C. Paint the Digits

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given a sequence of n digits $d_1 d_2 \dots d_n$. You need to paint all the digits in two colors so that:

- each digit is painted either in the color 1 or in the color 2;
- if you write in a row from left to right all the digits painted in the color 1, and then after them all the digits painted in the color 2, then the resulting sequence of n digits will be non-decreasing (that is, each next digit will be greater than or equal to the previous digit).

For example, for the sequence $d = 914$ the only valid coloring is 211 (paint in the color 1 two last digits, paint in the color 2 the first digit). But 122 is not a valid coloring (9 concatenated with 14 is not a non-decreasing sequence).

It is allowed that either of the two colors is not used at all. Digits painted in the same color are not required to have consecutive positions.

Find any of the valid ways to paint the given sequence of digits or determine that it is impossible to do.

Input

The first line contains a single integer t ($1 \le t \le 10000$) — the number of test cases in the input.

The first line of each test case contains an integer n ($1 \le n \le 2 \cdot 10^5$) — the length of a given sequence of digits.

The next line contains a sequence of n digits $d_1 d_2 \dots d_n$ ($0 \le d_i \le 9$). The digits are written in a row without spaces or any other separators. The sequence can start with 0.

It is guaranteed that the sum of the values of n for all test cases in the input does not exceed $2 \cdot 10^5$.

Output

Print t lines — the answers to each of the test cases in the input.

If there is a solution for a test case, the corresponding output line should contain any of the valid colorings written as a string of n digits $t_1 t_2 \dots t_n$ ($1 \le t_i \le 2$), where t_i is the color the i-th digit is painted in. If there are several feasible solutions, print any of them.

If there is no solution, then the corresponding output line should contain a single character '-' (the minus sign).

Example

input Copy

```
5
12
040425524644
1
0
9
123456789
2
98
3
987
```

output Copy

```
121212211211
1
222222222
```

```
21
-
```

Note

In the first test case, $d = 040425524644$. The output $t = 121212211211$ is correct because 0022444 (painted in 1) concatenated with 44556 (painted in 2) is 002244444556 which is a sorted sequence of n given digits.
