CIS 554 Homework 1

**Homework Objective**: Provide students with an opportunity to write a C++ program using the basic skills learned to date, including integer variables, simple operators, looping and input/output.

**Due Date:** See class website

**Description:**

You are asked to write a program to determine if a given ticket is a winner for a new type of lottery. The basic rules of the lottery are as follows:

1. There are 5 numbers drawn for each lottery.
2. Valid numbers to select for the lottery are 0-9, with each ticket having each number only 1 time.
3. Each ticket (entry) into the lottery contains 5 number selected by the lottery player.
4. Each lottery entry is represented by a 5-digit number (e.g. 10687). For simplicity, if 0 is selected by the player, it is not listed first on the ticket (e.g. 05648 should be entered into the program as 50648).
5. Winners fall into 1 of 3 categories, as follows:
   1. $1,000 – 3 correct numbers
   2. $10,000 – 4 correct numbers
   3. $1,000,000 – 5 correct numbers

Your program should allow the user to enter in the winning lottery number, as well as the lottery ticket number. The program should then print out what the player wins, or “Sorry, you lose. Try again tomorrow”.

For example, the program might look like this. Note how the entered ticket number has specific format rules).

Enter Winning Number (5 digits, no digit repeated, first number cannot be 0): 45782

Enter Ticket Number (5 digits, no digit repeated, first number cannot be 0): 23785

You Win $10,000 Congratulations!!

The program does not have to detect an invalid lottery number. (E.g., 134589 and 10034 would be invalid lottery numbers.) While the program may run, it will give incorrect results. You can assume that valid numbers were entered correctly, as per the constraints placed on the number above when the user is queried for the numbers.

Your program will consist of a main (located in main.cpp) as well as a separate class called Lottery (located in lottery.h and lottery.cpp). Your Lottery class must have at least 1 public, and 2 private methods. The 1 public method may be the lottery program controller, and the private methods will do the work of examining the numbers.

**HINT**: To solve this problem, you will use the modulus (%) and divide (/) operators. For example, consider what happens if I take any number and modulus that number by 10.

13567 % 10 = 7 – that is, I get the least significant digit in the number

Now, consider what happens if I take that number and divide it by 10

13567 / 10 = 1356 – that is, I am left with the remaining 4 digits.

Now, consider doing this several times, each time you can examine the next number in the original 5-digit number.

**Format for Submission:** Provide the information as follows:

1. Zip all the files together (main.cpp, lottery.cpp, lottery.h)
2. Upload the zip file via the web on the Homework page. If you don’t have an ECS account, please get one.
3. Please include your full name as part of the header in each source file.
4. Please append \_HW1 to the .zip file name (e.g. waclawski\_HW1.zip).