CALCULATOR GROUP PROJECT- GROUP NUMBER O6

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QUESTION NUMBER 02- We have to build a program that can be used as a basic calculator. Our program have a menu displayed for the user to choose from, where are listed are basic operations: Addition, Subtraction, Multiplication, Division, Second power, Square root, and exit. The program allows the user to choose the desired operation over and over again until user chooses to quit using it.

Calculator

Explanation of the functions

Here, we define the basic functions for each operation. This is the main calculator logic that displays a menu with options for the user to choose from. The user is prompted to input their choice:

1. For operations like addition, subtraction, multiplication, and division, the user must enter two numbers.
2. For operations like second power and square root, the user enters one number.

The program handles invalid input by prompting the user to try again. It runs in a continuous loop until the user selects the "Exit" option(choice '7'), at which point the loop breaks and the program terminates.

In [ ]:
```
import math

def display_menu():
```

```
    print("\nBasic Calculator Menu:")
    print("1. ADDITION")
    print("2. SUBTRACTION ")
    print("3. MULTIPLICATION")
    print("4. DIVISION")
    print("5. SECOND POWER")
    print("6. SQUARE ROOT")
    print("7. EXIT")

def addition():
    a = float(input("Enter the first number: "))
    b = float(input("Enter the second number: "))
    return a + b
def subtraction():
    a = float(input("Enter the first number: "))
    b = float(input("Enter the second number: "))
    return a - b

def multiplication():
    a = float(input("Enter the first number: "))
    b = float(input("Enter the second number: "))
    return a * b

def division():
    a = float(input("Enter the first number: "))
    b = float(input("Enter the second number: "))
    if b != 0:
        return a / b
    else:
        return "Error! Division by zero."

def second_power():
    a = float(input("Enter a number: "))
    return a ** 2

def square_root():
    a = float(input("Enter a number: "))
    if a >= 0:
        return math.sqrt(a)
    else:
        return "Error! Cannot take the square root of a negative number."

def calculator():
    while True:
        display_menu()
        choice = input("Choose an option (1-7): ")
        if choice == '1':
            print("Result:",addition())
        elif choice == '2':
            print("Result:",subtraction())
        elif choice == '3':
            print("Result:",multiplication())
        elif choice == '4':
            print("Result:",division())
        elif choice == '5':
            print("Result:",second_power())
```

```
        elif choice == '6':
            print("Result:", square_root())
        elif choice == '7':
            print("Exiting the calculator. Goodbye")
            break
        else:
            print("Invalid choice. Please try again.")

if __name__ == "__main__":
    calculator()
```

```
Basic Calculator Menu:
1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. SECOND POWER
6. SQUARE ROOT
7. EXIT
Result: 850.0

Basic Calculator Menu:
1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. SECOND POWER
6. SQUARE ROOT
7. EXIT
Result: 40.0

Basic Calculator Menu:
1. ADDITION
2. SUBTRACTION
3. MULTIPLICATION
4. DIVISION
5. SECOND POWER
6. SQUARE ROOT
7. EXIT
```

Explanation of the output

Here we run the calculator program. The user is presented with a menu to choose an operation. For example (we did 1st) if the user selects option 1(addition) they will be prompted two numbers, and the result will be displayed.(ex: 100 + 750 = 850). This process will repeat for each operation, allowing the user to perform multiple calculations until they choose to exit.