

Problem D. Dull Chocolates

Input file: `dull.in`
Output file: `standard output`
Balloon Color: `Yellow`

Fouad wants to eat a chocolate bar, so he bought a rectangular chocolate bar that has N rows and M columns of chocolate.

Fouad found that most of the cells in that chocolate bar are dark chocolate except for K cells which are white chocolate. Now, he wants to eat a prefix sub-grid of the bar. A prefix sub-grid is a rectangular sub-grid that starts at the first cell $(1, 1)$ and ends at any cell (i, j) . Fouad is also wondering how many perfect prefix sub-grids of the bar. A perfect prefix sub-grid is a one that contains an odd number of white chocolate cells.

Help Fouad find the number of perfect prefix sub-grids and non-perfect prefix sub-grids.

Input

The first line of the input containing a single integer T specifying the number of test cases.

Each test case begins with a line containing three integers N , M , and K ($1 \leq N, M \leq 10^9$, $0 \leq K \leq 10^3$), in which N and M are the number of rows and columns in the chocolate bar, respectively, and K is the number of white chocolate cells.

Then K lines follow, each line containing two integers X_i and Y_i ($1 \leq X_i \leq N$, $1 \leq Y_i \leq M$), giving the positions of the white chocolate cells. It is guaranteed that all the given positions are unique.

Output

For each test case, print a single line containing two space-separated integers representing the number of perfect prefix sub-grids and non-perfect prefix sub-grids, respectively.

Example

<code>dull.in</code>	<code>standard output</code>
3	0 9
3 3 0	4 5
3 3 1	14 11
2 2	
5 5 5	
1 5	
2 1	
3 3	
4 2	
5 4	

Note

In the second test case, the chocolate bar can be represented as follows:

```
ddd
dwd
ddd
```

in which 'd' represents dark chocolate cells while 'w' represents white chocolate cells. There are four perfect prefix sub-grids that end at cells: $(2, 2)$, $(2, 3)$, $(3, 2)$, and $(3, 3)$.