12141   Line Chart

ACRush is very famous in Supercoder. Supercoder is a professional company which arranges online algorithmic contests and rates peoples based on those contests. In Supercoder algorithm contest ranklist, ACRush is ranked third. Now a days he is doing some analysis on his rating history in Supercoder algorithm contest. In Supercoder, an algorithm contest is termed as a Single Round Tournament (SRT). After each SRT is finished, rating of a contestant is updated according to his/her relative performance. ACRush collected all these rating information, and using those he created a line chart.

To make things more clear, let us consider the following table as his rating info.

SRT	Rating
320	3
306	1
401	3
325	4
393	5
380	2

From this table, we see that his first SRT was SRT#306, and rating after that SRT was 1, so he marked point (1, 1) as r_1 in graph paper, his second SRT was SRT#320 and rating after that SRT was 3, so he marked (2, 3) as r_2, then he add r_1 with r_2 by a straight line and so on.

In general for his i-th SRT he marked point (i, rating after i-th SRT) by r_i.

After marking all the points he will add point r_i with r_{i-1} by straight lines, for all $1 < i \leq N$, Where N is the total number of SRTs he played. For better idea look at figure 1:

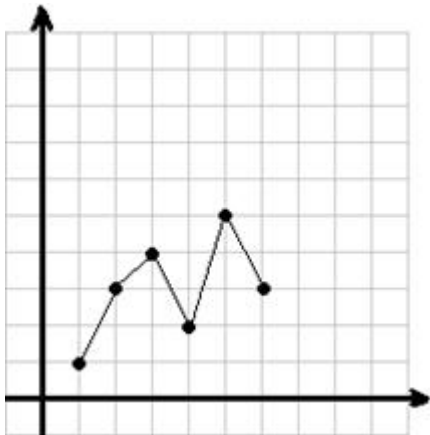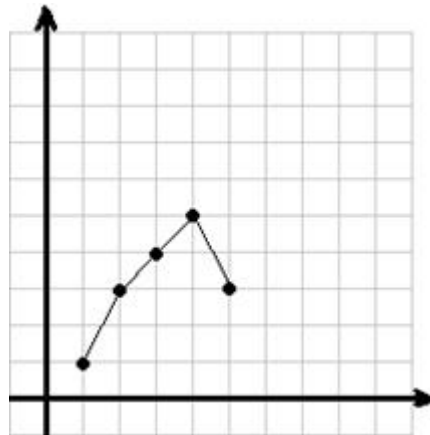
Fig 1: Line chart cosidering all SRTs   Fig 2: Line chart ignoring SRT #380

After drawing line chart, he became very interested about the number of peaks. There are two kinds of peaks in a line chart, 1) Upper Peak and 2) Lower Peak. Upper Peak is that point in a line chart whose previous and next point has smaller y coordinates and lower peak is that points in a line chart whose previous and next point has greater y coordinates. For example total number of peak in figure 1 is 3. Two of them upper peak, which are (3, 4) and (5, 5), and one of them is lower peak which is (4, 2).

ACRush observed that by ignoring SRT#380, his line chart will become like figure 2, in which number of peak is only 1. By observing this he became more curious. Now he wants to know, by

ignoring 0 or more SRTs how many distinct line charts having K peaks is possible. ACRush calls these line charts K-peak Line charts, in a K-peak line chart he doesn't allow two consecutive points to have same y coordinate.

Input

Input will start with an integer T ($T \leq 12$), which indicates the number of test cases. Each case starts with a line having two integers N ($1 \leq N \leq 10000$) and K ($0 \leq K \leq 50$). Each of the next N lines will contain two integers SRT ($1 \leq SRT \leq 1000000000$) and $Rating$ ($1 \leq Rating \leq 1000000000$). All the SRT numbers will be distinct.

Output

For Each test case output a single Line 'Case #: W', here # will be replaced by case number and W will be replaced by the number of distinct K-peak line charts modulo 1000000.

Sample Input

```
3
6 1
320 3
306 1
401 3
325 4
393 5
380 2
4 1
101 3
102 2
103 2
104 4
3 0
102 2
101 1
103 3
```

Sample Output

```
Case 1: 20
Case 2: 1
Case 3: 8
```