

Ranges

There are N contiguous cells numbered from 1 to N . Initially, each cell contains a 0 in it. A sub-contiguous group of cells can be updated this way:

- 1) A range $[i,j]$ is defined such that $i < j$
- 2) The cell numbered i is added 1; the cell numbered $i + 1$ is added 2, and so on until the cell numbered j is reached and added $j - i + 1$

For example, if $N = 7$ and the updates $[3, 6]$ and $[4,7]$ were performed, this is what would happen.

Initially: $\{0,0,0,0,0,0,0\}$

Update $[3,6]$: $\{0,0,1,2,3,4,0\}$

Update $[4,7]$: $\{0,0,1,3,5,7,4\}$

After performing some update operations, it would be amazing to answer questions like the following:

- 1) A range $[u,v]$ is defined such that $u < v$
- 2) The answer is the sum of every cell in the range $[u,v]$ (both u and v are included) modulus 10,000

Given N and U updates ranges. You have to write a program capable of answering Q questions.

Input

The first line contains three integers: N ($1 \leq N \leq 1,000,000,000$), U and Q ($1 \leq U, Q \leq 1,000$), representing the number of cells, the number of update operations, and the number of questions respectively.

Each of the following U lines contains two integers i and j ($1 \leq i < j \leq N$) separated by a single space indicating an update operation.

Each of the following Q lines contains two integers u and v ($1 \leq u < v \leq N$) separated by a single space indicating a question.

Output

For each question $[u,v]$ you must print the sum of all contiguous cells starting at u and ending at v

modulus 10,000.

Example

Input:

7 2 2

3 6

4 7

4 6

1 7

Output:

15

20