

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  $d_1d_2 \dots d_n$ . 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  $t$  ( $1 \leq t \leq 10000$ ) — the number of test cases in the input.

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

The next line contains a sequence of  $n$  digits  $d_1d_2 \dots d_n$  ( $0 \leq d_i \leq 9$ ). 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  $t_1t_2 \dots t_n$  ( $1 \leq t_i \leq 2$ ), 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 22222222	

Codeforces Round #584 - Dasha Code Championship - Elimination Round (rated, open for everyone, Div. 1 + Div. 2)

Contest is running

00:33:03

Contestant

Submit?

Language: GNU G++11 5.1.0

Choose file: 选择文件 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

Last submissions

Submission	Time	Verdict
60551892	Sep/14/2019 17:05	Pretests passed
60547833	Sep/14/2019 16:49	Wrong answer on pretest 2

Score table

	Score
Problem A	315
Problem B	315
Problem C	786
Problem D	944
Problem E1	629
Problem E2	944
Problem F	1572
Problem G1	944
Problem G2	1415
Problem H	2516
Successful hack	100
Unsuccessful hack	-50
Unsuccessful submission	-50
Resubmission	-50

\* If you solve problem on 01:56 from the first attempt

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**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.

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