

Meeting Point



There is an infinite integer grid where N people live in N different houses. They decide to create a meeting point at one person's house.

From any given cell, all 8 adjacent cells can be reached in 1 unit of time, e.g. (x,y) can be reached from $(x-1,y+1)$ in one unit of time. Find a common meeting place which minimizes the combined travel time of everyone.

Input Format

A positive integer N that denotes N houses or people.

The following N lines will contain two integers x,y each that denote the coordinates of the respective house.

Output Format

An integer, M , that denotes the minimum combined travel time of everyone.

Constraints

$N \leq 10^5$

The absolute value of each co-ordinate in the input will be at most 10^9

HINT: You may need 64-bit integer.

Input #1

```
4
0 1
2 5
3 1
4 0
```

Output #1

```
8
```

Explanation

The houses will have a travel-sum of 11, 13, 8, or 10. 8 is the minimum.

Input #2

```
6
12 -14
-3 3
-14 7
-14 -3
2 -12
-1 -6
```

Output #2:

```
54
```