D - String Rotation   Editorial (/contests/abc409/tasks/abc409_d/editorial)   🇯🇵 / 🇬🇧

Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 400 points

Problem Statement

You are given a string $S = S_1 S_2 \ldots S_N$ of length N consisting of lowercase English letters.
You will perform the following operation on S exactly once:

- Choose a contiguous substring of S with length at least 1 and cyclically shift it to the
  left by 1. That is, choose integers $1 \le \ell \le r \le N$, insert S_ℓ to the right of the r-th
  character of S, and then delete the ℓ-th character of S.

Find the lexicographically smallest string among all possible strings that S can become after
the operation.

You are given T test cases, so solve each of them.

Constraints

- $1 \le T \le 10^5$
- $1 \le N \le 10^5$
- S is a string of length N consisting of lowercase English letters.
- T and N are integers.
- The sum of N over all test cases in a single input file is at most 10^5.

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Input

The input is given from Standard Input in the following format:

$$T$$
$$\text{case}_1$$
$$\text{case}_2$$
$$\vdots$$
$$\text{case}_T$$

Each test case case_i $(1 \le i \le T)$ is given in the following format:

$$N$$
$$S$$

Output

Output T lines. The i-th $(1 \le i \le T)$ line should contain the answer for case_i.

Sample Input 1   Copy

```
3
7
atcoder
1
x
5
snuke
```
Copy

Sample Output 1   Copy

```
acodert
x
nsuke
```
Copy

- In the first test case, cyclically shifting from the 2nd to the 7th character gives acodert, which is lexicographically smallest.
- In the second test case, no matter how you operate, you get x.
- In the third test case, cyclically shifting from the 1st to the 2nd character gives nsuke, which is lexicographically smallest.

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