

Problem 1257: Smallest Common Region

Problem Information

Difficulty: Medium

Acceptance Rate: 68.22%

Paid Only: Yes

Tags: Array, Hash Table, String, Tree, Depth-First Search, Breadth-First Search

Problem Description

You are given some lists of `regions` where the first region of each list **directly** contains all other regions in that list.

If a region `x` contains a region `y` `_directly_`, and region `y` contains region `z` `_directly_`, then region `x` is said to contain region `z` `**indirectly**`. Note that region `x` also `**indirectly**` contains all regions `**indirectly**` contained in `y`.

Naturally, if a region `x` contains (either `_directly_` or `_indirectly_`) another region `y`, then `x` is bigger than or equal to `y` in size. Also, by definition, a region `x` contains itself.

Given two regions: `region1` and `region2`, return `_the smallest region that contains both of them_`.

It is guaranteed the smallest region exists.

`**Example 1:**`

`**Input:**` regions = [["Earth", "North America", "South America"], ["North America", "United States", "Canada"], ["United States", "New York", "Boston"], ["Canada", "Ontario", "Quebec"], ["South America", "Brazil"]], region1 = "Quebec", region2 = "New York" `**Output:**` "North America"

`**Example 2:**`

`**Input:**` regions = [["Earth", "North America", "South America"], ["North America", "United States", "Canada"], ["United States", "New York", "Boston"], ["Canada", "Ontario",

```
"Quebec"], ["South America", "Brazil"]], region1 = "Canada", region2 = "South America"
**Output:** "Earth"
```

****Constraints:****

```
* `2 <= regions.length <= 104` * `2 <= regions[i].length <= 20` * `1 <= regions[i][j].length,
region1.length, region2.length <= 20` * `region1 != region2` * `regions[i][j]`, `region1`, and
`region2` consist of English letters. * The input is generated such that there exists a region
which contains all the other regions, either directly or indirectly. * A region cannot be directly
contained in more than one region.
```

Code Snippets

C++:

```
class Solution {
public:
    string findSmallestRegion(vector<vector<string>>& regions, string region1,
    string region2) {

    }
};
```

Java:

```
class Solution {
    public String findSmallestRegion(List<List<String>> regions, String region1,
    String region2) {

    }
}
```

Python3:

```
class Solution:
    def findSmallestRegion(self, regions: List[List[str]], region1: str, region2: str) -> str:
```