

AlgoExpert

Quad Layout

Python

12px

Sublime

Monokai

00:00:00

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^2) 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 = {}

11 for coord1 in coords:

12 coord1Directions = {UP: [], RIGHT: [], DOWN: [], LEFT: []}

13 for coord2 in coords:

14 coord2Direction = getCoordDirection(coord1, coord2)

15 if coord2Direction in coord1Directions:

16 coord1Directions[coord2Direction].append(coord2)

17 coord1String = coordToString(coord1)

18 coordsTable[coord1String] = coord1Directions

19 return coordsTable

20

21

22def getCoordDirection(coord1, coord2):

23 x1, y1 = coord1

24 x2, y2 = coord2

25 if y2 == y1:

26 if x2 > x1:

27 return RIGHT

28 elif x2 < x1:

29 return LEFT

30 elif x2 == x1:

31 if y2 > y1:

32 return UP

33 elif y2 < y1:

34 return DOWN

35 return ""

36

37

38def getRectangleCount(coords, coordsTable):

39 rectangleCount = 0

40 for coord in coords:

41 rectangleCount += clockwiseCountRectangles(coord, coordsTable, UP, coord)

42 return rectangleCount

43

44

45def clockwiseCountRectangles(coord, coordsTable, direction, origin):

46 coordString = coordToString(coord)

47 if direction == LEFT:

48 rectangleFound = origin in coordsTable[coordString][LEFT]

49 return 1 if rectangleFound else 0

50 else:

51 rectangleCount = 0

52 nextDirection = getNextClockwiseDirection(direction)

53 for nextCoord in coordsTable[coordString][direction]:

54 rectangleCount += clockwiseCountRectangles(nextCoord, coordsTable, nextDirection, origin)

55 return rectangleCount

56

57

58def getNextClockwiseDirection(direction):

59 if direction == UP:

60 return RIGHT

61 if direction == RIGHT:

62 return DOWN

63 if direction == DOWN:

64 return LEFT

65 return ""

66

67

68def coordToString(coord):

69 x, y = coord

70 return str(x) + "-" + str(y)

71

72

73UP = "up"

74RIGHT = "right"

75DOWN = "down"

76LEFT = "left"

77

