

Problem

Call You With Your Name 4

Time limit: 3 seconds

Little Cyan Fish likes string theory very much. Today, Little Cyan Fish invites you to continue studying human nicknames with him.

In Little Cyan Fish's universe, a human nickname can be represented as a string consisting only of lowercase Latin letters (a to z). For example, "qingyu" and "xiuga" are human nicknames, but "Abacde" is not.

Little Cyan Fish considers a name s to be a **Lyndon string** if and only if s is lexicographically smaller* than every proper suffix† t of s . For example, "abacde" is a Lyndon string, but "qingyu" is not a Lyndon string (because it is not lexicographically smaller than its proper suffix "ingyu").

Now, Little Cyan Fish gives you a human nickname s of length n . In one operation, you can choose one position and replace its character with any lowercase Latin letter. Find the minimum number of operations needed to make s a Lyndon string.

Input

There are multiple test cases. The first line of the input contains a single integer T ($1 \leq T \leq 10^4$), indicating the number of test cases.

For each test case, the first line contains a single integer n ($1 \leq n \leq 3000$). The second line contains a string s of length n , consisting only of lowercase Latin letters.

It is guaranteed that the sum of n^2 over all test cases does not exceed 9×10^6 .

Output

For each test case, output a single line containing a single integer, indicating the minimum number of operations needed to make s a Lyndon string.

Sample Input 1

Sample Output 1

4	0
4	1
abac	2
4	3
aaaa	
4	
bbaa	
5	
bbaaa	

In the first sample test case, the string is already a Lyndon string, so no operation is needed.

In the second sample test case, Little Cyan Fish can change the last character to b, obtaining aaab.

In the third sample test case, he can change the first and last characters to a and c, respectively, obtaining abac. One operation is not enough.

*A string is lexicographically smaller than another string if it is a proper prefix of the other string, or if its character at the first position where the strings differ comes earlier in the alphabet.

†A proper suffix is a non-empty suffix that is not equal to the original string. For example, "qqoj" has 3 proper suffixes, which are "j", "oj", and "qoj".

In the fourth sample test case, he can change the first two characters to a and the last character to b, obtaining aaaab. It is impossible to achieve this in fewer than three operations.