

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 \(/home\)](#)
[🏠 Top \(/contests/abc409\)](#)
[☰ Tasks \(/contests/abc409/tasks\)](#)
[❓ Clarifications \(/contests/abc409/clarifications\)](#)
[🚀 Submit \(/contests/abc409/submit?taskScreenName=abc409\\_d\)](#)
[☰ Results ▼](#)
[⏴ Standings \(/contests/abc409/standings\)](#)
[⏴ Virtual Standings \(/contests/abc409/standings/virtual\)](#)
[🔧 Custom Test \(/contests/abc409/custom\\_test\)](#)
[📖 Editorial \(/contests/abc409/editorial\)](#)
[💬 Discuss \(https://codeforces.com/blog/entry/143567\)](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:

- 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  $S_\ell$  to the right of the  $r$ -th character of  $S$ , and then delete the  $\ell$ -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

- $1 \leq T \leq 10^5$
- $1 \leq N \leq 10^5$
- $S$  is a string of length  $N$  consisting of lowercase English letters.
- $T$  and  $N$  are integers.

2025-06-07 (Sat)  
09:47:44 -04:00

- 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
case1
case2
⋮
caseT
```

Each test case case <sub>$i$</sub>  ( $1 \leq i \leq T$ ) is given in the following format:

```
N
S
```

## Output

Output  $T$  lines. The  $i$ -th ( $1 \leq i \leq T$ ) line should contain the answer for case <sub>$i$</sub> .

### 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.

2025-06-07 (Sat)  
09:47:44 -04:00

## Language

Python (CPython 3.11.4) ▼

## Source Code



Open File



Customize

Toggle Editor

Auto Height

1 |

\* at most 512 KiB

\* Your source code will be saved as *Main.extension*.

Submit

#telegram)

[url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc409%2Ftasks%2Fabc409\\_d%3Flang%3Den&title=D%20-](https://atcoder.jp/contests/abc409/tasks/abc409_d%3Flang%3Den&title=D%20-)[Rule \(/contests/abc409/rules\)](/contests/abc409/rules) [Glossary \(/contests/abc409/glossary\)](/contests/abc409/glossary)[Terms of service \(/tos\)](/tos) [Privacy Policy \(/privacy\)](/privacy) [Information Protection Policy \(/personal\)](/personal) [Company \(/company\)](/company)[FAQ \(/faq\)](/faq) [Contact \(/contact\)](/contact)

2025-06-07 (Sat)

Copyright Since 2012 ©AtCoder Inc. (<http://atcoder.co.jp>) All rights reserved.

09:47:44 -04:00

