**CST 338 – Fall 2019**
**Homework 1**
**check iLearn for deadline**

# Histogram.java

Write a Java program called **Histogram.java** that displays a list of distinct characters in an input file and the occurrence of each character. Your program should read an input file name from a user. After that, your program should read characters in the file and display a list of distinct characters and their occurrences. Finally, your program should draw a vertical bar for the occurrences.

Assume that the number of characters in the input file is less than 200. You can also assume that each line has only one character and there's no extra blank space after each character. Furthermore, you can assume that all characters are capitals and from 'A' to 'K'.

A sample run of your program MUST be like below:

```
Input filename: t1.txt

Char  Occurrence
 A        1
 B        3
 C        1

============= Vertical Bar =============
|  3 |                                  *
|  2 |                                  *
|  1 |                            *  *  *
=======================================
| No |  D  E  F  G  H  I  J  K  A  C  B
=======================================
```

For the sample run, **t1.txt** has the following context:

```
B
A
C
B
B
```

For the assignment, your program has to display **the result exactly as the sample run**. For instance, when you display a list of character occurrences, your program should display the **characters with more than zero occurrence in the ascending order**. The height of the vertical bar should be the same as the maximum value of "Occurrence". And also, the characters in the vertical bar should come in the order of occurrences. In other words, since the characters from 'D' to 'K' have occurrence 0, it comes first. After that, characters 'A' and 'C' come next because their occurrences are 1. Finally, 'B' is displayed because its occurrence is 3.

This is another sample run of your program:

```
Input filename: t2.txt

Char  Occurrence
 A        1
 B        2
 D        2
 H        4
 K        1

============= Vertical Bar =============
|  4 |                                  *
|  3 |                                  *
|  2 |                            *  *  *
|  1 |                      *  *  *  *  *
=========================================
| No |  C  E  F  G  I  J  A  K  B  D  H
=========================================
```

For the sample run, **`t2.txt`** has the following context:

```
H
A
D
B
B
K
H
D
H
H
```

When you write your program, you should provide the following **four items at the beginning of your program**:

(1) Title: File Name
(2) Abstract: Overall purpose (or functionality) of the program.
(3) Author: Your name
(4) Date: The date you wrote the program

**Your program will be graded based on**

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

**How to turn in?**

Submit your Java source file (**Histogram.java**) on **iLearn**.