

2D-Sum

You are given a rectangular field of integers with a width W and a height H . These integers are all in the range $[-1000,1000]$. Your task is to write a program that computes the sum of all integers in a rectangular subfield. You are therefore additionally given a list of Q subrectangles. For each of these subrectangles you should compute the sum.

Input

The first line contains W , H and Q in that order.

The next H lines contain each W integers separated by a space. This is the rectangular field.

After that another Q lines follow with 4 integers x_1 , y_1 , x_2 , y_2 in that order. (x_1, y_1) and (x_2, y_2) form two opposing edges of a subrectangle. Coordinates are in the range $[1, W]$ or $[1, H]$. The edges should be included in the subrectangle.

H and W will not exceed 1000.

Output

For each subrectangle print the sum of the integers in it on a line of its own.

Sample Input

```
5 4 3
1 5 -3 8 -4
2 4 -1 -5 9
10 1 0 -8 5
3 5 9 0 1
1 1 5 4
2 3 2 3
4 3 2 2
```

Sample Output

```
42
1
-9
```