

Problem A. Implement a Queue using Linked List

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

***Implement queue using Linked list for this question. If found using any other data structure your submission will not be considered**

In this problem, you have to implement a queue which should support following 3 operations,

Enqueue: Insert element x in the end of the queue. No output.

E x

Remove: remove first element from the queue and **print its value**

R

Increment: Increment last k elements by a value d . No output.

I $k d$

Input

First line contains an integer n , denoting the number of queries ($0 < n \leq 10^3$)

Next n lines contain one query in each line of the following formats:

E x

R

I $k d$

$0 < n \leq 10^3$

$1 \leq x \leq 10^9$

$1 \leq d \leq 10^9$

$1 \leq k \leq \text{size of queue}$

Output

For each **R** query, print the integer representing the front element of the queue which was removed. Print -1 if the queue is empty.

At end print all the elements left in the queue. If queue is empty print -1

Examples

standard input	standard output
6 E 1 E 2 E 3 R E 4 I 2 2	1 2 5 6
6 R E 1 E 2 E 3 I 2 2 E 4	-1 1 4 5 4
1 R	-1 -1
4 E 1 E 2 R R	1 2 -1
6 E 1 E 2 I 1 1 R R E 5	1 3 5

Problem B. Placement Season Round the Corner!!!

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

NOTE: Implement your own stacks/queues from scratch. Else your submissions will not be considered.

It's Placement season round the corner and everyone is grinding hard to get a good placement. Eyus has started his preparation recently and he is stuck at a problem which was asked to him in an interview. Help him solve the problem. The problem statement is as follows:

"The soldiers are fighting in a war and have captured n enemies to kill. They assign n numbers randomly which is given in an array A . The soldiers have thought of killing the enemies in the following fashion.

- On a day, the soldiers kill all the enemies which have assigned number greater than that the numbers assigned to enemies on its left.

Your task is to find the number of days after which the soldiers would not be able kill the enemies."

Input

The first line contains the integer n . The next line contains n spaced integers of the Array A , denoting the randomly assigned numbers to each enemy.

Constraints:

- $1 \leq n \leq 100000$
- $0 \leq A_i \leq 10^9$

Output

In the first line output the number of days after which the soldiers would not be able kill the enemies.

Examples

standard input	standard output
2 6 5	0
4 0 1 4 6	1
4 1 3 2 6	2
7 2 8 1 8 6 2 3	3
3 0 6 6	2
4 2 9 0 0	1
4 5 7 6 8	2