Facebook Hacker Cup '15 Round 1 P3 - Winning at Sports

Time limit: 25.0s **Memory limit:** 1G

Facebook Hacker Cup 2015 Round 1

In the game of *Sports*, the object is to have more points than the other team after a certain amount of time has elapsed. Scores are denoted by two hyphen-separated integers. For example, scores may include 3-2, 4-1, or 10-0. The first number is how many points you've scored, and the second is the number of points scored by the opposing team. You're very good at *Sports*, and consequently you always win. However, you don't always achieve victory the same way every time.

The two most extreme kinds of victory are called **stress-free** and **stressful**. In a **stress-free** victory, you score the first point and from then on you always have more points than your opponent. In a **stressful** victory, you never have more points than your opponent until after their score is equal to their final score.

Given the final score of a game of *Sports*, how many ways could you arrange the order in which the points are scored such that you secure a **stress-free** or **stressful** win?

Input

Input begins with an integer T, the number of games you'll play. For each game, there is one line containing the final score of the game in the format described above.

Output

For the i^{th} game, print a line containing `Case #i:` followed by two space-separated integers, the number of ways you can achieve a **stress-free** or **stressful** win, respectively. Since these numbers may be very large, output them modulo $1\,000\,000\,007$.

Constraints

$1 \leq T \leq 100$

Since you always win, the first number in any final score will always be larger than the second. Both scores will be non-negative integers not exceeding 2000.

Explanation of Sample

In the third test case, you can get a stress-free win by scoring points 1, 2, and 4, or points 1, 2, and 3. You can get a stressful win by scoring points 2, 4, and 5, or points 3, 4, and 5.

Sample Input

```
5
2-1
3-1
3-2
10-5
1000-500
```

Sample Output

```
Case #1: 1 1
Case #2: 2 1
Case #3: 2 2
Case #4: 1001 42
Case #5: 70047606 591137401
```