

Guarding Plan

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

There are N security guards standing on a 2D coordinate plane. The i -th guard is standing at the point (x_i, y_i) .

You may perform the following operation any number of times (including zero):

Choose two points where security guards are currently standing, and select any point on the line segment connecting those two points. If no guard is already standing at the selected point, place a new guard there.

A guard standing at point (a, b) monitors all guards located in the region where both the x -coordinate is less than or equal to a and the y -coordinate is less than or equal to b .

A guard who is not being monitored by any other guard is called a **necessary guard**.

Determine the minimum possible number of necessary guards in the final configuration, and also the minimum number of operations required to achieve that configuration.

Input

The input is given in the following format:

```
 $N$   
 $x_1$   $y_1$   
 $x_2$   $y_2$   
 $\vdots$   
 $x_N$   $y_N$ 
```

- All input values are integers.
- $1 \leq N \leq 2 \times 10^5$.
- $0 \leq x_i, y_i \leq 10^9$.
- $(x_i, y_i) \neq (x_j, y_j) (i \neq j)$.

Output

In the first line, print a single integer — the minimum possible number of necessary guards. In the second line, print a single integer — the minimum number of operations required to achieve that configuration.

Examples

standard input	standard output
5 1 6 2 4 3 3 4 2 6 1	4 1
3 0 0 1 2 2 1	2 0
7 10 49 9 27 59 8 19 22 0 50 25 23 33 13	4 1

Note

In the first example, select the point (3,4), which lies between the guards at points (1,6) and (6,1), and place a new guard there. After this operation, the necessary guards will be the four stationed at (1,6), (3,4), (4,2), and (6,1).