ECE 152 Programming for Engineers

Laboratory 1

NOTE:

- Submit only C++ source files (\*.cpp) to Blackboard.

- Put your name, project description, and date on the top of your file as a comment.

- PLEASE WORK ALONE. If cheating is found, you will get ZERO.

1. Go through Lab 0. Make sure you can compile and run the “Hello World” program successfully. (Do not submit the Hello World file to Blackboard.)
2. (Lastname\_Lab1\_p1.cpp) Write a program that stores the integer value 78 in the variable length and the integer value 59 in the variable width. Have your program calculate the value assigned to the variable perimeter, using the assignment statement

Perimeter = 2 \* length + 2\*width;

And print out the value stored in the variable perimeter. Be sure to declare all the variables as integers at the beginning of the main() function.

1. (Lastname\_Lab1\_p2.cpp) Write a program that stores the number 87.653 in the variable firstnum, 183.59 in the variable secnum, and 97.7 in the variable thirdnum. (Be sure to declare the variables first as either float or double). Have your program calculate the total of the three numbers and their average. The total should be stored in the variable total and the average in the variable average. (Use the statement average = total/3.0; to calculate the average.) Use cout to display the total and average.
2. (Lastname\_Lab1\_p3.cpp) Write a program that calculates the distance between two points whose coordinates are (7,12) and (3,9). Use the fact that the distance between two points having coordinates (x1,y1) and (x2,y2) is
   1. Distance = sqrt((x1-x2)2+(y1-y2)2).
3. (Lastname\_Lab1\_p4.cpp) Write a program that first displays the following prompt:
   * + 1. Enter the temperature in degrees Fahrenheit:
     1. Have your program accept a value entered from the keyboard and convert the temperature entered to degrees Fahrenheit, using the formula

Celsius = 5/9\*(Fahrenheit – 32);

Your program should then display the temperature in degrees Fahrenheit, using an appropriate output message. Verify your program by calculating the Celsius equivalent of the following data. Display your results by completing the following table (use tabs, ‘\t’, if necessary):

Fahrenheit Celsius

212

78

32

-9

1. (Lastname\_Lab1\_p5.cpp) Write a program that displays the following prompts:

Enter the length of the swimming pool(ft):

Enter the width of the swimming pool (ft):

Enter the average depth of the swimming pool(ft):

After each prompt is displayed, your program should use a cin to accept data from the keyboard for the displayed prompt. After the depth of the swimming pool is entered, your program should calculate and display the volume of the pool

( volume = length \* width \* average depth).

Convert the volume from cubit foot to gallon using the equation

Volume in gallons = volume in cubic foot \* 7.48;

Assume the price of resident water is $3.11 per 1000 gallons, calculate and display the water cost of the swimming pool.