Educational DP Contest AtCoder T - Permutation

Time limit: 1.0s **Memory limit:** 1G

Let N be a positive integer. You are given a string s of length $N-1$, consisting of `<` and `>`.

Find the number of permutations $(p_1, p_2, \ldots, p_N)$ of $(1, 2, \ldots, N)$ that satisfy the following condition, modulo 10^9+7:

- For each i $(1 \leq i \leq N-1)$, $p_i < p_{i+1}$ if the i-th character in s is `<` and $p_i > p_{i+1}$ if the i-th character in s is `>`.

Constraints

- N is an integer.
- $2 \leq N \leq 3000$
- s is a string of length $N-1$.
- s consists of `<` and `>`.

Input Specification

The first line will contain the integer N.

The second line will contain the string s.

Output Specification

Print the number of permutations that satisfy the condition, modulo 10^9+7.

Note: Be sure to print the number modulo 10^9+7.

Sample Input 1

```
4
<><
```

Sample Output 1

```
5
```

Explanation For Sample 1

There are five permutations that satisfy the condition, as follows:

- $(1, 3, 2, 4)$
- $(1, 4, 2, 3)$
- $(2, 3, 1, 4)$
- $(2, 4, 1, 3)$
- $(3, 4, 1, 2)$

Sample Input 2

```
5
<<<<
```

Sample Output 2

```
1
```

Explanation For Sample 2

There is one permutation that satisfies the condition, as follows:

- $(1, 2, 3, 4, 5)$

Sample Input 3

```
20
>>>><>>><>><>>><<>>
```

Sample Output 3

```
217136290
```