**Problem Statement:**

Given a regular expression r and an input string w, the LEX tool finds the longest prefix w1 (say w1 as a valid token) of the input w that can be generated from the regular expression r and repeats the process with the remaining part of the input w. If a character is not part of any valid token, it echoes. Therefore, each character of w is either part of a valid token or echoed. Your task is to write a C / C++ code that takes a regular expression r and a string w as an input and outputs the sequences of valid tokens, as per LEX tool, and echo if a character is not part of any token without using the <regex> library.

Here the tokens are actual lexemes.

Further note the following:

1. Assume that Σ = {a, b} is the alphabet set i.e., any regular expression r (as given as input) will generate a language L(r) ⊆ {a, b} ∗ .

2. Operations on the regular expressions: concatenation, union, closures (both ∗ and +).

Input format: A text file, input.txt contains two lines; the first line contains the regular expression and the second line containing the input string.

Please note that each sub-regular expression is parenthesized. See the examples given in the below.

Output format: Each valid token is preceded by a $ and each echo character is preceded by @. A string s is a sequence of valid tokens and echo characters in the same order as they appear in the input string w and s ends with #.

Generate a file output.txt that contains s.