Problem 1463: Cherry Pickup II

Problem Information

Difficulty: Hard
Acceptance Rate: 72.19%
Paid Only: No
Tags: Array, Dynamic Programming, Matrix

Problem Description

You are given a `rows x cols` matrix `grid` representing a field of cherries where `grid[i][j]` represents the number of cherries that you can collect from the `(i, j)` cell.

You have two robots that can collect cherries for you:

* **Robot #1** is located at the **top-left corner** `(0, 0)`, and * **Robot #2** is located at the **top-right corner** `(0, cols - 1)`.

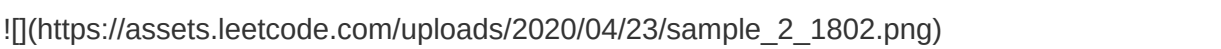
Return _the maximum number of cherries collection using both robots by following the rules below_ :

* From a cell `(i, j)`, robots can move to cell `(i + 1, j - 1)`, `(i + 1, j)`, or `(i + 1, j + 1)`. * When any robot passes through a cell, It picks up all cherries, and the cell becomes an empty cell. * When both robots stay in the same cell, only one takes the cherries. * Both robots cannot move outside of the grid at any moment. * Both robots should reach the bottom row in `grid`.

Example 1:

Input: grid = [[3,1,1],[2,5,1],[1,5,5],[2,1,1]] **Output:** 24 **Explanation:** Path of robot #1 and #2 are described in color green and blue respectively. Cherries taken by Robot #1, (3 + 2 + 5 + 2) = 12. Cherries taken by Robot #2, (1 + 5 + 5 + 1) = 12. Total of cherries: 12 + 12 = 24.

Example 2:



Input: grid = [[1,0,0,0,0,0,1],[2,0,0,0,0,3,0],[2,0,9,0,0,0,0],[0,3,0,5,4,0,0],[1,0,2,3,0,0,6]] **Output:** 28 **Explanation:** Path of robot #1 and #2 are described in color green and blue respectively. Cherries taken by Robot #1, (1 + 9 + 5 + 2) = 17. Cherries taken by Robot #2, (1 + 3 + 4 + 3) = 11. Total of cherries: 17 + 11 = 28.

Constraints:

* `rows == grid.length` * `cols == grid[i].length` * `2 <= rows, cols <= 70` * `0 <= grid[i][j] <= 100`

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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