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Questions

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1/1 point (graded)

Which of the following are signs of an excellent specification (check all that apply):

1. the specification is declarative
2. the specification is operational
3. the specification is as super-strong as possible
4. the specification is as super-weak as possible
5. the implementation is allowed to ignore invalid arguments
₹ 6. the implementation is allowed to use different algorithms depending on the arguments
7. the specification utilizes the reader's knowledge of the implementation

Explanation

We prefer declarative specs (option 1) to operational ones (2).

We want a spec that is neither too strong (3) nor too weak (4) to balance the constraints of implementor and client.

We would rather have clear specs and implementations that fail fast than allow the implementation to quietly fail (5).

And we do not want the client to have to read the implementation at all (7).





6 Answers are displayed within the problem

that's an odd way of looking at it

1/1 point (graded)

```
public static int secondToLastIndexOf(int[] arr, int val)
  requires: val appears in arr an odd number of times
  effects: returns the 2nd-largest i such that arr[i] == val
```

Which of the following are reasonable criticisms of this spec? Check all that apply.

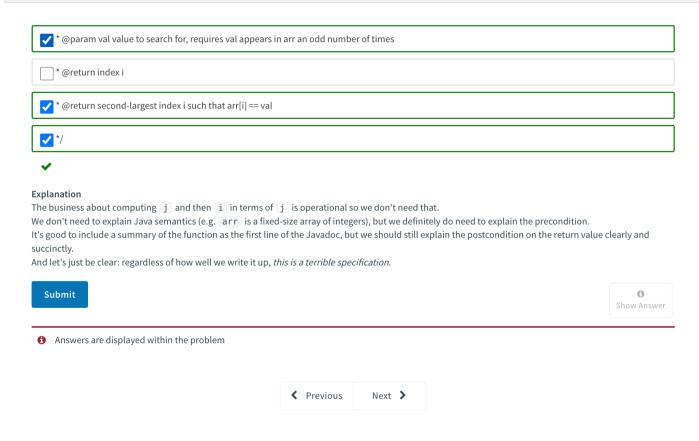
✓ The spec is not well-defined, we cannot implement it
▼ The spec is not coherent
The spec is not deterministic
The spec is not operational
✓
Submit Show Answer
✓ Correct (1/1 point)
behavioral oddities
4/4 points (graded)
Consider the following test cases for secondToLastIndexOf:
[1, 3, 4], 3 returns 1
valid test case
could be valid with a weaker precondition, same postcondition
could be valid with a weaker precondition, stronger postcondition
oculd be valid with same precondition, weaker postcondition
✓
Explanation The current postcondition doesn't admit any output value with only one occurence of val.
[1, 3, 3, 4], 3 returns 1
valid test case
o could be valid with a weaker precondition, same postcondition
could be valid with a weaker precondition, stronger postcondition
could be valid with same precondition, stronger postcondition
✓
Explanation We would need to weaken the precondition to allow even occurences of val.
[1, 3, 3, 4], 3 returns 2
o valid test case
could be valid with a weaker precondition, same postcondition

s Reading 5: Designing Specifications 6.005.1x Courseware MIT Open Learning Library penlearninglibrary.mlt.edu/courses/course-v1:MITx+6.005.1x+3T2016/courseware/Readings_Videos/05-Designing-Specifications/?activate_block_id=block-v1%3AMITx%2B6.00	05.1x%2B3T2016%2Btype
could be valid with a weaker precondition, stronger postcondition	
Could be valid with a weaker precondition, stronger postcondition	
could be valid with same precondition, stronger postcondition	
•	
xplanation atisfies the precondition, and the postcondition is deterministic.	
[3, 3, 3, 3], 3 throws an exception	
○ valid test case	
Could be valid with a weaker precondition, same postcondition	
o could be valid with a weaker precondition, stronger postcondition	
could be valid with same precondition, stronger postcondition	
xplanation his is not (currently) a valid test because it violates the precondition; maybe the method throws an exception in such cases, but that belibec. So at least we need to weaken the precondition to allow this input. Having done that, we also need to change the postcondition to exception is thrown when val appears an even number of times, because the current postcondition doesn't mention any exceptions a	specify that an
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* @param arr array to search

* @param val value to search for

* @param arr fixed-size array of integers to search



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