Problem G
Galactic Collegiate Programming Contest
Problem ID: gcpc
Time limit: 6 seconds

Picture by GuillaumePreat on Pixabay, cc0

One hundred years from now, in 2117, the International Collegiate Programming Contest (of which the NCPC is a part) has expanded significantly and it is now the Galactic Collegiate Programming Contest (GCPC).

This year there are n teams in the contest. The teams are numbered $1, 2, \ldots, n$, and your favorite team has number 1.

Like today, the score of a team is a pair of integers (a, b) where a is the number of solved problems and b is the total penalty of that team. When a team solves a problem there is some associated penalty (not necessarily calculated in the same way as in the NCPC – the precise details are not important in this problem). The total penalty of a team is the sum of the penalties for the solved problems of the team.

Consider two teams t_1 and t_2 whose scores are (a_1, b_1) and (a_2, b_2). The score of team t_1 is better than that of t_2 if either $a_1 > a_2$, or if $a_1 = a_2$ and $b_1 < b_2$. The rank of a team is $k + 1$ where k is the number of teams whose score is better.

You would like to follow the performance of your favorite team. Unfortunately, the organizers of GCPC do not provide a scoreboard. Instead, they send a message immediately whenever a team solves a problem.

Input

The first line of input contains two integers n and m, where $1 \leq n \leq 10^5$ is the number of teams, and $1 \leq m \leq 10^5$ is the number of events.

Then follow m lines that describe the events. Each line contains two integers t and p ($1 \leq t \leq n$ and $1 \leq p \leq 1000$), meaning that team t has solved a problem with penalty p. The events are ordered by the time when they happen.

Output

Output m lines. On the i'th line, output the rank of your favorite team after the first i events have happened.

Sample Input 1	Sample Output 1
3 4 2 7 3 5 1 6 1 9	2 3 2 1