ICS 232 Computer Organization & Architecture
Project 1 - 100 points + 10 Bonus Points
Due Date: 7/5/2023

Name:

Note: Post your submission to ICS232 D2L site on or before the due date.

Programming Assignment 1:

Create a simple integer calculator using the MARIE computer.

The program should execute as follows:

1. Using the INPUT instruction wait for the user to enter a decimal number.

2. Using the INPUT instruction wait for the user to enter the operator as the ASCII character +, - or *.

3. Using the INPUT instruction wait for the user to enter a second decimal number.

4. Perform the desired addition, subtraction, or multiplication operation.

5. Store the result in a variable in memory.

6. Display the result via the OUTPUT instruction.

7. If an invalid operation is requested, display a zero as the result.

8. The code should be clearly commented.

Submit your .MAS file to the Project 1 dropbox.

The multiply can be done by repeated additions. For example, 12 * 3 would be calculated as 12 + 12 + 12. You need to support a negative multiplier and negative multiplicand (12 * ¯3).

Bonus – 10 points

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Implement divide by allowing the user to enter /. Only positive numbers need to be supported. Both the resulting quotient and remainder need to be displayed. The divide can be done by repeated subtractions.

Other Notes

If you have trouble using the MARIE simulator on your computer, you can also try https://marie.js.org/.

Grading Criteria:

1. -15 points if not all operations are supported.

2. -5 points if your code is not commented nicely.

3. -5 points if there is no error checking for an unrecognized operator.

4. -10 points if the arithmetic results are not correct.

5. -10 points if multiply with a negative number fails.

6. -10 points if three individual programs are submitted rather than one program that does all the operations.

Late Submission Policy:

1. -10 points if submitted after the due date and an extension has been granted.

2. -20 points if submitted after the due date and an extension has not been granted.