

Contest Duration: 2025-05-17(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250517T2100&p1=248>) - 2025-05-17(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250517T2240&p1=248>) (local time) (100 minutes)

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## D - Garbage Removal

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Time Limit: 2.5 sec / Memory Limit: 1024 MiB

Score : 400 points

### Problem Statement

There is a grid with  $H$  rows and  $W$  columns. Let  $(i, j)$  denote the cell at the  $i$ -th row from the top and the  $j$ -th column from the left.

There are  $N$  pieces of trash on the grid; the  $i$ -th piece is at cell  $(X_i, Y_i)$ .

You are given  $Q$  queries, which you must process in order. Each query is of one of the following types:

- Type 1: Given in the format  $1 \ x$  in the input. Report the number of trash pieces in the  $x$ -th row. Then, all trash pieces in the  $x$ -th row are removed from the grid.
- Type 2: Given in the format  $2 \ y$  in the input. Report the number of trash pieces in the  $y$ -th column. Then, all trash pieces in the  $y$ -th column are removed from the grid.

### Constraints

- $1 \leq H, W, N \leq 2 \times 10^5$
- $1 \leq X_i \leq H$
- $1 \leq Y_i \leq W$
- If  $i \neq j$ , then  $(X_i, Y_i) \neq (X_j, Y_j)$ .
- $1 \leq Q \leq 2 \times 10^5$
- For a type 1 query,  $1 \leq x \leq H$ .

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- For a type 2 query,  $1 \leq y \leq W$ .
  - All input values are integers.
- 

## Input

The input is given from Standard Input in the following format:

```
H  W  N
X1  Y1
X2  Y2
⋮
XN  YN
Q
query1
query2
⋮
queryQ
```

Here,  $\text{query}_i$  denotes the  $i$ -th query, which is given in one of the following formats:

```
1  x
```

```
2  y
```

## Output

Output  $Q$  lines. The  $i$ -th line should contain the response to the  $i$ -th query.

---

## Sample Input 1

Copy

```
3 4 5
1 2
1 3
3 4
3 1
2 2
5
1 1
1 2
2 2
2 4
1 2
```

Copy

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## Sample Output 1

Copy

```
2  
1  
0  
1  
0
```

Copy

Initially, trash pieces are at cells  $(1, 2)$ ,  $(1, 3)$ ,  $(3, 4)$ ,  $(3, 1)$ ,  $(2, 2)$ .

In the 1st query, the 1st row contains two pieces of trash at  $(1, 2)$  and  $(1, 3)$ , so report 2.  
These pieces are then removed; the remaining trash is at  $(3, 4)$ ,  $(3, 1)$ ,  $(2, 2)$ .

In the 2nd query, the 2nd row contains one piece of trash at  $(2, 2)$ , so report 1. This piece is then removed; the remaining trash is at  $(3, 4)$ ,  $(3, 1)$ .

In the 3rd query, the 2nd column contains no trash, so report 0.

In the 4th query, the 4th column contains one piece of trash at  $(3, 4)$ , so report 1. This piece is then removed; the remaining trash is at  $(3, 1)$ .

In the 5th query, the 2nd row contains no trash, so report 0.

---

## Sample Input 2

Copy

```
1 2 1  
1 2  
7  
2 1  
2 1  
2 1  
2 1  
2 1  
2 1  
2 1
```

Copy

## Sample Output 2

Copy

```
0  
0  
0  
0  
0  
0  
0  
0
```

Copy

## Sample Input 3

Copy

```
4 4 16
1 1
1 2
1 3
1 4
2 1
2 2
2 3
2 4
3 1
3 2
3 3
3 4
4 1
4 2
4 3
4 4
7
2 1
1 1
2 2
1 2
2 3
1 3
2 4
```

Copy

## Sample Output 3

Copy

```
4
3
3
2
2
1
1
```

Copy

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#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc406%2Ftasks%2Fabc406\_d%3Flang%3Den&title=D%20-

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