

4 Neighbours

We consider the matrix A whose elements can only have the values 0 or 1 and in which the numbering of lines and numbering of columns starts from 1. For any element of the matrix, we define the notion of neighbour as those elements of the matrix located in its immediate vicinity, on one of the horizontal, vertical or two diagonal directions. A good neighbour of the element $A[i][j]$ is a neighbour that has the same value as $A[i][j]$.

Given the matrix A , determine the maximum number of good neighbours present in the matrix, as well as the number of elements that have this maximum number of good neighbours.

Input/Output

The input contains on the first line three integer values m , n , and k representing the number of lines, the number of columns and the number of values equal to 1 in the matrix. On each of the next k lines of the matrix there are two values i and j with the meaning of $A[i][j]$ is 1. These values are given in order of traversing the matrix on the lines from line 1 to line m .

The output consists of two integer numbers x and y separated by a single space. x represents the maximum number of good neighbours present in the matrix and y represents the number of elements that have this maximum number of good neighbours.

Constraints

- $2 \leq m, n \leq 1000$.
- $0 \leq k \leq n * m$

Examples

Sample Input

```
3 4 7
1 3
2 1
2 4
3 1
3 4
3 3
3 2
```

Explanation

```
0  0* 1  0
1  0* 0* 1*
1  1* 1* 1
```

The maximum number of good neighbours we encounter in the matrix above is 3. There are 6 elements that have this maximum, they are marked with a star in the matrix above

Sample Output

```
3 6
```