

Đế chế

[English](#)

[Vietnamese](#)

An empire is building a network for its own planets. The empire consists of N planets, represented as points in the 3D space. The cost of connecting planet A and planet B is $\min\{|x_A - x_B|, |y_A - y_B|, |z_A - z_B|\}$ with $(x_A, y_A, z_A), (x_B, y_B, z_B)$ are coordinates of planet A, B in space. The empire is planning to build $N - 1$ connection and the requirement is that all planets are connected with each other and the cost is minimized.

Input

- Number of planets N ($N < 100001$).
- Next N lines, one line represents one coordinate of a planet.

Output

Only the minimum cost.

Example

Input

```
5
11 -15 -15
14 -5 -15
-1 -1 -5
10 -4 -1
19 -4 19
```

Output

```
4
```