

CS 151 Programming Assignment #12

Goal: Compute a histogram of letter grades entered from the keyboard.

Create a class named `GradeHistogram` that includes a method `inputData ()` that reads a series of letter grades (A, B, C, D, F) from the user and counts the number of times each grade occurs. The grades are entered one per line. Enter a 'Z' to signal the end of input. The grades can occur in any order. Accept both upper and lower case. For example 'A' and 'a' are the same grade. Don't assume any upper limit for the number of grades.

Count the number of times a letter that is not a grade has been entered. The method `showData ()` writes out the histogram.

Write the program with a class definition of `GradeHistogram` and a separate class definition `GHTester` that contains the `static main()` method. The `main()` method creates a `GradeHistogram` object and call that object's `inputData ()` method to read and process the data.

Store the grade frequencies in an array of integers. Use a separate variable to contain the number of errors. You **must** use an array for this program since the purpose is practice with arrays.

Do not write this program with just a single class. Write a driver class `HistoTester` which contains `main()`, which instantiates a `GradeHistogram` and uses its methods. Here is an example of the program working:

```
Enter Grade: C
Enter Grade: A
Enter Grade: D
Enter Grade: c
Enter Grade: S
Enter Grade: a
Enter Grade: Z
```

Grade	Frequency
-----	-----
A	2
B	0
C	2
D	1
F	1
errors	1
Class Average:	2.6

Expect much more input than shown here.

You will need: A `while` loop that keeps going until the user inputs a Z. You may also need to use the `charAt()` method of the `String` to get a single character from the user's input.

Program Outline:

```
import java.util.*;

public class GradeHistogram
{
    . . . instance variables . . .

    public void inputData()
    {
        ...fill in here...
    }

    public void showData()
    {
        ...fill in here...
    }

    public double classAverage()
    {
        ...fill in here...
    }
}

// Driver class
public class HistoTester
{
    public static void main ( String[] args )
    {
        GradeHistogram gradeHist = new GradeHistogram();

        gradeHist.inputData();
        gradeHist.showData();

        . . .
    }
}
```

What to turn in: Turn in `GradeHistogram.java` and `HistoTester.java`. At the top of your source files include your name and date in the comment header.