

Problem 892: Surface Area of 3D Shapes

Problem Information

Difficulty: Easy

Acceptance Rate: 69.89%

Paid Only: No

Tags: Array, Math, Geometry, Matrix

Problem Description

You are given an $n \times n$ grid where you have placed some $1 \times 1 \times 1$ cubes. Each value $v = \text{grid}[i][j]$ represents a tower of v cubes placed on top of cell (i, j) .

After placing these cubes, you have decided to glue any directly adjacent cubes to each other, forming several irregular 3D shapes.

Return the total surface area of the resulting shapes.

Note: The bottom face of each shape counts toward its surface area.

Example 1:



Input: grid = [[1,2],[3,4]] **Output:** 34

Example 2:



Input: grid = [[1,1,1],[1,0,1],[1,1,1]] **Output:** 32

Example 3:



****Input:**** grid = [[2,2,2],[2,1,2],[2,2,2]] ****Output:**** 46

****Constraints:****

* `n == grid.length == grid[i].length` * `1 <= n <= 50` * `0 <= grid[i][j] <= 50`

Code Snippets

C++:

```
class Solution {  
public:  
    int surfaceArea(vector<vector<int>>& grid) {  
  
    }  
};
```

Java:

```
class Solution {  
    public int surfaceArea(int[][] grid) {  
  
    }  
}
```

Python3:

```
class Solution:  
    def surfaceArea(self, grid: List[List[int]]) -> int:
```