Network Issue

Problem Statement

There are **N** teams which have come to the college to take part in Codestorm. Also, there are **M** different locations where internet connection is available to the participants.

Each team is described by two integers, $\mathbf{n_t}$ and $\mathbf{b_t}$, the number of team members and the minimum bandwidth required, respectively.

Each location has an initial bandwidth of $\mathbf{b_p}$. The bandwidth of the internet connection at a location decreases by $\mathbf{d_p}$ for every $\mathbf{n_p}$ participants who are connected to the internet at that location.

The formula for final bandwidth, $\mathbf{b_f}$ of a location can be given as

$$\mathbf{b_f = b_p-(d_p \times (n_{tot} \div n_p)))}$$

where the division operation is integer division and $\mathbf{n_{tot}}$ is the total number of participants who are connected to the internet at that location.

The participants of a team are happy if the location at which they are connected to the internet has a final bandwidth, $\mathbf{b_f}$, greater than or equal to the team's required bandwidth, $\mathbf{b_t}$. In other words, members of a team are happy if $\mathbf{b_f \geq b_t}$.

Your task is to assign a location to each team such that the number of happy participants across all teams and all locations is maximized.

Note that multiple teams can be assigned to the same location. It is also possible that no team is assigned to a location. It is mandatory to assign a location to each team.

Input Format

- Each input data is provided in a plain text file containing exclusively ASCII characters with lines terminated with a single '\n' character.

- When a single line contains multiple elements, they are separated by single spaces.
- The first line of each test case consists of two integers, **N** and **M**, the number of teams and the number of different locations.
- The next **N** lines consists of two integers in each line. The two integers $\mathbf{n_{ti}}$ and $\mathbf{b_{ti}}$, in the $\mathbf{i^{th}}$ line, represent the number of team members and the minimum bandwidth required by the $\mathbf{i^{th}}$ team, respectively.
- The next **M** lines consists of three integers in each line. The three integers $\mathbf{b_{pi}}$, $\mathbf{d_{pi}}$ and $\mathbf{n_{pi}}$, in the $\mathbf{i^{th}}$ line, represent the initial bandwidth, decrease in bandwidth and the number of participants for which the decrease takes place, respectively.

Constraints

- $1 \leq \mathbf{N, M} \leq 1000$
- $1 \leq \mathbf{n_t} \leq 100$
- $1 \leq \mathbf{b_t} \leq 10^5$
- $1 \leq \mathbf{b_p} \leq 10^5$
- $1 \leq \mathbf{d_p} \leq 100$
- $1 \leq \mathbf{n_p} \leq 100$

Output Format

- The output file must contain **M** lines.
- The $\mathbf{i^{th}}$ line must contain the indices of the teams which are assigned to participate in the event from the $\mathbf{i^{th}}$ location.
- The indices must be separated by space.
- If there are no participants who are assigned to the $\mathbf{i^{th}}$ location, print an empty line.

Scoring

- For each location, the final bandwidth, $\mathbf{b_f}$, of the internet connection is determined after counting the total number of participants across all the teams which have been assigned to that location.

- The final score is the sum of all $\mathbf{n_t}$ which belong to a team whose minimum bandwidth required, is less than or equal to the final bandwidth of the location.

Examples

Input file	Description
2 2	There are 2 teams and 2 locations
4 5	The first team consists of 4 members and requires an internet connection with a minimum bandwidth of 5
5 3	The second team consists of 5 members and requires an internet connection with a minimum bandwidth of 3
6 2 4	The first location has initial bandwidth, $\mathbf{b_p}$ = 6, and decreases by $\mathbf{d_p}$ = 2 bandwidths for every $\mathbf{n_p}$ = 4 participants
8 1 2	The first location has initial bandwidth, $\mathbf{b_p}$ = 8, and decreases by $\mathbf{d_p}$ = 1 bandwidths for every $\mathbf{n_p}$ = 2 participants

Output File	Description
1	The first team is assigned to the first location
2	The second team is assigned to the second location

For the above output, the bandwidth for the first location will become 4, since the number of members in the first team is 4 and the initial bandwidth is decreased by 2.

The bandwidth of the second location will become 6, since the number of members in the second team is 5 and the initial bandwidth is decreased by 2.

The team members at first location are not happy because the final bandwidth of the location is less than the minimum required bandwidth of that team. The team members at the second location are happy because the bandwidth of the location is greater than the minimum required bandwidth of that team. Hence, 5 participants are happy.

Therefore, the overall score is sum of happy participants across all location, which is 0+5 = 5 happy participants.

Output File	**Description**
1 2	Both teams are assigned to the first location No team is assigned to the second location

For the above output, the bandwidth for the first location will become 2, since the total number of participants at the location is 9 and the initial bandwidth is decreased by 4.

Both the teams are not happy and hence the sum of happy participants is 0.

Output File	**Description**
1 2	No team is assigned to the first location Both teams are assigned to the second location

For the above output, the bandwidth for the second location will become 4, since the total number of participants at the location is 9 and the initial bandwidth is decreased by 4.

The members of the first team are not happy since they require minimum a bandwidth of 4. The members of the second team are happy since they require a minimum bandwidth of 3. Hence, the number of happy participants are 0+5 = 5.

Output File	Description
2	The second team is assigned to the first location
1	The first team is assigned to the second location

For the above output, the bandwidth for the first location will become 4, since the number of members in the second team is 5 and the initial bandwidth is decreased by 2.

The bandwidth of the second location will become 6, since the number of members in the second team is 4 and the initial bandwidth is decreased by 2.

The participants of team at first location are happy because the final bandwidth of the location is greater than or equal to the minimum required bandwidth of that team. Hence, 5 participants are happy. The participants of team at the second location are happy because the bandwidth of the location is greater than the minimum required bandwidth of that team. Hence, 4 participants are happy.

Therefore, the overall score is sum of happy participants across all location, which is 5+4 = 9 happy participants.