Cutting the Pizza

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	256 megabytes

It's your best friend's best birthday and he has assigned you the task of cutting and distributing the pizza to everyone. The pizza can be considered as a large rectangle on the coordinate plane with (1, 1) and (n ,m) being diagonally opposite corners. To make the cuts you play a special game. Every guest chooses a point (x, y) and makes a cut parallel to the x-axis passing through (x, y) and another cut parallel to the y-axis passing through the same point. Now after all the cuts have been made you have to tell the number of pieces obtained. Also you want to give the largest piece (by area) to the birthday girl and the smallest piece (by area) to your annoying DSA TA whom you both hate. Print the number of pieces obtained the size of smallest and the largest piece.

Input

First line contains T which is the number of test cases. ($0 \leq T \leq 10$).
First line of every test case contains 3 integers N, M, Q where N and M are coordinates of the top right corner of the pizza and Q is the number of guests. ($2 \leq N$, $M \leq 10^5$) ($0 \leq Q \leq 10^5$)
The next Q lines contains the coordinates X, Y where each of the guest decided to make the cut. ($1 \leq X \leq N$) ($1 \leq Y \leq M$)
The sum of Q for all test cases won't exceed 10^5

Output

For each test case, output a line containing 3 integers indicating the number of pieces, the area of piece with smallest area and the area of piece with largest area.

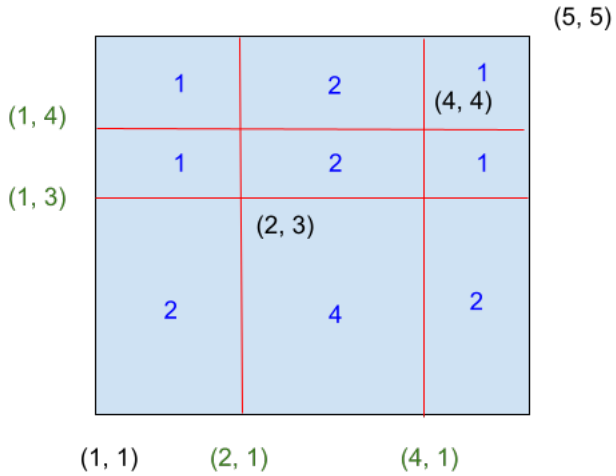
Examples

standard input	standard output
1 5 5 2 2 3 4 4	9 1 4
1 4 4 1 2 2	4 1 4

Note

The pizza can be assumed to be a rectangle with bottom left point as (1, 1) and top right point as (n, m).
More than one guest can choose same point to make a cut.
Cuts are thin.

Explanation for sample case 1.


(5, 5)
1
2
1
(4, 4)
(1, 4)
1
2
1
(1, 3)
(2, 3)
2
4
2
(1, 1)
(2, 1)
(4, 1)