Problem K
KOVID-21

Time limit: 2 seconds

Memory limit: 1024 megabytes

Problem Description

There is an epidemic of KOVID-21 spreading around the world. People's lives are severely affected by the KOVID-21. Especially the people like to travel around the world.

Fortunately, the vaccine, Hoderna, is coming. Hoderna is so powerful that the person who has been vaccinated with Horderna will not be infected with KOVID-21 at all. But Hoderna is hard to preserve. For convenience, the government wants to find *exactly one* place to be a vaccination station. Finding the place of the vaccination station is a hard problem. If the place of the vaccination station is too far for some person. They will be annoyed with the government.

The country is a 2D plane, there are n residents. The ith resident lives on the (x_i, y_i) of the 2D plane. Guarantee the residents live in the integer position, which means x_i, y_i are integers. In one unit, the person in the position (x, y) can go to one of the eight position $(x - 1, y - 1), (x - 1, y), (x - 1, y + 1), (x, y - 1), (x, y + 1), (x + 1, y - 1), (x + 1, y), (x + 1, y + 1)$. The annoy value of a resident is the number of time units that he needs to spend to go to the vaccination station from their home. Please help the government to *minimize* the *sum* of annoyance with all residents.

Input Format

The first line contains one integer n indicating the number of residents. Following contains n lines. The i-th line contains two integers x_i, y_i separated with one space indicating the position of i-th resident.

Output Format

Print a single integer indicating the minimum sum of annoyance value with all residents.

Technical Specification

- $1 \le n \le 10^6, -10^9 \le x_i, y_i \le 10^9$

Sample Input 1

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1
1  1
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Sample Output 1

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0
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Sample Input 2

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2
0  0
2  2
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Sample Output 2

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2
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