

Basic Java 1 - Four Functions

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1 SUMMARY

The goal of this homework is to continue practicing writing some simple java functions. You will do the following:

1. Implement the four methods shown below.
2. Implement a small program to allow a user input values to pass to each of the four methods below.
3. **FILES TO DOWNLOAD:** None
4. **FILE TO SUBMIT:** FourFunctions.java

1.1 FOUR FUNCTIONS

For this homework, you will implement six functions, as well as a small program that allows a user to select which method they'd like to test. You will start by implementing the following methods:

1. **average:** Accepts an array of integers as a parameter, and returns the average of the numbers as a double.

2. **median**: Accepts an array of integers as a parameter, and returns the **median** of the numbers. *Note that you can invoke your `max` and `min` function here to make this easier. You don't necessarily need to sort the data.*
3. **stddev**: Accepts an array of integers as a parameter, and return the **standard deviation** of the numbers. We are using the **sample standard deviation** here. *Note that you can invoke your `average` method here.*
4. **mode**: Accepts and array of integers as a parameter, and returns the most commonly occurring value among them. *If there is more than one mode, you may return any of them.*

Once these methods are complete, you should write a program that asks the user to input a number one through four. If the user doesn't enter a valid number, the program exits. If the user enters a valid number one through four, then they are prompted to enter five integers. Those five integers are then given to the corresponding method above (1 = average, 2 = median, 3 = stddev, 4 = mode) and the answer (a single value) is printed to the console. The program then exits.

IMPORTANT NOTE: The average, standard deviation, and medians should be printed as a double to two decimal places. The mode should be printed as an integer. You can handle the floating point values using this line of code:

```
1 System.out.printf("%.2f\n", average(nums));
```

You should submit one file for this homework, **FourFunctions.java**.

SAMPLE INPUT:

```
1 1
  3
3 5
  9
5 7
  11
```

SAMPLE OUTPUT:

```
7.00
```

You should submit one file for this homework, **FourFunctions.java**.

1.2 GRADESCOPE

You should submit your code to *Gradescope*. If you are having trouble with your submission, you should double check the following common problems:

1. Make sure you are only submitting one file, and it is called *FourFunctions.java* exactly.
2. Make sure you remove any *package* statements from your code before submitting. The autograder doesn't expect your file to be inside a package for this assignment.
3. Make sure your output is in the correct format (see above) exactly. You should not be printing ANYTHING else or the autograder will think your output is incorrect.