**Homework 2**

### **CMP 326: Programming Methods I**

Lehman College, City University of New York

Fall 2019

### [**Homework 2-1 Textbook Section 7.23**](https://learn.zybooks.com/zybook/CUNYCMP326Fall2019/chapter/7/section/23)

In this assignment you are being asked to write some methods that operate on an array of int values. You will code all the methods and use your main method to test your methods.

Your class should be named **[Array](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html)**

Your class will have the following methods (***click on the method signatures for the Javadoc description of the methods***):

1. **[public static int sum(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#sum-int:A-)**
2. **[public static int sum(int[] arr, int firstIndex, int lastIndex)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#sum-int:A-int-int-)**
3. **[public static double average(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#average-int:A-)**
4. **[public static double average(int[] arr, int firstIndex, int lastIndex)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#average-int:A-int-int-)**
5. **[public static int maxValue(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#maxValue-int:A-)**
6. [**public static int maxValue(int[] arr, int firstIndex, int lastIndex)**](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#maxValue-int:A-int-int-)
7. **[public static int indexOfFirstMaxValue(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#indexOfFirstMaxValue-int:A-)**
8. **[public static int indexOfFirstMaxValue(int[] arr, int firstIndex, int lastIndex)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#indexOfFirstMaxValue-int:A-int-int-)**
9. **[public static int numberOfBelowAverageElements(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#numberOfBelowAverageElements-int:A-)**
10. **[public static int numberOfBelowAverageElements(int[] arr, int firstIndex, int lastIndex)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#numberOfBelowAverageElements-int:A-int-int-)**
11. **[public static void rotateElements(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#rotateElements-int:A-)**
12. **[public static void rotateElements(int[] arr, int rotationCount)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#rotateElements-int:A-int-)**
13. **[public static void reverseArray(int[] arr)](http://comet.lehman.cuny.edu/sfakhouri/teaching/cmp/cmp326/s19/hw/hw2-Array.html#reverseArray-int:A-)**

For example, given the following array:

myArray = {45, 22, 18, 89, 82, 79, 15, 69, 100, 55, 48, 72, 16, 98, 57, 75, 44, 32, 21, 14, 7, 16, 49, 58, 72}

Your methods will return the following values:

Sum of whole array = 1253  
 Sum of elements 12-18 = 343  
  
 Average of whole array = 50.12  
 Average of elements 12-18 = 49.0  
  
 Max of whole array = 100  
 Max of elements 12-18 = 98  
  
 Index of first Max of whole array = 8  
 Index of first Max of elements 12-18 = 13  
  
 Count of elements below average of whole array = 13  
 Count of elements below average of elements 12-18 = 4  
  
 Rotating once  
 myArray = {72, 45, 22, 18, 89, 82, 79, 15, 69, 100, 55, 48, 72, 16, 98, 57, 75, 44, 32, 21, 14, 7, 16, 49, 58}  
  
 Rotating 5 more times  
 myArray = {14, 7, 16, 49, 58, 72, 45, 22, 18, 89, 82, 79, 15, 69, 100, 55, 48, 72, 16, 98, 57, 75, 44, 32, 21}  
  
 Reversing the array  
 myArray = {21, 32, 44, 75, 57, 98, 16, 72, 48, 55, 100, 69, 15, 79, 82, 89, 18, 22, 45, 72, 58, 49, 16, 7, 14}

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**This work must be completed in your textbook**  [**ZYBooks -- CMP-326: Programming Methods I**](https://learn.zybooks.com/zybook/CUNYCMP326Fall2019/)**I**

**No other forms of submission will be accepted.**