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✅ BJP4 Self-Check 7.7: arrayBugs

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

What is wrong with the following code? Correct the bugs to produce the following expected output:

```
first  = [3, 7]
second = [3, 7]
They contain the same elements.
```

♻ Revert

Type your solution here:

```java
1  int[] first = new int[2];
2  first[0] = 3;
3  first[1] = 7;
4  int[] second = new int[2];
5  second[0] = 3;
6  second[1] = 7;
7
8  // print the array elements
9  System.out.println("first  = [" + first[0] + ", " + first[1] + "]");
10 System.out.println("second = [" + second[0] + ", " + second[1] + "]");
11
12 // see if the elements are the same
13 if (Arrays.equals(first,second)) {
14     System.out.println("They contain the same elements.");
15 } else {
16     System.out.println("The elements are different.");
17 }
```

This problem asks for **bare code.** Submit a fragment of Java code as described. Do not write any class or method heading around your code; just write the lines of code that will produce the result described.

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⊘ You passed 1 of 1 tests.

Go to the next problem: arrayDeclarationSyntax2

```
       test #1:  test1
console output:  first  = [3, 7]
                 second = [3, 7]
                 They contain the same elements.
         result:  ⊘ pass
```

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⭕ BJP4 Exercise 7.4: isSorted

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

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:

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

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

test #2: `isSorted({1.5, 4.3, 7.0, 19.5, 25.1, 46.2})`
return: `true`
result: ⊘ pass

test #3: `isSorted({42.0})`
return: `true`
result: ✓ pass

test #4: `isSorted({42.0, 27.0})`
return: `false`
result: ✓ pass

test #5: `isSorted({1.5, 4.3, 7.0, 19.5, 7.8, 25.1, 46.2})`
return: `false`
result: ✓ pass

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⚪ BJP4 Exercise 7.3: countInRange

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

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:

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

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: isSorted

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

test #2:	`countInRange({14, 1, 22, 17, 36, 7, -43, 5}, 0, 0)`
return:	0

```
                    result:    ⊘ pass
          test #3:   countInRange({14, 1, 22, 17, 36, 7, -43, 5}, 18, 21)
          return:    0
          result:    ⊘ pass

          test #4:   countInRange({-1, 1, 3, 5, 7, 9, 11, 15}, 3, 7)
          return:    3
          result:    ⊘ pass

          test #5:
countInRange({-5, -31, -6, -5, -7, -9, -11, -15}, -70, -3)
          return:    8
          result:    ⊘ pass
```

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○ BJP4 Exercise 7.2: range

Language/Type: ☕ Java arrays
Author: Lisa Fiedler (on 2016/09/08)

Write a static method named range that takes an array of integers as a parameter and returns the range of values contained in the array. The range of an array is defined to be one more than the difference between its largest and smallest element. For example, if the largest element in the array is 15 and the smallest is 4, the range is 12. If the largest and smallest values are the same, the range is 1.

The following table shows some calls to your method and their results (the largest and smallest values are underlined):

Call	Value Returned
`int[] a1 = {8, 3, 5, 7, 2, 4};`	`range(a1) returns  7`
`int[] a2 = {15, 22, 8, 19, 31};`	`range(a2) returns 24`
`int[] a3 = {3, 10000000, 5, -29, 4};`	`range(a3) returns 10000030`
`int[] a4 = {100, 5};`	`range(a4) returns 96`
`int[] a5 = {32};`	`range(a5) returns  1`

You may assume that the array contains at least one element (that its length is at least 1). You should not make any assumptions about the values of the particular elements in the array; they could be extremely large, very small, etc. You should not modify the contents of the array.

Type your solution here:

```java
1 public static int range(int[] a) {
2     int n = 0, min = a[0], max = a[0];
3     for (int i = 0; i <= a.length - 1; i++) {
4         if (a[i] > max)
```

```
 5              max = a[i];
 6          if (a[i] < min)
 7              min = a[i];
 8      }
 9      n = max - min + 1;
10      return n;
11 }
```

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: countInRange

test #1:	range({8, 3, 5, 7, 2, 4})	
return:	7	
result:	⊘ pass	

test #2:	range({15, 22, 8, 19, 31})	
return:	24	
result:	⊘ pass	

test #3:	range({3, 10000000, 5, -29, 4})	
return:	10000030	
result:	⊘ pass	

test #4:	range({100, 5})	
return:	96	
result:	⊘ pass	

test #5:	range({32})	
return:	1	
result:	⊘ pass	

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⚪ BJP4 Exercise 7.1: lastIndexOf

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

Write a method named `lastIndexOf` that accepts an array of integers and an integer value as its parameters and returns the last index at which the value occurs in the array. The method should return -1 if the value is not found. For example, in the list containing {74, 85, 102, 99, 101, 85, 56}, the last index of the value 85 is 5.

Type your solution here:

```java
public static int lastIndexOf(int[] numbers, int n) {
    int i = -1;
    for (int j = 0; j <= numbers.length-1; j++) {
        if (numbers[j] == n) {
            i = j;
        }
    }
    return i;
}
```

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 8 of 8 tests.

Go to the next problem: range

test #1:	`lastIndexOf({74, 85, 102, 99, 101, 85, 56}, 85)`	
return:	5	
result:	⊘ pass	

test #2:	`lastIndexOf({74, 85, 102, 99, 101, 85, 56}, 58)`	
return:	-1	
result:	⊘ pass	

test #3: `lastIndexOf({12, 34, 56, 78, 90, 24, 68, 10}, 90)`
return: `4`
result: ⊘ pass

test #4: `lastIndexOf({10, 34, 56, 10, 90, 10, 68, 10}, 10)`
return: `7`
result: ⊘ pass

test #5: `lastIndexOf({4, 4}, 4)`
return: `1`
result: ⊘ pass

test #6: `lastIndexOf({42}, 42)`
return: `0`
result: ⊘ pass

test #7: `lastIndexOf({42}, 24)`
return: `-1`
result: ⊘ pass

test #8: `lastIndexOf({}, 42)`
return: `-1`
result: ⊘ pass

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○ BJP4 Self-Check 7.9: declareArray

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

Write a piece of code that declares an array variable named `data` with the elements 7, -1, 13, 24, and 6. Use only one statement to initialize the array.

```
statement    int[] data = {7,-1,13,24,6};
```

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⊘ **You passed 1 of 1 tests.**

Go to the next problem: max

#	question	your answer	result
1	statement	int[] data = {7,-1,13,24,6};	⊘ pass

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○ BJP4 Self-Check 7.8: arrayDeclarationSyntax2

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

Which of the following choices is the correct syntax for quickly
declaring/initializing an array of six integers to store a particular list of
values?

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```
a.  ○  int[6] a = {17, -3, 42, 5, 9, 28};
b.  ◉  int[] a = {17, -3, 42, 5, 9, 28};
c.  ○  int a {17, -3, 42, 5, 9, 28};
d.  ○  int[] a = new int[6] {17, -3, 42, 5, 9, 28};
e.  ○  int[] a = new {17, -3, 42, 5, 9, 28} [6];
```
(order shuffled)

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⊘ **You passed 1 of 1 tests.**

Go to the next problem: declareArray

```
    question #1:   Which of the following choices is the correct syntax for quickly
declaring/initializing an array of six integers to store a particular list of values?
   your answer:  int[] a = {17, -3, 42, 5, 9, 28};
        result:  ⊘ pass
```

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work, please contact your TA or instructor.

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○ BJP4 Self-Check 7.6: fillDataArray

Language/Type: ☕ Java arrays array mystery
Author: Marty Stepp (on 2016/09/08)

Fill in the array with the values that would be stored after the code executes:

```java
int[] data = new int[8];
data[0] = 3;
data[7] = -18;
data[4] = 5;
data[1] = data[0];

int x = data[4];
data[4] = 6;
data[x] = data[0] * data[1];
```

data[0]	3
data[1]	3
data[2]	0
data[3]	0
data[4]	6
data[5]	9
data[6]	0
data[7]	-18

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⊘ **You passed 8 of 8 tests.**

Go to the next problem: arrayBugs

#	question	your answer	result
1	data[0]	3	⊘ pass

2	data[1]	3	⊘ pass
3	data[2]	0	⊘ pass
4	data[3]	0	⊘ pass
5	data[4]	6	⊘ pass
6	data[5]	9	⊘ pass
7	data[6]	0	⊘ pass
8	data[7]	-18	⊘ pass

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◯ BJP4 Self-Check 7.5: numbersArray

Language/Type: ☕ Java arrays array mystery
Author: Coral Peterson (on 2016/09/08)

What elements does the array `numbers` contain after the following code is executed?
(Write the elements in the format: {0, 1, 2, ...})

```java
int[] numbers = new int[8];
numbers[1] = 4;
numbers[4] = 99;
numbers[7] = 2;

int x = numbers[1];
numbers[x] = 44;
numbers[numbers[7]] = 11;   // uses numbers[7] as index
```

elements `{0,4,11,0,44,0,0,2}`   ☑ Sound F/X

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✅ **You passed 1 of 1 tests.**

Go to the next problem: fillDataArray

#	question	your answer	result
1	elements	{0,4,11,0,44,0,0,2}	✅ pass

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✓ BJP4 Self-Check 7.3: dataArray

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

Write code that creates an array of integers named `data` of size 5 with the following contents:

```
[27, 51, 33, -1, 101]
```

Type your solution here:
```
1 int[] data = {27, 51, 33, -1, 101};
```

This problem asks for **bare code.** Submit a fragment of Java code as described. Do not write any class or method heading around your code; just write the lines of code that will produce the result described.

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✓ You passed 1 of 1 tests.

Go to the next problem: oddsArray

test #1:	test1
console output:	data = [27, 51, 33, -1, 101]
result:	✓ pass

If you do not understand how to solve a problem or why your solution doesn't work, please contact your TA or instructor.

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○ BJP4 Self-Check 7.4: oddsArray

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

Write code that creates an array named odds and stores all odd numbers between -6 and 38 into it using a `for` loop. Make the array's size exactly large enough to store the numbers.

Type your solution here:

```java
int[] odds = new int[22];
for (int i = 0, n = -6; n <= 38; n++) {
    if (n%2 != 0) {
        odds[i] = n;
        i++;
    }
}
```

This problem asks for **bare code.** Submit a fragment of Java code as described. Do not write any class or method heading around your code; just write the lines of code that will produce the result described.

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⊘ You passed 1 of 1 tests.

Go to the next problem: numbersArray

test #1:	test1
console output:	odds = [-5, -3, -1, 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, ²
result:	⊘ pass

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○ **BJP4 Self-Check 7.2: numbersElements**

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

Assume that the following array has been defined, though you do not necessarily know its length.

```
int[] numbers = new int[??];
```

What expression should be used:

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To access the first element?

`numbers[0]`

To access the last element, assuming was created with length 10?

`numbers[9]`

To access its last element, regardless of its length?

`numbers[numbers.l`

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⊘ **You passed 3 of 3 tests.**

Go to the next problem: dataArray

question #1: To access the first element?
your answer: numbers[0]
result: ⊘ pass

question #2:
To access the last element, assuming was created with length 10?
your answer: numbers[9]
result: ⊘ pass

question #3: To access its last element, regardless of its length?
your answer: numbers[numbers.length - 1]
result: ⊘ pass

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⊙ BJP4 Self-Check 7.1: arrayDeclarationSyntax

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

Which of the following choices is the correct syntax for declaring/initializing
an array of ten integers?

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a. ○ []int a = [10]int;
b. ◉ int[] a = new int[10];
c. ○ int[10] a = new int[10];
d. ○ int a[10] = new int[10];
e. ○ int a[10];
(order shuffled)

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⊙ You passed 1 of 1 tests.

Go to the next problem: numbersElements

> **question #1:**   Which of the following choices is the correct syntax for
> declaring/initializing an array of ten integers?
> **your answer:** int[] a = new int[10];
> **result:** ⊙ pass

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work, please contact your TA or instructor.

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