Write a program, that, given a board, and a list of rectangular sub-portions of the board, returns the number of positions that belong to no sub-portion.

Input

The input consists of a series of test sets separated by blank lines. A test set starts with a line with three numbers W, H and N, giving respectively the width, the height and the number of sub-boards. These values satisfy the following constraints: $1 \leq W, H \leq 500$ and $0 \leq N \leq 99$. Follow then N lines, composed of four integers X_1, Y_1, X_2, Y_2, such that (X_1, Y_1) and (X_2, Y_2) are the positions of two opposite corners of a sub-board. These values satisfy the following constraints: $1 \leq X_1, X_2 \leq W$ and $1 \leq Y_1, Y_2 \leq H$. The end of the input is reached when the numbers W, H and N are equal to 0. This last line shall not be considered as a test set.

Output

The program shall output each result on a line by its own, following the format given in the sample output.

Sample Input

```
1 1 1
1 1 1 1

2 2 2
1 1 1 2
1 1 2 1

493 182 3
349 148 363 146
241 123 443 147
303 124 293 17

0 0 0
```

Sample Output

```
There is no empty spots.
There is one empty spot.
There are 83470 empty spots.
```