

Problem 3625: Count Number of Trapezoids II

Problem Information

Difficulty: Hard

Acceptance Rate: 13.50%

Paid Only: No

Tags: Array, Hash Table, Math, Geometry

Problem Description

You are given a 2D integer array `points` where `points[i] = [xi, yi]` represents the coordinates of the `ith` point on the Cartesian plane.

Return _the number of unique_ trapezoids that can be formed by choosing any four distinct points from `points` .

A*****trapezoid** is a convex quadrilateral with **at least one pair** of parallel sides. Two lines are parallel if and only if they have the same slope.

Example 1:

Input: points = [[-3,2],[3,0],[2,3],[3,2],[2,-3]]

Output: 2

Explanation:

There are two distinct ways to pick four points that form a trapezoid:

* The points `[-3,2], [2,3], [3,2], [2,-3]` form one trapezoid.
* The points `[2,3], [3,2], [3,0], [2,-3]` form another trapezoid.

Example 2:

****Input:**** points = [[0,0],[1,0],[0,1],[2,1]]

****Output:**** 1

****Explanation:****

There is only one trapezoid which can be formed.

****Constraints:****

* `4 <= points.length <= 500` * `-1000 <= xi, yi <= 1000` * All points are pairwise distinct.

Code Snippets

C++:

```
class Solution {
public:
    int countTrapezoids(vector<vector<int>>& points) {
        }
    };
}
```

Java:

```
class Solution {
public int countTrapezoids(int[][] points) {
        }
    }
}
```

Python3:

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