2768. Number of Black Blocks

Description

You are given two integers `m` and `n` representing the dimensions of a **0-indexed** `m x n` grid.

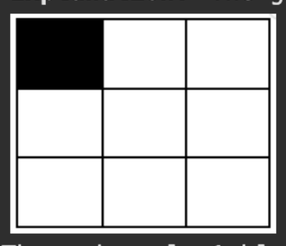
You are also given a **0-indexed** 2D integer matrix `coordinates`, where `coordinates[i] = [x, y]` indicates that the cell with coordinates `[x, y]` is colored **black**. All cells in the grid that do not appear in `coordinates` are **white**.

A block is defined as a `2 x 2` submatrix of the grid. More formally, a block with cell `[x, y]` as its top-left corner where `0 <= x < m - 1` and `0 <= y < n - 1` contains the coordinates `[x, y]`, `[x + 1, y]`, `[x, y + 1]`, and `[x + 1, y + 1]`.

Return *a* ***0-indexed*** *integer array* `arr` *of size* `5` *such that* `arr[i]` *is the number of blocks that contains exactly* `i` ***black*** *cells*.

Example 1:

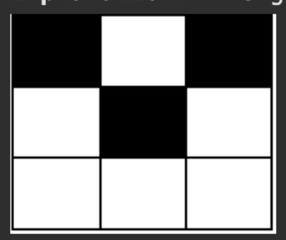
Input: m = 3, n = 3, coordinates = [[0,0]]
Output: [3,1,0,0,0]
Explanation: The grid looks like this:



There is only 1 block with one black cell, and it is the block starting with cell [0,0].
The other 3 blocks start with cells [0,1], [1,0] and [1,1]. They all have zero black cells.
Thus, we return [3,1,0,0,0].

Example 2:

Input: m = 3, n = 3, coordinates = [[0,0],[1,1],[0,2]]
Output: [0,2,2,0,0]
Explanation: The grid looks like this:



There are 2 blocks with two black cells (the ones starting with cell coordinates [0,0] and [0,1]).
The other 2 blocks have starting cell coordinates of [1,0] and [1,1]. They both have 1 black cell.
Therefore, we return [0,2,2,0,0].

Constraints:

- `2 <= m <= 10^5`
- `2 <= n <= 10^5`
- `0 <= coordinates.length <= 10^4`
- `coordinates[i].length == 2`
- `0 <= coordinates[i][0] < m`
- `0 <= coordinates[i][1] < n`
- It is guaranteed that `coordinates` contains pairwise distinct coordinates.