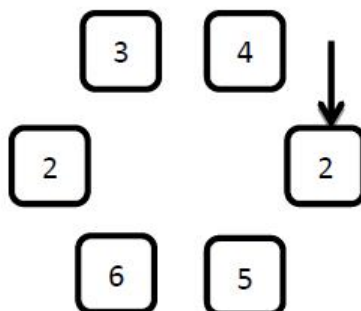


6371 Looploop

XXX gets a new toy named Looploop. The toy has N elements arranged in a loop, an arrow pointing to one of the elements, and two preset parameters k_1 and k_2 . Every element has a number on it.

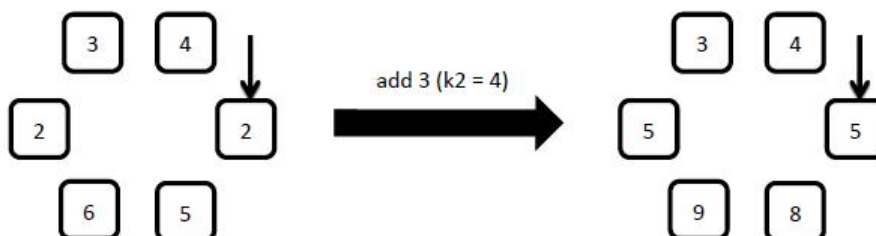


The figure above shows a Looploop of 6 elements. Let's assume the preset parameter k_1 is 3, and k_2 is 4.

XXX can do six operations with the toy.

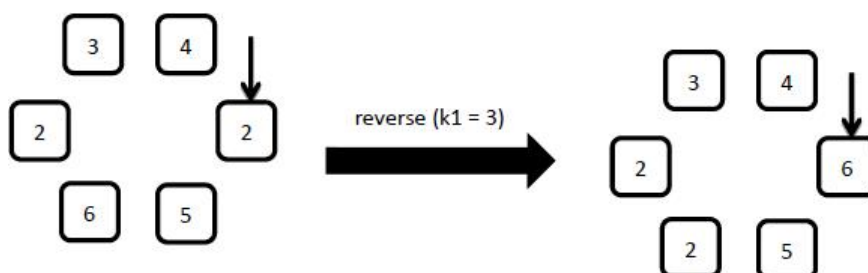
1. add x

Starting from the arrow pointed element, add x to the number on the clockwise first k_2 elements.



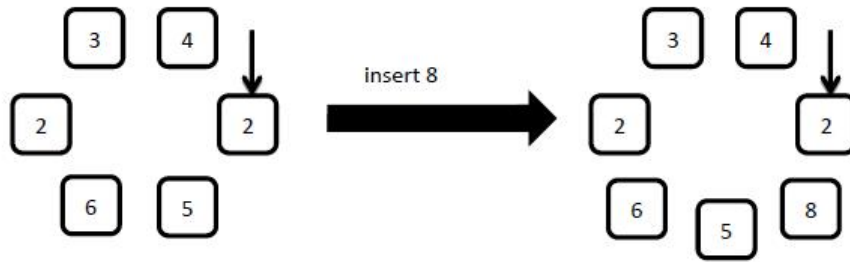
2. reverse

Starting from the arrow pointed element, reverse the first k_1 clockwise elements.



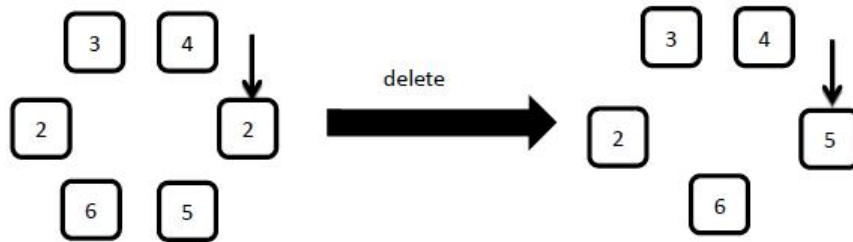
3. insert x

Insert a new element with number x to the right (along clockwise) of the arrow pointed element.



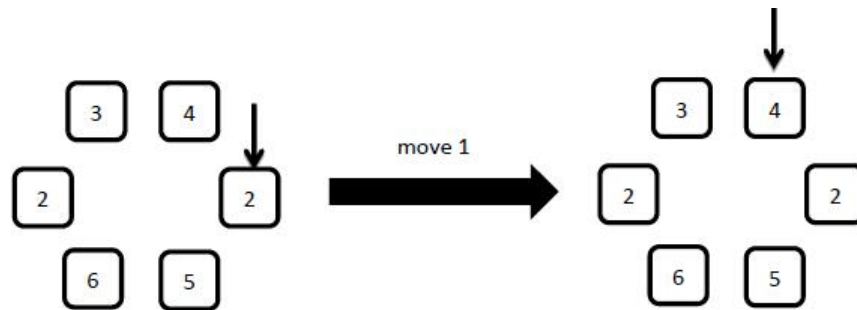
4. delete

Delete the element the arrow pointed and then move the arrow to the right element.



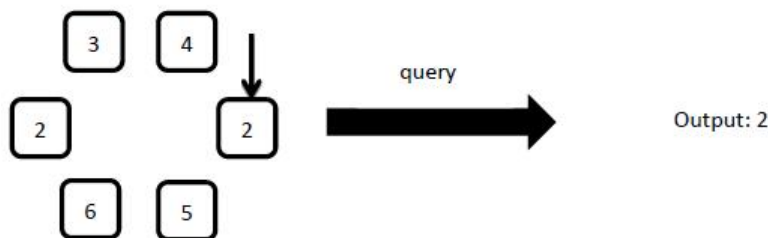
5. move x

x can only be 1 or 2. If $x = 1$, move the arrow to the left (along the counterclockwise) element, if $x = 2$ move the arrow to the right element.



6. query

Output the number on the arrow pointed element in one line.



XXX wants to give answers to every query in a serial of operations.

Input

There are multiple test cases.

For each test case the first line contains N , M , k_1 , k_2 ($2 \leq k_1 < k_2 \leq N \leq 10^5$, $M \leq 10^5$) indicating the initial number of elements, the total number of operations XXX will do and the two preset parameters of the toy.

Second line contains N integers a_i ($-10^4 \leq a_i \leq 10^4$) representing the N numbers on the elements in Looploop along clockwise direction. The arrow points to first element in input at the beginning.

Then m lines follow, each line contains one of the six operations described above.

It is guaranteed that the x in the 'add', 'insert' and 'move' operations is always integer and its absolute value $\leq 10^4$. The number of elements will never be less than N during the operations.

The input ends with a line of '0 0 0 0'.

Output

For each test case, output case number in the first line (formatted as the sample output). Then for each query in the case, output the number on the arrow pointed element in a single line.

Sample Input

```
5 1 2 4
3 4 5 6 7
query
5 13 2 4
1 2 3 4 5
move 2
query
insert 8
reverse
query
add 2
query
move 1
query
move 1
query
delete
query
0 0 0 0
```

Sample Output

```
Case #1:
3
Case #2:
2
8
10
1
5
1
```