

D. Come a Little Closer

time limit per test: 2 seconds
memory limit per test: 256 megabytes

The game field is a matrix of size $10^9 \times 10^9$, with a cell at the intersection of the a -th row and the b -th column denoted as (a, b) .

There are n monsters on the game field, with the i -th monster located in the cell (x_i, y_i) , while the other cells are empty. No more than one monster can occupy a single cell.

You can move one monster to any cell on the field that is not occupied by another monster **at most once** .

After that, you must select **one** rectangle on the field; all monsters within the selected rectangle will be destroyed. You must pay 1 coin for each cell in the selected rectangle.

Your task is to find the minimum number of coins required to destroy all the monsters.

Input

The first line contains a single integer t ($1 \leq t \leq 10^4$) — the number of test cases.

The first line of each test case contains a single integer n ($1 \leq n \leq 2 \cdot 10^5$) — the number of monsters on the field.

The following n lines contain two integers x_i and y_i ($1 \leq x_i, y_i \leq 10^9$) — the coordinates of the cell with the i -th monster. All pairs (x_i, y_i) are distinct.

It is guaranteed that the sum of n across all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output a single integer — the minimum cost to destroy all n monsters.

Example

input	Copy
<pre> 7 3 1 1 1 2 2 1 5 1 1 2 6 6 4 3 3 8 2 4 1 1 1 1000000000 1000000000 1 1000000000 1000000000 1 1 1 5 1 2 4 2 4 3 3 1 3 2 3 1 1 2 5 2 2 4 4 3 3 1 4 4 1 2 </pre>	

Codeforces Round 1027 (Div. 3)

Contest is running

00:19:19

Contestant



→ Submit?

Language:
GNU G++23 14.2 (64 bit, ms)

Choose file:
No file chosen

→ Last submissions

Submission	Time	Verdict
321517907	May/26/2025 19:28	Accepted

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Note

The diagram illustrates a transformation of a 4x4 grid. On the left, the grid has red numbers 1, 2, and 3 in the top row, and a red number 3 in the second row. A large black arrow points to the right grid, where the top row is highlighted in green and contains the numbers 1, 2, and 3.

The diagram illustrates a transformation of a 4x4 grid. On the left, a grid contains numbers in specific positions: row 1, column 2 has '1'; row 3, column 1 has '4'; row 3, column 2 has '5'; row 4, column 2 has '2'; and row 4, column 3 has '3'. A large black arrow points to the right, where the same grid is shown with a different configuration: row 3, column 1 has '4'; row 3, column 2 has '5'; row 3, column 3 has '1'; row 4, column 1 is empty; row 4, column 2 has '2'; and row 4, column 3 has '3'. The numbers are highlighted in red in the original image.

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The only programming contests Web 2.0 platform
Server time: May/26/2025 23:28:53^{UTC+7} (k1).
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