Problem K: Play Of The Game

You always knew: Hard work pays off. Now look at you: You are an important part of the development team of the highly anticipated game OVERCATCH. OVERCATCH is a team based First Person Shooter with cats fighting against the evil forces of dogs.

OverCATch character (by leah.c.andersen on instagram.com)

After every game of 30 minutes (1 800 000 milliseconds) the *play of the game* is shown. It is a replay of fixed length t milliseconds showing the best sequence of actions by one player during the game. Your task is to determine when the *play of the game* should start and which player should be shown.

For this purpose, the game creates a log file for each player, where all events involving that player are recorded. Each log entry includes a time stamp (the time from the start of the game until the event) and the score awarded to the player for that event. The scores may be zero or even negative depending on the player's performance – for instance, getting hit would result in a negative score.

You decided that the best way to determine the *play of the game* is to pick the player and starting time such that the sum of scores for all of his/her actions during the following t milliseconds is maximal. This is an important task and you need to be done with it today, so hurry up, because it's high noon already.

Input

The input consists of:

- one line with two integers p and t ($1 \leq p \leq 12, 1 \leq t \leq 40\,000$) where p is the number of players and t is the length of the *play of the game* in milliseconds.
- p blocks each describing one of the players:
  - One line with two strings and one integer e ($0 \leq e \leq 40\,000$), where the strings describe the player's unique name and the in-game-character they played as and e is the number of log entries for that player.
  - e lines with two integers t_i and s_i ($0 \leq t_i < 1\,800\,000, -10\,000 \leq s_i \leq 10\,000$) each, describing that at t_i the player got a score of s_i. The t_i are given in strictly increasing order.

All strings in the input are alphanumerical and at most 20 characters long.

Output

OverCATch character (by leah.c.andersen on instagram.com)

First output the name of the player followed by `as`, the name of the character and a colon. After that print an integer a ($0 \leq a \leq 1\,800\,000 - t$), the starting point of the *play of the game*. If a is the starting time, the *play of the game* will include all events with time stamp between a and $a + t - 1$ inclusive.

If there is more than one optimal answer, any will be accepted.

Explanation for sample 1

Here t is $12\,000$ ms. Player `BornToMeow` got the *play of the game*, because starting at time $22\,000$ two events are included for a total score of 52. Note that it is not better to start at time $10\,000$ instead, because then the score would only be 50 (the next event is 1 ms too late). The best sum of scores player `Furtastic` got was 51.

Sample Input 1

```
2 12000
BornToMeow Junkcat 3
10000 50
22000 5
25000 47
Furtastic Symmeowtra 2
20000 30
30000 21
```

Sample Output 1

```
BornToMeow as Junkcat: 22000
```

Sample Input 2

```
5 10000
TheLegend27 Nyanzo 5
12300 1000
12400 1000
12500 1000
12600 1000
13000 200
PurrMan Kittenji 1
12300 -1000
WubU Meowcy 1
12400 -1000
RatsOrCats MeowCree 1
12500 -1000
RawMeat Reapurr 1
12600 -1000
```

Sample Output 2

```
TheLegend27 as Nyanzo: 12300
```

Sample Input 3

```
2 14000
TakesALicking Phurah 3
102300 120
113400 150
124100 150
BasketDude Clawmbra 5
1700000 230
1719200 -500
1721500 500
1723300 -450
1730000 250
```

Sample Output 3

```
BasketDude as Clawmbra: 1720999
```