DMOPC '18 Contest 2 P1 - Pumpkin Patches

Roger is getting ready for his final[1] Halloween of high school!

To celebrate, he goes to the land of Cartesia with Robert to grow P pumpkins. The ith pumpkin is at point (x_i, y_i).

Unfortunately, the Pumpkin King of Cartesia has demanded that he surround his field of pumpkins with an axis-aligned rectangular fence first. Given that Roger is very poor, can you determine the minimum length of fencing he needs to enclose all his pumpkins?

Note: A pumpkin is considered within the fence if it lies on the fence.

[1]Assuming he doesn't fail to graduate...

Constraints

$2 \le P \le 100\,000$
$-1\,000\,000 \le x_i, y_i \le 1\,000\,000$
The locations of all pumpkins are pairwise distinct.

It is guaranteed the area enclosed by the fence will be positive.

Input Specification

The first line of input will contain a single integer, P.
The next P lines will each contain two space-separated integers, x_i and y_i, the coordinates of the ith pumpkin.

Output Specification

A single integer, the amount of fencing Roger and Robert will need.

Sample Input

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

Sample Output

6

Explanation for Sample

The 4 corners of the fence are $(0, 0)$, $(1, 0)$, $(1, 2)$, and $(0, 2)$.