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# **MINI PROJECT REPORT ON “ Simple Calculator ”**

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## DECLARATION

We hereby declare that this submission is our own work and that, to the best of mine knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award for any other degree or diploma of the university or other institute of higher learning, except where acknowledgement has been made in the text.

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Session 2024 – 25



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## CERTIFICATE

It is to certify that Moirangthem Satyabrata of class MCA 1st Year under University Roll Number :- 24MCA20343 has completed the project titled “ Simple Calculator ” in which the language used is Python, Tkinter, Operating System for the Masters of Computer Application 1<sup>st</sup> Semester under my supervision. The work done in project is a result of the candidate's own efforts and report maintains is satisfied as per requirement.

Project Guide :-

Mr. Shivam Sharma



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## Abstract

The Simple Calculator project is a Python-based application designed to perform basic arithmetic operations, such as addition, subtraction, multiplication, and division. It serves as an introductory project for those new to programming, focusing on fundamental principles of coding and the basic structure of a functional Python application. This calculator offers an easy-to-use interface where users can input numbers, choose operations, and receive instant results. Its simplicity allows users to focus on understanding Python syntax, functions, and control structures.

Developed as a command-line tool, the Simple Calculator provides a clear and functional approach to problem-solving and algorithmic thinking. By implementing this project, learners can gain hands-on experience with Python functions, conditionals, and error handling. It also introduces users to the development process of creating user-friendly software, emphasizing clarity, accuracy, and responsiveness in computational tasks. This project lays the groundwork for understanding more complex applications by building a strong foundation in coding fundamentals.

## Introduction

Calculators are essential tools in daily life, from academic environments to professional settings. The core purpose of a calculator is to simplify numerical calculations and present solutions accurately and efficiently. Although advanced scientific calculators exist, understanding the inner workings of a simple calculator provides valuable insights into programming and software development. This Simple Calculator project aims to recreate the functionality of a basic calculator, offering the user a straightforward means of performing arithmetic operations.

Developed in Python, the Simple Calculator introduces users to the principles of input-output operations, function design, and error handling. As Python is widely recognized for its readability and beginner-friendly syntax, this project is ideal for those at the beginning of their programming journey. By implementing fundamental mathematical operations, learners can deepen their understanding of Python's capabilities and gain confidence in writing and troubleshooting code.

## Objective

The primary objective of the Simple Calculator project is to build a tool that performs basic arithmetic calculations in an accurate, reliable, and user-friendly manner. Through this project, users can familiarize themselves with programming constructs such as functions, conditionals, and loops in Python. The goal is to create a responsive program that takes input, processes it through selected arithmetic operations, and displays the correct output to the user.

In addition to practical programming skills, this project aims to enhance problem-solving abilities by encouraging users to think logically and systematically. The calculator project offers a manageable yet effective way to develop critical programming skills while providing a functional tool. Ultimately, this project seeks to lay a foundation for more complex programming tasks by helping users build confidence and understanding through practical application.

## Technology used :-

**Python** :- The core programming language used for the calculator's logic and functionality.

**Tkinter** :- The Python library used for creating the graphical user interface, offering a simple yet effective method for layout and event handling.

**Operating Systems** :- The calculator can be run on any operating system that supports Python, including Windows, macOS, and Linux.

## Code

```
import tkinter as tk
from tkinter import messagebox
# Main calculator class
class Calculator:
```



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```
def __init__(self, root):
    self.root = root
    self.root.title("Simple Calculator 📈")
    self.root.geometry("300x400")
    self.root.config(bg="lightblue")
    self.equation = tk.StringVar()
    # Input field
    self.input_field = tk.Entry(self.root, textvariable=self.equation, font=("Arial", 18),
borderwidth=2, relief="solid")
    self.input_field.grid(row=0, column=0, columnspan=4, ipadx=8, ipady=10, pady=20)
    # Button layout with an emoji button
    buttons = [
        ('⌫ 1, 0), ('⌦ 1, 1), ('⌦ 1, 2), ('÷ 1, 3),
        ('⌫ 2, 0), ('⌫ 2, 1), ('⌫ 2, 2), ('✖ 2, 3),
        ('⌫ 3, 0), ('⌫ 3, 1), ('⌫ 3, 2), ('— 3, 3),
        ('⌫ 4, 0), ('. 4, 1), ('+ 4, 2), ('= 4, 3),
        ('C ↴ 5, 0), ('Emoji 😊 5, 1) # Emoji button
    ]
    # Create buttons
    for (text, row, col) in buttons:
        self.create_button(text, row, col)
    # Button creation function
def create_button(self, text, row, col):
```



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```
button = tk.Button(self.root, text=text, width=8, height=3, font=("Arial", 12),  
                   command=lambda: self.on_button_click(text))  
  
button.grid(row=row, column=col, padx=5, pady=5)  
  
# Button click event handler  
  
def on_button_click(self, char):  
  
    if char == 'C ✖':  
  
        self.equation.set("")  
  
    elif char == '=':  
  
        try:  
  
            result = eval(self.equation.get())  
  
            self.equation.set(result)  
  
        except:  
  
            self.equation.set("Error")  
  
            messagebox.showerror("Error", "Invalid Input")  
  
    elif char == 'Emoji 😊':  
  
        # Add an emoji to the input field  
  
        self.equation.set(self.equation.get() + '😊')  
  
    else:  
  
        # Replace some symbols to match Python syntax  
  
        symbol = str(char).replace('□ ', '').replace('➕', '+').replace('➖', '-').replace('✖', '*').replace('➗', '/')  
  
        self.equation.set(self.equation.get() + symbol)  
  
# Main function to run the calculator
```



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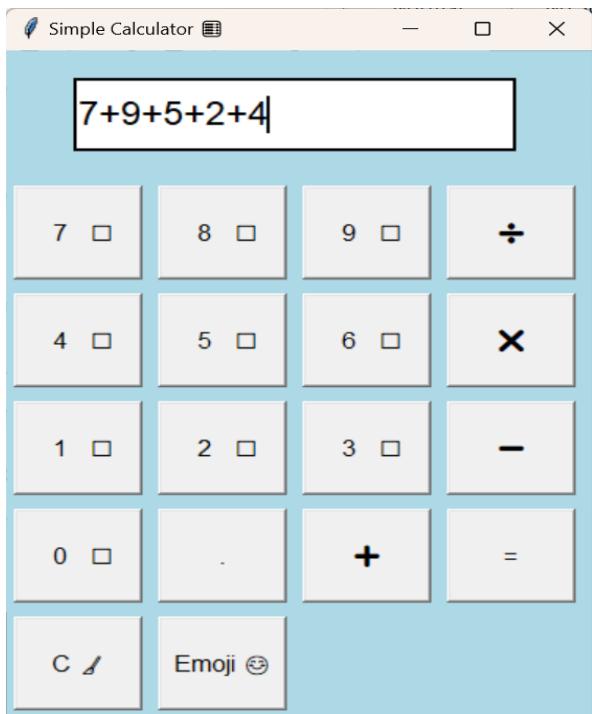
```
if __name__ == "__main__":
```

```
    root = tk.Tk()
```

```
    calculator = Calculator(root)
```

```
    root.mainloop()
```

## Output





## Conclusion

The Simple Calculator project showcases how Python and tkinter can be combined to create a functional and visually accessible tool for performing arithmetic operations. Through its development, the project provides insight into Python's GUI programming capabilities, serving as an educational resource for beginners and a practical tool for everyday use. By focusing on simplicity and usability, the project demonstrates the effectiveness of Python for creating applications that are both functional and user-friendly.

In summary, the Simple Calculator project successfully fulfils its purpose of offering an intuitive, reliable tool for performing basic calculations. Its simple design makes it accessible, while its Python foundation ensures that it is easy to modify and expand. The project not only highlights the potential of Python in software development but also encourages further learning and creativity by providing a customizable foundation that can be built upon to create more complex applications.

## GitHub

The screenshot shows a GitHub repository page for 'Python-Programming-Mini-Project'. The repository is public and was created by satyabrata-tech. It contains three files: README.md, Python Programming Project Report 1.pdf, and README.md. The README file describes the project as a basic calculator for arithmetic operations. The repository has 2 commits, 0 forks, and 0 stars. There are no releases or packages published.

satyabrata-tech / Python-Programming-Mini-Project

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No packages published Publish your first package

This Python project involves creating a basic calculator that can perform essential arithmetic operations like addition, subtraction, multiplication, and division. The program will provide a simple, user-friendly interface for inputting numbers and selecting operations. It is an ideal project for beginners to understand function definitions and basic control flow in Python.

**GitHub Link :-** <https://github.com/satyabrata-tech/Python-Programming-Mini-Project>