Idea Meeting

A company which has N employees working at K(≤ N) departments plans to call for a meeting to collect new ideas from all departments. To collect a wide variety of ideas, the company sets the following conditions for the meeting.

- At any time of the meeting, at least one person from each department must participate in the meeting.
- A current participant can be replaced with another person from the same department any time of the meeting.

However, it is not easy to arrange such a meeting due to limited availabilities of employees. To arrange a meeting, the company asks each employee to report the time intervals available for a meeting. (for example, "from 10 to 19"). An employee belongs to only one department.
A time interval "from a to b" can be represented by an interval [a, b] in the one-dimensional time line. Each time interval reported from an employee is labeled with an integer between 1 and K inclusive that denotes his or her department. For a point p in the time line, if the set of the time intervals that contain p has all integer labels from 1 to K, the time corresponding to p in the time line can be allocated for a meeting. Since a meeting must be held continuously in time, a meeting is also represented by an interval in the one-dimensional time line.

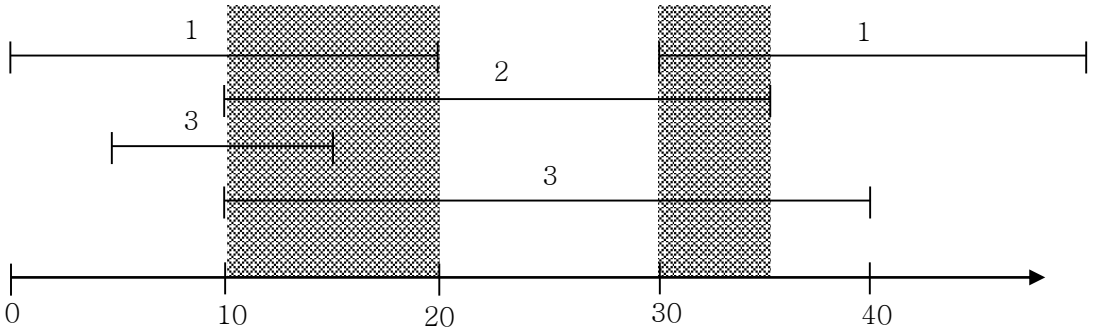

Figure 1. Time intervals of four employees available for a meeting. Any time interval that is contained in a gray interval can be allocated for an idea meeting.

For example, Figure 1 shows five time intervals available for a meeting that are reported from two employees of department 1, one employee of department 2, and two employees of department 3. For p = 5, there is no one from department 2 available for a meeting and time 5 cannot be allocated for a meeting. For p = 10, there is at least one employee from each department and therefore time 10 can be allocated for a meeting. The two gray intervals in Figure 1 represent the set of times that can be allocated for a meeting and any time interval that is contained in a gray interval can be allocated for a meeting. Therefore, the longest meeting can be scheduled to start at 10 and end at 20. Compute the start and end times of an interval of the longest meeting.

[Input]
The first line contains the total number of test cases, T (T ≤ 40), given in the input. Then the test cases follow. In each test case, the first line has two numbers N(1 ≤ N ≤ 50,000) and K (1 ≤ K ≤ 100), which are the number of employees and the number of departments the employees belongs to, respectively.
In each of the next N lines, two integers a, b (0 ≤ a, b ≤ 10,000,000) corresponding to the time interval "from a to b" reported from an employee, followed by the department number c(1 ≤ c ≤ K) where the employee belongs to are given.

There are two types of input sets.

- Set 1: $N \leq 500, \quad 0 \leq a, b \leq 10{,}000$
- Set 2: $N \leq 50{,}000$

[Output]
For each test case, you should print "a b" where a and b are the start point and end time of an interval of the longest meeting, respectively. If there are more than one intervals of the longest meeting, print the one that starts earliest. If there is no interval for a meeting, print -1.

[I/O Example]

Input

```
3
5 3
0 20 1
30 50 1
10 35 2
5 15 3
10 40 3
6 3
1 3 1
6 10 1
2 4 2
7 11 2
3 8 3
8 10 3
2 2
1 2 1
3 4 2
```

Output

```
10 20
7 10
-1
```