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**Task:** Create a user-friendly calculator with any coding language you are comfortable with and make a documentation (including explanation of the code) of the same in MS-Word with screenshots of all functions including input and output.

**Programming language used:** Python 3.10.6

**GitHub link:** [Manan-Ahuja/calculator (github.com)](https://github.com/Manan-Ahuja/calculator)

**Explanation:**

1. I have used tkinter module in python to make the frontend of the calculator.
2. This calculator consists of 17 buttons with each displaying what they do.
3. For display, label is used (upper white colour area).
4. ‘AC’ button is designed to clear the display area and reset the equation.
5. ‘=’ button is designed to calculate the result.
6. Code consists of three functions ac(), show(), equate().
7. ac() -> is called from the ‘AC’ button, it clears the display area and equation.
8. show() -> is called by all the buttons except ‘AC’ and ‘=’, it takes one parameter which is the value of the called button and appends it to the display string and builds up the equation.
9. equate() -> is called by ‘=’ button, it first checks for the equation if not empty then calculate the equation, if any error display ‘error’ else display the calculated result of the equation.

**Functionalities:**

1. Code checks the equation if solvable then display the result else display error.
2. It can operate with the negative numbers and decimal numbers also.
3. We can continue with the calculated result further without resetting the equation. Suppose we first calculate 5+5 which results to 10, further we can append more numbers or the operator to it. Examples 10+10, 100-10, 10.5
4. To calculate power, we can use ‘××’. Example 4××2 is equivalent to 42=16.

**Code:**

import tkinter

from tkinter import \*

app=Tk()

app.title("Manan's Calculator")

app.geometry('500x500')

app.resizable(False,False)

app.configure(bg="black")

display=Label(app,width=50,height=4,anchor="e",font=("arial",15),text="")

display.pack()

Button(app,text='AC',width=5,height=14,font=("arial",15,"bold"),bd=1,fg="black",bg="lightblue",command=lambda:ac()).place(x=15,y=125)

Button(app,text='7',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('7')).place(x=115,y=125)

Button(app,text='8',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('8')).place(x=215,y=125)

Button(app,text='9',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('9')).place(x=315,y=125)

Button(app,text='÷',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('÷')).place(x=415,y=125)

Button(app,text='4',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('4')).place(x=115,y=225)

Button(app,text='5',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('5')).place(x=215,y=225)

Button(app,text='6',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('6')).place(x=315,y=225)

Button(app,text='×',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('×')).place(x=415,y=225)

Button(app,text='1',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('1')).place(x=115,y=325)

Button(app,text='2',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('2')).place(x=215,y=325)

Button(app,text='3',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('3')).place(x=315,y=325)

Button(app,text='-',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('-')).place(x=415,y=325)

Button(app,text='0',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('0')).place(x=115,y=425)

Button(app,text='.',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('.')).place(x=215,y=425)

Button(app,text='=',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="black",bg="lightgreen",command=lambda:equate()).place(x=315,y=425)

Button(app,text='+',width=5,height=2,font=("arial",15,"bold"),bd=1,fg="lightgreen",bg="grey",command=lambda:show('+')).place(x=415,y=425)

display\_str=""

equation=""

def ac():

global display\_str

global equation

display\_str=""

equation=""

display.configure(text=display\_str)

def show(value):

global display\_str

global equation

display\_str+=value

if(value=='×'):

equation+='\*'

elif(value=='÷'):

equation+='/'

else:

equation+=value

display.configure(text=display\_str)

def equate():

global equation

global display\_str

if(equation!=""):

try:

equation=str(eval(equation))

except:

equation="error"

display\_str=equation

display.configure(text=display\_str)

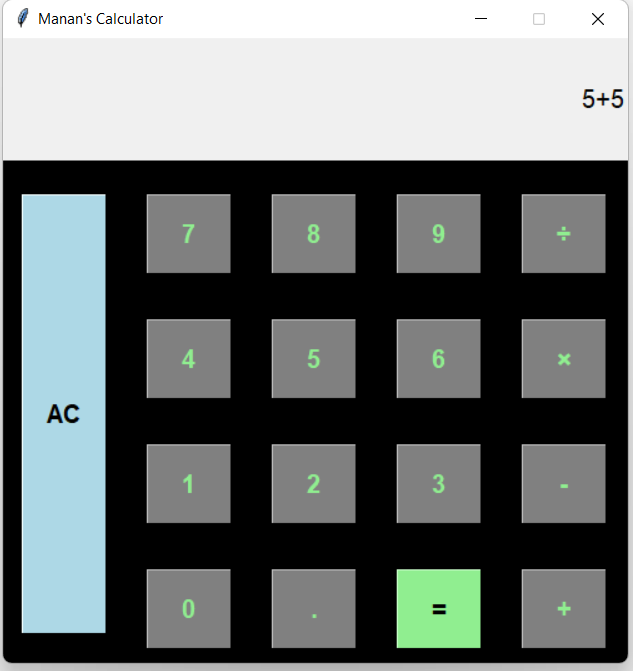
if(equation=="error"):

display\_str=""

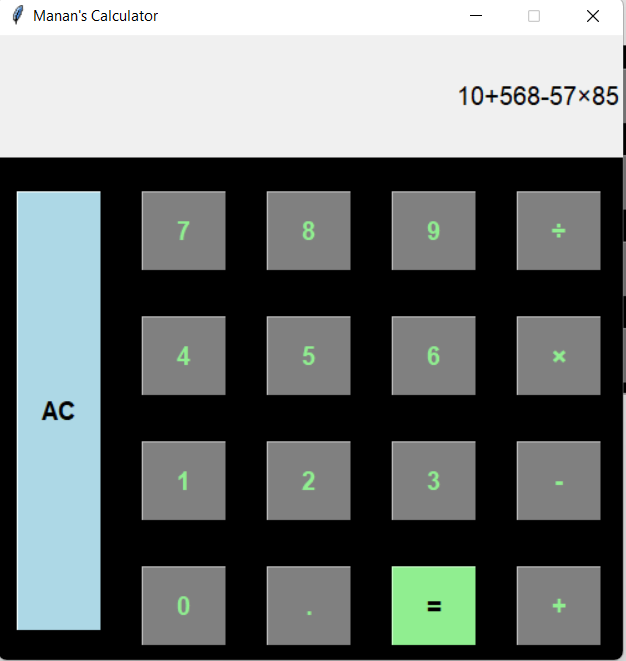
equation=""

app.mainloop()

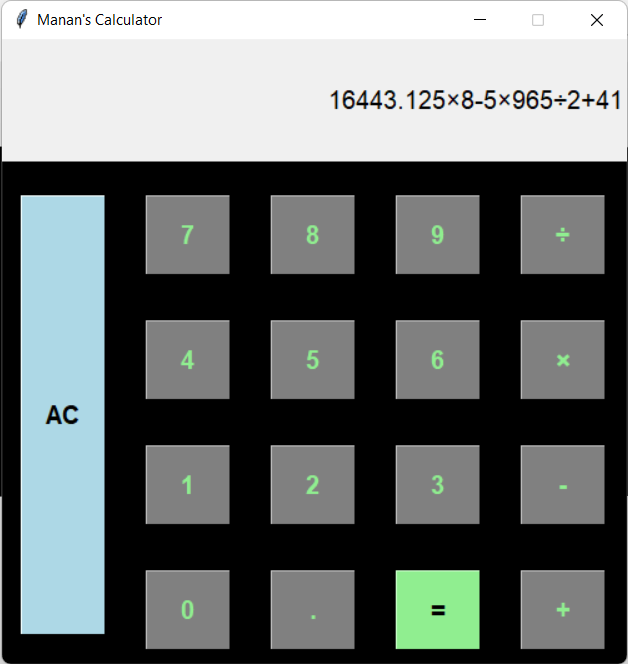
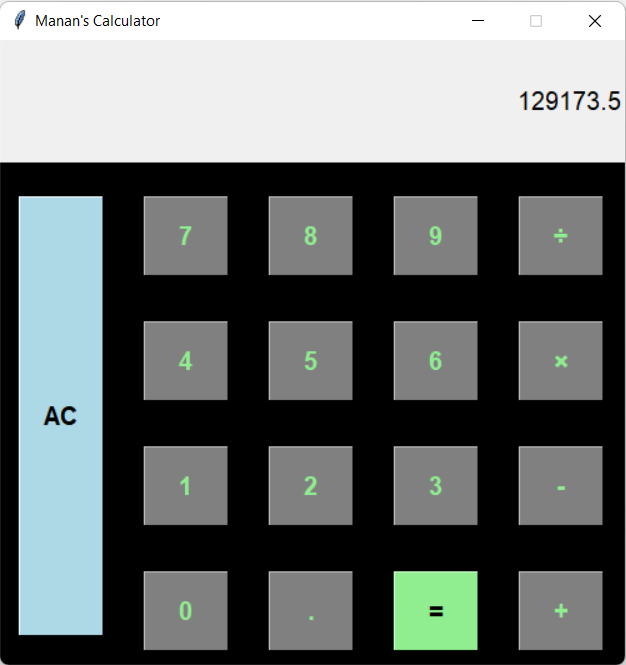
**Screenshots:**

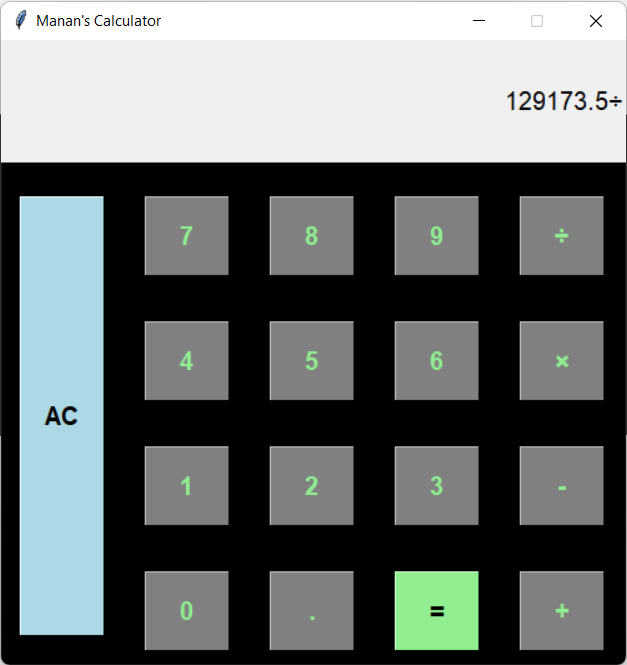
 A screenshot of a computer

Description automatically generated with medium confidence

 A screenshot of a computer

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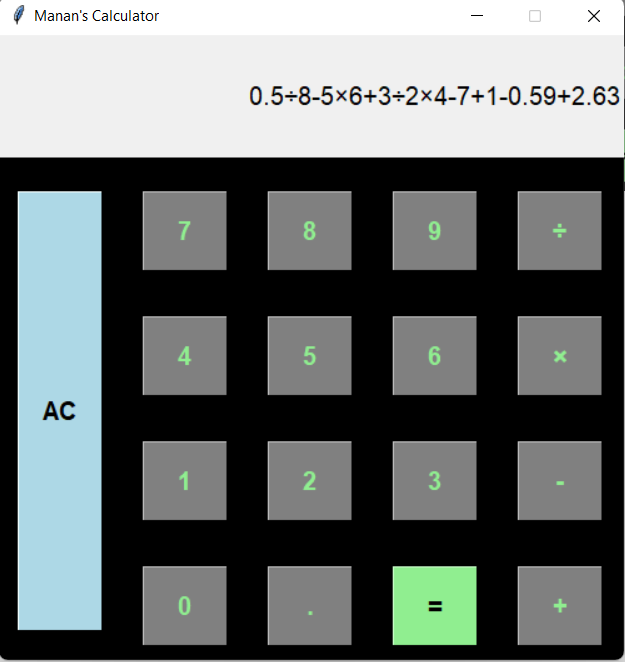
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