Palindrome

A palindrome is a word that is the same when read forwards and backwards, for example `madam`, `racecar`, and `deed`.

You will be given a word with `N` lowercase letters, which may or may not be a palindrome. Your goal is to change this word into a palindrome. You cannot add or remove letters; you can only change existing ones.

You want to transform the word into a palindrome by making the fewest number of letter changes. If multiple palindromes can be made with the fewest number of changes, you should choose the one that is alphabetically smallest.

Input

The first line of input contains the integer `N`, the length of the word. The second line of input contains a word consisting of `N` lowercase letters.

It is guaranteed that $2 \leq N \leq 100\,000$.

We strongly recommend using the solution templates provided below. These templates will ensure that you handle the input and output correctly.

Output

Your output should be a palindrome with `N` lowercase letters, which is the alphabetically smallest palindrome possible with the fewest number of changes.

Sample Input 1

```
7
racecab
```

Sample Output 1

```
bacecab
```

Explanation 1

By changing 1 letter, you can make either of the following two palindromes:

- `bacecab`
- `racecar`

Since `bacecab` is alphabetically smaller, it is the correct answer.

Sample Input 2

```
4
deed
```

Sample Output 2

```
deed
```

Explanation 2

The word `deed` is already a palindrome, so no changes are necessary.

Sample Input 3

```
7
ababbab
```

Sample Output 3

```
aaabaaa
```

Explanation 3

You can transform `ababbab` into `aaabaaa` with three changes, which is the fewest number of changes needed to create a palindrome.