Road Maintenance

Task: You start your new job as manager of the road maintenance depot of a district in Manhattan. Your district has the shape of a polygon and the road system has the shape of a perfect grid (so the Broadway is located in a different district). To get an overview you want to count all crossroads that you will be responsible for in future.

Input: The input starts with a line containing the number m of corners of the polygon. Then, m lines follow, where the i-th line contains the x- and y-coordinate of the i-th corner. The coordinates are all integers.

You can assume that the polygon is non-self-intersecting, but it is possible that more than 2 corners are located on a line.

Output: Output the number of crossroads that are located in your district. You are also responsible for the crossroads that lie on the boundary.

Sample Input:

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5
0 1
2 0
0 -2
-1 -1
-2 0
```

Sample Output:

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10
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