Project 1: Build Your Own Calculator

Objective:
To develop a simple calculator application in Python that can perform basic arithmetic operations. This project aims to apply your knowledge of Python basics, functions, and testing

Requirements:

User Interface:
Provide a simple text-based user interface where users can choose an operation, input their numbers, and see the result. You can assume the user will always input the correct type, meaning no need for error checking or type checking.

You should prompt the user 3 times. For example first input() use is for the first number. The second input() for the second number. And third input() for the operation. Or any order you desire. Should not involve, parsing, or indexing.

Functionality:
The calculator should support the following operations: addition, subtraction, multiplication, division, floor division, modulus, and power.
Implement a separate function for each operation.

Bonus (no extra credit given beyond 100%):
Add more advanced mathematical operations such as square root, factorial, and trigonometric functions using the math module.

Instructions:

Create separate functions for each operation.

Implementing the Core Features:
Use input() to get operation choice and numbers from the user.

You should prompt the user 3 times. For example first input() use is for the first number. The second input() for the second number. And third input() for the operation. Or any order you desire. Should not involve, parsing, or indexing.

Display results using print().

Testing:

Ensure to test your calculator with various inputs to cover all operations.
Try edge cases, like very large numbers or edge cases specific to each operation.

Documentation and Code Style:
Add comments to your functions explaining their purpose and any assumptions they make.

Ensure your code is readable and follows Python conventions.

Submission:
Provide the Python code file. Submitted via canvas. The file should be .py not .ipynb

No Late Submissions accepted, unless discussed ahead of time.

Evaluation:
Your project will be evaluated based on the following criteria:

Calculator Assignment Rubric (100 points)

1. Functionality and Completeness of the Calculator (50 points)

Basic Operations (30 points)

- The calculator correctly performs addition, subtraction, multiplication, division, floor division, modulus, and power and returns accurate results.

User Interface (20 points)

- The user interface is intuitive and easy to use.
- Clear feedback to the user about the result.

2. Code Organization, Readability, and Comments (40 points)

Organization (15 points)

- Code is logically structured.
- Appropriate separation between interface and logic.

Readability (15 points)

- Code follows consistent naming conventions.
- Appropriate use of whitespace and indentation.

Comments (10 points)

- Essential sections of code are briefly explained using comments.
- Comments are clear and concise.

Testing (10 points)

- Clearly defined test cases that cover common and edge scenarios.
- Test cases should be able to verify the correctness of the calculator's functionality.
- Comments explaining the purpose of each test case and the expected outcome.

3. Bonus Features (if implemented) (10 points)

Additional Features (5 points)
Implementation of any feature beyond the basic requirements.
Innovative Approach (5 points)
Creativity in solution or any unique approach that enhances the user experience.