Reviews

Guest reviews are an important part of helping travelers choose destinations that satisfy their passions. Each guest review consists of a reviewer ID (r), Unix time timestamp denoting the date of the review (t), and a string of body text (b).

To help determine which reviewers are experts on a specific passion, we want to score each reviewer for their reviews mentioning that passion. A reviewer's score *for a single, specific passion* is calculated as follows:

- *Review Date*:
  - Reviews having a timestamp, t, in the inclusive range between June 15^{th}, 2016, $12:00AM$ and July 15^{th}, 2016, $12:00AM$ (GMT) are awarded 20 points.
  - Reviews written outside of the aforementioned time range (i.e., before or after) are awarded 10 points.
- *Review Length*:
  - A review body, b, having 100 or more characters is awarded 20 points.
  - A review having less than 100 characters is awarded 10 points.
- If a reviewer has more than one review mentioning a specific passion, their expertise score for that passion is the sum of the scores for all their reviews mentioning that specific passion.

Determining the foremost expert reviewer with regard to a specific passion:

1. *Score Each Reviewer*. Note that a reviewer ID may have multiple reviews associated with it and a reviewer's expertise score for a passion is the sum of the scores for all their reviews mentioning that passion.
2. *Breaking Ties*. If two reviewer IDs have the same expertise score for a passion, choose the reviewer with the smaller ID.

Given a set of reviews and a list of passions, go through each passion (in order) and print the reviewer ID (r) for the reviewer having the highest expertise score for that passion on a new line. If no reviewers mentioned a specific passion, print -1 instead.

Input Format

The first line contains two positive space-separated integers denoting the respective values of n (the number of passions) and m (the number of reviews).
Each line i of the n subsequent lines contains a single word describing passion i.
The $2m$ subsequent lines describe each of the m reviews over two lines:

1. The first line contains two space-separated integers describing the respective values of r (the reviewer ID) and t (the review's Unix time timestamp in seconds).
2. The second line contains a string of text denoting the value of b (the review's body).

Constraints

- $1 \leq n \leq 100$
- $1 \leq m \leq 3250$
- $0 \leq r \leq 1000$

- String b will contain a maximum of 5000 characters.

Output Format

Print n lines of output. Each line i must contain a single integer denoting the reviewer ID (r) of the expert for the i^{th} passion received as input; if no reviewers mentioned that specific passion, print -1 instead.

Sample Input

```
3 4
Skating
Food
Climbing
1 1467720000
Skating is good in Austria
22 1464782400
I loved the Spanish food, it had so many varieties and it was super super delicious. The price was a little bit high but it was worth it.
People who don't like spicy food might need to think twice as it could be a little bit problematic for them.
4 1467720000
I didn’t like the Indian food!
50  1467720000
People were really friendly, I enjoyed being there.
```

Sample Output

```
1
4
-1
```

Explanation

There are $m = 4$ reviews:

1. Reviewer $r = 1$ wrote a review on $t = 1467720000 \rightarrow \textbf{July 05, 2016}$ that was less than 100 characters.
2. Reviewer $r = 22$ wrote a review on $t = 1464782400 \rightarrow \textbf{June 01, 2016}$ that was greater than 100 characters.
3. Reviewer $r = 4$ wrote a review on $t = 1467720000 \rightarrow \textbf{July 05, 2016}$ that was less than 100 characters.
4. Reviewer $r = 50$ wrote a review on $t = 1467720000 \rightarrow \textbf{July 05, 2016}$ that was less than 100 characters.

We then find the highest scoring reviewer for each of the respective passions and print the foremost expert reviewer's ID on a new line:

1. Reviewer 1 is the only person to mention *skating*, so they are automatically the highest scoring reviewer for this passion. Thus, we print 1 on a new line.
2. Reviewers 22 and 4 both mentioned *food* in their reviews. We calculate their review scores as follows:
   - Reviewer 4 gets 10 points for having a review with < 100 characters and 20 points for writing a review between June 15^{th}, 2016 and July 15^{th}, 2016.
   - Reviewer 22 gets 20 points for having a review with ≥ 100 characters and 10 points for writing a review before June 15^{th}, 2016.

   Because both reviewers scored a total of 30 points, we break the tie by choosing the reviewer having the smallest ID number (r); because $4 < 22$, we print 4 on a new line.

3. None of the reviewers mentioned *climbing*, so we print -1 on a new line.