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import tkinter as tk
from tkinter import messagebox
class Calculator:
  def init (self, master):
     self.master = master
     master.title("Simple Calculator")
     master.geometry("310x450") # Set initial window size
     master.resizable(False, False) # Prevent resizing
     self.expression = ""
     self.input_text = tk.StringVar()
     # Input field (display screen)
     self.input frame = tk.Frame(master, bd=0, relief=tk.RAISED, bg="lightgray")
     self.input frame.pack(side=tk.TOP, fill=tk.BOTH, expand=True, padx=5, pady=5)
     self.input field = tk.Entry(self.input frame, font=('arial', 24, 'bold'),
                       textvariable=self.input_text, width=20, bg="#eee", bd=5,
                       justify=tk.RIGHT, relief=tk.FLAT)
     self.input_field.grid(row=0, column=0, ipady=10, sticky="nsew")
     # Configure the grid to make the input field expand
     self.input_frame.grid_rowconfigure(0, weight=1)
     self.input frame.grid columnconfigure(0, weight=1)
     # Buttons frame
     self.btns frame = tk.Frame(master, bg="#282C35")
     self.btns_frame.pack(fill=tk.BOTH, expand=True)
     # Button layout (text, row, col)
     buttons = [
       ('C', 1, 0), ('CE', 1, 1), ('%', 1, 2), ('/', 1, 3),
       ('7', 2, 0), ('8', 2, 1), ('9', 2, 2), ('*', 2, 3),
       ('4', 3, 0), ('5', 3, 1), ('6', 3, 2), ('-', 3, 3),
       ('1', 4, 0), ('2', 4, 1), ('3', 4, 2), ('+', 4, 3),
       ('0', 5, 0), ('.', 5, 1), ('=', 5, 2)
     1
     # Create and place buttons
     for text, r, c in buttons:
       if text == 'C':
          btn = tk.Button(self.btns frame, text=text, fg="white", bg="#ff6b6b",
                     font=('arial', 18, 'bold'), bd=0, relief=tk.FLAT,
                     command=self.clear all)
          btn.grid(row=r, column=c, columnspan=1, sticky="nsew", padx=1, pady=1)
       elif text == 'CE':
          btn = tk.Button(self.btns frame, text=text, fg="white", bg="#ff6b6b",
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font=('arial', 18, 'bold'), bd=0, relief=tk.FLAT,
                    command=self.clear_entry)
          btn.grid(row=r, column=c, columnspan=1, sticky="nsew", padx=1, pady=1)
       elif text == '=':
          btn = tk.Button(self.btns frame, text=text, fg="white", bg="#61dafb",
                    font=('arial', 18, 'bold'), bd=0, relief=tk.FLAT,
                    command=self.calculate)
          btn.grid(row=r, column=c, columnspan=2, sticky="nsew", padx=1, pady=1) # Span
2 columns for '='
       else:
          btn = tk.Button(self.btns_frame, text=text, fg="white", bg="#44475A",
                    font=('arial', 18, 'bold'), bd=0, relief=tk.FLAT,
                    command=lambda t=text: self.button click(t))
          btn.grid(row=r, column=c, sticky="nsew", padx=1, pady=1)
     # Configure rows and columns of buttons_frame to expand proportionally
     for i in range(1, 6): # Rows 1 to 5 for buttons
       self.btns frame.grid rowconfigure(i, weight=1)
     for i in range(4): # Columns 0 to 3
       self.btns_frame.grid_columnconfigure(i, weight=1)
  def button click(self, item):
     self.expression += str(item)
     self.input_text.set(self.expression)
  def clear_all(self):
     self.expression = ""
     self.input text.set("")
  def clear entry(self):
     # Remove the last character
     self.expression = self.expression[:-1]
     self.input text.set(self.expression)
  def calculate(self):
     try:
       result = str(eval(self.expression))
       self.input text.set(result)
       self.expression = result # Keep result for further calculations
     except Exception as e:
       messagebox.showerror("Error", "Invalid Input or Calculation Error!")
       self.expression = ""
       self.input text.set("")
if __name__ == "__main__":
  root = tk.Tk()
  my_calculator = Calculator(root)
  root.mainloop()
```

