Trolling bribritt

Input file:	`standard input`
Output file:	`standard output`
Time limit:	0.25 seconds
Memory limit:	1024 megabytes

bribritt is an innocent child who has just learnt about queues!

Now, Kiameimon will ask him Q queries of 3 types:

1 x. Push x to the back of the queue.

2. Remove the entry at the front of the queue.

3 i. Find the i-th element (1-indexed) from the front of the queue.

However, Kiameimon, unable to resist the opportunity to play a prank on bribritt, may decide to ask bribritt to perform Type 2 queries when the queue is empty and/or perform Type 3 queries with x larger than the size of the queue!

Therefore, when a Type 2 operation is performed with an empty queue, bribritt should not do anything. In addition, when a Type 3 operation is performed with i larger than the size of the queue, bribritt should answer -1.

Help bribritt correctly answer all type 3 queries!

Input

The first line contains an integer Q.

Q lines follow. Each line contains queries of the form 1 x, 2, or 3 i.

Output

For each type 3 query, output a single integer, the i-th element from the front of the queue or -1 if i is larger than the size of the queue (and hence there is no such element).

Scoring

For all testcases, $1 \leq Q, i \leq 10^5$ and $1 \leq x \leq 10^9$.

Subtask	Score	Value of i	Type 2 queries	Type 3 queries
1	6	$i = 1$	None	Valid
2	9	—		
3	8	$i = 1$	Valid	
4	12	—		
5	6	$i = 1$	—	
6	9	—		
7	6	$i = 1$	None	—
8	9	—		
9	8	$i = 1$	Valid	
10	12	—		
11	6	$i = 1$	—	
12	9	—		

Here, a valid query refers to a type 2 query where the queue is nonempty, or a type 3 query where i is less than or equal to the current size of the queue.

Example

standard input	standard output
7	1
1 1	-1
1 2	
3 1	
2	
2	
2	
3 1	

Note

After the first 2 queries, the queue is now 1, 2. Hence the 1st element of the queue is 1.

Then, bribritt attempts to pop 3 entries (the last pop operation has no effect), so the queue is now empty. Therefore, bribritt should answer -1 to the last query.