3 - Comparison

Bob has an array of length n whose elements lie in the range [1,n]. He compared the adjacent elements of the array and prepared a string **s** of length n−1 of "<", ">", and "=" signs that show the result of the comparison between the adjacent elements of the array.

Formally, for each valid index i:

if s[i] is "<", then a[i]<a[i+1].

if s[i] is ">", then a[i]>a[i+1].

if s[i] is "=", then a[i]=a[i+1].

Unfortunately, Bob lost the array and now he wonders how many distinct arrays of length n exist such that its elements are between 1 and n. Since the count can be very large, find this count modulo 10^9+7.

Two arrays are different if they differ at least one index.

Input

First line contains an integer *T* (≤T≤100) denoting the number of test cases. First line of each test case contains a number n (2<=n<=5000) that denotes the length of the array. The second line contains a string s of length n-1.s contains only "<", ">" and "=".

Output

For each test case, print: "Case #", the number of the case, ": ", and the number of different arrays modulo 10^9+7.

Sample input

```
2
3
<>
2
<
```

Sample output

```
Case #1: 5
Case #2: 1
```