



**Full Name:** Xinying Shi  
**Email:** shi.xiny@husky.neu.edu  
**Test Name:** Spring\_2018\_INFO6205\_Sec05\_Quiz\_5  
**Taken On:** 6 Feb 2018 16:43:08 EST  
**Time Taken:** 23 min 16 sec/ 30 min  
**Invited by:** Robin  
**Invited on:** 6 Feb 2018 16:33:06 EST  
**Tags Score:**

**100%**  
**100/100**

scored in  
**Spring\_2018\_INFO6205\_Sec05\_**  
in 23 min 16 sec on 6  
Feb 2018 16:43:08 EST

**Recruiter/Team Comments:**

No Comments.

**Plagiarism flagged**

We have marked questions with suspected plagiarism below. Please review.

	Question Description	Time Taken	Score	Status
Q1	Sorting Method Selection (1) > Multiple Choice	14 sec	15/ 15	✓
Q2	Sorting Method Selection (2) > Multiple Choice	13 sec	15/ 15	✓
Q3	Sorting Method Selection (3) > Subjective	3 min 1 sec	15/ 15	⊖
Q4	Merge Sort > Subjective	2 min 45 sec	15/ 15	⊖
Q5	Anagram > Coding	16 min 52 sec	40/ 40	!

**QUESTION 1**



Correct Answer

Score 15

Sorting Method Selection (1) > Multiple Choice

**QUESTION DESCRIPTION**

As a developer of your company, you are asked to implement sorting method for processing business data.  
If the input data are already sorted in **\*\*\*most cases\*\*\***, which one would you choose?

**CANDIDATE ANSWER**

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

- ☒ Insertion Sort  
☐ Selection Sort  
☐ Merge Sort

No Comments

**QUESTION 2**

Correct Answer

Score 15

## Sorting Method Selection (2) &gt; Multiple Choice

**QUESTION DESCRIPTION**

As a developer of your company, you are asked to implement sorting method for processing business data.  
If the input data are **random**, which one would you choose?

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

- ☐ Insertion Sort  
☐ Selection Sort  
☒ Merge Sort

No Comments

**QUESTION 3**

Self Evaluation

Score 15

## Sorting Method Selection (3) &gt; Subjective

**QUESTION DESCRIPTION**

One of the methods (Insertion / Selection / Merge) was not selected in the former 2 questions..  
Please describe the reason.

**INTERNAL NOTES**Selection Sort is always  $O(n^2)$ .**CANDIDATE ANSWER**

Selection Sort is not selected

Because insertion sort do not need much compare and swap operation and when in random array, merge sort will have  $O(N \log N)$  time complexity while Selection sort and Insertion Sort will have  $O(N^2)$  time complexity.

No Comments

**QUESTION 4**  
Self Evaluation

Score 15

## Merge Sort &gt; Subjective

**QUESTION DESCRIPTION**

Please briefly describe why the complexity of Merge Sort is  $O(n \log n)$ .

**INTERNAL NOTES**

$\log n$  layers of division and  $n$  times of compare for each layer.

**CANDIDATE ANSWER**

On the traditional merge sort, every pass through the data will double the size of the sorted subsections.

After the first pass, the data will be sorted into sections of length two. After the second pass, length four. Then eight, etc. Finally, it will up to the size of the data.

It's necessary to keep doubling the size of the sorted sections until there's one section comprising the whole data. It will take  $\lg(N)$  doublings of the section size to reach the file size, and each pass of the data will take time proportional to the number of records.

No Comments

# QUESTION 5

 Needs Review

Score 40

## Anagram > Coding

### QUESTION DESCRIPTION

(An anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.)  
Given two strings s and t, write a function to determine if t is an anagram of s.

For example,  
s = "anagram", t = "nagaram", return true.  
s = "rat", t = "car", return false.

Note:

You may assume the string contains only lowercase alphabets.

Hint:

1. There is O(n) solution for this question but your algorithm doesn't have to be O(n) as long as you can pass the test cases.
2. You may find toCharArray() and charAt() methods in String Class useful.
3. You may sort the characters in the given Strings to solve this problem.

### INTERNAL NOTES

Sort the characters (or put them into hash map) first and then compare the 2 character arrays (hash maps).

### CANDIDATE ANSWER

Language used: **Java 8**

```
1 public static boolean isAnagram(String s, String t) {
2     // put your implementation here
3     HashMap<Character,Integer> map=new HashMap<>();
4     char[] sc=s.toCharArray();
5     for (char i:sc){
6         if (map.get(i)==null)
7             map.put(i,0);
8         map.put(i,map.get(i)+1);
9     }
10    for (int i=0;i<t.length();i++){
11        if (map.get(t.charAt(i))==null||map.get(t.charAt(i))<=0)
12            return false;
13        map.put(t.charAt(i),map.get(t.charAt(i))-1);
14    }
15    return true;
16 }
17 }
```

TESTCASE	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	✔ Success	8	0.17 sec	34 MB
Testcase 1	Easy	✔ Success	8	0.17 sec	35.4 MB
Testcase 2	Easy	✔ Success	8	0.17 sec	33.1 MB
Testcase 3	Easy	✔ Success	8	0.16 sec	34.8 MB
Testcase 4	Easy	✔ Success	4	0.16 sec	34.3 MB
Testcase 5	Easy	✔ Success	4	0.16 sec	34.4 MB

No Comments