H. Palindromic Cut

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Kolya has a string s of length n consisting of lowercase and uppercase Latin letters and digits.

He wants to rearrange the symbols in s and cut it into the minimum number of parts so that each part is a palindrome and all parts have *the same lengths*. A palindrome is a string which reads the same backward as forward, such as `madam` or `racecar`.

Your task is to help Kolya and determine the minimum number of palindromes of equal lengths to cut s into, if it is allowed to rearrange letters in s before cuttings.

Input

The first line contains an integer n ($1 \le n \le 4 \cdot 10^5$) — the length of string s.

The second line contains a string s of length n consisting of lowercase and uppercase Latin letters and digits.

Output

Print to the first line an integer k — minimum number of palindromes into which you can cut a given string.

Print to the second line k strings — the palindromes themselves. Separate them by a space. You are allowed to print palindromes in arbitrary order. All of them should have the same length.

Examples

input
6 aabaac

output
2 aba aca

input
8 0rTrT022

output
1 02TrrT20

input
2 aA

output
2 a A