Hidden Word II

Problem Code: HWORD2

Design Challenge

Task Description

One trick of sending secret message is too hide it inside a longer sentence. For example, we may hide "love" in "a**l**g**o**rithm is **v**ery int**e**resting". More specifically, a word is considered to be hidden inside a sentence if we can remove some of the characters of the sentence and finally get the word.

John sends Mary a sentence today. Mary has a list of words she thinks that John's sentence might contain. However, Mary finds it very tedious to check whether each word is actually hidden in John's sentence. Can you help her?

Let John's sentence be S. S has n characters ($|S| = n$). Let Mary's list be L. L contains k words and each word has at most 10 characters. To simplify the task, John's sentence and Mary's words contain only lowercase English characters (we ignore the special characters like spaces).

Constraints

$n, k \geq 1$.

Example

Case 1: $S =$ "algorithmisveryinteresting", $L =$ ["love"]

Answer: [*Yes*]

John's sentence is "algorithmisveryinteresting". Mary's list contains only one word "love". As "love" is hidden in the sentence, the answer is *Yes*.

Case 2: $S =$ "aabbccaa", $L =$ ["abca", "aaaa", "abab", "cba"]

Answer: [*Yes, Yes, No, No*]

"abca" is hidden in "**aa**b**b**cc**a**a". "aaaa" is hidden in "**aa**bbcc**aa**". There is no way we can remove some characters from "aabbccaa" and obtain "abab" or "cba".

Requirements

Time: $O(n + k \log n)$ **Space:** $O(n + k)$