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Tehran, Iran

Summer Camp Programming Finals - Day 1

LIS

en (US)

LIS

Mehrshad is selling potatoes. He wants to put potatoes in separate bags and arrange them in a line in front of his store, to attract customers. Each bag will contain some number of potatoes, but the total number of potatoes will not exceed 10^6 .

Each time, he will put some potatoes in a bag, and put the bag somewhere in the line (He might need to shift some bags to the right, to make space).

Well, his mind is quite complex, so in the middle of the work, he wonders what's the LIS of potato bags. Your job is to tell him the LIS, each time he adds a potato bag, so he can focus on his work.

In an other word, you should find maximum size of a subsequence of potato bags, such that each bag contains more potato than its previous bag in subsequence.

Input

The first line contains q , number of queries. Each of the following q lines contains two integers p_i and x_i , position of i th potato bag after insertion and its number of potatoes (positions are 1-based).

Output

You should print q lines. For each query, print the LIS (Longest STRICTLY increasing subsequence).

Constraints

- $1 \leq q \leq 10^6$
- $1 \leq p_i \leq i$
- $1 \leq x_i \leq 10^6$
- $q \leq \sum x_i \leq 10^6$

Subtasks

Subtasks	score	constraints
1	20	$q \leq 2000$
2	80	No additional constraints

Examples

Standard input	Standard output
6 1 7 2 10 2 11 2 8 4 10 1 2	1 2 2 3 3 4
4 1 3 2 1 1 1 2 2	1 1 2 3

Sample explanation

in the first sample queue of Mehrshad's potatoes changes as follows:

- $\langle 7 \rangle$
- $\langle 7, 10 \rangle$
- $\langle 7, 11, 10 \rangle$
- $\langle 7, 8, 11, 10 \rangle$
- $\langle 7, 8, 11, 10, 10 \rangle$
- $\langle 2, 7, 8, 11, 10, 10 \rangle$