

colour

Time Limit: 1.0s

Memory Limit: 64MB

Problem Statement

During the November/December holidays, An Jun was bored, and decided to start colouring on a giant piece of paper, instead of doing his stash of holiday homework. The paper is entirely white at first, and is divided into intervals of unit length. An Jun colours N black segments onto the paper one by one. The i^{th} black segment starts at interval l_i and ends at interval r_i . It can be assumed that the segments are coloured with a fixed thickness.

After colouring each segment, An Jun wants to know how many distinct connected black components there are on the paper.

Input

The input format is as follows:

- The first line will contain a positive integer N .
- The next N lines will contain two space separated integers l_i and r_i , denoting the start and end points of the i^{th} black segment.

Output

The output should contain N lines, where the i^{th} line contains a single integer, the number of distinct black connected components on the paper after the i^{th} black segment is added.

Constraints

- $1 \leq N \leq 2 \cdot 10^5$
- $1 \leq l_i < r_i \leq 10^9$

Subtasks

- Subtask 1 (1%): $N = 1$
- Subtask 2 (6%): $N = 2$
- Subtask 3 (16%): $N \leq 1000$
- Subtask 4 (10%): $r_i = l_i + 1$ for all $1 \leq i \leq N$
- Subtask 5 (19%): $l_i \leq l_{i+1}$ for all $1 \leq i \leq N - 1$
- Subtask 6 (48%): No additional constraints
- Subtask 7 (0%): Sample Testcase

Sample Input

```
5
1 3
6 7
10 13
2 6
8 11
```

Sample Output

```
1
2
3
2
2
```

Explanation

The first black segment is the only black connected component.

The second black segment does not connect with the first, so there are now 2 black components.

The third black segment does not connect with the previous two, so there are now 3 black components.

The fourth black segment connects with the first and second black segment, merging the three segments into one segment from 1 to 7, so there are now 2 black components.

The fifth black segment connects with only the segment from 10 to 13, so there are still only 2 black components.