Plan for the Worst! (airstrike)

The latest *Trample*'s air raid against the *United Nations of Antarctica* (UNA) has destroyed everything! Now it's time for Edoardo, the emperor of the UNA, to plan the reconstruction of all the new N buildings of the continent. The i-th building will be constructed in a strategic position at coordinates (X_i, Y_i).

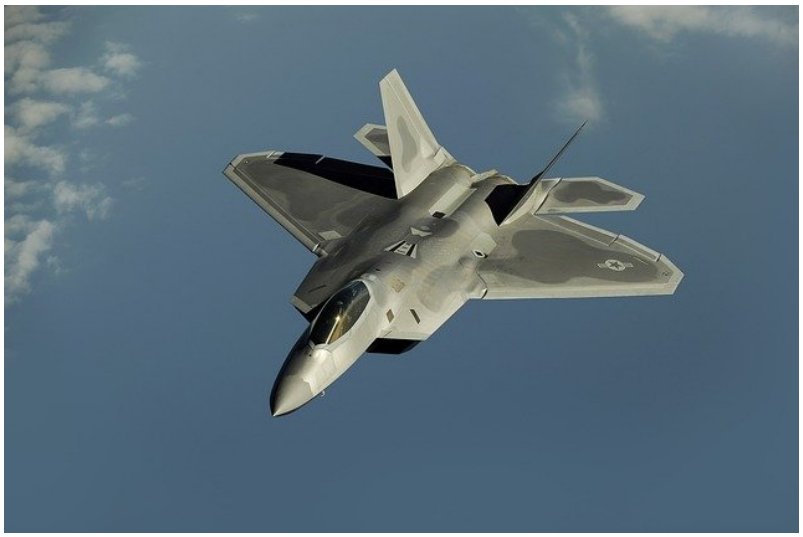

Figure 1: One of Trample's formidable fighter jets.

Everyone knows that Trample's fighter jets are very powerful. In particular, a single airstrike is able to destroy all the buildings that have a given X or Y coordinate in a matter of seconds. Before giving his approval, Edoardo would like to know if the plan is resistant to air attacks. Can you help him find out the minimum number of airstrikes needed to destroy all the new buildings?

☞ Among the attachments of this task you may find a template file `airstrike.*` with a sample incomplete implementation.

Input

The first line contains the only integer N, the number of buildings. Each of the next N lines contains two integers X_i and Y_i, the coordinates of the i-th building.

Output

You need to write a single line with an integer: the minimum number of airstrikes needed to destroy all the buildings.

Constraints

- $1 \leq N \leq 10\,000$.
- $1 \leq X_i, Y_i \leq N$ for each $i = 0 \ldots N-1$.
- No two buildings have the same coordinates.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (10 points) $N \leq 4$.

– **Subtask 3** (10 points) $N \leq 9$.

– **Subtask 4** (10 points) $N \leq 17$.

– **Subtask 5** (10 points) $X_i, Y_i \leq 10$ for each $i = 0 \ldots N-1$.

– **Subtask 6** (15 points) $X_i, Y_i \leq 17$ for each $i = 0 \ldots N-1$.

– **Subtask 7** (15 points) $Y_i \neq Y_j$ for each i, j such that $i \neq j$.

– **Subtask 8** (30 points) No additional limitations.

Examples

input	output
5 1 1 1 2 1 5 2 3 4 3	2
4 1 2 2 1 3 3 4 4	4

Explanation

In the **first sample case**, Trample is able to destroy all the buildings using only two airstrikes. In particular, he can destroy the first three buildings with a single airstrike, by targeting all the buildings that have $X_i = 1$. Then, he can destroy the last two buildings with another airstrike that targets all the buildings that have $Y_i = 3$.

In the **second sample case**, no two buildings have the same X or Y coordinate. This means that Trample needs to use at least four airstrikes, one for each building.