

Sample Questions for Computer Science A

13. Consider the following instance variable and method.

```

private int[] numbers;

/** Precondition: numbers contains int values in no particular order.
 */
public int mystery(int num)
{
    for (int k = numbers.length - 1; k >= 0; k--)
    {
        if (numbers[k] < num)
        {
            return k;
        }
    }
    return -1;
}

```

Which of the following best describes the contents of numbers after the following statement has been executed?

```
int m = mystery(n);
```

- (A) All values in positions 0 through m are less than n.
- (B) All values in positions m+1 through numbers.length-1 are less than n.
- (C) All values in positions m+1 through numbers.length-1 are greater than or equal to n.
- (D) The smallest value is at position m.
- (E) The largest value that is smaller than n is at position m.

numbers → 11, -1, 3, 10, 7  
 n = 5 mystery(5)?  
 m = mystery(5)  
 m = 2

k	numbers[k]	<	num?
4	7		5
3	10		
2	3		

mystery(5) → 2 m = 2

Sample Questions for **Computer Science A**

17. Consider the following instance variable and method.

```
private int[] array;

/** Precondition: array.length > 0
 */
public int checkArray()
{
    int loc = array.length / 2;
    for (int k = 0; k < array.length; k++)
    {
        if (array[k] > array[loc])
        {
            loc = k;
        }
    }
    return loc;
}
```

Which of the following is the best postcondition for `checkArray` ?

- (A) Returns the index of the first element in array `array` whose value is greater than `array[loc]`
- (B) Returns the index of the last element in array `array` whose value is greater than `array[loc]`
- (C) Returns the largest value in array `array`
- (D) Returns the index of the largest value in array `array`
- (E) Returns the index of the largest value in the second half of array `array`

array → <sup>0</sup>-2, <sup>1</sup>3, <sup>2</sup>4, <sup>3</sup>-3, <sup>4</sup>11, <sup>5</sup>9

loc	k	array[k]	>	array[loc]
3	0	-2	>	-3
0	1	3	>	-2
1	2	4		3
2	3	-3		4
	4	11		4
<b>4</b>	5	9		11

array → <sup>0</sup>5, <sup>1</sup>3, <sup>2</sup>-1

1	0	5	>	3
0	1	3	>	5?
	2	-1	>	5?

33  
end  
return 0