

Solution 1

Solution 2

Solution 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
4 function rectangleMania(coords) {
5   const coordsTable = getCoordsTable(coords);
6   return getRectangleCount(coords, coordsTable);
7 }
8
9 function getCoordsTable(coords) {
10  const coordsTable = {};
11  for (const coord1 of coords) {
12    const coord1Directions = {
13      [UP]: [],
14      [RIGHT]: [],
15      [DOWN]: [],
16      [LEFT]: [],
17    };
18    for (const coord2 of coords) {
19      const coord2Direction = getCoordDirection(coord1, coord2);
20      if (coord2Direction in coord1Directions) coord1Directions[coord2Direction].push(coord2);
21    }
22    const coord1String = coordToString(coord1);
23    coordsTable[coord1String] = coord1Directions;
24  }
25  return coordsTable;
26 }
27
28 function getCoordDirection(coord1, coord2) {
29   const [x1, y1] = coord1;
30   const [x2, y2] = coord2;
31   if (y2 === y1) {
32     if (x2 > x1) {
33       return RIGHT;
34     } else if (x2 < x1) {
35       return LEFT;
36     }
37   } else if (x2 === x1) {
38     if (y2 > y1) {
39       return UP;
40     } else if (y2 < y1) {
41       return DOWN;
42     }
43   }
44   return '';
45 }
46
47 function getRectangleCount(coords, coordsTable) {
48   let rectangleCount = 0;
49   for (const coord of coords) {
50     rectangleCount += clockwiseCountRectangles(coord, coordsTable, UP, coord);
51   }
52   return rectangleCount;
53 }
54
55 function clockwiseCountRectangles(coord, coordsTable, direction, origin) {
56   const coordString = coordToString(coord);
57   if (direction === LEFT) {
58     const rectangleFound = coordsTable[coordString][LEFT].includes(origin);
59     return rectangleFound ? 1 : 0;
60   } else {
61     let rectangleCount = 0;
62     const nextDirection = getNextClockwiseDirection(direction);
63     for (const nextCoord of coordsTable[coordString][direction]) {
64       rectangleCount += clockwiseCountRectangles(nextCoord, coordsTable, nextDirection, origin);
65     }
66     return rectangleCount;
67   }
68 }
69
70 function getNextClockwiseDirection(direction) {
71   if (direction === UP) return RIGHT;
72   if (direction === RIGHT) return DOWN;
73   if (direction === DOWN) return LEFT;
74   return '';
75 }
76
77 function coordToString(coord) {
78   const [x, y] = coord;
79   return `${x}-${y}`;
80 }
81
82 const UP = 'up';
83 const RIGHT = 'right';
84 const DOWN = 'down';
85 const LEFT = 'left';
86
87 exports.rectangleMania = rectangleMania;
88
```

