CSC111 Computer Science II

Lab 14 – String Reduction

As part of the new educational reform program, the CS department has decided to engage in censorship of school texts. In this problem, you must help the department by writing a program which eliminates from an input text string all occurrences of strings from a set of words to be filtered.

More formally, a word w can be removed from another string s if w is a substring of s (i.e., the characters of w appear consecutively in s). Given a text string s and a set T of words to be filtered, return the length of the shortest possible string that can result from iteratively removing words in T from s. Each word in T may be removed from s an unlimited number of times.

Input

The input test file will contain multiple cases, with each case on a single line of input. Each test case begins with a single integer n (where 1 ≤ n ≤ 50) indicating the size of the set T followed by a text string s to be processed. Then, n strings t₁ . . . tₙ indicating the words of T follow. The text string and all of the filter words are guaranteed to contain only the characters ‘a’ through ‘z’ and will have lengths between 1 and 50.

All filter words will be unique. Input is terminated by a single line containing the number 0; do not process this line.

Output

For each test case, print a single integer indicating the minimum length resulting string possible.

Possible reductions giving the lengths shown for the three sample inputs are:

- ccedefcde → cdefcde → fcd → f
- aabaab → baab → ab → φ
- aabaab → baab → bb → φ,
where φ denotes the empty string.
Sample Input

1 ccedefcde cde
3 aabaab aa ba ab
3 aabaab aa ba bb
0

Sample Output

1
0
0