# **Meeting Point**



There is an infinite integer grid where  $\mathbf{N}$  people live in  $\mathbf{N}$  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.

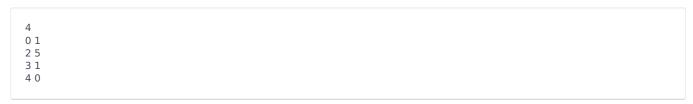
#### **Constraints**

 $N \le 10^5$ 

The absolute value of each co-ordinate in the input will be at most 109

**HINT:** You may need 64-bit integer.

### Input #1



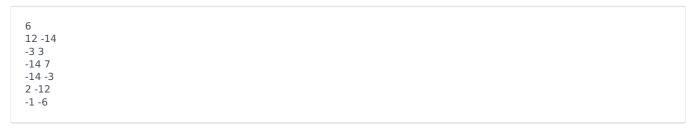
#### Output #1

8

### **Explanation**

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

## Input #2



## Output #2:

54