Java Lab 4: GradeBook 2

Read instructions carefully! Following instructions is part of the grade for this lab.

This lab is **due by 4pm on Monday, June 13th**, at which point solutions will be made available to the class. Make sure you read through the entire lab before attempting any of the parts to manage your time appropriately.

1. This lab will continue developing Lab 3 (GradeBook 1) using methods. You will need to be familiar with Lectures 4, 5, and 6 to complete this lab. You can copy your GradeBook.java code into a new directory or project and edit that file for this lab.

2. (2 points) Move your code from Lab 3, parts 2-5 into the following methods:
    a. `public static void printScores(double[] scores);`
       Print out each score value in `scores`.
    b. `public static double aveScore(double[] scores);`
       Returns the average score.
    c. `public static double maxScore(double[] scores);`
       Returns the maximum score.
    d. `public static char letterGrade(double score);`
       Returns the letter grade character for a score.
       (This can be useful for parts (e) and (f).)
    e. `public static void printGrades(double[] scores);`
       Print out the letter grade for each score.
    f. `public static void histogram(double[] scores);`
       Prints out a histrogram plot of the scores.

3. (3 points) Add a method `merge` that takes two arrays as input and outputs a new array that contains their combined elements:
   `public static double[] merge(double[] a, double[] b);`

4. The following code demonstrates how to read Strings, integers, and doubles from the user. You can test this out in a file called InputDemo.java. Explanations of this code will appear in later lectures:

```java
import java.io.*;

public class InputDemo {
    public static void main(String[] args) throws Exception {
        BufferedReader reader =
            new BufferedReader(new InputStreamReader(System.in));

        System.out.print("Enter a string: ");
        String s = reader.readLine();
        System.out.println(s);

        System.out.print("Enter an integer: ");
        int i = Integer.parseInt(reader.readLine());
        System.out.println(i);

        System.out.print("Enter a double: ");
        double d = Double.parseDouble(reader.readLine());
        System.out.println(d);
    }
}
```

5. (4 points) In the `main` method, write a loop to read an array of doubles from the user and store them in an array. You should probably first read an integer from the user and use that value to allocate `scores`. Note: The parsing methods are expecting well-formed input. If, for example, you give a String to parseInt, Java will report an error called an *Exception*. You do not have to handle exceptions, and it is okay for your code to crash on badly formed input.

6. (1 point) Use the methods you wrote in part 2 to display contents, average, maximum, and histogram of the array.

7. **CheckOff**

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