1066. Campus Bikes II Premium

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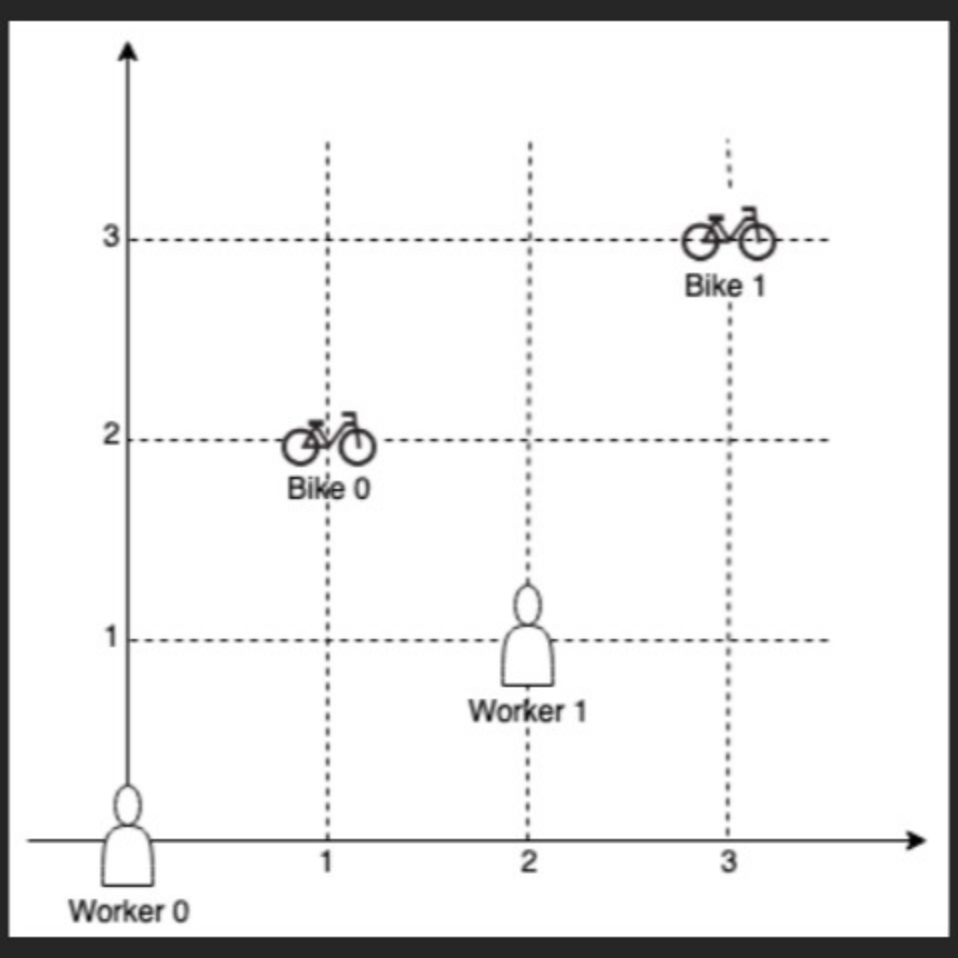
On a campus represented as a 2D grid, there are `n` workers and `m` bikes, with `n <= m`. Each worker and bike is a 2D coordinate on this grid.

We assign one unique bike to each worker so that the sum of the **Manhattan distances** between each worker and their assigned bike is minimized.

Return `the minimum possible sum of Manhattan distances between each worker and their assigned bike`.

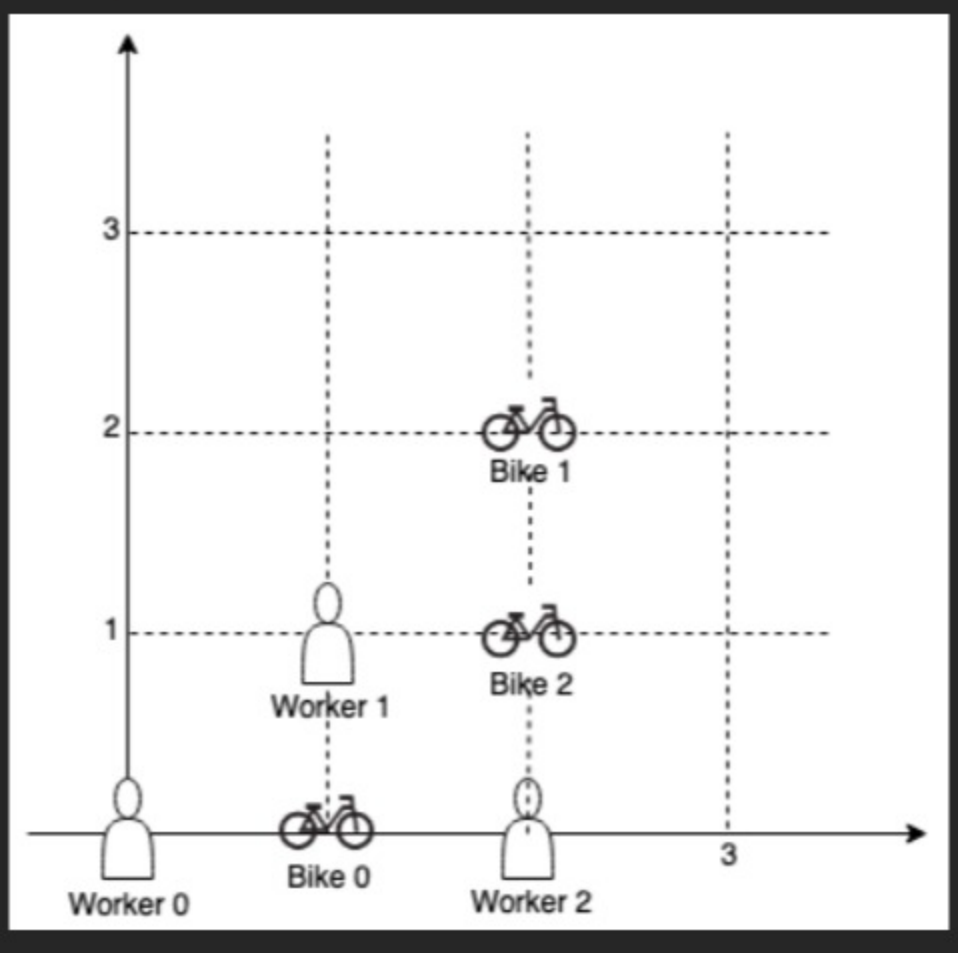
The **Manhattan distance** between two points `p1` and `p2` is `Manhattan(p1, p2) = |p1.x - p2.x| + |p1.y - p2.y|`.

Example 1:



> **Input:** workers = [[0,0],[2,1]], bikes = [[1,2],[3,3]]
> **Output:** 6
> **Explanation:**
> We assign bike 0 to worker 0, bike 1 to worker 1. The Manhattan distance of both assignments is 3, so the output is 6.

Example 2:



> **Input:** workers = [[0,0],[1,1],[2,0]], bikes = [[1,0],[2,2],[2,1]]
> **Output:** 4
> **Explanation:**
> We first assign bike 0 to worker 0, then assign bike 1 to worker 1 or worker 2, bike 2 to worker 2 or worker 1. Both assignments lead to sum of the Manhattan distances as 4.

Example 3:

> **Input:** workers = [[0,0],[1,0],[2,0],[3,0],[4,0]], bikes = [[0,999],[1,999],[2,999],[3,999],[4,999]]
> **Output:** 4995

Constraints:

- `n == workers.length`
- `m == bikes.length`
- `1 <= n <= m <= 10`
- `workers[i].length == 2`
- `bikes[i].length == 2`
- `0 <= workers[i][0], workers[i][1], bikes[i][0], bikes[i][1] < 1000`
- All the workers and the bikes locations are **unique**.

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

Yes No

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Hint 1

Model the problem with a dp(pos, mask) where pos represents the current bike to be assigned and mask the set of available workers.

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