Programming Fundamentals I
COSC1336

Lab 2. Introduction to C++

Note: This lab is to be done in teams of two
Due date: By end-of-class Sept 9, 2015

Objectives:

1. To become familiar with basic input and output statements.
2. To become familiar with variable and named constant declarations, and the assignment statements.
3. To be able to write a C++ program that takes its input from the standard input device, performs simple arithmetic computations, and displays its output on the standard output device with proper indentation and documentation.

Make sure to demo your work to your instructor for each task to get credit.

Task 1: Working with output statements

1. Download file `contactInfo` from d2L (Chapter 2/Lab2 folder)

2. Add statements so that the program does the following:
   - Display your first name and last name on one line of the screen console
   - Display your street address on the next line (you don't have to use your actual address)
   - Display City, State, and Zip code on next line
   - Display a phone number followed by your e-mail address (don't use real information)

The output should look as follows:

```
Ali Berrached
1212 Westheimer Rd
Houston, Texas 77077
(832)555-2121        ali.berrached@lonestar.edu
```

3. Modify your code so that the output looks as follow:

```
Author:   Ali Berrached
          1212 Westheimer Rd
          Houston, Texas 77077


Contact:  (832)555-2121       ali.berrached@lonestar.edu
```

4. **Demo your program**

Task 2: Working with variables, named constants, and arithmetic expressions

1. Download file `circle` from D2L (Chapter 2/Lab2 folder)
2. Add code where indicated in the file to output the circumference of the circle. Output should look like:

```
The circumference of a circle of radius 5.0 ft is:  31.4 ft
```

3. Add code to calculate the area of the circle
4. Add code to output the area. Program output should look like:

```
The circumference of a circle of radius 5.0 ft is:  31.4 ft
Its area is:   78.5 sqft
```

5. Instead of using a constant to store the radius, we want to use a variable so that we can compute the area and circumference of circles of varying size. Modify your program as follows:
    - Remove the declaration of RADIUS
    - Add a variable declaration inside `main()` for a variable named `radius`.
    - Initialize `radius` to 5.0.
6. **Demo your program to your instructor.**

Task 3: Working input statements

1. Modify your program from Task 2 so that the radius value is read from the standard input device (i.e. entered in the keyboard)

    a. Prompt user to enter the radius
    b. Read input into variable radius

2. Test your program with few test data values and verify that's it correct.

3. **Demo your program to you instructor for credit**

Task 4: Write your own program 1: Area and perimeter of a rectangle

Write a program that calculates and outputs the area and perimeter of a rectangle given its length and width. Your program should read the length and width from the standard input device (keyboard). Make sure your program does the following:

1. Prompt the user to enter the input
2. Use proper documentation
3. Use proper indentation

Demo your program to you instructor for credit

Task 5: Write your own program 2: Surface and volume of a cone.

Write a program that calculates and outputs the surface area and volume of a cone. Look up the formulas for computing the surface area and volume of a cone and determine the input data that must be provided to your program. Make sure to include `<cmath>` header file using a preprocessor directive for some math functions that will be needed by your program. In addition to correctness, your program must meet the following specs for credit:

1. All input data must be entered at the keyboard at the program prompt.
2. Use user-friendly prompts
3. Use proper documentation
4. Use proper indentation

Demo your program to you instructor for credit