Binary Search Tree?

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

You will be implementing a program that manages a dynamic set of integers.
Let S be a set, which is initially empty. You will be given **N** queries which can be either of the following:

- **INSERT x** : if x does not belong to S, add x to S
- **DELETE x** : if x belongs to S, delete x from S.
- **FIND k** : print the k^{th} element of S (when sorted in increasing order)
- **COUNT x** : print the number of elements in S, which are less than x

Input

First line contains **N**: the number of queries. Each of the next line is one of the queries mentioned above. Do not print any output for insert and delete operations.
Constraints:
$1 \leq \mathbf{N} \leq 10^5$
$1 \leq \mathbf{x} \leq 10^9$
$1 \leq \mathbf{k} \leq 10^5$

Output

For each query, print the result on one line. For the find query, if k is greater than the number of elements present in S, print -1.

Example

standard input	standard output
8 INSERT 0 INSERT 0 INSERT 2 COUNT 1 FIND 2 DELETE 0 FIND 1 FIND 2	1 2 2 -1