Lab 8

Turn In:

1. Code Assignment – Exercise #1 Due in class on Tuesday, December 13, 2011
    a) For each exercise, a (Word, OpenOffice, PDF, etc.) document 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)
        - Copy of output (copy and paste from output screen as possible)
        - Naming the document as
          `cis25Fall2011YourNameLab8Problem1`
    b) Submitting one hard copy of the document
    c) Emailing document as follows,
        - One message for each exercise.
        - Attaching ONLY 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 2011 Your Name : Lab 8 – Problem #1`

          Or,

          `cis25Fall2011YourNameLab8Problem1.cpp`

3. Q.E.D.

1. Code Assignment/Exercises

You are asked to provide C++ implementation/code for the given **`C++ classes`**.

1. Name your program as `cis25Fall2011YourNameLab8Problem1.cpp`.
2. Run your program and save the output.

Important Reminder:

- DO NOT CHANGE ANY names for member data, functions, and arguments (as shown below), and
- DO NOT CHANGE ANY local variables in `main()` (as shown below), and
- Create the program with **`main()` updated properly in order to perform the operations and to display the results**, and
- Run and attach the output of your program at the end of `main()` as COMMENT

Hint!

- If needed, value of **`PI`** is given as a fraction value of **`157/50`**.
- When adding two `YourNameCircle` objects, the result is another `YourNameCircle` object, which has its radius to be the sum of the other 2 radii and the center will be the midpoint of the 2 given centers.
- When displaying a circle, it should show the center, the radius, and the area.
- When adding two `YourNameCylinder` objects, the result is another `YourNameCylinder` object that has the larger base of the 2 given bases; the base will be located at the midpoint of the 2 given bases. The height if the new cylinder will be the smaller height of the 2 given cylinders.
- When displaying a cylinder, it should show the base (with details for center and radius), the area (which would be the area of the tube plus the 2 bases), and volume.

Task #1:

Complete the classes being laid out below.

```
class YourNameBox : public YourNameRectangle
{
public:

  // update and add constructors and destructor

  // add getters & setters

  // add supported functions

  // add operator functions

private:
  YourNameFraction height;
};

class YourNameCircle  {
public:
```

```
  // update and add constructors and destructor

  // add getters & setters

  // add supported functions

  // add operator functions

private:
  YourNamePoint center;
  YourNameFraction radius;
};

class YourNameCylinder : public YourNameCircle
{
public:

  // update and add constructors and destructor

  // add getters & setters

  // add supported functions

  // add operator functions

private:
  YourNameFraction height;
};
```

Task #2

(1) Run a menu program and save the output. A sample program output is given as follows,

(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 8,
                      Exercise #1
  Written by:         Your Name
  Due Date:           Due Date
```

(b) Then, the output screen should also be followed by,

```
MENU
(1)    Create 2 YourNameRectangle objects
(2)    Create 2 YourNameCircle objects
(3)    Create 2 YourNameBox objects
(4)    Create 2 YourNameCylinder objects
(5)    Compare 2 selected objects by area
(6)    Compare 2 selected objects by volume
```

```
(7)    Print selected objects
(8)    Quit

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 1

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 2

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 3

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 4

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 5

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 6

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 7

  //Provide some sample output of your program

Enter your option (1, 2, 3, 4, 5, 6, 7, or 8) : 8

  Thank you and good bye!
```