

Galactic Collegiate Programming Contest

Problem ID: gcpc**CPU Time limit:** 2 seconds**Memory limit:** 1024 MB**Author:** Antti Laaksonen**Source:** Nordic Collegiate Programming Contest (NCP) 2017**License:**  CC BY-SA

One hundred years from now, in 2117, the International Collegiate Programming Contest (of which the NCP 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 $1, 2, \dots, n$, 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 NCP – 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

```
3 4
2 7
3 5
1 6
1 9
```

Sample Output 1

```
2
3
2
1
```



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