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

dull.in	standard output
3 3 3 0 3 3 1 2 2 5 5 5 1 5 2 1 3 3 4 2 5 4	0 9 4 5 14 11

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 $(3, 3)$.