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Test Name:	INFO_6205 Spring2019 Sec_05 quiz_2
Taken On:	22 Jan 2019 16:29:51 EST
Time Taken:	21 min 20 sec/ 30 min
Work Experience:	< 1 years
Invited by:	Robin
Invited on:	22 Jan 2019 16:25:43 EST
Tags Score:	<div>Algorithms 5/5</div> <div>Complexity 5/5</div> <div>Core CS 5/5</div> <div>Easy 5/5</div>

100%

50/50

scored in **INFO_6205 Spring2019 Sec_05 quiz_2** in 21 min 20 sec on 22 Jan 2019 16:29:51 EST

Recruiter/Team Comments:

No Comments.

	Question Description	Time Taken	Score	Status
Q1	Binary Search > Multiple Choice	32 sec	5/ 5	✓
Q2	Complexity of the Code Snippet > Multiple Choice	1 min 4 sec	5/ 5	✓
Q3	Implementation > Coding	5 min 36 sec	20/ 20	✓
Q4	Pass by value or reference > Sentence Completion	7 min 2 sec	15/ 15	✓
Q5	What is the result of this code? > Multiple Choice	6 min 59 sec	5/ 5	✓

QUESTION 1

Correct Answer

Score 5

Binary Search > Multiple Choice

QUESTION DESCRIPTION

Given a sorted integer array of length N, what's the maximum number of comparisons required to find a target number using the binary search method ?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- ☐ logN
- ☐ log(N+1)
- ☒ logN + 1
- ☐ logN -1

No Comments

QUESTION 2

Correct Answer

Score 5

Complexity of the Code Snippet > Multiple Choice

Core CS

Algorithms

Complexity

Easy

QUESTION DESCRIPTION

Consider the following code snippet:

```
int a = 1;

while (a < n) {
    a = a * 2;
}
```

What is the complexity of the above code snippet?

INTERNAL NOTES

Task is reducing exponentially by an order of 2.

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- ☐ O(n)
- ☐ O(1)
- ☒ O(log₂(n))
- ☐ O(2ⁿ)

No Comments

QUESTION 3



Correct Answer

Score 20

Implementation > Coding

QUESTION DESCRIPTION

Your company has many different products and each products comes in different sizes.

The inventory management system treats each combination of "(String) *productName*" & "(int) *size*" as an individual *Product* record.

The records also contains a "(LocalDateTime) *lastUpdate*" field as a timestamp, which can be updated so that, even if it is different, as long as the *productName* and *size* fields are equal, the *Product* records should be considered the same.

```
product1: productName = "Gloves", size = 5, timestamp = "2018-01-15 18:35:05"
product2: productName = "Gloves", size = 7, timestamp = "2018-01-11 10:02:55"
product3: productName = "Gloves", size = 5, timestamp = "2017-12-03 11:28:23"
product4: productName = "Hat", size = 5, timestamp = "2017-12-03 11:28:23"
```

Only *product1.equals(product3)* should return *true* as their *productName* and *size* fields are identical (the timestamp may vary.)

All other *equals()* calls should return false.

Please complete both *equals()* and *hashCode()* methods for the *Product* class.

CANDIDATE ANSWER

Language used: **Java 8**

```
1  @Override
2      public boolean equals(Object o) {
3          // ***** change the underline part *****
4          if (this == o) {
5              return true;
6          }
7
8          // ***** change the underline part *****
9          if (o == null) {
10             return false;
11         }
12
13         // ***** change the underline part *****
14         if (getClass() != o.getClass()) {
15             return false;
16         }
17
18         // ***** change the underline part *****
19         Product p = (Product) o;
20         return ((this.productName.equals(p.productName)) && (this.size ==
21 p.size));
22     }
23
24     @Override
25     public int hashCode() {
26         int result = 7;
27
28         // ***** Please ONLY uncomment the correct lines *****
29         result = result * 31 + size;
30         result = result * 31 + ((productName == null) ? 0 :
31 productName.hashCode());
32         // result = result * 31 + (timestamp.hashCode());
33         return result;
34     }
```

35
36

TESTCASE	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	✔ Success	10	0.35 sec	35.9 MB
Testcase 1	Easy	✔ Success	10	0.34 sec	35.6 MB

No Comments

QUESTION 4



Correct Answer

Score 15

Pass by value or reference > Sentence Completion

QUESTION DESCRIPTION

Problem Statement

When the following code is executed, there will be 6 lines of output generated. Please complete the output.

```
public class CallByValue {
    int number = 0;
    int[] array = {0};

    public int incrementNumber1(int number) {
        number++;
        return number;
    }

    public int incrementNumber2() {
        number++;
        return number;
    }

    public int[] incrementArray1 (int[] array) {
        for (int i = 0; i < array.length; i++) {
            array[i]++;
        }
        return array;
    }

    public int[] incrementArray2 () {
        for (int i = 0; i < array.length; i++) {
            array[i]++;
        }
        return array;
    }

    public static void main(String[] args) {
        CallByValue cbv = new CallByValue();

        cbv.number = 0;
        cbv.incrementNumber1(cbv.number);
        System.out.println("incrementNumber1(): " + cbv.number);

        cbv.number = 0;
        cbv.incrementNumber2();
        System.out.println("incrementNumber2(): " + cbv.number);

        cbv.array[0] = 0;
        cbv.incrementArray1(cbv.array);
        System.out.println("incrementArray1(): " + cbv.array[0]);

        cbv.array[0] = 0;
        cbv.incrementArray2();
        System.out.println("incrementArray2(): " + cbv.array[0]);
    }
}
```

```
        }
    }
}
```

Complete String

incrementNumber1(): {blank} incrementNumber2(): {blank} incrementArray1(): {blank} incrementArray2(): {blank}

CANDIDATE ANSWER

```
        incrementNumber1(): 0
    incrementNumber2(): 1
    incrementArray1(): 1
    incrementArray2(): 1
```

No Comments

QUESTION 5

Correct Answer

Score 5

What is the result of this code? > Multiple Choice

QUESTION DESCRIPTION

```
import java.util.*;

public class VLA2 {
    public VLA2(int d) { dishSize = d; }

    public static void main(String[] args) {
        Comparator<VLA2> cf = new Comparator<VLA2>() {
            @Override
            public int compare(VLA2 o1, VLA2 o2) {
                return Integer.compare(o2.dishSize,o1.dishSize);
            }
        };
        VLA2[] va = {new VLA2(40), new VLA2(200), new VLA2(60)};
        Arrays.sort(va, cf);
        int index = Arrays.binarySearch(va, new VLA2(40), cf);
        System.out.print(index + " ");
        index = Arrays.binarySearch(va, new VLA2(80), cf);
        System.out.print(index>=0);
    }

    private int dishSize;
}
```

CANDIDATE ANSWER**Options:** (Expected answer indicated with a tick)

- ☐ 0 true
- ☐ 0 false
- ☐ 2 true
- ☒ 2 false
- ☐ Compilation Error
- ☐ Run time Exception

No Comments