CS 1410 Introduction to Computer Science - CS2
Assignment #0
Given: January 7, 2015
Due: January 11, 2015
Total Points: 40 points

Assignment:

Write a simple C++ calculator program. This program will consist of a single Calculator class that keeps track of the running total. The total will be initialized to zero. The Calculator class will consist of the following methods:

void add(double value);
void subtract(double value);
void multiply(double value);
void divide(double value);
double getTotal() const;

The program must offer a user interface, using cin and cout, to allow the user the ability to manipulate the total. The user interface must look like the following:

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Section:

You should write your program and break out the definitions and implementations into main.cpp, Calculator.hpp, and Calculator.cpp.

1. [5 points] Create your main
2. [5 points] Create the user interface
    a. Using cin and cout, create the user interface listed above.
    b. The user input should be case insensitive
3. [30 points] The Calculator structure
    a. Create a constructor

b. Create a destructor
c. Define each of the above listed functions

Execution Example:

Run 0)

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 0.0
Selection: A

***** Add selected *****
Value: 1.1
0.0 + 1.1 = 1.1
****

Run 1)

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 1.1
Selection: S

***** Subtract selected *****
Value: 0.2
1.1 - 0.2 = 0.9
****

Run 2)

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 0.9
Selection: M

***** Multiply selected *****
Value: 2.2
0.9 * 2.2 = 1.98
****

Run 3)

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 1.98
Selection: d

***** Divide selected *****
Value: 2.2
1.98 / 2.2 = 0.9
****

Run 4)

***** Calculator *****

A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 0.9
Selection: T

***** Total selected *****
Total Value: 0.9
****

Run 5)

***** Calculator *****
A: Add a value
S: Subtract a value
M: Multiply by a value
D: Divide by a value
T: Get the total
Q: Quit

Current Total: 0.9
Selection: q

Thank you for using the calculator! Bye bye! Have a great day!

Extra Credit: [5 points]

1. Keep track of all operations and values
    a. Instead of updating the user interface with the simple “total [operation] value = new total”, add the complete set of mathematical operations and values
        i. ((((0.0 + 1.1) - 0.2) * 2.2) / 2.2) = 0.9