

EIU Attendance

You are given an attendance list of EIU (multiple classes). Suppose that each class has some students attending all the class's lessons, and every student joined at least one lessons of every class that they registered.

Your task is to write a program to print out attendance list of each class.

Input

- The first line contains two integers N – all class sizes, M – all attendance list sizes ($1 \leq N, M \leq 10^5$).
- Each line in the next N lines represents 2 integers: student ID (sID) and class ID (cID) ($1 \leq sID, cID \leq 10^9$).
- Each line in the next M lines represents 3 integers: class's start time (in milliseconds format), student ID and class ID followed by a boolean isCheckin (0 - absence or 1 - present) . All integers don't exceed 10^{18} .

Output

The required sorted list. The output should be starting with class ID_1 followed by its attendance list, class ID_2 , its attendance list, ... Each line in the attendance list contains student ID, the number of their absent days and the number of their attendant day. The list should be sorted in ascending order of class ID, student ID.

Sample

Input	Output
4 8	0001
001 0001	001 0 2
002 0001	002 1 1
001 0002	0002
003 0002	001 2 1
1656894600000 001 0001 1	003 0 3
1657153800000 001 0001 1	
1657153800000 002 0001 1	
1656894600000 001 0002 1	
1656894600000 003 0002 1	
1657153800000 003 0002 1	

165715380000 001 0002 0	
165775860000 003 0002 1	
165775860000 002 0002 1	