

Task 5

Masking Tape

Task

You are a publicity agent of the JCIIOI. You are ordered to make a signboard to publicize the IOI. The signboard made by painting a rectangle plywood board. The plywood board is bound with some rectangle masking tapes is in advance. So, You decide that you paint each region which is bounded by the masking tapes with different colors.

For example, five colors are necessary and enough to paint the plywood of Fig 5-1.

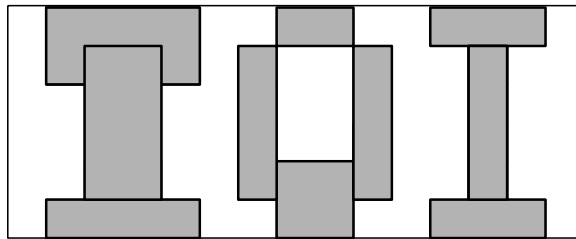


Fig. 5-1 An example of a signboard.

Write a program which, given a situation of a plywood, determine the minimum number of colors to be able to paint the input plywood with. Here, it is impossible that the entire surface of the plywood is covered by masking tapes, and every side of masking tapes is parallel to one of a side of the plywood.

Input

The input file is named `input.txt`.

The first line contains two integers separated by a single space that represent the size of the given plywood, the width w ($1 \leq w \leq 1000000$) and the height h ($1 \leq h \leq 1000000$).

The second line contains the number n ($1 \leq n \leq 1000$) of the masking tape on the plywood.

The $(2 + i)$ -th line ($1 \leq i \leq n$) contains four integers x_1, y_1, x_2, y_2 ($0 \leq x_1 < x_2 \leq w, 0 \leq y_1 < y_2 \leq h$) separated by single spaces. (x_1, y_1) and (x_2, y_2) represent the coordinates of the bottom left corner and the top right corner, respectively, of the i th masking tape on the plywood.

Note that the coordinates of the bottom left corner of the plywood is $(0, 0)$ and the coordinates of the bottom left corner of it is (w, h) .

30% of the mark is given for test cases with $w \leq 100, h \leq 100, n \leq 100$.

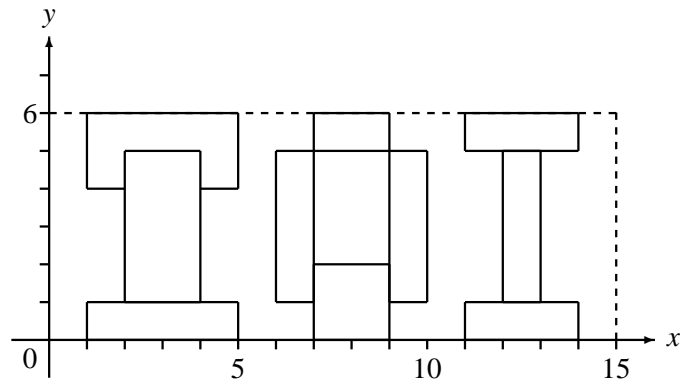


Fig. 5-2 An example of an input corresponding to the signboard of Fig 5-1.

Output

The output file is named `output.txt`.

The output file should contain a single integer, which is the minimum number of colors to be able to paint the input plywood with.

Sample input and output

The following are the input and the output corresponding to Fig. 5-1.

`input.txt`

```
15 6
10
1 4 5 6
2 1 4 5
1 0 5 1
6 1 7 5
7 5 9 6
7 0 9 2
9 1 10 5
11 0 14 1
12 1 13 5
11 5 14 6
```

`output.txt`

```
5
```