Problem 3025: Find the Number of Ways to Place People I

Problem Information

Difficulty: Medium
Acceptance Rate: 64.07%
Paid Only: No
Tags: Array, Math, Geometry, Sorting, Enumeration

Problem Description

You are given a 2D array `points` of size `n x 2` representing integer coordinates of some points on a 2D plane, where `points[i] = [xi, yi]`.

Count the number of pairs of points `(A, B)`, where

* `A` is on the **upper left** side of `B`, and * there are no other points in the rectangle (or line) they make (**including the border**), except for the points `A` and `B`.

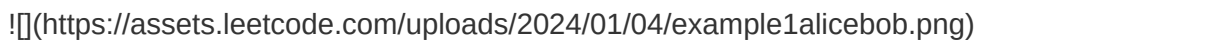
Return the count.

Example 1:

Input: points = [[1,1],[2,2],[3,3]]

Output: 0

Explanation:



There is no way to choose `A` and `B` such that `A` is on the upper left side of `B`.

Example 2:

Input: points = [[6,2],[4,4],[2,6]]

Output: 2

Explanation:

* The left one is the pair `(points[1], points[0])`, where `points[1]` is on the upper left side of `points[0]` and the rectangle is empty. * The middle one is the pair `(points[2], points[1])`, same as the left one it is a valid pair. * The right one is the pair `(points[2], points[0])`, where `points[2]` is on the upper left side of `points[0]`, but `points[1]` is inside the rectangle so it's not a valid pair.

Example 3:

Input: points = [[3,1],[1,3],[1,1]]

Output: 2

Explanation:

* The left one is the pair `(points[2], points[0])`, where `points[2]` is on the upper left side of `points[0]` and there are no other points on the line they form. Note that it is a valid state when the two points form a line. * The middle one is the pair `(points[1], points[2])`, it is a valid pair same as the left one. * The right one is the pair `(points[1], points[0])`, it is not a valid pair as `points[2]` is on the border of the rectangle.

Constraints:

* `2 <= n <= 50` * `points[i].length == 2` * `0 <= points[i][0], points[i][1] <= 50` * All `points[i]` are distinct.

Code Snippets

C++:

```
class Solution {
public:
int numberOfPairs(vector<vector<int>>& points) {

}
};
```

Java:

```
class Solution {
public int numberOfPairs(int[][] points) {

}
}
```

Python3:

```
class Solution:
def numberOfPairs(self, points: List[List[int]]) -> int:
```