ECCS 1611 – Programming 1

Lab 4 – Selection

**Programming practice with if statements.**

Please write the following programs using Visual Studio or XCode. When completed, please submit your .cpp files and your screenshots to Moodle. For all programs your output is to match **exactly** what is shown in the example runs below. Note that for these examples, each run is a separate execution of the program.

**P4.1** Write a program that reads an integer temperature value and the letter C for Celsius or F for Fahrenheit. Print whether water is liquid, solid, or gaseous at the given temperature at sea level.

Example runs (with user input indicated with ***bold italics***):

Please enter temperature value: ***20 C***

Water is a liquid at that temperature.

Please enter temperature value: ***212 F***

Water is both a liquid and a gas at that temperature.

**P4.2** Write a program that reads in three floating-point numbers and prints the largest of the three inputs.

Example run (with user input indicated with ***bold italics***):

Please enter three numbers: ***4 9 2.5***

The largest number is 9.

**P4.3** Write a program that reads an integer and prints how many digits the number has, by checking whether the number is ≥10, ≥100, and so on. Assume that the absolute value of any entered integer is less than two billion. HINT: If the number is negative, first multiply it by -1.

Example run (with user input indicated with ***bold italics***):

Please enter an integer: ***12345***

The number has 5 digits.

**P4.4** Implement a program that directs a cashier how to give change. The program has two inputs: the amount due and the amount received from the customer. Display the dollars, quarters, dimes, nickels, and pennies that the customer should receive in return. Use if statements to prevent the display of zeros as outputs; i.e., 0 dollars should not be displayed. For now, we will ignore potential grammatical errors caused between singular and plural amounts (e.g., “1 penny” versus “2 pennies”) and just assume the use of plurals as shown below.

Example runs (with user input indicated with ***bold italics***):

Customer owes $***1.30***

Customer pays $***2.00***

Change due is $0.70

2 quarters

2 dimes

Customer owes $***14.56***

Customer pays $***20.00***

Change due is $5.44

5 dollars

1 quarters

1 dimes

1 nickels

4 pennies