

## E. Vladik and Entertaining Flags

time limit per test: 2 seconds  
memory limit per test: 256 megabytes  
input: standard input  
output: standard output

In his spare time Vladik estimates beauty of the flags.

Every flag could be represented as the matrix  $n \times m$  which consists of positive integers.

Let's define the beauty of the flag as number of components in its matrix. We call component a set of cells with same numbers and between any pair of cells from that set there exists a path through adjacent cells from same component. Here is the example of the partitioning some flag matrix into components:

But this time he decided to change something in the process. Now he wants to estimate not the entire flag, but some segment. Segment of flag can be described as a submatrix of the flag matrix with opposite corners at  $(1, l)$  and  $(n, r)$ , where conditions  $1 \leq l \leq r \leq m$  are satisfied.

Help Vladik to calculate the beauty for some segments of the given flag.

### Input

First line contains three space-separated integers  $n, m, q$  ( $1 \leq n \leq 10, 1 \leq m, q \leq 10^5$ ) — dimensions of flag matrix and number of segments respectively.

Each of next  $n$  lines contains  $m$  space-separated integers — description of flag matrix. All elements of flag matrix is positive integers not exceeding  $10^6$ .

Each of next  $q$  lines contains two space-separated integers  $l, r$  ( $1 \leq l \leq r \leq m$ ) — borders of segment which beauty Vladik wants to know.

### Output

For each segment print the result on the corresponding line.

### Example

input
4 5 4 1 1 1 1 1 1 2 2 3 3 1 1 1 2 5 4 4 5 5 5 1 5 2 5 1 2 4 5
output
6 7 3 4

### Note

Partitioning on components for every segment from first test case: