

2282. Number of People That Can Be Seen in a Grid Premium

Medium Topics Companies Hint

You are given an $m \times n$ **0-indexed** 2D array of positive integers `heights` where `heights[i][j]` is the height of the person standing at position (i, j) .

A person standing at position (row_1, col_1) can see a person standing at position (row_2, col_2) if:

- The person at (row_2, col_2) is to the right **or** below the person at (row_1, col_1) . More formally, this means that either `row1 == row2` and `col1 < col2` **or** `row1 < row2` and `col1 == col2`.
- Everyone in between them is shorter than **both** of them.

Return an $m \times n$ 2D array of integers `answer` where `answer[i][j]` is the number of people that the person at position (i, j) can see.

Example 1:

heights					answer				
3	1	4	2	5	2	1	2	1	0

Input: heights = [[3,1,4,2,5]]
Output: [[2,1,2,1,0]]
Explanation:

- The person at $(0, 0)$ can see the people at $(0, 1)$ and $(0, 2)$.
Note that he cannot see the person at $(0, 4)$ because the person at $(0, 2)$ is taller than him.
- The person at $(0, 1)$ can see the person at $(0, 2)$.
- The person at $(0, 2)$ can see the people at $(0, 3)$ and $(0, 4)$.
- The person at $(0, 3)$ can see the person at $(0, 4)$.
- The person at $(0, 4)$ cannot see anybody.

Example 2:

heights		answer	
5	1	3	1
3	1	2	1
4	1	1	0

Input: heights = [[5,1],[3,1],[4,1]]
Output: [[3,1],[2,1],[1,0]]
Explanation:

- The person at $(0, 0)$ can see the people at $(0, 1)$, $(1, 0)$ and $(2, 0)$.
- The person at $(0, 1)$ can see the person at $(1, 1)$.
- The person at $(1, 0)$ can see the people at $(1, 1)$ and $(2, 0)$.
- The person at $(1, 1)$ can see the person at $(2, 1)$.
- The person at $(2, 0)$ can see the person at $(2, 1)$.
- The person at $(2, 1)$ cannot see anybody.

Constraints:

- $1 \leq heights.length \leq 400$
- $1 \leq heights[i].length \leq 400$
- $1 \leq heights[i][j] \leq 10^5$

Seen this question in a real interview before? 1/5

Yes No

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TopicsArrayStackMatrixMonotonic Stack

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Hint 1Imagine you are looking to the right. The heights of the people you see form an ascending sequence.

Hint 2Iterate through the row from right to left. Use a decreasing monotonic stack to keep track of the people that you can see.

Hint 3Use binary search to find the number of people in the stack that are shorter than the current person.

Hint 4Repeat this process for each column.

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