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Taken On:	12 Jul 2021 21:46:53 PDT
Time Taken:	88 min 1 sec/ 90 min
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Skills Score:	
Tags Score:	

96.9%

315/325

scored in **Graphs Assessment, Part 2 2021** in 88 min 1 sec on 12 Jul 2021 21:46:53 PDT

Recruiter/Team Comments:

No Comments.

Plagiarism flagged

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

	Question Description	Time Taken	Score	Status
Q1	Topological Sort > **Multiple Choice**	4 min 15 sec	5/ 5	✓
Q2	Alien Language > **Coding**	28 min	140/ 140	!
Q3	Number of Islands > **Coding**	8 min 53 sec	100/ 100	!
Q4	Possible Bipartition > **Coding**	46 min 29 sec	70/ 80	✓

QUESTION 1

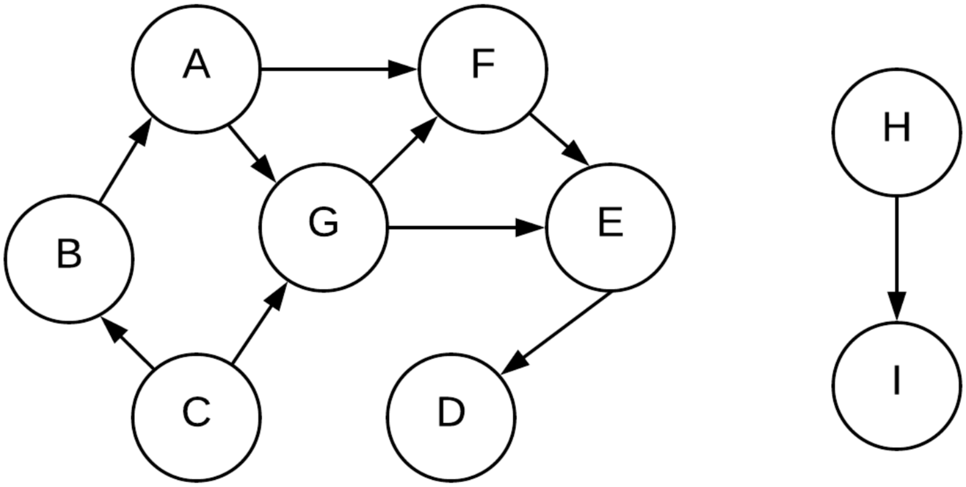
✓ Correct Answer

Score 5

Topological Sort › Multiple Choice

QUESTION DESCRIPTION

Given this graph, answer the following questions:



What is a valid topological sorting of this graph?

CANDIDATE ANSWER

Options: (Expected answer indicated with a tick)

- ○ HICBAGEDF
- ✓ ● HICBAGFED
- ○ HICGBAFED
- ○ HICGFEDBA

No Comments

QUESTION 2

! Needs Review

Score 140

Alien Language › Coding

QUESTION DESCRIPTION

Given a sorted dictionary (array of words) of an alien language, find order of characters in the language.

Examples:

```
Input:  words[] = {"baa", "abcd", "abca", "cab", "cad"}
Output: Order of characters is 'b', 'd', 'a', 'c'
Note that words are sorted and in the given language "baa"
comes before "abcd", therefore 'b' is before 'a' in output.
Similarly we can find other orders.

Input:  words[] = {"caa", "aaa", "aab"}
Output: Order of characters is 'c', 'a', 'b'
```

If you're trying to understand how the test cases / inputs work, you can analyze the code outside of the function you're trying to implement to see how the input string is parsed to create the graph.

CANDIDATE ANSWER

Language used: **Java 8**

```java
/*
This function finds and returns the order
of characers from a sorted array of words.
alpha is number of possible alphabets
starting from 'a'. For simplicity, this
function is written in a way that only
first 'alpha' characters can be
in words array. For example if alpha
is 7, then words[] should contain words
having only 'a', 'b','c' 'd', 'e', 'f', 'g'

Graph class
 Graph(numVertices)
 addEdge(startVertex, endVertex)
 topologicalSort()
 */

public static ArrayList<Character> getOrder(String[] words, int alpha) {
    Graph graph = new Graph(alpha);
    for (int i = 0; i < words.length-1; i++) {
        String first = words[i];
        String second = words[i+1];
        // System.out.println("first: " + first + ", second: " + second);
        int max = Math.min(first.length(), second.length());
        for (int j = 0; j < max; j++) {
            char source = first.charAt(j);
            char dest = second.charAt(j);
            if (source != dest) {
                graph.addEdge(source-'a', dest-'a');
                break;
            }
        }
    }
    return graph.topologicalSort();
}
```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✓ Success	10	0.1068 sec	24.9 KB
Testcase 1	Easy	Hidden case	✓ Success	10	0.0953 sec	25 KB
Testcase 2	Easy	Hidden case	✓ Success	10	0.1584 sec	25 KB
Testcase 3	Easy	Hidden case	✓ Success	10	0.1289 sec	25 KB
Testcase 4	Easy	Hidden case	✓ Success	10	0.1214 sec	24.9 KB
Testcase 5	Easy	Hidden case	✓ Success	10	0.1465 sec	24.8 KB
Testcase 7	Easy	Hidden case	✓ Success	10	0.1276 sec	24.9 KB
Testcase 8	Easy	Hidden case	✓ Success	10	0.1181 sec	25 KB
Testcase 9	Easy	Hidden case	✓ Success	10	0.1199 sec	25.3 KB
Testcase 10	Easy	Hidden case	✓ Success	10	0.0997 sec	24.8 KB
Testcase 11	Easy	Hidden case	✓ Success	10	0.0992 sec	25 KB
Testcase 12	Easy	Hidden case	✓ Success	10	0.1345 sec	24.9 KB
Testcase 13	Easy	Hidden case	✓ Success	10	0.0949 sec	24.9 KB

Testcase 14	Easy	Hidden case	✓ Success	10	0.1321 sec	25.1 KB

No Comments

QUESTION 3

Needs Review

Score 100

Number of Islands › Coding

QUESTION DESCRIPTION

Given an `m x n` 2D binary grid `grid` which represents a map of `1`s (land) and `0`s (water), return *the number of islands*.
An **island** is surrounded by water and is formed by connecting adjacent lands horizontally or vertically. You may assume all four edges of the grid are all surrounded by water.

Example 1:

```
Input: grid = [
  [1,1,1,1,0],
  [1,1,0,1,0],
  [1,1,0,0,0],
  [0,0,0,0,0]
]
Output: 1
```

Example 2:

```
Input: grid = [
  [1,1,0,0,0],
  [1,1,0,0,0],
  [0,0,1,0,0],
  [0,0,0,1,1]
]
Output: 3
```

CANDIDATE ANSWER

Language used: **Java 8**

```
    public static int numIslands(int[][] grid) {
        int count = 0;
        for (int i = 0; i < grid.length; i++) {
            for (int j = 0; j < grid[i].length; j++) {
                if (grid[i][j] == 1) {
                    count++;
                    bfs(grid, i, j);
                }
            }
        }
        return count;
    }

    private static void bfs(int[][] grid, int i, int j) {
        if (i < 0 || i >= grid.length || j < 0 || j >= grid[0].length ||
grid[i][j] == 0)
            return;

        grid[i][j] = 0;
        bfs(grid, i+1, j);
        bfs(grid, i, j+1);
        bfs(grid, i-1, j);
        bfs(grid, i, j-1);
    }
```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✓ Success	10	0.1009 sec	25 KB
Testcase 1	Easy	Hidden case	✓ Success	10	0.126 sec	25 KB
Testcase 2	Easy	Hidden case	✓ Success	10	0.1209 sec	25 KB
Testcase 3	Easy	Hidden case	✓ Success	10	0.1002 sec	25 KB
Testcase 4	Easy	Hidden case	✓ Success	10	0.1317 sec	24.7 KB
Testcase 5	Easy	Hidden case	✓ Success	10	0.0842 sec	25 KB
Testcase 6	Easy	Hidden case	✓ Success	10	0.0964 sec	25 KB
Testcase 7	Easy	Hidden case	✓ Success	10	0.1277 sec	25 KB
Testcase 8	Easy	Hidden case	✓ Success	10	0.1525 sec	24.8 KB
Testcase 9	Easy	Hidden case	✓ Success	10	0.2199 sec	24.8 KB

No Comments

QUESTION 4

✓ Correct Answer

Score 70

Possible Bipartition › Coding

QUESTION DESCRIPTION

Given a set of `n` people (numbered `1, 2, ..., n`), we would like to split everyone into two groups of **any** size.
Each person may dislike some other people, and they should not go into the same group.
Formally, if `dislikes[i] = [a, b]`, it means it is not allowed to put the people numbered `a` and `b` into the same group.
Return `true` if and only if it is possible to split everyone into two groups in this way.

Example 1:

```
Input: n = 4, dislikes = [[1,2],[1,3],[2,4]]
Output: true
Explanation: group1 [1,4], group2 [2,3]
```

Example 2:

```
Input: n = 3, dislikes = [[1,2],[1,3],[2,3]]
Output: false
```

Example 3:

```
Input: n = 5, dislikes = [[1,2],[2,3],[3,4],[4,5],[1,5]]
Output: false
```

CANDIDATE ANSWER

Language used: **Java 8**

```java
    public static boolean possibleBipartition(int n, int[][] dislikes) {
        Map<Integer, List<Integer>> graph = new HashMap<>();
        for (int[] dislike : dislikes) {
            // System.out.println(Arrays.toString(dislike));
            int source = dislike[0];
            int dest = dislike[1];
            if (!graph.containsKey(source)) {
                List<Integer> list = new ArrayList<>();
                graph.put(source, list);
            }
            graph.get(source).add(dest);
        }

        int[] groups = new int[n+1];
        for (int i = 0; i <= n; i++)
            groups[i] = -1;
        for (int i = 0; i < n; i++) {
            if (!dfs(i, graph, groups, 0))
                return false;
        }
        return true;
    }

    private static boolean dfs(int index, Map<Integer, List<Integer>> graph,
int[] groups, int next) {
        if (!graph.containsKey(index))
            return true;

        groups[index] = next;
        for (int neighbor : graph.get(index)) {
            if (groups[neighbor] == -1)
                dfs(neighbor, graph, groups, (next+1)%2);
            else if (groups[neighbor] == next)
                return false;
        }

        return true;
    }

```

TESTCASE	DIFFICULTY	TYPE	STATUS	SCORE	TIME TAKEN	MEMORY USED
Testcase 0	Easy	Sample case	✓ Success	10	0.136 sec	25.1 KB
Testcase 1	Easy	Hidden case	⊗ Wrong Answer	0	0.1446 sec	24.9 KB
Testcase 2	Easy	Hidden case	✓ Success	10	0.1205 sec	24.8 KB
Testcase 3	Easy	Hidden case	✓ Success	10	0.1401 sec	24.8 KB
Testcase 5	Easy	Hidden case	✓ Success	10	0.1279 sec	25.1 KB
Testcase 6	Easy	Hidden case	✓ Success	10	0.1032 sec	24.8 KB
Testcase 7	Easy	Hidden case	✓ Success	10	0.1372 sec	24.9 KB
Testcase 8	Easy	Hidden case	✓ Success	10	0.1346 sec	25.1 KB

No Comments

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