Problem 2711: Difference of Number of Distinct Values on Diagonals

Problem Information

Difficulty: Medium
Acceptance Rate: 68.21%
Paid Only: No
Tags: Array, Hash Table, Matrix

Problem Description

Given a 2D `grid` of size `m x n`, you should find the matrix `answer` of size `m x n`.

The cell `answer[r][c]` is calculated by looking at the diagonal values of the cell `grid[r][c]`:

* Let `leftAbove[r][c]` be the number of **distinct** values on the diagonal to the left and above the cell `grid[r][c]` not including the cell `grid[r][c]` itself. * Let `rightBelow[r][c]` be the number of **distinct** values on the diagonal to the right and below the cell `grid[r][c]`, not including the cell `grid[r][c]` itself. * Then `answer[r][c] = |leftAbove[r][c] - rightBelow[r][c]|`.

A **matrix diagonal** is a diagonal line of cells starting from some cell in either the topmost row or leftmost column and going in the bottom-right direction until the end of the matrix is reached.

* For example, in the below diagram the diagonal is highlighted using the cell with indices `(2, 3)` colored gray: * Red-colored cells are left and above the cell. * Blue-colored cells are right and below the cell.

Return the matrix `answer`.

Example 1:

Input: grid = [[1,2,3],[3,1,5],[3,2,1]]

Output: Output: [[1,1,0],[1,0,1],[0,1,1]]

Explanation:

To calculate the `answer` cells:

answer | left-above elements | leftAbove | right-below elements | rightBelow | |leftAbove - rightBelow| ---|---|---|---|---|--- [0][0] | [] | 0 | [grid[1][1], grid[2][2]] | |{1, 1}| = 1 | 1 [0][1] | [] | 0 | [grid[1][2]] | |{5}| = 1 | 1 [0][2] | [] | 0 | [] | 0 | 0 [1][0] | [] | 0 | [grid[2][1]] | |{2}| = 1 | 1 [1][1] | [grid[0][0]] | |{1}| = 1 | [grid[2][2]] | |{1}| = 1 | 0 [1][2] | [grid[0][1]] | |{2}| = 1 | [] | 0 | 1 [2][0] | [] | 0 | [] | 0 | 0 [2][1] | [grid[1][0]] | |{3}| = 1 | [] | 0 | 1 [2][2] | [grid[0][0], grid[1][1]] | |{1, 1}| = 1 | [] | 0 | 1
Example 2:

Input: grid = [[1]]

Output: Output: [[0]]

Constraints:

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

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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