ZIYTECHS CALCULATOR PROGRAM

- Welcome the user
- Inform the user about the available mathematical operations
- List the available operations (Addition, Subtraction, Multiplication, Division, Square, square root, Exit program (Alert, are you sure you want to exit this program?))
- Ask the user the kind of operation they intend to perform and take their response
- Convert the response to float, and save the response in a variable.
- Handle user input errors
- Request for the numbers intended for mathematical operation (num1, num2)
- Handle user input errors
- Save the responses in a variable
- Write a function to perform the operations and display the results. Comment on the function of each **function**.
- For the division function, check for zero denominator error. You can't perform divide by zero operation. Use conditional statement to handle zero input for denominator.
- Print the result
- Thank the user
- Request if the user intends to perform another operation (If yes, rerun the program, if no Terminate the program safely)
- Exit the program

Note: Use line breaks and comments where necessary.

I optimized the calculator I built earlier, and here are the issues I fixed:

1. ISSUE: Programs run continuously.

   FIXED: Now, it will prompt the user if they would like to perform another mathematical operation before running the program again.

2. ISSUE: The program will proceed if user input is wrong.

   FIXED: Now, if an invalid option is entered, the program will not proceed, rather it will request for a correct option.

3. ISSUE: The program terminates after each operation, and the user has to rerun the program manually after each mathematical operation.

FIXED: Now, the program asks the user if they would like to perform another operation after each operation. If yes, the program runs; if no, it terminates.

4. ISSUE: If a user inputs a zero as the denominator of a division operation, the program displays an error message and terminates abruptly.

   FIXED: Now, the zero-division error is fixed. The user is informed of the error, and can try the division operation again with a non-zero input.

5. ISSUE: The user cannot perform power and square root operations.

   FIXED: Now, Power and square operations have been successfully integrated into the calculator.

NOTES:

- A converted string case does not work in "IF" statements. Therefore, "Y" or "y" and "N" or "n" should be used.
- There is a limit for exponential values in Python. If a value exceeding 4300 is input, the program will return a "ValueError." The recommended solution is to use `sys.set_int_max_str_digits()` to increase the limit.
- The program does not multiply numbers that begin with zero, as it throws a syntax error.
    - **FIXED:** SyntaxError for leading zeros in decimal integer literals is resolved. It is now capable of handling numbers starting with zero.