        #Using addButton() method which is described below
```

```
        b0 = self.addButton(0)
```

```
        b1 = self.addButton(1)
```

```

b2 = self.addButton(2)
b3 = self.addButton(3)
b4 = self.addButton(4)
b5 = self.addButton(5)
b6 = self.addButton(6)
b7 = self.addButton(7)
b8 = self.addButton(8)
b9 = self.addButton(9)
b_add = self.addButton("+")
b_sub = self.addButton("-")
b_mult = self.addButton("*")
b_div = self.addButton("/")
b_clear = self.addButton("c")
b_equal = self.addButton("=")

```

#Arrange the buttons into lists which represent calculator rows

```

row1 = [b7, b8, b9, b_add]
row2 = [b4, b5, b6, b_sub]
row3 = [b1, b2, b3, b_mult]
row4 = [b_clear, b0, b_equal, b_div]

```

#Assign each button to a particular location on the GUI

```

r = 1
for row in [row1, row2, row3, row4]:
    c = 0
    for btn in row:
        btn.grid(row=r, column=c, columnspan=1)
        c += 1
    r += 1

```

```

def addButton(self, value):

```

```

    """

```

Method to process the creation of a button and make it clickable

INPUT: value of the button (1,2,3,4,5,6,7,8,9,0,+,-,*,/,c,=)

OUTPUT: returns a designed button object

```

    """

```

```

    return Button(
        self.master,
        text=value,

```

```
width=9,  
command=lambda: self.clickButton(str(value)),  
)
```

```
def clickButton(self, value):
```

```
    """
```

```
    Method to add actions for button clicks
```

```
    INPUT: value of the button (1,2,3,4,5,6,7,8,9,0,+,-,*,/,c,=)
```

```
    OUTPUT: what action will be performed when a particular button is clicked
```

```
    """
```

```
    #Get the equation that's entered by the user
```

```
    current_equation = str(self.equation.get())
```

```
    #If user clicked "c", then clear the screen
```

```
    if value == "c":
```

```
        self.equation.delete(-1, END)
```

```
    #If user clicked "=", then compute the answer and display it
```

```
    elif value == "=":
```

```
        answer = str(eval(current_equation))
```

```
        self.equation.delete(-1, END)
```

```
        self.equation.insert(0, answer)
```

```
    #If user clicked any other button, then add it to the equation line
```

```
    else:
```

```
        self.equation.delete(0, END)
```

```
        self.equation.insert(-1, current_equation + value)
```

```
#Execution
```

```
if __name__ == "__main__":
```

```
    #Create the main window of an application
```

```
    root = Tk()
```

```
    #Tell our calculator class to use this window
```

```
    my_gui = Calculator(root)
```

```
    #Executable loop for the application, waits for user input
```

```
root.mainloop()
```