CSC 220 – Lab 10

April 23, 2013

Due: Friday, April 25, 11:59pm

Objective:
Exercise arrays in Java.

Java program:
Design and implement an application with a single class that computes and prints the mean and standard deviation of a list of integers x_1 through x_n. Your application should read the value of *n*, as well as the *n* integers, from the user. Compute both the mean and standard deviation as floating point values, using the following formulas:

$$mean = \frac{\sum_{i=1}^{n} x_i}{n} \qquad sd = \sqrt{\frac{\sum_{i=1}^{n} (x_i - mean)^2}{n-1}}$$

Specifically, your application should perform the following:
- Request the total number of integers *n* from the user. (**5 points**)
- Create an array of size *n*. (**5 points**)
- Perform *n* requests for integers from the user. (**10 points**)
- Store the provided integers in the array. (**10 points**)
- Compute and print the mean of the *n* integers. The mean should be computed by a method. The array is passed to the method as a parameter, and the mean is returned as a value. (**22 points**)
- Compute and print the standard deviation of the *n* integers. The standard deviation should be computed by a method. The array is passed to the method as a parameter, and the standard deviation is returned as a value. (**23 points**)

The integers should be provided to the program one at a time. The mean and standard deviation should be printed out on separate lines (total of 2 lines). The mean and standard deviation should be formatted to 2 decimal places. Use a single scanner object to obtain all input from the user. (**10 points**)

Additional Requirements:

The name of the file where you save your class should contain your name, **last name first** (example `SmithJohn_Lab08.java`). (**3 points**)

Start your program with a Javadoc comment that has your name, the course number and section, and the title of the assignment (**2 points**):

```
/** John Smith
 *   CSC220-2
 *   Lab 08
 */
```

Continue with a Javadoc comment that describes the tasks that your program/class is performing. Be specific. (**2 points**)

Put more comments in strategic places in your program. You are required to put comments on top of each method, describing what the method does. (**3 points**)

Indent your program. (**3 points**)

What to turn in:

JAR your `Java` file (and only your Java file, no directories or other files) into a jar archive called `YourName_Lab08.jar`. Substitute `YourName` with your name (last name first)! (**5 points**) When you're done, upload the JAR file to canvas, under category `Lab08`, by the deadline.

Note:

- If you program does not compile, you cannot receive more than half the total points of the lab (so the maximum score you can receive is 50).