Part 1.

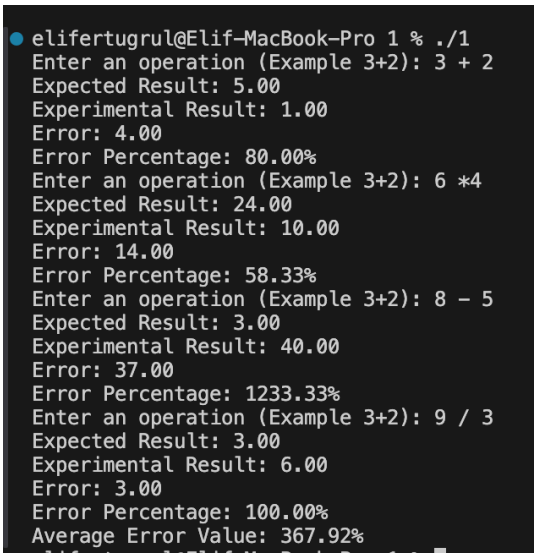
This program asks for an operation, but it may not work as expected. So, it also calculates the expected and experimental results, the error, and the error percentage.

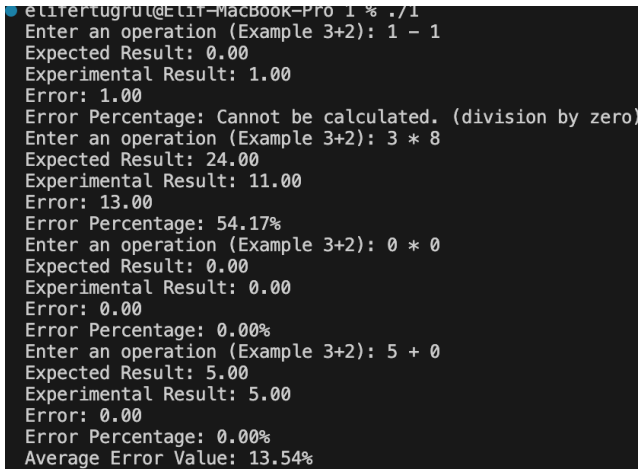
I used 3 scanf functions to take the numbers and the operation separately. Then, I used if and else if statements to check for the four fundamental operations and calculate the given operation.

I also added some input checks, such as ensuring that dividing a number by 0 prints an error message to the console saying, “ERROR: Division by zero.” Although the ‘/’ operation does not perform division but subtraction, it must still be forbidden in this case. There are also two special cases, first one is where both the expected and experimental results equal 0, this causes error_percentage to be ‘nan’, so I added a check for this case. If the error is 0, the program does not calculate the error_percentage and simply prints, “Error percentage: 0.00%.”. Second one is only expected_result equals 0, and this causes error_percentage to be ‘inf’. So, if expected_result is 0 and error is not 0, then my program prints “Error Percentage: Cannot be calculated. (division by zero)”.

Finally, my program calculates the average error value by dividing it by 4, because by the end, the user will have inputted 4 operations, whether or not the operations' error percentages are calculated.

Here are the screenshots of outputs:





Part 2.

The program asks the user to input the diameter of the sphere (R). Then, it calculates the radius (r) by dividing the diameter (R) by 2, since the radius is half the diameter.

Using the formula for the surface area of a sphere ($4 * pi * r^2$), the program calculates the area and stores it in the variable area.

Finally, it prints the surface area of the sphere with two decimal places.

Here are the screenshots of outputs: