

Project Title: "Rounding & Estimation Toolkit"

Write a Python program that:

1. Accepts numbers or simple math problems as input.
2. Performs rounding to a chosen place value (nearest 10, 100, 1000, 1 decimal place, etc.).
3. Performs estimation for addition, subtraction, multiplication, and division.
4. Compares the estimated result to the exact result.

Algorithm for Rounding & Estimation

Step 1: Start the program.

Step 2: Display a menu asking the user to choose between:

- Rounding a number.
- Estimating a calculation.

Step 3: If the user selects rounding:

1. Ask the user to input a number.
2. Ask how they want to round (nearest 10, 100, 1000, or specific decimal places).
3. Apply the rounding function.
4. Display the rounded result.

Step 4: If the user selects estimation:

1. Ask the user for the first number.
2. Ask the user for the second number.
3. Ask for the operation (+, -, *, /).
4. Round both numbers to a suitable place value (e.g., nearest 10) for estimation.
5. Perform the operation using the rounded numbers.
6. Calculate the exact result using the original numbers.
7. Display both the estimated and exact results.

Step 5: Ask the user if they want to perform another operation. If yes, go back to Step 2. If no, end the program.

Step 6: Stop.

Pseudocode for Rounding & Estimation Toolkit

```
START
DISPLAY "Choose an option:"
DISPLAY "1. Round a number"
DISPLAY "2. Estimate a calculation"
INPUT choice

IF choice == 1 THEN
    INPUT number
    INPUT rounding_place
    rounded_result = ROUND(number, rounding_place)
    DISPLAY "Rounded Result:", rounded_result

ELSE IF choice == 2 THEN
    INPUT num1
    INPUT num2
    INPUT operation
    num1_rounded = ROUND(num1, -1)
    num2_rounded = ROUND(num2, -1)

    IF operation == '+' THEN
        estimated = num1_rounded + num2_rounded
    ELSE IF operation == '-' THEN
        estimated = num1_rounded - num2_rounded
    ELSE IF operation == '*' THEN
        estimated = num1_rounded * num2_rounded
    ELSE IF operation == '/' THEN
        estimated = num1_rounded / num2_rounded
    ENDIF

    exact = EVALUATE(num1, operation, num2)
    DISPLAY "Estimated Result:", estimated
    DISPLAY "Exact Result:", exact
ENDIF

ASK "Do you want to perform another operation? (yes/no)"
IF answer == "yes" THEN
    GOTO START
ELSE
    STOP
```