Contest Duration: 2025-06-07(Sat) 08:00 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20250607T2100&p1=248) - 2025-06-07(Sat) 09:40 (http://www.timeanddate.com/worldclock/fixedtime.html? iso=20250607T2240&p1=248) (local time) (100 minutes) Back to Home (/home)

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Discuss (https://codeforces.com/blog/entry/143567)

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 $S=S_1S_2\dots S_N$ of length N consisting of lowercase English letters. You will perform the following operation on S exactly once:

ullet Choose a contiguous substring of S with length at least 1 and cyclically shift it to the left by 1. That is, choose integers $1 \leq \ell \leq r \leq N$, 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

- $1 < T < 10^5$
- $1 < N < 10^5$
- ullet is a string of length N consisting of lowercase English letters.

 \bullet T and N are integers.

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• The sum of N over all test cases in a single input file is at most 10^5 .

Input

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

```
T
\operatorname{case}_1
\operatorname{case}_2
\vdots
\operatorname{case}_T
```

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

```
egin{array}{c} N \ S \end{array}
```

Output

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

Sample Input 1 Copy

```
Copy

7
atcoder
1
x
5
snuke
```

Sample Output 1 Copy

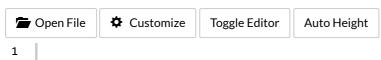
```
acodert
x
nsuke
```

- 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, 09:47:44 -04:00 which is lexicographically smallest.

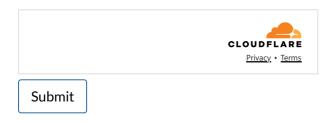
Language

Python (CPython 3.11.4)

Source Code



^{*} Your source code will be saved as Main. extension.



#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc409%2Ftasks%2Fabc409_d%3Flang%3Den&title=D%20-

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^{*} at most 512 KiB