Experiment no 11 **Simple Calculator Using Functions***

AIM: Implement a simple Python calculator that takes user input and performs basic arithmetic operations (addition, subtraction, multiplication, division) using functions.

THEORY :

A **calculator** performs arithmetic operations on numbers. The basic operations are:

- **Addition (+)**: Adds two numbers.
- **Subtraction (-)**: Subtracts one number from another.
- **Multiplication (*)**: Multiplies two numbers.
- **Division (/)**: Divides one number by another (denominator must not be zero).

Each operation is implemented using a separate function that takes two numbers as input and returns the result.

ALGORITHM

1. **Start**
2. **Display menu** of operations: Addition, Subtraction, Multiplication, Division.
3. **Input choice** from the user.
4. **Input two numbers** from the user.
5. Based on the choice, call the respective function:
    - If **Addition**, call add (a, b).
    - If **Subtraction**, call subtract (a, b).
    - If **Multiplication**, call multiply (a, b).
    - If **Division**, call divide (a, b), ensuring the denominator is not zero.
6. Display the **result**.
7. Ask the user if they want to perform another calculation. If yes, **repeat** from Step 2; otherwise, **end the program**.

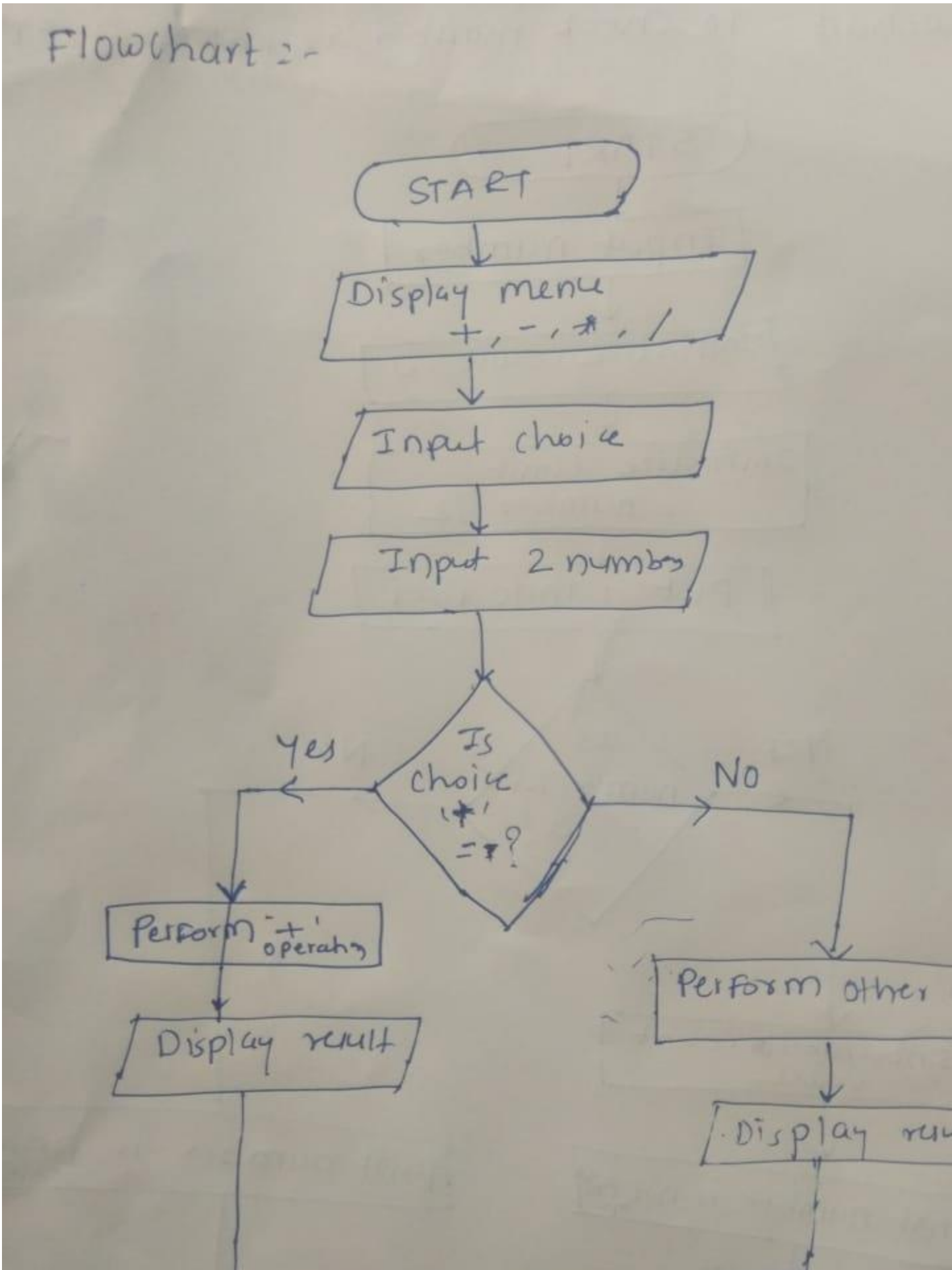
PROGRAM:

```
# Function for addition
def add (a, b):
    return a + b

# Function for subtraction
def subtract (a, b):
    return a - b

# Function for multiplication
def multiply ( a, b):
    return a * b

# Function for division
def divide (a, b):
    if b == 0:
        return "Error! Division by zero."
    return a / b
```

```
# Main function to perform calculations
def calculator ():
    while True:
        print ("\nSimple Calculator")
        print("1. Addition (+)")
        print("2. Subtraction (-)")
        print("3. Multiplication (*)")
        print("4. Division (/)")
        print("5. Exit")

        # User choice
        choice = input ("Enter your choice (1/2/3/4/5): ")

        if choice == '5':
            print ("Exiting the calculator. Goodbye!")
            break

        num1 = float(input("Enter first number: "))
        num2 = float(input("Enter second number: "))

        if choice == '1':
            print(f"Result: {add(num1, num2)}")
        elif choice == '2':
            print(f"Result: {subtract(num1, num2)}")
```

```
    elif choice == '3':
        print(f"Result: {multiply(num1, num2)}")
    elif choice == '4':
        print(f"Result: {divide(num1, num2)}")
    else:
        print("Invalid choice! Please enter a valid option.")

# Run the calculator
calculator()
```

Flowchart :-


START
Display menu
+, -, *, /
Input choice
Input 2 numbers
Is choice '+' =+?
Yes
No
Perform '+' operation
Display result
Perform other
Display