Assignment 7
Problem #1 of 3
Statistician
Lists And Arrays
4/19/2019

Getting Started: If you haven't already *"Assignment 7 Files.zip"* provided into your working directory. You will see a directory named "Statistician". That is the directory we'll use for this problem (#1).

All **classes** should be designated as **public** unless otherwise noted.
All **methods** should be designated as **public** unless otherwise noted.
All **instance variables** should be designated as **private** unless otherwise noted

General Notes:

- When a method description uses the word "we" our "our", it is talking about "this" object. In other words, the class (object) you are working on.
- For all coding needed for this assignment, there should be an example that will help in the chapters on lists and arrays. If you don't find one, shout it to the discussion board.

General Hints:

- Construct objects within methods liberally and freely as needed to make things easier. That is, if you have an object handy that can already do what you need done, employ it.
- You can construct objects on the fly (without setting them to a variable) and send them one message. This is useful for a "quick need". E.g. say you wanted to know just the area of a rectangle, then you could do the following:

```
println("Area: " + (new Rectangle(10, 2)).computeArea());
```

- Add as many other "helper methods" as you like. A helper method is simply adding another method to a class that you then call. Reuse your code! E.g. generalize.
- Write some test code to test your methods and check that they are giving results you would expect and reuse as much as possible as you go (that is, try not to reinvent)

Problem 1 -- Statistician

For this problem our goal is to develop useful statistics utility.

Purpose

We're given an array of numbers (these could represent game scores, temperatures, costs, earnings, distances, etc). It is common that statistical computations are needed for such a number set. Our software here will provide these services.

Concept

We'll take our array of numbers, and we'll compute the statistical function on this set of numbers and we'll return the result.

Statistician

Add a class named **Statistician**
(see top of document for the directory where the class should go).

Instance variables

Name: “nums”
Type: int[]
Description: An array of ints (our numbers)

Constructors

Statistician (constructor)
Constructor Method Parameters: A parameter of type “int[]”
Description: Set our instance variable with the method param
Return Type: Not Applicable

Instance Methods

Method Name: getNums
Method Parameters: None
Return Type: int[]
Description: Simple getter that returns our numbers

Statistical Methods (5)

Method Name	Method Description
count	Count of our numbers
sum	Sum of our numbers
min	Minimum value in our numbers
max	Maximum value in our numbers
mean	Mean (Average) of our numbers

Notes:

- All of these methods have no method parameters.
- All of these methods return an int type
- **For min, max, and mean: if array is empty, return -1**

Hints:

- Here is how to divide an "int" by an "int" to avoid truncation:

```
//given pre-defined ints "a" and "b"
double x = (double)a / b;
```

- Here is how to convert (round) a "double" to an "int":

```
int roundedX = (int)Math.round(x);
```