

AlgoExpert

Quad Layout

Python

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
4def rectangleMania(coords):
5 coordsTable = getCoordsTable(coords)
6 return getRectangleCount(coords, coordsTable)
7
8
9def getCoordsTable(coords):
10 coordsTable = {"x": {}, "y": {}}
11 for coord in coords:
12 x, y = coord
13 if x not in coordsTable["x"]:
14 coordsTable["x"][x] = []
15 coordsTable["x"][x].append(coord)
16 if y not in coordsTable["y"]:
17 coordsTable["y"][y] = []
18 coordsTable["y"][y].append(coord)
19 return coordsTable
20
21
22def getRectangleCount(coords, coordsTable):
23 rectangleCount = 0
24 for coord in coords:
25 lowerLeftY = coord[1]
26 rectangleCount += clockwiseCountRectangles(coord, coordsTable, UP, lowerLeftY)
27 return rectangleCount
28
29
30def clockwiseCountRectangles(coord1, coordsTable, direction, lowerLeftY):
31 x1, y1 = coord1
32 if direction == DOWN:
33 relevantCoords = coordsTable["x"][x1]
34 for coord2 in relevantCoords:
35 lowerRightY = coord2[1]
36 if lowerRightY == lowerLeftY:
37 return 1
38 return 0
39 else:
40 rectangleCount = 0
41 if direction == UP:
42 relevantCoords = coordsTable["x"][x1]
43 for coord2 in relevantCoords:
44 y2 = coord2[1]
45 isAbove = y2 > y1
46 if isAbove:
47 rectangleCount += clockwiseCountRectangles(coord2, coordsTable, RIGHT, lowerLeftY)
48 elif direction == RIGHT:
49 relevantCoords = coordsTable["y"][y1]
50 for coord2 in relevantCoords:
51 x2 = coord2[0]
52 isRight = x2 > x1
53 if isRight:
54 rectangleCount += clockwiseCountRectangles(coord2, coordsTable, DOWN, lowerLeftY)
55 return rectangleCount
56
57
58 UP = "up"
59 RIGHT = "right"
60 DOWN = "down"
61

