

Problem K

Suffixes may Contain Prefixes

Time Limit: 2 seconds

You are playing a game on character strings. At the start of a game, a string of lowercase letters, called the *target string*, is given. Each of the players submits one string of lowercase letters, called a *bullet string*, of the specified length. The winner is the one whose bullet string marks the highest score.

The score of a bullet string is the sum of the points of all of its suffixes. When the bullet string is “ $b_1b_2 \dots b_n$ ”, the point of its suffix s_k starting with the k -th character ($1 \leq k \leq n$), “ $b_kb_{k+1} \dots b_n$ ”, is the length of its longest common prefix with the target string. That is, with the target string “ $t_1t_2 \dots t_m$ ”, the point of s_k is p when $t_j = b_{k+j-1}$ for $1 \leq j \leq p$ and either $p = m$, $k + p - 1 = n$, or $t_{p+1} \neq b_{k+p}$ holds.

You have to win the game today by any means, as Alyssa promises to have a date with the winner! The game is starting soon. Write a program in a hurry that finds the highest achievable score for the given target string and the bullet length.

Input

The input consists of a single test case with two lines. The first line contains the non-empty target string of at most 2000 lowercase letters. The second line contains the length of the bullet string, a positive integer not exceeding 2000.

Output

Output the highest achievable score for the given target string and the given bullet length.

Sample Input 1

ababc 6	10
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Sample Output 1

Sample Input 2

aabaacaabaa 102	251
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Sample Output 2

For the first sample, “**ababab**” is the best bullet string. Three among its six suffixes, “**ababab**”, “**abab**”, and “**ab**” obtain 4, 4, and 2 points, respectively, achieving the score 10. A bullet string “**ababca**” may look promising, but its suffixes “**ababca**”, “**abca**”, and “**a**” get 5, 2, and 1, summing up only to 8.