

Problem E

To All Tha Customers

Time Limit: 2 seconds

A shop sells N items numbered $1, 2, \dots, N$.

There are M people who visit the shop one after another. When person i arrives, they first look at which items are currently for sale, and then act as follows:

- They buy item A_i if it is available.
- Otherwise, they buy item B_i if it is available.
- Otherwise, they buy nothing and leave.

Note that it is possible that $A_i = B_i$.

There are $M!$ possible arrival orders for the M people. Compute the number of arrival orders for which every person is able to buy an item. Output that number modulo 998244353.

Input

```
N M
A1 B1
A2 B2
⋮
AM BM
```

The first line contains an integer N ($1 \leq N \leq 200\,000$) representing the number of items sold in the store and M ($1 \leq M \leq N$) representing the number of people visiting the store.

Each of the following M lines contains two integers A_i and B_i ($1 \leq A_i, B_i \leq N$).

Output

Print the answer.

Sample Input 1

```
4 3
2 1
3 2
3 4
```

Sample Output 1

```
4
```

Sample Input 2

```
6 6
2 3
4 3
5 4
2 5
5 1
6 6
```

Sample Output 2

```
198
```