Problem D
Distinctive Number

This year, the organizing comittee of ICPC prepares a game for students. The game is very simple, each student can select one positive integer and send his/her selection to the game master. After all selections are received, the winning number is the *smallest unique number*. For example, if the selections are $1, 1, 2, 2, 2, 3, 4, 5, 5, 7$, the winning number is 3. There could be a case where there is no winning number (i.e. all selections are not unique).

The game master receives N selections, one-by-one. Instead of calculating the winning number after having received all selections, he wants to keep track of the winning number as selections are sent in. Your task is to help the game master deal with this.

Input

- The first line of the input contains a single integer N — the number of selections ($1 \leq N \leq 5 \cdot 10^5$).
- The i-th line of the next N lines contains a single integer s_i denoting the i-th selection ($1 \leq s_i \leq 10^9$).

Output

You should print N lines. The i-th one contains the winning number after the i-th selection is sent. In case there is no winning number, print -1 instead.

Sample Input 1	Sample Output 1
6 5 4 4 3 5 3	5 4 5 3 3 -1