

# Mysterious Array

## Problem ID: mysterious

There is an array that contains a permutation of the numbers  $1, 2, \dots, N$  (i.e., each number appears exactly once in the array). The elements of the array are 1-indexed.

However, you don't know the contents of the array. Instead, you are given the results of  $Q$  queries of the form "what is the minimum value between positions  $a$  and  $b$ ?"

Your task is to count the number of arrays that match the queries.

### Input

The first input line contains two integers  $N$  and  $Q$ : the size of the array and the number of queries.

Then there are  $Q$  lines that describe the queries. Each line contains three integers  $a, b$ , and  $x$  ( $1 \leq a \leq b \leq N$  and  $1 \leq x \leq N$ ): the minimum value between positions  $a$  and  $b$  is  $x$ .

Note that the results of the queries might be inconsistent, and it is possible that no array matches them.

### Output

Print one integer: the number of arrays modulo  $10^9 + 7$ .

### Grading

Your solution will be graded on a set of subtasks. A subtask will consist of multiple test cases. To get the points for a subtask, your solution must pass all test cases that are part of the subtask.

Subtask	Score	Constraints
1	23	$1 \leq N, Q \leq 10$
2	35	$1 \leq N, Q \leq 1000$
3	42	$1 \leq N, Q \leq 2 \cdot 10^5$

### Explanation of examples

In the first example there is an array of size 3, containing a permutation of the numbers 1, 2 and 3. Additionally, it is given that the minimum among the numbers at indices between 1 and 2 is 2, and the minimum among the numbers at indices between 1 and 3 (i.e. the whole array) is 1. There are only two arrays matching these conditions:  $[2, 3, 1]$  and  $[3, 2, 1]$ .

In the second example there are 576 arrays that match the given conditions.

#### Sample Input 1

3 2 1 2 2 1 3 1	2
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#### Sample Output 1

#### Sample Input 2

8 3 3 7 2 6 8 2 4 5 5	576
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#### Sample Output 2