

AlgoExpert

Quad Layout

JavaScript

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// O(n^2) time | O(n) space - where n is the number of coordinates
4function rectangleMania(coords) {
5 const coordsTable = getCoordsTable(coords);
6 return getRectangleCount(coords, coordsTable);
7}
8
9function getCoordsTable(coords) {
10 const coordsTable = {x: {}, y: {}};
11 for (const coord of coords) {
12 const [x, y] = coord;
13 coordsTable.x[x] = coordsTable.x[x] || [];
14 coordsTable.x[x].push(coord);
15 coordsTable.y[y] = coordsTable.y[y] || [];
16 coordsTable.y[y].push(coord);
17 }
18 return coordsTable;
19}
20
21function getRectangleCount(coords, coordsTable) {
22 let rectangleCount = 0;
23 for (const coord of coords) {
24 const lowerLeftY = coord[1];
25 rectangleCount += clockwiseCountRectangles(coord, coordsTable, UP, lowerLeftY);
26 }
27 return rectangleCount;
28}
29
30function clockwiseCountRectangles(coord1, coordsTable, direction, lowerLeftY) {
31 const [x1, y1] = coord1;
32 if (direction === DOWN) {
33 const relevantCoords = coordsTable.x[x1];
34 for (const coord2 of relevantCoords) {
35 const lowerRightY = coord2[1];
36 if (lowerRightY === lowerLeftY) return 1;
37 }
38 return 0;
39 } else {
40 let rectangleCount = 0;
41 if (direction === UP) {
42 const relevantCoords = coordsTable.x[x1];
43 for (const coord2 of relevantCoords) {
44 const y2 = coord2[1];
45 const isAbove = y2 > y1;
46 if (isAbove) rectangleCount += clockwiseCountRectangles(coord2, coordsTable, RIGHT, lowerLeftY);
47 }
48 } else if (direction === RIGHT) {
49 const relevantCoords = coordsTable.y[y1];
50 for (const coord2 of relevantCoords) {
51 const x2 = coord2[0];
52 const isRight = x2 > x1;
53 if (isRight) rectangleCount += clockwiseCountRectangles(coord2, coordsTable, DOWN, lowerLeftY);
54 }
55 }
56 return rectangleCount;
57 }
58}
59
60const UP = 'up';
61const RIGHT = 'right';
62const DOWN = 'down';
63
64exports.rectangleMania = rectangleMania;
65

