Problem solving session for NPTEL Course
Getting started with Competitive programming
Week 3 – Greedy Algorithms

Problem 1

At a gadget service center, there are **K** counters (numbered from **1** to **K**) where the staff address complaints of customers. They tried creating a token system so that customers could wait for their turn, but they soon discovered that all of their customers were both impatient and superstitious.

Each customer that visits the service center has a strongly preferred counter **p** (**1 ≤ p ≤ K**) based on their lucky number, and because of their impatience, if that counter is already occupied, then the customer simply leaves. Now obviously, the owner wants to maximize the total number of customers that get their gadgets fixed so he allows (or disallows) certain customers so as to achieve this task. You are to help the owner with figuring out an optmal strategy.

Given a list of **N** customers with their arrival time, departure time, and the preferred counter, you need to calculate the maximum number of customers that can be accommodated by the service center. Note that we are only interested in the number of customers and you may assume that each customer brings in equal profit to the shop.

Input

The first line contains an integer **T** denoting the number of test cases. Each of the next **T** lines contains two integers **N** and **K** , the number of customers that plan to visit the service center and the number of counters respectively. Each of the next **N** lines contains three integers $\mathbf{s_i}$, $\mathbf{f_i}$ and $\mathbf{p_i}$, the arrival time, departure time and the strongly preferred counter of the $\mathbf{i^{th}}$ customer respectively. Note that the $\mathbf{i^{th}}$ customer wants to occupy the $\mathbf{p_i^{th}}$ counter from $\mathbf{[s_i, f_i)}$ i.e the $\mathbf{i^{th}}$ customer leaves just before $\mathbf{f_i}$ so that another customer can occupy that counter from $\mathbf{f_i}$ onwards.

Output

For every test case, print in a single line the maximum number of customers that can be accommodated at the service center.

Constraints

- $\mathbf{1 \le T \le 30}$
- $\mathbf{0 \le N \le 10^5}$
- $\mathbf{1 \le K \le 10^9}$
- $\mathbf{0 \le s_i < f_i \le 10^9}$
- $\mathbf{1 \le p_i \le K}$

Example

Input:

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

```
4 6 2
7 10 3
4 2
10 100 1
100 200 2
150 500 2
200 300 2
```

Output:

```
3
3
```

Explanation

Example case 1.

All three customers want different counters and hence all 3 can be accommodated.

Example case 2.

If we serve the **1st**, **2nd** and **4th** customers, then we can get a maximum of 3.