

Looks like Nim - but it is not

Goran and Stjepan play an interesting game. On the table between them, there is a sequence of N skyscrapers made of Lego bricks. All of them are made of equal bricks and each of them has a height, which equals the number of bricks in it.

Goran plays first; then Stjepan, then Goran, then Stjepan and so on. In each move, a player has to find the **highest** skyscraper in the sequence (if there's more than one, he chooses any of them) and reduces its height - that is, takes away an arbitrary (positive) number of bricks from it.

The winner of the game is the one who takes away the last brick. Equivalently, the loser of the game is the one who is not able to make a move.

Help Goran and tell him in how many ways he can play his first move, so that he can certainly win (no matter how Stjepan played). If Goran doesn't have a winning strategy at all, the number of ways is zero.

Input

In the first line of input, there is an integer $T \leq 3$, the number of test cases.

Then follow T blocks, each of them in two lines:

- $N \leq 300\,000$, the number of skyscrapers in the sequence.
- a sequence of N integers in the range $[0, 10^6]$.

Output

For each of the T games, print the required number of ways.

Example

Input:

```
3
5
0 1 0 1 0
3
0 7 0
5
1 0 1 0 1
```

Output:

```
0
1
3
```