Problem 750: Number Of Corner Rectangles

Problem Information

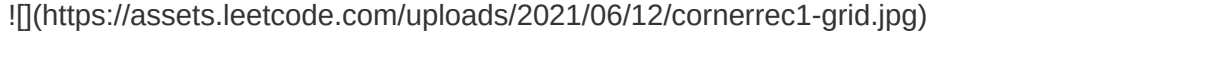
Difficulty: Medium
Acceptance Rate: 67.86%
Paid Only: Yes
Tags: Array, Math, Dynamic Programming, Matrix

Problem Description

Given an `m x n` integer matrix `grid` where each entry is only `0` or `1`, return _the number of**corner rectangles**_.

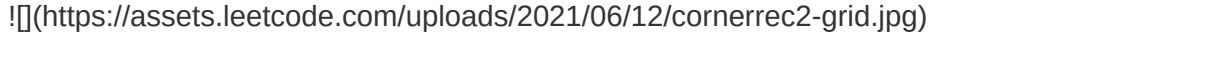
A **corner rectangle** is four distinct `1`'s on the grid that forms an axis- aligned rectangle. Note that only the corners need to have the value `1`. Also, all four `1`'s used must be distinct.

Example 1:



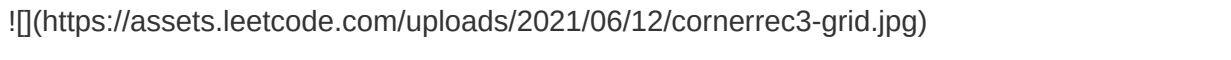
Input: grid = [[1,0,0,1,0],[0,0,1,0,1],[0,0,0,1,0],[1,0,1,0,1]] **Output:** 1 **Explanation:** There is only one corner rectangle, with corners grid[1][2], grid[1][4], grid[3][2], grid[3][4].

Example 2:



Input: grid = [[1,1,1],[1,1,1],[1,1,1]] **Output:** 9 **Explanation:** There are four 2x2 rectangles, four 2x3 and 3x2 rectangles, and one 3x3 rectangle.

Example 3:



Input: grid = [[1,1,1,1]] **Output:** 0 **Explanation:** Rectangles must have four distinct corners.

Constraints:

* `m == grid.length` * `n == grid[i].length` * `1 <= m, n <= 200` * `grid[i][j]` is either `0` or `1`. * The number of `1`'s in the grid is in the range `[1, 6000]`.

Code Snippets

C++:

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

}
};
```

Java:

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

}
}
```

Python3:

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