Misspelling

Some time ago, President K had a string S of length N consisting of lower case characters. But, he forgot it. He had a dictionary which contains misspellings of several kinds, and he once took a look at the dictionary to check the misspellings of the string S. Now, he remembers that the following is true for the string S.

- Let T_i $(1 \leq i \leq N)$ be the string obtained from S by deleting the i-th character and removing the gap. For each j $(1 \leq j \leq M)$, the relation $T_{A_j} \leq T_{B_j}$ holds.

Here, $T_{A_j} \leq T_{B_j}$ means either T_{A_j} is equal to T_{B_j}, or T_{A_j} is smaller than T_{B_j} in the lexicographic order (alphabetical order).

Write a program which, given information on the string S remembered by President K, calculates the number of strings S modulo 1 000 000 007 which do not contradict given information.

Input

Read the following data from the standard input. Given values are all integers.

N M
A_1 B_1
A_2 B_2
$\vdots$
A_M B_M

Output

Write one line to the standard output. The output should contain the number of strings S modulo 1 000 000 007 which do not contradict given information.

Constraints

- $2 \leq N \leq 500\,000$.
- $1 \leq M \leq 500\,000$.
- $1 \leq A_j \leq N$ $(1 \leq j \leq M)$.
- $1 \leq B_j \leq N$ $(1 \leq j \leq M)$.
- $A_j \neq B_j$ $(1 \leq j \leq M)$.
- $(A_j, B_j) \neq (A_k, B_k)$ $(1 \leq j < k \leq M)$.

Subtasks

1. (8 points) $N \leq 10$.
2. (20 points) $N \leq 200$.
3. (29 points) $M = N - 1$. Moreover, there exists a permutation P of $(1, 2, \ldots, N)$ of length N satisfying $A_j = P_j$ and $B_j = P_{j+1}$ $(1 \leq j \leq M)$.
4. (32 points) $N \leq 20\,000$.
5. (11 points) No additional constraints.

Sample Input and Output

Sample Input 1	Sample Output 1
3 2 1 3 3 2	5876

For example, if the string S is bab, we have T_1 = ab, T_2 = bb, T_3 = ba. The relations $T_1 \leq T_3$ and $T_3 \leq T_2$ hold. This string does not contradict given information. In total, there are 5876 strings S which do not contradict given information. Therefore, output 5876.

On the other hand, for example, if the strings S is aab, we have T_1 = ab, T_2 = ab, T_3 = aa. The relation $T_1 \leq T_3$ does not hold. Therefore, this string contradicts given information.

This sample input satisfies the constraints of all the subtasks.

Sample Input 2	Sample Output 2
5 6 1 2 1 5 2 4 5 4 5 3 4 3	656981

This sample input satisfies the constraints of Subtasks 1, 2, 4, 5.

Sample Input 3	Sample Output 3
10 9 3 6 4 6 6 7 7 9 10 8 9 8 8 5 5 2 5 1	206289833

The number of strings S which do not contradict given information is 824 206 295 601. Therefore, output 206 289 833, which is the remainder of 824 206 295 601 when divided by 1 000 000 007.

This sample input satisfies the constraints of Subtasks 1, 2, 4, 5.

Sample Input 4	Sample Output 4
7 6 1 3 3 4 4 6 6 5 5 7 7 2	7125651

This sample input satisfies the constraints of all the subtasks.

Sample Input 5	Sample Output 5
5 4 2 4 4 3 3 5 5 1	61451

This sample input satisfies the constraints of all the subtasks.