

Problem 3071: Minimum Operations to Write the Letter Y on a Grid

Problem Information

Difficulty: **Medium**

Acceptance Rate: 63.47%

Paid Only: No

Tags: Array, Hash Table, Matrix, Counting

Problem Description

You are given a **0-indexed** $n \times n$ grid where n is odd, and $\text{grid}[r][c]$ is 0 , 1 , or 2 .

We say that a cell belongs to the Letter **Y** if it belongs to one of the following:

- * The diagonal starting at the top-left cell and ending at the center cell of the grid.
- * The diagonal starting at the top-right cell and ending at the center cell of the grid.
- * The vertical line starting at the center cell and ending at the bottom border of the grid.

The Letter **Y** is written on the grid if and only if:

- * All values at cells belonging to the Y are equal.
- * All values at cells not belonging to the Y are equal.
- * The values at cells belonging to the Y are different from the values at cells not belonging to the Y.

Return the **minimum** number of operations needed to write the letter Y on the grid given that in one operation you can change the value at any cell to 0 , 1 , or 2 .

Example 1.



Input: `grid = [[1,2,2],[1,1,0],[0,1,0]]` **Output:** `3` **Explanation:** We can write Y on the grid by applying the changes highlighted in blue in the image above. After the operations, all cells that belong to Y, denoted in bold, have the same value of 1 while those that do not belong to Y are equal to 0. It can be shown that 3 is the minimum number of operations

needed to write Y on the grid.

Example 2:



Input: grid = [[0,1,0,1,0],[2,1,0,1,2],[2,2,2,0,1],[2,2,2,2,2],[2,1,2,2,2]] **Output:** 12

Explanation: We can write Y on the grid by applying the changes highlighted in blue in the image above. After the operations, all cells that belong to Y, denoted in bold, have the same value of 0 while those that do not belong to Y are equal to 2. It can be shown that 12 is the minimum number of operations needed to write Y on the grid.

Constraints:

$3 \leq n \leq 49$, $n == \text{grid.length} == \text{grid}[i].\text{length}$, $0 \leq \text{grid}[i][j] \leq 2$, n is odd.

Code Snippets

C++:

```
class Solution {
public:
    int minimumOperationsToWriteY(vector<vector<int>>& grid) {

    }
};
```

Java:

```
class Solution {
    public int minimumOperationsToWriteY(int[][] grid) {

    }
}
```

Python3:

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