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 assuming the preset parameter $k_1$ is 3, and $k_2$ is 4.

XXX can do six operations with the toy:

1. **add**
   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**
   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**
   $x$ 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 $a_i$ $(1 \leq a_i \leq 10^4)$ representing the $N$ numbers on the elements in Looploop along clockwise direction. The arrow points to the first element in input at the beginning.

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

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
```

**Sample Output**

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

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 $a_i$ $(1 \leq a_i \leq 10^4)$ representing the $N$ numbers on the elements in Looploop along clockwise direction. The arrow points to the first element in input at the beginning.

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

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**

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

**Sample Output**

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