

Dept Selection

For engineering students, they have to select their department when they reach sophomore. It depends on their freshmen's scores, whether they can enter the selected department. The criteria contain these following steps(these steps are just example, not actually used in real life).

1. Each department announces the max number of students which it can receive.
2. Each student has ID, his/her grade point in freshman year and 4 selected department's ordered by preference.
3. Student with the highest score, will be the first to select a department. Student will be assigned to his/her highest preference department which is not full. For example, if a student selects PE,ME,CP and MT but PE and ME are full, he/ she will be assigned to CP
4. After all processes are completed, all results will be displayed ordered by student's ID

Input

The first line defines integer n which is a number of departments.

For the next n lines, each line contains department's name and number of students that the department can receive.

Next line defines integer m which is a number of students.

For the next m lines, each line contains a student's ID, his/her grade point in decimal numeral, and 4 selected departments ordered by preference(for this problem, there is no student whose score is equal to another student)

Output

Each student's department ordered by their student's ID

Example

Input (from keyboard)	Output (on screen)
5 AP 1 ME 2 PE 1 CHE 1 MT 3 6 59301234521 23.6 PE CP MT CHE 59300799921 44.5 ME CP CHE PE 59300081621 37 PE CHE MT CP 59300653521 61.2 PE MT CP ME 59300002121 19.4 CHE CP ME CP 59300048721 7 ME CP CHE MT	59301234521 ME 59300048721 MT 59300081621 CHE 59300653521 PE 59300799921 ME 59301234521 CP