Lab 03: Simple Arithmetic in C++

Warm-Up

The formula for converting a temperature reading from Fahrenheit to Celsius is

```
C° = (F° − 32) × (5 ÷ 9)
```

We have attached a program that illustrates two topics in Chapter 2, numerical calculations and screen output. We will use the attached file in this lab. Create a new project in Code::Blocks (named lab02Arithmetic), rename the main.cpp file to fahrenheitCelsius.cpp. Replace the hello-world code with the code from the attached file. Try to build and run the program.

There are several errors in the given code of the program. Hence, the program will not compile in its current form. In other words, there are syntax errors in the code. Your first task is to fix the syntax errors so that the program will build and run. You can consult with the instructor and s/he will help you to understand some of these syntax errors.

Once the program compiles and runs, you will notice that the results are incorrect. In other words, there are also logical (or semantic) errors in the program. Your second task is to fix these errors so that the program produces numerically correct output. (Hint: to test, 212°F should equal 100°C, and 32°F should equal 0°C.)

Assignment Problem

Once you have the program working correctly both syntactically and logically, use it as a model to address the following program requirement. What is desired is a program that will calculate and display on screen the correct diameter, circumference, and area of a circle. The input to your program will be the radius of the circle. The sample input and output of the program is given below:

```
Please enter the radius of a circle: 14
For a circle with radius 14
The diameter is 28
The circumference is 87.962
The area is 615.734
```

Design a solution on paper and then create a project (named lab02CircleArea) and a C++ source code file (maybe call it circleCalculations.cpp) that implements your solution. You should use the value 3.1415 for pi. You should define variables to store pi, the diameter, the circumference, and the area of the circle, and use these to print the values to the screen.

Make sure you have header comments that give your name, student ID information. In addition it would be great if you can write a summary detailing the purpose of the program. Use comments and meaningful variable names in order to make your program more readable. In particular, pay attention to the following:

- Indent levels consist of two spaces

- Matching curly braces are aligned vertically

When you are satisfied with your programs then submit both of the two cpp files (cirleCalculations.cpp, fahrenheitCelsius.cpp) on the Blackboard website by the due date of 5:00 pm on Saturday, 1 Feb. The link to the submission will be available in the "Labs and Assignment" page. Thank you.