Problem H. Set and Sequence and Query

Time limit: 2 seconds

Takina and Chisato are playing a game with a set of positive integers.

This game is about making *continuous increasing sequence*s using the numbers from the set.

A *continuous increasing sequence* is defined as a sequence $a_1, a_2, \ldots, a_k$ of positive length k, satisfying $a_{i+1} = a_i + 1$ for all $1 \leq i \leq k - 1$.

The game begins with an empty set and consists of Q turns. In each turn, Takina can either insert a new integer into the set or delete an integer from the set.

Every time a change is made to the set, Chisato has to count how many different *continuous increasing sequence*s can be made using the numbers from the set.

Your task is to help Chisato.

Input

The first line contains the number of turns, Q.

The following Q lines contain two integers, describing Takina's move. Each line has one of the following forms:

- `1` x : Insert x into the set. It is guaranteed that x was not in the set.
- `2` x : Delete x from the set. It is guaranteed that x was in the set.

Output

Output Q integers separated by newlines, the number of *continuous increasing sequence*s in the set after each Takina's move.

Constraints

- $1 \leq Q \leq 300\,000$
- $1 \leq x \leq 10^9$

Examples

standard input	standard output
3 1 1 1 2 2 1	1 3 1