Candles Counting

Tim is visiting his grandma for two days and is bored due to the lack of the electricity over there. That's why he starts to play with grandma's colorful candle collection.

He aligned the N candles from left to right. The ith candle from the left has the height H_i and the color C_i, an integer ranged from 1 to a given K, the number of colors.

Now he stares at the sequence of candles and wonders, how many strictly increasing (in height) colorful subsequences are there? A subsequence is considered as colorful if every of the K colors appears at least one times in the subsequence.

As the number of subsequences fulfilling the requirement can be large, print the result modulo $10^9 + 7$.

Input Format

On the first line you will be given N and K, then N lines will follow. On the ith line you will be given two integers H_i and C_i.
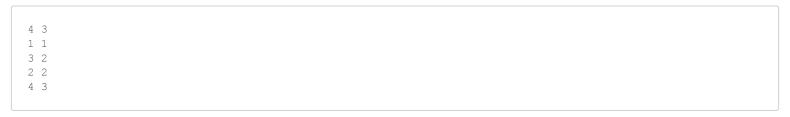
Constraints

- $1 \le N \le 5 \cdot 10^4$
- $1 \le C_i \le K \le 7$
- $1 \le H_i \le 5 \cdot 10^4$

Output Format

Print the number of strictly increasing colorful subsequences modulo $10^9 + 7$.

Sample Input

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

Sample Output

```
2
```

Explanation

In the first sample the only two valid subsequences are (1, 2, 4) and (1, 3, 4).