C101 Homework #8 Due Wednesday 10/30/13

Write a program that repeatedly asks for the numerators and denominators of two fractions and then outputs the sum of the two fractions. For full credit program output must look like following, don’t need to turn in algorithm.

```
This program adds fractions. ‘Y’ continues, any other key exits program
===================================================
Enter      numerator 1 ==> 1
Enter  denominator 1 ==> 3

Enter     numerator 2 ==> 1
Enter denominator 2 ==> 6

  1         1          1
 ---  +  ---    =    ---
  3         6          2

----------------------------------------------------
Continue? Y or N!  ==> n
```

Hints and Suggestions:

1) The easiest way to add fractions is to use formula

$$\frac{a}{b} + \frac{c}{d} = \frac{a*d + b*c}{b*d}$$

2) After using this formula, the answer still needs to be reduced to lowest terms. One way to do this is to divide the numerator and denominator of the answer by their Greatest Common Divisor, GCD.

3) Program does not have to deal with negative numbers or fractions with large numerators and denominators, lets use a maximum number of 50 for either numerator or denominator. It should handle fractions with a zero in numerator, but not a zero in denominator, don't test for this case.

4) Output of the form below is acceptable, but worth 10 less points.

```
1/3 + 1/6 = 1/2
```

5) Output not reduced to lowest terms will be worth 10 less points.

6) Output answer may be left in improper fractions, but in reduced terms.

7) Use only “cin >>” for all input, do not use “cin.get()” for any of the inputs.

This program must be written using functions. Each function should be logically coherent and designed correctly. This program needs to be written with five total functions; the main function and the four others, one to read the inputted data, one to calculate the sum of the two fractions, one to find the Greatest Common Divider between the numerator and denominator and a function that will display the end result.

Make sure that all functions are commented correctly and tell what it does along with parameters and any return value. Remember the main function should not contain any messy detail, should be relatively short and concise.

We will go over the algorithm to find the GCD in next class. Turn in only source code and output, don’t need to turn in an algorithm, but you should still write one.