Longest Palindromic Subsequence



Steve loves playing with palindromes. He has a string, s, consisting of n lowercase English alphabetic characters (i.e., a through z). He wants to calculate the number of ways to insert exactly 1 lowercase character into string s such that the length of the longest palindromic subsequence of s increases by at least s. Two ways are considered to be different if either of the following conditions are satisfied:

- The positions of insertion are different.
- The inserted characters are different.

This means there are at most $26 \times (n+1)$ different ways to insert exactly 1 character into a string of length n.

Given q queries consisting of n, k, and s, print the number of different ways of inserting exactly 1 new lowercase letter into string s such that the length of the longest palindromic subsequence of s increases by at least k.

Input Format

The first line contains a single integer, q, denoting the number of queries. The 2q subsequent lines describe each query over two lines:

- 1. The first line of a query contains two space-separated integers denoting the respective values of n and k.
- 2. The second line contains a single string denoting $oldsymbol{s}$.

Constraints

- $1 \le q \le 10$
- $1 \le n \le 3000$
- $0 \le k \le 50$
- It is guaranteed that s consists of lowercase English alphabetic letters (i.e., a to z) only.

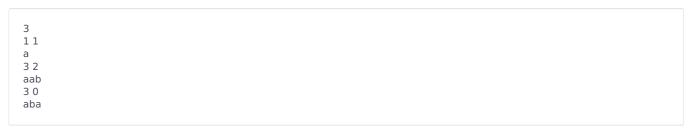
Subtasks

- $1 \le n \le 100$ for 25% of the maximum score.
- 1 < n < 1000 for 70% of the maximum score.

Output Format

On a new line for each query, print the number of ways to insert exactly 1 new lowercase letter into string s such that the length of the longest palindromic subsequence of s increases by at least k.

Sample Input



Sample Output

Explanation

We perform the following q=2 queries:

- 1. The length of the longest palindromic subsequence of s = a is 1. There are two ways to increase this string's length by at least k = 1:
 - 1. Insert an a at the start of string s, making it aa.
 - 2. Insert an a at the end of string s, making it aa.

Both methods result in aa, which has a longest palindromic subsequence of length 2 (which is longer than the original longest palindromic subsequence's length by k=1). Because there are two such ways, we print 2 on a new line.

- 2. The length of the longest palindromic subsequence of s=aab is a=aab i
 - 1. Insert a b at the start of string s, making it baab.

We only have one possible string, baab, and the length of its longest palindromic subsequence is $\bf 4$ (which is longer than the original longest palindromic subsequence's length by $\bf k=2$). Because there is one such way, we print $\bf 1$ on a new line.