CSC 101 Programming Assignment #1 09/01/17

Due date – Friday 10/6/17 by Noon

**Program 1:** Quadratic.java

Write a program that will solve a quadratic equation of the form ax2 + bx + c = 0

Where a, b, and c are real numbers and are inputted by the user. (not integers)

The two solutions to the equation are of the form:

This relationship only holds if we assume that ‘a’ is not zero and b2 – 4ac is not negative. Do not use one-letter variables, even though the formula shows them as this, or you will lose points. Inputs values are asked for and given by user of your program. All variables might be typed in as values with decimal places. There will be two answers to calculate and output. Assume user gives input that gives two answers. Format the two outputs to show only the first two decimal places. Output the original equation with given coefficients as part of the solution. See back for example.

**Program 2:** Change.java

This program will figure out the change required for a purchase. Start by asking the user for price of product and amount tendered. Assume user will give a larger value for amount tendered. Read in each as a double. Report back to user the number of each denomination of change is required to complete transaction. Working with integers only is much easier. (Hint- multiply inputs by 100 and cast to be an integer in order to work with pennies) Use a step by step approach to calculate the number of dollars first, then move to quarters with what is left. Have output look as shown on back.

**Program 3:** MiddleLetter.java

Ask the user to input a multiple word phrase and store in a String. Using the methods from the String class, report back to the user the following: length of string, substring of original with first and last letter missing, the location of the first letter ‘e’, and the middle letter of string (if length is even use the first of two middle values). Spaces are considered letters and count in number of characters.

Tips for good grades:

-Use of your programs should be user friendly- I should not have to wonder if the computer is waiting for me to input a value without having been given direction to.

-The program should repeat my input back to me in some way, verifying that it was typed in correctly.

-Programs should begin and end with friendly messages.

-Make sure you use comments where needed and use variable names that make sense, some of your grade will depend on program style as well as the use of your program.

-I will use the project grading sheet, so look over each area so you do not lose credit.

-Test your own projects thoroughly before you hand them in.

Each of these programs must be done in a separate file. Name them **Quadratic.java, Change.java** and **MiddleLetter.java**. (The .java is added automatically when you save a java file) This means you should be naming the main class in each file these names as well. If you do not name these files correctly you will lose points.

Hand in electronically – (NOT E-mail!!!)

In S-drive CSC 101 folder:

1. Create folder called **projectone\_firstname\_lastname**
2. Place three script files named above in folder. (NOTHING ELSE)

Program 1 Sample output of solution:

Welcome to my Quadratic solver.

I will solve equations of the form < A\*x2 + B \* x + C = 0 > for the variable x.

Please enter in the three coefficients in order of A, B and C.

A: 1.0

B: -2.0

C: -8.0

You have entered the Equation 1.00x2 + -2.00x + - 8.00 = 0

The solutions are:

x = -2.00

x = 4.00

Thank you for using my program!

Program 2 sample output of solution:

Welcome to my Change maker.

Please enter cost of product: $ 34.82

Please enter amount tendered: $ 40.00

Your change is: $ 5.18

5 one-dollar bills

0 quarters

1 dimes

1 nickels

3 pennies

Thank you for your business!