The Fast and the Furious

Task: You take part in a illegal street racing competition in Manhattan. The rules are as follows: You and your opponent are given the coordinates of a couple of crossroads in Manhattan a few minutes before the race starts. The goal is to visit all these crossroads and then return to the start.

Your opponent is a local racer, so it is very likely that he will choose the optimal tour. Bad for your, but your face lights up when you take a look at his car: It is a pimped Nissan Skyline, and you are sure that your Lamborghini will be more than twice as fast as his car.

What is the length of the tour you choose?

Input: The first line contains the number n of crossroads you have to pass (including the point where you start). Then, in the following n lines the coordinates x_i and y_i of the crossroads are given. All coordinates will be integers. Since you are in Manhattan, the distance between two crossroads p_1 and p_2 is given by $\|p_1 - p_2\|_1$.

Output: Output the length of the route you will take.

Sample Input:

```
4
0 0
1 0
1 1
0 1
```

Sample Output:

```
4
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