Machine Schedule

As we all know, machine scheduling is a very classical problem in computer science and has been studied for a very long history. Scheduling problems differ widely in the nature of the constraints that must be satisfied and the type of schedules desired. Here we consider a 2-machine scheduling problem.

There are two machines A and B. Machine A has n working modes, which is called $A_0, A_1, ..., A_{n-1}$, likewise machine B has m working modes, $B_0, B_1, ..., B_{m-1}$. At the beginning, they both work at A_0 and B_0.

For k jobs given, each of them can be processed in either one of the two machines in particular mode. For example, job 1 can either be processed in machine A at mode A_3 or in machine B at mode B_4, job 2 can either be processed in machine A at mode A_2 or in machine B at mode B_3, and so on. Thus, for job i, the constraint can be represented as a triple $(i, x, y),$ which means it can be processed either in machine A at mode A_x, or in machine B at mode B_y.

Obviously, to accomplish all the jobs, we need to change the machines' working mode from time to time, but unfortunately, the machines' working mode can only be changed by restarting it manually. By changing the sequence of the jobs and assigning each job to a suitable machine, please write a program to minimize the number of times to restart the two machines.

Input

Input contains multiple test cases and is terminated by end of file. The first line of each test case contains three positive integers: **n, m, k** ($1 \le$ **n, m** $\le 100, 0 \le$ **k** ≤ 1000). The following **k** lines give the constraints of the **k** jobs, where the **i-th** line contains two integers **x** and **y** ($0 \le$ **x** $<$ **n**, $0 \le$ **y** $<$ **m**), indicating that the **i-th** job can be processed either in machine **A** at mode **A$_x$**, or in machine **B** at mode **B$_y$**.

Output

For each test case, print the minimum number of times to restart the two machines, in a separate line.

Sample Input	Sample Output
3 2 2 1 0 2 1 4 4 4 1 1 2 2 2 3 3 1	1 2

Hints

In the first example, execute job 1 on machine B, restart machine A to mode A2, then execute job 2.

In the second example,

- restart machine A to mode A2, then execute job 2,3
- restart machine B to mode B1, then execute job 1,4