D. Olya and Graph

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Olya has got a directed non-weighted graph, consisting of n vertexes and m edges. We will consider that the graph vertexes are indexed from 1 to n in some manner. Then for any graph edge that goes from vertex v to vertex u the following inequation holds: $v < u$.

Now Olya wonders, how many ways there are to add an arbitrary (possibly zero) number of edges to the graph so as the following conditions were met:

1. You can reach vertexes number $i + 1, i + 2, ..., n$ from any vertex number i $(i < n)$.
2. For any graph edge going from vertex v to vertex u the following inequation fulfills: $v < u$.
3. There is at most one edge between any two vertexes.
4. The shortest distance between the pair of vertexes i, j $(i < j)$, for which j - $i \le k$ holds, equals j - i edges.
5. The shortest distance between the pair of vertexes i, j $(i < j)$, for which j - $i > k$ holds, equals either j - i or j - i - k edges.

We will consider two ways *distinct*, if there is the pair of vertexes i, j $(i < j)$, such that first resulting graph has an edge from i to j and the second one doesn't have it.

Help Olya. As the required number of ways can be rather large, print it modulo 1000000007 $(10^9 + 7)$.

Input

The first line contains three space-separated integers n, m, k $(2 \le n \le 10^6, 0 \le m \le 10^5, 1 \le k \le 10^6)$.

The next m lines contain the description of the edges of the initial graph. The i-th line contains a pair of space-separated integers u_i, v_i $(1 \le u_i < v_i \le n)$ — the numbers of vertexes that have a directed edge from u_i to v_i between them.

It is guaranteed that any pair of vertexes u_i, v_i has at most one edge between them. It also is guaranteed that the graph edges are given in the order of non-decreasing u_i. If there are multiple edges going from vertex u_i, then it is guaranteed that these edges are given in the order of increasing v_i.

Output

Print a single integer — the answer to the problem modulo 1000000007 $(10^9 + 7)$.

Examples

input
7 8 2 1 2 2 3 3 4 3 6 4 5 4 7 5 6 6 7
output
2

input
7 0 2

output

```
12
```

input

```
7 2 1
1 3
3 5
```

output

```
0
```

Note

In the first sample there are two ways: the first way is not to add anything, the second way is to add a single edge from vertex 2 to vertex 5.