

It is time to swim and you should help Gustavo to get a good place in the World Swimming Championship. The competition has two phases. In the first phase, the qualification phase, every competitor will swim and the eight fastest swimmers will advance to second phase, the big final. During the final, each competitor will swim again to decide who is the best swimmer. In the beginning of the competition, every swimmer has associated with him a rank indicating how good he is, where the best competitor has a rank 1, the second one has rank 2 and so on.

Gustavo wants to reach the finals and to finish in the top three to get a medal, but he does not want to spend all his energy in the qualification round. Actually, he desires to swim as slow as possible in the first phase in a way he can still advance to the final and get a medal.

When going to the final, it is important to get a good lane. There are eight lanes in the pool and each one is assigned to a swimmer according to how fast he swam in the previous phase. The fastest swimmer gets lane #4 (the best lane), the second gets lane #5, the third gets lane #3, the fourth gets lane #6, the fifth gets lane #2, the sixth gets lane #7, the seventh gets lane #1 and the eighth one gets lane #8 (the worst lane).

During the final, Gustavo believes he can swim faster than a competitor if he got a better lane than him or if he has a better rank than him. Your task is to determine what is the worst possible place Gustavo can get in the first phase in a way he can advance to the final and get a medal. You should also determine in which position Gustavo will end at the final.

## Input

The first line of input gives the number of cases,  $T$  ( $1 \leq T \leq 120$ ), after there will be a blank line and then the first test case. Each test case starts with  $8 \leq N \leq 1000$ , the number of competitors. The following line will contain an integer  $R$ , representing Gustavo's rank. Then  $N - 1$  lines will follow, each line has an integer  $R$ , representing the rank of that competitor, and a time in the format  $MM : SS : DD$ , which is the time that competitor got in the qualification phase. The first field represents the minutes,  $00 \leq MM \leq 09$ , the second field represents the seconds,  $00 \leq SS \leq 59$ , and the third field represents hundredths of a second,  $00 \leq DD \leq 99$ . If more than one competitor got the same time, the tie will be broken according to their ranks, the competitors with best ranks will come first.

You should consider 00:01:00 as the fastest time a competitor can get, being Gustavo the only swimmer able to achieve a faster time. Be aware that if two competitors are not tied with the same time, there should exist a difference of at least one hundredth of a second between their times. There is a blank line after each test case.

## Output

For each test case you must print two lines. The first contains the the number of the test case (see below the exact format) and the second contains the following message: 'Gustavo should be # $N$  during the qualification to achieve position # $P$  in the final.'

## Sample Input

```
2

8
4
1 02:21:03
3 02:22:17
5 02:22:03
6 02:21:59
8 02:22:99
7 02:21:33
2 02:21:77

16
10
1 05:33:55
2 05:23:32
3 05:34:87
4 05:33:12
5 05:33:21
6 05:44:17
7 05:33:15
16 06:02:98
15 05:49:12
14 05:37:44
13 05:33:12
12 05:39:67
11 05:34:37
8 05:35:88
9 05:34:09
```

## Sample Output

```
Case #1:
Gustavo should be #6 during the qualification to achieve position #3 in the final.
Case #2:
Gustavo should be #4 during the qualification to achieve position #3 in the final.
```