○ BJP5 Exercise 7.3: countInRange

Language/Type: ⬩ Java arrays
Author: Whitaker Brand (on 2019/09/19)

Write a method called `countInRange` that accepts an array of integers, a minimum value, and a maximum value as parameters and returns the count of how many elements from the array fall between the minimum and maximum (inclusive).

For example, in the array {14, 1, 22, 17, 36, 7, −43, 5}, there are four elements whose values fall between 4 and 17.

Type your solution here:

```
1 public int countInRange(int[] array, int min, int max){
2     int count = 0;
3     for (int i = 0; i < array.length; i++){
4         if (array[i] <= max && array[i] >= min)
5             count += 1;
6     }
7     return count;
8
9 }
```

This is a **method problem.** Write a Java method as described. Do not write a complete program or class; just the method(s) above.

▦ 4 Indent

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⊘ **You passed 5 of 5 tests.**

Go to the next problem: isSorted

test #1:	countInRange({14, 1, 22, 17, 36, 7, −43, 5}, 4, 17)
return:	4
result:	⊘ pass

○ BJP5 Exercise 7.4: isSorted

Language/Type: ⬩ Java arrays
Author: Marty Stepp (on 2019/09/19)

Write a static method named `isSorted` that accepts an array of `doubles` as a parameter and returns `true` if the list is in sorted (nondecreasing) order and `false` otherwise. For example, if arrays named `list1` and `list2` store {16.1, 12.3, 22.2, 14.4} and {1.5, 4.3, 7.0, 19.5, 25.1, 46.2} respectively, the calls `isSorted(list1)` and `isSorted(list2)` should return `false` and `true` respectively. Assume the array has at least one element. A one-element array is considered to be sorted.

Type your solution here:

```
1 public static boolean isSorted(double[] array){
2
3     for (int i = 0; i < array.length−1; i++){
4         if (array[i] > array[i+1])
5             return false;
6     }
7     return true;
8
9 }
```

This is a **method problem.** Write a Java method as described. Do not write a complete program or class; just the method(s) above.

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⊘ **You passed 5 of 5 tests.**

Go to the next problem: mode

test #1:	isSorted({16.1, 12.3, 22.2, 14.4})
return:	false
result:	⊘ pass

BJP4 Self-Check 7.10: max

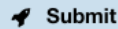**Language/Type:** ⓘ Java arrays
Author: Whitaker Brand (on 2016/09/08)

Write a method called max that accepts an array of integers as a parameter and returns the maximum value in the array. For example, if the array passed stores {12, 7, −1, 25, 3, 9}, your method should return 25. You may assume that the array contains at least one element. Your method should not modify the elements of the array.

Type your solution here:

```java
public int max(int[] array){
    int max = array[0];
    for (int i = 1; i < array.length; i++){
        if (array[i] > max)
            max = array[i];
    }
    return max;
}
```

This is a **method problem.** Write a Java method as described. Do not write a complete program or class; just the method(s) above.

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⊘ **You passed 7 of 7 tests.**

Go to the next problem: average

```
test #1:  max({12, 7, −1, 25, 3, 9})
 return:  25
 result:  ⊘ pass
```

BJP4 Self-Check 7.11: average

Language/Type: ⓘ Java arrays
Author: Marty Stepp (on 2016/09/08)

Write a method called average that computes the average (arithmetic mean) of all elements in an array of integers and returns the answer as a double. For example, if the array passed contains the values [1, −2, 4, −4, 9, −6, 16, −8, 25, −10], the calculated average should be 2.5. Your method accepts an array of integers as its parameter and returns the average. You may assume that the array contains at least one element. Your method should not modify the elements of the array.

Type your solution here:

```java
public double average(int[] array){
    double sum = 0;
    int count = 0;
    double avg;

    for (int i = 0; i < array.length; i++){
        sum += array[i];
        count += 1;
    }
    avg = sum/count;
    return avg;
}
```

This is a **method problem.** Write a Java method as described. Do not write a complete program or class; just the method(s) above.

▤ 4 Indent

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⊘ **You passed 7 of 7 tests.**

Go to the next problem: traversal

```
test #1:  average({12, 7, −1, 25, 5, 9})
 return:  9.5
 result:  ⊘ pass
```

○ **BJP5 Self-Check 7.19: ReferenceMystery1**

The following program produces 4 lines of output. Write each line of output below as it would appear on the console.

```java
import java.util.*;   // for Arrays class

public class ReferenceMystery1 {
    public static void main(String[] args) {
        int x = 0;
        int[] a = new int[4];
        x++;

        mystery(x, a);
        System.out.println(x + " " + Arrays.toString(a));

        x++;
        mystery(x, a);
        System.out.println(x + " " + Arrays.toString(a));
    }

    public static void mystery(int x, int[] a) {
        x++;
        a[x]++;
        System.out.println(x + " " + Arrays.toString(a));
    }
}
```

line 1   `2 [0, 0, 1, 0]`

line 2   `1 [0, 0, 1, 0]`

line 3   `3 [0, 0, 1, 1]`

line 4   `2 [0, 0, 1, 1]`

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⊘ You passed 4 of 4 tests.

○ **BJP5 Self-Check 7.20: ReferenceMystery2**

The following program produces 4 lines of output. Write each line of output below as it would appear on the c

```java
import java.util.*;   // for Arrays class

public class ReferenceMystery2 {
    public static void main(String[] args) {
        int x = 1;
        int[] a = new int[2];
        mystery(x, a);
        System.out.println(x + " " + Arrays.toString(a));
        x--;
        a[1] = a.length;
        mystery(x, a);
        System.out.println(x + " " + Arrays.toString(a));
    }

    public static void mystery(int x, int[] list) {
        list[x]++;
        x++;
        System.out.println(x + " " + Arrays.toString(list));
    }
}
```

line 1   `2 [0, 1]`

line 2   `1 [0, 1]`

line 3   `1 [1, 2]`

line 4   `0 [1, 2]`

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⊘ You passed 4 of 4 tests.

○ BJP5 Self-Check 7.22: arrayCodeTracing3

What are the values of the elements in the array numbers after the following code is executed?

```java
int[] numbers = {10, 20, 30, 40, 50, 60, 70, 80, 90, 100};
for (int i = 0; i < 9; i++) {
    numbers[i] = numbers[i + 1];
}
```

numbers[0]   20

numbers[1]   30

numbers[2]   40

numbers[3]   50

numbers[4]   60

numbers[5]   70

numbers[6]   80

numbers[7]   90

numbers[8]   100

numbers[9]   100

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⊘ **You passed 10 of 10 tests.**