

New Year Chaos



It's New Year's Day and everyone's in line for the Wonderland rollercoaster ride!

There are n people queued up, and each person wears a sticker indicating their *initial* position in the queue (i.e.: $1, 2, \dots, n - 1, n$ with the first number denoting the frontmost position).

Any person in the queue can bribe the person *directly in front* of them to swap positions. If two people swap positions, they still wear the same sticker denoting their original place in line. One person can bribe *at most two other persons*.

That is to say, if $n = 8$ and *Person 5* bribes *Person 4*, the queue will look like this: $1, 2, 3, 5, 4, 6, 7, 8$.

Fascinated by this chaotic queue, you decide you must know the minimum number of bribes that took place to get the queue into its current state!

Note: Each *Person X* wears sticker X , meaning they were initially the X^{th} person in queue.

Input Format

The first line contains an integer, T , denoting the number of test cases.

Each test case is comprised of two lines; the first line has n (an integer indicating the number of people in the queue), and the second line has n space-separated integers describing the final state of the queue.

Constraints

$$1 \leq T \leq 10$$

$$1 \leq n \leq 10^5$$

Subtasks

For 60% score $1 \leq n \leq 10^3$

For 100% score $1 \leq n \leq 10^5$

Output Format

Print an integer denoting the minimum number of bribes needed to get the queue into its final state; print **Too chaotic** if the state is invalid (requires *Person X* to bribe more than 2 people).

Sample Input

```
2
5
2 1 5 3 4
5
2 5 1 3 4
```

Sample Output

```
3
Too chaotic
```

Explanation

Sample 1

The initial state:



After person **5** moves one position ahead by bribing person **4**:



Now person **5** moves another position ahead by bribing person **3**:



And person **2** moves one position ahead by bribing person **1**:



So the final state is **2, 1, 5, 3, 4** after three bribing operations.

Sample 2

No person can afford to bribe more than two people, so its not possible to achieve the input state.