Lab 5

Turn In:

1. Code Assignment – Exercise #1 Due in class on ?????, ???? ??, 2012
    a) For each exercise, a hardcopy package must be generated to include the following items:
        - Cover Sheet (see the sample copy include in lecture note)
        - Exercise/problem statement
        - Copy of your source file (C++ program named as **`cis25Fall2012YourNameLab5Ex1`**)
        - Copy of output (copy and paste from output screen as possible)
    b) Submitting one hard copy package for each exercise; and
    c) Emailing each document as follows,
        - One message for each exercise.
        - Attaching the source file that was created in part a).
        - The SUBJECT line of each message should have one of the following lines:

          `CIS 25 Fall 2012 Your Name : Lab 5 – Exercise #1`

          Or,

          `cis25Fall2012YourNameLab5Ex1.cpp`

2. Q.E.D.

1. Code Assignment/Exercise

Exercise 1 – Due on ?????, ???? ??, ????

A. Update the **`Fraction`** class given in the Lecture notes or as discussed in class meetings as follows,

1. Add your FIRST NAME and the initial of your last name to the name **`Fraction`** and use this as your updated class. For examples, if your first name is **`John Smith`** then update the class name to be **`FractionJohnS`**.
2. Add and update all class constructors for your **`Fraction`** class to handle the initialization appropriately.

   There must be as least 3 constructors of

   (i) default,

   (ii) copy, and

   (iii) convert taking on an `int`.
3. Provide `get/set` member functions for each private member data.
4. A member function `print()` that will print the current `Fraction` object.

B. Provide the following member functions,

   a. A function `add()` to add a `Fraction` object; and

   b. A function `subtract()` to subtract a `Fraction` object; and

   c. A function `multiply()` to multiply a `Fraction` object; and

   d. A function `divide()` to divide a `Fraction` object; and

C. Provide the following member operator functions,

   e. A function `operator=()` to assign a `Fraction` object.

   f. A function `operator+()` to add a `Fraction` object; and

   g. A function `operator-()` to subtract a `Fraction` object; and

   h. A function `operator*()` to multiply a `Fraction` object; and

   i. A function `operator/()` to divide a `Fraction` object; and

D. Provide the following stand alone functions,

   j. A function `init()` to set up or update the 2 required `Fraction` objects.

   k. A function `add()` to add 2 `Fraction` objects; and

   l. A function `subtract()` to subtract 2 `Fraction` objects; and

   m. A function `multiply()` to multiply 2 `Fraction` objects; and

   n. A function `divide()` to divide 2 `Fraction` objects; and

   o. A function `print()` to print the 2 required `Fraction` objects; and

   p. An appropriate `menu()` function to produce the required output as displayed below.

E. Run and record the output of the program.

(a) The output screen should have the following lines displayed before any other display or input can be seen,

```
CIS 25 – C++ Programming
Laney College
Your Name

Assignment Information --
  Assignment Number:  Lab 5,
                      Exercise #1
  Written by:         Your Name
  Due Date:           Due Date
```

(b) Then, the output screen should be followed by a sample output as follows,

```
**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 7

  Printing Option --

    Not a proper call as no Fractions are available!

**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 2

  Adding Option --

    Not a proper call as no Fractions are available!

**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
```

```
*  4. Multiplying   *
*  5. Dividing      *
*  6. Printing      *
*  7. Quit          *
**********************
Select an option (use integer value only): 1

  Initializing Option --

    REPLACE WITH YOUR CODE AND ACTUAL OUTPUT

**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 6

  PRINTING Option –

    ********************************
    *         PRINTING MENU        *
    *                              *
    *  1. print() - Member         *
    *  2. print() – Stand Alone    *
    *  3. Return to Previous MENU  *
    ********************************
    Select an option (1, 2, or 3): 1

      REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


    ********************************
    *         PRINTING MENU        *
    *                              *
    *  1. print() - Member         *
    *  2. print() – Stand Alone    *
    *  3. Return to Previous MENU  *
    ********************************
    Select an option (1, 2, or 3): 2

      REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


    ********************************
    *         PRINTING MENU        *
    *                              *
    *  1. print() - Member         *
    *  2. print() – Stand Alone    *
    *  3. Return to Previous MENU  *
    ********************************
```

```
    Select an option (1, 2, or 3): 3


**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 2

  ADDING Option –

    ********************************
    *          ADDING MENU         *
    *                              *
    *  1. add() - Member           *
    *  2. add() – Stand Alone      *
    *  3. operator+() - Member     *
    *  4. Return to Previous MENU  *
    ********************************
    Select an option (1, 2, 3, or 4): 5

      WRONG OPTION ...


    ********************************
    *          ADDING MENU         *
    *                              *
    *  1. add() - Member           *
    *  2. add() – Stand Alone      *
    *  3. operator+() - Member     *
    *  4. Return to Previous MENU  *
    ********************************
    Select an option (1, 2, 3, or 4): 1

      Calling member add()
        REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


    ********************************
    *          ADDING MENU         *
    *                              *
    *  1. add() - Member           *
    *  2. add() – Stand Alone      *
    *  3. operator+() - Member     *
    *  4. Return to Previous MENU  *
    ********************************
    Select an option (1, 2, 3, or 4): 2

      Calling stand alone add()
        REPLACE WITH YOUR CODE AND ACTUAL OUTPUT
```

```
    *********************************
    *          ADDING MENU          *
    *                               *
    *  1. add() - Member            *
    *  2. add() – Stand Alone       *
    *  3. operator+() - Member      *
    *  4. Return to Previous MENU   *
    *********************************
    Select an option (1, 2, 3, or 4): 3

      Calling member operator+()
        REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


    *********************************
    *          ADDING MENU          *
    *                               *
    *  1. add() - Member            *
    *  2. add() – Stand Alone       *
    *  3. operator+() - Member      *
    *  4. Return to Previous MENU   *
    *********************************
    Select an option (1, 2, 3, or 4): 4


**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 3

  SUBTRACTING Option –

    *********************************
    *        SUBTRACTING MENU       *
    *                               *
    *  1. subtract() - Member       *
    *  2. subtract() – Stand Alone  *
    *  3. operator-() - Member      *
    *  4. Return to Previous MENU   *
    *********************************
    Select an option (1, 2, 3, or 4): 5

      WRONG OPTION ...


    *********************************
    *        SUBTRACTING MENU       *
```

```
*                                 *
*  1. subtract() - Member         *
*  2. subtract() – Stand Alone    *
*  3. operator-() - Member        *
*  4. Return to Previous MENU     *
***********************************
Select an option (1, 2, 3, or 4): 1

  REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


SELECT AND RUN OTHER OPTIONS
REPLACE WITH YOUR CODE AND ACTUAL OUTPUT


**********************
*        MENU        *
*                    *
*  1. Initializing   *
*  2. Adding         *
*  3. Subtracting    *
*  4. Multiplying    *
*  5. Dividing       *
*  6. Printing       *
*  7. Quit           *
**********************
Select an option (use integer value only): 7

Having fun ...!
```

F. Save the program as `cis25Fall2012YourNameLab5Ex1.cpp`.

G. When running your program, use the following sets of fractions for your objects:

{`1/2` and `3/4`} and {`-5/9` and `7/11`}

F. Add a comment block after your program name (shown below) to suggest about improving your current code (Optional)

```
/**
 * Program Name:         cis25Fall2012YourNameLab5Ex1.cpp
 * Discussion:           Function, Class, and Operations
 * Comments/Suggestion:  YOUR SUGGESTION HERE
*/
```