

Subject

Write a C++ program, which solves next task.

There is some city, which is represented by a matrix $\mathbf{m} \times \mathbf{n}$, where the rows are numbered from $\mathbf{1}$ to \mathbf{n} , and columns – from $\mathbf{1}$ to \mathbf{m} .

The tram paths in this city are always straight along the rows. In other words, the initial and final points of the tram path are $(\mathbf{r}, \mathbf{c1})$ and $(\mathbf{r}, \mathbf{c2})$, where \mathbf{r} is the number of the row, $\mathbf{c1}$ – the initial column, $\mathbf{c2}$ – the final point.

There is some need to find out a number of the cells, which can be used for putting the street lights. The street light can be placed within the cell, which isn't occupied by the tram paths.

Find out and output the number of such cells for specific city.

Attention: the tram paths can intersect one another within one row.

Input format:

First line consist of three integer numbers, separated the whitespaces: \mathbf{n} (a number of the rows), \mathbf{m} (a number of the columns), \mathbf{k} (a number of the tram paths).

Each next \mathbf{i} line of the \mathbf{k} paths consist of three integer numbers, separated the whitespaces: $\mathbf{r}, \mathbf{c1}, \mathbf{c2}$.

Constraints:

$$1 \leq \mathbf{n}, \mathbf{m} \leq 10^9$$

$$0 \leq \mathbf{k} \leq 1000$$

$$1 \leq \mathbf{r} \leq \mathbf{n}$$

$$1 \leq \mathbf{c1}, \mathbf{c2} \leq \mathbf{m}$$

Output format:

The integer number, which represents a number of the cells for putting the street lights.

Test input:

4 4 3

2 2 3

3 1 4

4 4 4

Test output:

9

Explanation:

On the picture below yellow color shows the first tram path, green color – the second path, blue color – the third path. The street light can be placed within anyone red cell, so the output of the program is 9.

