TASK 1: Calculator CLI App

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Objective:

The objective of this project is to design and implement a simple Command-Line Interface (CLI) calculator in Python that performs basic arithmetic operations such as addition, subtraction, multiplication, division, power, and modulus.

Problem Statement:

A CLI-based calculator provides an easy way to practice functions, loops, conditionals, and user input handling in Python while also demonstrating basic command-line interaction.

Tools and Technologies Used:

Programming Language: Python 3
Editor: Visual Studio Code
Platform: Command Line / Terminal
Version Control: GitHub (for project hosting)

Concepts Used:

Functions – to define operations (add, subtract, etc.)
Loops – to keep the calculator running until the user exits
Conditionals (if/elif) – to choose operations
Input/Output (input(), print()) – for CLI interaction
Exception Handling (try/except) – for invalid inputs and division by zero

System Requirements:

Hardware: Any PC/laptop (Windows, macOS, Linux)

Software: Python 3.8 or above, VS Code or any text editor, Github.

Algorithm / Step-by-Step Procedure:

1. Start the program.
2. Display a menu of operations.
3. Ask the user to select an option (1–6) or 0 to exit.
4. If user selects a valid option:

Take two numeric inputs.

Perform the chosen operation using respective function.

Display the result.

5. If invalid input, then show an error message.
6. Repeat the menu until user selects exit (0).
7. Stop the program.

Source Code:

```
# Define functions for each mathematical operation
def add(a, b):
    return a + b
def subtract(a, b):
    return a - b
def multiply(a, b):
    return a * b
def divide(a, b):
    if b == 0:
        return "Error: Cannot divide by zero!"
    return a / b
def power(a, b):
    return a ** b
def modulus(a, b):
    if b == 0:
        return "Error: Cannot take modulus by zero!"
    return a % b

# Function to display the menu
def print_menu():
    print("\n=== Simple CLI Calculator ===")
    print("1. Addition")
    print("2. Subtraction")
    print("3. Multiplication")
    print("4. Division")
    print("5. Power")
    print("6. Modulus")
    print("0. Exit")


# Main program
def main():
    history = []  # optional: to store results
```

```
while True:
    print_menu()
    choice = input("Enter your choice (0–6): ").strip()

    if choice == "0":
        print(" Exiting the calculator. Thankyou!")
        break

    if choice in ["1", "2", "3", "4", "5", "6"]:
        try:
            a = float(input("Enter first number: "))
            b = float(input("Enter second number: "))

            if choice == "1":
                result = add(a, b)
                operation = f"{a} + {b} = {result}"
            elif choice == "2":
                result = subtract(a, b)
                operation = f"{a} - {b} = {result}"
            elif choice == "3":
                result = multiply(a, b)
                operation = f"{a} * {b} = {result}"
            elif choice == "4":
                result = divide(a, b)
                operation = f"{a} / {b} = {result}"
            elif choice == "5":
                result = power(a, b)
                operation = f"{a} ** {b} = {result}"
            elif choice == "6":
                result = modulus(a, b)
                operation = f"{a} % {b} = {result}"

            print(f"Result: {result}")
            history.append(operation)
```

```
            except ValueError:
                print(" Invalid input. Please enter numeric values.")

        elif choice == "7":
            if not history:
                print("No calculations yet.")
            else:
                print("\n Calculation History:")
                for item in history:
                    print(item)

        else:
            print(" Invalid choice! Please choose between 0–6.")


# Run the main function
if __name__ == "__main__":
    main()
```