You are given two grids where each cell of the grids contains either a 0 or a 1. If two cells share a side then they are adjacent. Cells that contain 1 form a connected region if any cell of that region can be reached by moving through the adjacent cells that contain 1. Overlay the first grid onto the second

and if a region of the first grid completely matches a region of the second grid, the regions are matched. Count total number of such matched regions



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2/3 Attempted

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# ☆ Image Matching



Images are stored in the form of a grid. Image recognition is possible by comparing grids of two images and checking if they have any matching

1

2

For example, given two 3x3 grids 1 and 2:

```
111\ 111 \rightarrow 111\ 111
100\ 100 \rightarrow 100\ 100
100\ 101 \rightarrow 100\ 101
```

in the second grid.

There are 2 regions in the second grid:  $\{(0,0),(0,1),(0,2),(1,0),(2,0)\}$  and  $\{(2,2)\}$ .

Regions in grid 1 cover the first region of grid 2, but not the second region. There is 1 matching region.

Making a slight alteration to the above example:

There are no matching regions. From the first graph, the 1 at position (1,2) is not matched in the second grid's larger region. The second grid position (2,2) is not matched in grid 1.

### **Function Description**

Complete the function countMatches in the editor below. The function must return the number of matching regions.

countMatches has the following parameter(s):

```
grid1[grid1[0],...grid1[n-1]]: an array of bit strings representing the rows of image 1
grid2[grid2[0],...grid2[n-1]]: an array of bit strings representing the rows of image 2
```

### **Constraints**

- $1 \le n \le 100$
- $1 \le |grid1[i]|, |grid2[i]| \le 100$
- · grid cells contain only 0 or 1

**Input Format For Custom Testing** 

Sample Case 0

## Sample Input 0

#### **Sample Output 0**



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 $\equiv$ 

0

The first grid forms 2 regions. They are  $\{(0,2), (1,1), (1,2)\}$  and  $\{(2,0)\}$ 

The second grid forms 2 regions. They are  $\{(0,2), (1,1), (1,2), (2,2)\}$  and  $\{(2,0)\}$ 

So, only one region matches.

## Sample Case 1

1

# Sample Input 1

2

## **Sample Output 1**

## **Explanation 1**

The first grid forms 3 regions. They are  $\{(0,1)\},\{(1,0)\}$  and  $\{(1,3),(2,2),(2,3),(3,2),(3,3)\}$ The second grid forms 3 regions. They are  $\{(0,1)\}$ ,  $\{(1,0)\}$  and  $\{(0,3),(1,3),(2,2),(2,3),(3,2),(3,3)\}$ So, two regions match.

### Sample Case 2

### Sample Input 2

## **Sample Output 2**

0

## **Explanation 2**

The first grid forms 1 region. It is  $\{(0,2), (1,1), (1,2), (1,3), (2,1), (3,0), (3,1), (3,2), (3,3)\}$ The second grid forms 1 region. It is  $\{(0,2), (1,1), (1,2), (1,3), (2,1), (2,2), (3,0), (3,1), (3,2), (3,3)\}$ So, no regions match.

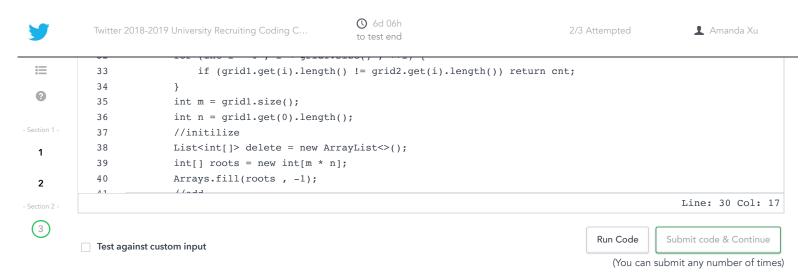
### YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour.



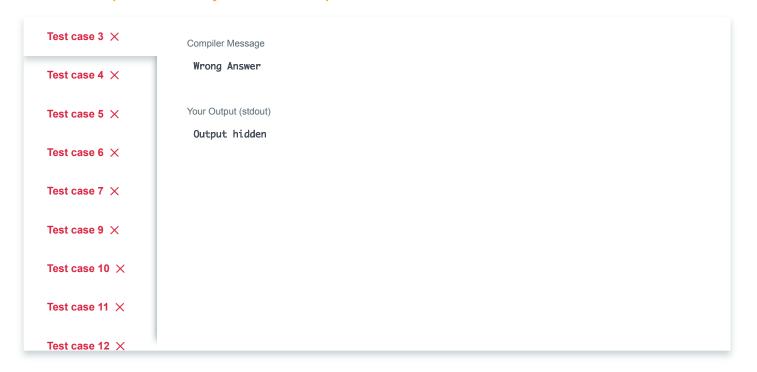
Start tour

```
Draft saved 08:04 am
                                                                                            Java 8
                                                                             Original Code
                                                                                                                        (3)
            * /
  24
 25
           private static int cnt = 0;
 26
           private static Set<Integer> set = new HashSet<>();
 27
           private static int[][] dirs = { { 1, 0 }, { -1, 0 }, { 0, 1 }, { 0, -1 } };
  28
           public static int countMatches(List<String> grid1, List<String> grid2) {
```



📥 Download sample test cases 💮 The input/output files have Unix line endings. Do not use Notepad to edit them on windows.

Status: Compiled successfully. 4/13 test cases passed.



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