**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**

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/](https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fmarie.js.org%2F&data=05%7C01%7Crobin.ehrlich%40metrostate.edu%7C750018c56983485fd11608db23fb0687%7C5011c7c60ab446ab9ef4fae74a921a7f%7C0%7C0%7C638143333278828475%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=see7zgvReLfw8ta7h0AYWZdzEh%2BhkKaeI5rlclnPexM%3D&reserved=0).

**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.