Problem F. Marriage questions

Input file:	`marriage.in`
Output file:	`marriage.out`
Time limit:	1 second
Memory limit:	256 megabytes
Feedback	`full`
Grading system	`each test is graded separately`

Once upon a time in a country far, far away, the wise king had M beautiful daughters. At last, the time for them to get married has come. King sent a message in N neighboring kingdoms, so each of them sent a prince to marry one of the princesses.

As a loving father the king considered his daughters' opinions. First of all he arranged young men in a line, enumerated them with numbers from 1 to N, and asked each of his daughters, with which of those candidates she was agree to get married.

King had an excellent mathematical background, so it was easy for him to check whether it is possible to find a husband for each of his daughters in such way, that requests of each daughter were satisfied. But suddenly the king thought about more interesting question: how many pairs (L, R) $(1 \le L \le R \le N)$ are there, such that it is possible to assign a husband for each daughter, using only candidates with numbers of range from L to R inclusive?

Help king to find an answer to his question!

Input

First line contains three integers N, M and K ($1 \le N \le 30\,000$, $1 \le M \le 2\,000$, $1 \le K \le \min(N \cdot M, 100\,000)$) — number of candidates, number of girls and number of lines, describing girls' requests respectively.

In next K lines there are integers A_i, B_i ($1 \le A_i \le N$, $1 \le B_i \le M$), it means that girl B_i likes candidate A_i. All pairs are different.

Output

Output the number of ways king can choose a pair (L, R) to satisfy the problem statement.

Examples

marriage.in	marriage.out
5 3 7 1 1 1 2 1 3 2 3 3 2 4 2 5 1	4

Note

In the sample test pairs $(1, 3), (1, 4), (1, 5)$ and $(2, 5)$ satisfy the required conditions.

For 24% points $N \le 10$, $M \le 4$.

For 48% points $N \le 100$, $M \le 50$.

For 72% points $N \le 1\,000$, $M \le 500$.