B. Lanran's mahjong survey

Description

n Lanrans are living on Lanrand now! Lanrans all love playing mahjong-soul, which has 2 modes: 3-players mode and 4-players mode. Each Lanran has 2 ranks in both modes, (u_i, v_i).

If 2 Lanrans: Lanran i with rank(u_i, v_i) is **weaker than** Lanran j with rank(u_j, v_j), if and only if $u_i \leq u_j$, and $v_i \leq v_j$. **Note that, no 2 Lanrans have the same rank in both modes($u_i = u_j$, and $v_i = v_j$).** One Lanran's happiness value is equal to the number of Lanrans that is weaker than him.

Now you are doing a survey on Lanrand. Your task is to count the number of Lanrans for each possible happiness value $k(0 \leq k \leq n-1)$.

Input format

The first line contains an integer $n(1 \leq n \leq 15\,000)$.

Then n lines following, each line contains 2 integers $u_i, v_i (0 \leq u_i, v_i \leq 30\,000)$.

To make this problem simpler, the input u_i, v_i has already been sorted in ascending order of v_i, and Lanrans with equal v_i are sorted in ascending order of u_i.

Output format

Output n integer in n lines. For the i-th line, you should output the number of Lanrans that have a happiness value equal to $i-1$(happiness value is ranging from 0 to $n-1$).

Sample input

```
5
1 1
3 1
4 1
2 2
3 3
```

Sample output

```
1
2
1
1
0
```

Limitations & Hints

Limit

1 second for each test case. The memory limit is 256MB.

For 50% of the test cases, $n \leq 1\,000, 0 \leq a_i \leq 1\,000$.

For 100% of the test cases, $n \leq 15\,000, 0 \leq a_i \leq 30\,000$.

Hint

If you can beat Lanran in Mahjong-soul, you can ask Lanran for the hint in this problem. Otherwise, Lanran's happiness value will increase by 1. :)