

AlgoExpert

Quad Layout

C++

12px

Sublime

Monokai

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PromptScratchpadOur Solution(s)Video Explanation

Run Code

Solution 1Solution 2Solution 3

1// Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3#include <vector>
4#include <unordered_map>
5using namespace std;
6
7struct Point {
8 int x;
9 int y;
10};
11
12unordered_map<string, bool> getCoordsTable(vector<Point> coords);
13int getRectangleCount(vector<Point> coords,
14 unordered_map<string, bool> coordsTable);
15bool isInUpperRight(Point coord1, Point coord2);
16string coordToString(Point coord);
17
18// O(n^2) time | O(n) space - where n is the number of coordinates
19int rectangleMania(vector<Point> coords) {
20 unordered_map<string, bool> coordsTable = getCoordsTable(coords);
21 return getRectangleCount(coords, coordsTable);
22}
23
24unordered_map<string, bool> getCoordsTable(vector<Point> coords) {
25 unordered_map<string, bool> coordsTable;
26 for (Point coord : coords) {
27 string coordString = coordToString(coord);
28 coordsTable.insert({coordString, true});
29 }
30 return coordsTable;
31}
32
33int getRectangleCount(vector<Point> coords,
34 unordered_map<string, bool> coordsTable) {
35 int rectangleCount = 0;
36 for (Point coord1 : coords) {
37 for (Point coord2 : coords) {
38 if (!isInUpperRight(coord1, coord2))
39 continue;
40 string upperCoordString = coordToString(Point({coord1.x, coord2.y}));
41 string rightCoordString = coordToString(Point({coord2.x, coord1.y}));
42 if (coordsTable.find(upperCoordString) != coordsTable.end() &&
43 coordsTable.find(rightCoordString) != coordsTable.end())
44 rectangleCount++;
45 }
46 }
47 return rectangleCount;
48}
49
50bool isInUpperRight(Point coord1, Point coord2) {
51 return coord2.x > coord1.x && coord2.y > coord1.y;
52}
53
54string coordToString(Point coord) {
55 return to_string(coord.x) + "-" + to_string(coord.y);
56}

