Problem 789: Escape The Ghosts

Problem Information

Difficulty: Medium
Acceptance Rate: 63.13%
Paid Only: No
Tags: Array, Math

Problem Description

You are playing a simplified PAC-MAN game on an infinite 2-D grid. You start at the point `[0, 0]`, and you are given a destination point `target = [xtarget, ytarget]` that you are trying to get to. There are several ghosts on the map with their starting positions given as a 2D array `ghosts`, where `ghosts[i] = [xi, yi]` represents the starting position of the `ith` ghost. All inputs are **integral coordinates**.

Each turn, you and all the ghosts may independently choose to either **move 1 unit** in any of the four cardinal directions: north, east, south, or west, or **stay still**. All actions happen **simultaneously**.

You escape if and only if you can reach the target **before** any ghost reaches you. If you reach any square (including the target) at the **same time** as a ghost, it **does not** count as an escape.

Return `true` _if it is possible to escape regardless of how the ghosts move, otherwise return_`false` _._

Example 1:

Input: ghosts = [[1,0],[0,3]], target = [0,1] **Output:** true **Explanation:** You can reach the destination (0, 1) after 1 turn, while the ghosts located at (1, 0) and (0, 3) cannot catch up with you.

Example 2:

Input: ghosts = [[1,0]], target = [2,0] **Output:** false **Explanation:** You need to reach the destination (2, 0), but the ghost at (1, 0) lies between you and the destination.

Example 3:

Input: ghosts = [[2,0]], target = [1,0] **Output:** false **Explanation:** The ghost can reach the target at the same time as you.

Constraints:

* `1 <= ghosts.length <= 100` * `ghosts[i].length == 2` * `-104 <= xi, yi <= 104` * There can be **multiple ghosts** in the same location. * `target.length == 2` * `-104 <= xtarget, ytarget <= 104`

Code Snippets

C++:

```
class Solution {
public:
bool escapeGhosts(vector<vector<int>>& ghosts, vector<int>& target) {

}
};
```

Java:

```
class Solution {
public boolean escapeGhosts(int[][] ghosts, int[] target) {

}
}
```

Python3:

```
class Solution:
def escapeGhosts(self, ghosts: List[List[int]], target: List[int]) -> bool:
```