Last Celebration

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	1024 megabytes

To commemorate the end of a memorable era, the city is holding a **Last Celebration**. As a grand finale, a group of N artists has been commissioned to create a final, collaborative mural on a massive city wall. The wall has a length of D and is divided into D sections, numbered from 1 to D. Before they begin, the entire wall is primed with a base color, represented as color 0.

Each artist i is assigned a specific task: to paint the sections from l_i to r_i with their designated color c_i. As the artists work, some sections might be painted over multiple times. The final color of any section is determined by the last artist to paint it.

The quality of the final artwork is determined by its **diversity**. A **block** is defined as a maximal contiguous segment of the wall painted in a single color. The **diversity** of the wall is the total number of blocks.

The N artists will complete their tasks in a random order. Each of the $N!$ possible permutations is equally likely. Your goal is to calculate the **expected value** of the wall's diversity after all artists are finished.

Input

The first line contains two integers, D and N — the length of the wall and the number of artists.

The following N lines each contain three integers, l_i, r_i, and c_i — the range and color for the i-th artist.

Output

Output the expected value of the wall's diversity. Since the expectation can be rational, output it modulo 998 244 353. Formally, if the expectation equals s/t in lowest terms, print $s \times t^{-1} \pmod{998\,244\,353}$, where t^{-1} is the modular inverse of t modulo 998 244 353.

Scoring

- $1 \leq D \leq 10^9$
- $1 \leq N \leq 2 \cdot 10^5$
- $1 \leq l_i \leq r_i \leq D$
- $1 \leq c_i \leq N$

Examples

standard input	standard output
5 2 1 4 1 2 3 2	3
6 3 2 3 1 4 5 1 1 6 2	332748120
1000000000 9 1 2 1 11 22 1 111 222 1 1111 2222 1 11111 22222 1 111111 222222 1 1111111 2222222 1 11111111 22222222 1 111111111 222222222 1	18
4 10 1 1 1 1 2 2 1 3 3 1 4 4 2 2 5 2 3 6 2 4 7 3 3 8 3 4 9 4 4 10	356515843