

## Problem J. Ternary String Counting

Input file: *standard input*  
Output file: *standard output*  
Time limit: 2 seconds  
Memory limit: 256 mebibytes

Chiaki studies ternary strings  $s$  of length  $n$ . A ternary string is a string consisting of characters “0”, “1”, and “2”.

Chiaki has made  $m$  restrictions, and the  $i$ -th restriction is: the number of distinct characters of the substring of  $s$  from the  $l_i$ -th position to the  $r_i$ -th position (both inclusive) is exactly  $x_i$ .

Chiaki would like to know the number of strings which meet the  $m$  restrictions. As the number may be very large, you are only asked to calculate it modulo  $10^9 + 7$ .

### Input

There are multiple test cases. The first line of input contains an integer  $T$ , indicating the number of test cases. For each test case:

The first line contains two integers  $n$  and  $m$  ( $1 \leq n \leq 5000$ ,  $0 \leq m \leq 10^6$ ): the length of the string and the number of restrictions.

Each of the next  $m$  lines contains three integers,  $l_i$ ,  $r_i$ , and  $x_i$  ( $1 \leq l_i \leq r_i \leq n$ ,  $1 \leq x_i \leq 3$ ).

It is guaranteed that the sum of  $n$  over all test cases does not exceed 5000, and the sum of  $m$  over all test cases does not exceed  $10^6$ .

### Output

For each test case, output an integer denoting the number of such strings modulo  $10^9 + 7$ .

### Example

standard input	standard output
4	3
1 0	9
2 0	27
3 0	18
5 2	
1 3 3	
4 5 1	

### Note

In the fourth sample, all possible strings are: 21000, 12000, 20100, 02100, 10200, 01200, 21011, 12011, 20111, 02111, 10211, 01211, 21022, 12022, 20122, 02122, 10222, 01222.