Problem

In this experiment, you will learn how to use assembly language to create a simple calculator. Your assembly program should be designed to perform basic arithmetic operations based on user input. The program must support the following functionalities:

1. User Input: The user should be able to input two numbers, representing the operands for the arithmetic operation.
2. Addition: Your program should be capable of executing the addition operation on the two input numbers.
3. Subtraction: Implement functionality to subtract the second operand from the first, returning the difference.
4. User Choice: The program should prompt the user to choose the desired operation. The program will execute the corresponding operation based on the user's input: typing '1' triggers addition, '2' for subtraction, and '3' to exit the program directly.
5. Loop Execution: The program will continuously loop, allowing the user to perform multiple operations without restarting the program. This loop will persist until the user types in '3' to exit the program.

Your assembly language program should provide clear instructions for the user on how to input numbers, select an operation, and exit the program. After performing the chosen arithmetic operation, the program should display the result to the user and then prompt for the next action until the user decides to exit by entering '3'. **To simplify, you can assume that both operands are less than ten and the calculation result is also less than ten.** This means the calculator only deals with one-digit numbers.

The following screenshot is an example of the program:

```
PS C:\Users\xz201\OneDrive - University of Maine System\1 TEACHING\cos 255 LAB computer orgranizations\experiments\3> .\e3.exe
What you want to do? (1-Add, 2-Sub, 3-Exit)
1
Type in the first operand
4
Type in the second operand
2
Perform addition operation!
The calculation result is:
6
What you want to do? (1-Add, 2-Sub, 3-Exit)
2
Type in the first operand
4
Type in the second operand
1
Perform substract operation!
The calculation result is:
3
What you want to do? (1-Add, 2-Sub, 3-Exit)
3
PS C:\Users\xz201\OneDrive - University of Maine System\1 TEACHING\cos 255 LAB computer orgranizations\experiments\3>
```

The submission

Please submit both your experiment report and assembly code (.asm file) to BrightSpace. Ensure that the experiment report adheres to the specified Report Template 3, as provided on BrightSpace.

Deadline

Experiment 3 will be due on April 27th , 11:59 PM.

Grading policy

Late submission: Late assignments will be marked down 10% per day that they are late, and assignments submitted after three days will not be accepted (except under special circumstances such as illness or other unanticipated impediments).

Experiment report (60%): Ensure strict adherence to the provided report template, focusing on format, grammar, correctness, and clarity in answering all questions. Pay attention to the clarity of figures and diagrams.

Code (40%): your code must adhere to the following guidelines:

1. Commenting: Incorporate at least 5 meaningful comments throughout your code to elucidate its functionality and logic. You must write a comment including your name.
2. Organization: Ensure your code is well-structured and logically organized for readability and maintenance.
3. Efficiency: Avoid unnecessary handles and strive for efficient memory usage, eliminating any redundancy.