

Circle Game

Sheila is a naughty girl. Yesterday she came up with a boring game and forced other classmates to play with her. The rule is simple. Some classmates will form a circle initially. Each classmate will be identified by a tag (an integer). Unluckily, you are chosen to be the judge of this game and answer Sheila's queries.

Sheila will give the following types of orders:

1. Student with tag T is added to the circle.
2. Remove a student from the circle
3. Do the query on current circle.

Please use c++ and write a class to implement linked list for this problem and do not use the libraries <list> <vector> etc.

Input

The input consists of a single test case. The first line contains an integer N ($1 \leq N \leq 1000$) indicating the initial number of students in the circle. Then follows N integers indicating the tags of the N students in clockwise direction. The circle begins with the first number in the sequence. Then there is an integer Q ($1 \leq Q \leq 100$) denoting the number of operations.

Initially, the reference point points to the first student, then after each operation, the reference point is updated.

There will be 3 kinds of operations in the following format:

(1) 1 i tag : A new student will be inserted after the i-th student counting from ***the reference point*** in clockwise direction. It is guaranteed that i is a positive integer. After this operation, the new reference point points to the newly inserted student.

(2) 2 i : remove the student at i-th position counting from ***the reference point*** in clockwise direction. The new reference point points to the student who follows the removed student.

(3) 3 i : print the tag of the i-th student counting from ***the reference point*** in clockwise direction. The new reference point points to this student.

It may happen that $i \geq (\text{total number of students in the circle})$, in which case you may use modulo function to make your program faster.

Output

For each type (3) operation in the input, print the corresponding tag in one line.

| Sample Input | Sample Output |
|---|---------------|
| 6 1 5 3 3 2 10 4 1 3 20 3 3 2 5 3 6 | 2 5 |

Hints:

Initially, the circle is $\{1 \rightarrow 5 \rightarrow 3 \rightarrow 3 \rightarrow 2 \rightarrow 10 \rightarrow \text{back to } 1\}$

After first operation, tag 20 is inserted after the 3rd element: $\{1 \rightarrow 5 \rightarrow 3 \rightarrow 20 \rightarrow 3 \rightarrow 2 \rightarrow 10\}$ and 20 becomes the reference point.

The first query of position 3 is '2' at the moment. $\{20 \rightarrow 3 \rightarrow 2 \rightarrow 10 \rightarrow 1 \rightarrow 5 \rightarrow 3\}$ and then 2 becomes the reference point. $\{2 \rightarrow 10 \rightarrow 1 \rightarrow 5 \rightarrow 3 \rightarrow 20 \rightarrow 3\}$

After the next operation "2 5", the 5th element '3' is removed and the follower '20' becomes the reference point: $\{20 \rightarrow 3 \rightarrow 2 \rightarrow 10 \rightarrow 1 \rightarrow 5\}$.

The next query of position 6 is '5'.