

CISC 181 Fall 2013

Practice Set 2

Assigned: September 11

Due: September 17 at 11:55PM on Sakai

Practice sets are to be completed individually. You are free to consult other students to help complete the practice sets (see syllabus for collaboration policy). However, keep in mind that each practice set is designed to cover basic material on which you will be quizzed and tested.

This practice set is intended to cover the following major topics:

- Writing methods to meet tests
- Identifying test cases and writing tests
- Arrays and loops over arrays

Please consult chapters 3, 4, 5, and 6 of your textbook, and your class notes for additional examples that will help to solve these problems. Note: The review problems at the end of each chapter generally contain enough code for you to code and see the answer, which is great practice. Also, if you bought your text new you can log into Pearson's website and see some exercise answers – the instructions for doing this are in the start of the text.

Create a new project in Eclipse called PS2.

Download the JUnit test file provided, and use it as a guide for the problems below.

Hint: Start by looking at the tests! Do not change any of the existing test cases (although you DO need to add new test cases).

Create a class named `ArrayStaticMethods`. This class will consist solely of *public static* methods useful for operating on arrays.

1. **[15 points]** Write the method:

```
public static double mean(double[] data)
```

where the returned double is the average of all values in data.

- Throughout this practice set you will be adding test cases to the existing tests in `PS2Test.java` by following the instructions indicated in the comments. Add the test cases for `test_mean`.

2. **[15 points]** Write the method **countWords**. Given a sentence as an array of characters, compute how many words are included. The only characters that will appear in our sentences are letters, spaces, commas, and a period will always end the sentence. Every comma will be followed by a space.

- Add the test cases for `test_countWords`

3. **[20 points]** Write the method, **replace**, that takes an integer array and two integer values as parameters. The method produces a new array with exactly the same contents as the parameter, except that all occurrences of value1 have been replaced with value2.

```
public static int[] replace(int[] values, int value1, int value2)
```

- Add the test cases for test_replace

4. **[25 points]** Write the method, **evenFront**, that takes an array of integers as parameter. It returns a new array (do not modify the original data) that contains the exact same numbers as the given array, but arranged so that all the even numbers are grouped at the start of the array. The order of the numbers within the even/odd groupings must be the same as the original array.

- Add the test cases for test_evenFront

5. **[25 points]** Write the method, **surroundedCharacter**, that takes an array of characters as a parameter and returns true if any character is surrounded by another character. For example, in 'abcdc' the character d would be surrounded by c, but in 'abccc' no characters are surrounded by another character.

- Add the test cases for test_surroundedCharacter

Turn in to Sakai your entire archived Eclipse PS2 project as follows:

1. Select project
2. File-> Export -> General -> Archive File
3. Click Browse to find place on your computer to place archive
4. Upload archive to Sakai

You should be uploading a single archive file and then clicking “submit”.