CST 238 – Fall 2014
Homework 1
Due: September 5, 2014 (Friday) (11:55 PM)

1. (10 points) Write a C++ program called **`hw1_1`** that reads integer values from a user. Your program should display a biggest number (= largest one) among the input values. Your program should also display a list of distinct elements in the input and the number of occurrences of each distinct value. Following presents a sample run of your program. In this program, you can assume that the number of input values from a user is less than **30**.

```
How many input values [max: 30]?
5
Enter 5 numbers.
2
1
2
-3
2

Biggest Number: 2

Number      Count
-3          1
1           1
2           3
```

This is another sample run:

```
How many input values [max: 30]?
8
Enter 8 numbers.
-5
1
5
3
10
2
3
5

Biggest Number: 10

Number      Count
-5          1
1           1
2           1
3           2
5           2
10          1
```

In the assignment, your program should display the **exactly same result as the samples**. In other words, your program should display the distinct numbers in the ascending order.

2. (10 points) Write a C++ program called **`hw1_2.cpp`** that reads an input file name from a user. Note that the input file holds 10 integer values, and the values can be from 0 to 9. After reading the input file, your program should display a vertical histogram as below. For example, let's assume that an input file called **C:\\Temp\\test1.txt** has the following data in it.

```
1
5
5
5
1
9
9
5
5
9
```

Then, a sample run of your program should look like this:

```
 Enter input file name: C:\\Temp\\test1.txt

===== Vertical Histogram =====
                *
                *
                *       *
          *     *       *
          *     *       *
        -------------------
        0 1 2 3 4 5 6 7 8 9
```

As another example, let's assume that an input file called **C:\\Temp\\test2.txt** has the following data in it.

```
0
2
4
6
8
1
3
5
7
9
```

Then, a sample run of your program should look like this:

```
 Enter input file name: C:\\Temp\\test2.txt

 ===== Vertical Histogram =====
      * * * * * * * * * *
      -------------------
      0 1 2 3 4 5 6 7 8 9
```

Your program will be graded based on

1. Compilation without error.
2. Correct output result.
3. Good programming structure.
4. Comments. (Title, Abstract, Author, ID, and Date are mandatory.)
5. Meaningful and related variable names.

How to turn in?

Submit your source programs (**hw1_1.cpp** and **hw1_2.cpp**) on iLearn as a **single zip file** entitled yourLastNameHW1.zip. For example, my submission file would be McGrathHW1.zip.