Problem 3
The Light is On
Time Limit: *2 Second*

You decided to use a LED screen to do some performance for a ceremony. The LED screen consists of n rows and each row has m lights. During the performance, there are three types of operations need to be done.

1. Turn on a light at a certain position if the light is off.
2. Turn off a light at a certain position if the light is on.
3. Switch all the lights at a certain row. For all the lights at this row, if it is originally on, we turn it off. And if it is originally off, we turn it on.

Initially all lights are off. You will need to know, after each operation, how many lights are on in total.

Input

The first line consist of 3 space separated integers $n(1 \leq n \leq 100)$ $m(1 \leq d \leq 10000)$ and $q(1 \leq q \leq 10^5)$, denoting the number of rows, number of lights at each row and total number of operations need to be done.

The following q lines will be one of the following :

1 $x(1 \leq x \leq n)$ $y(1 \leq y \leq m)$: Turn the y-th light at x-th row on if it is off.

2 $x(1 \leq x \leq n)$ $y(1 \leq y \leq m)$: Turn the y-th light at x-th row off if it is on.

3 $x(1 \leq x \leq n)$: Switch all the lights at x-th row.

Output

After each operation, print a single integer on a line denoting the total number of lights on.

Sample Input

```
2 3 6
2 1 1
1 1 1
3 2
1 2 1
2 2 2
3 1
```

Sample Output

```
0
1
4
4
3
4
```

Explanation of Sample Data

At the beginning all lights are off.

For first operation, the first light at first row is off, so we do nothing to the light. There is still no light on.

For second operation, the first light at first row is off, so we turn it on. There is 1 light on.

For next operation, the lights at second row are off, so we turn all of them on. There are 4 lights on.

For next operation, the first light at second row is on, so we do nothing to the light. There are still 4 lights on.

For next operation, the second light at second row is on, so we turn it off. There are only 3 lights on.

For the last operation, the first light at first row is on, the rest of the lights at first row are off. So we turn first light at first row off and turn the rest of the lights at first row on. In total we have one more light on, so there are 4 lights on.