C. Dreamoon and Strings

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Dreamoon has a string s and a pattern string p. He first removes exactly x characters from s obtaining string s' as a result. Then he calculates that is defined as the maximal number of non-overlapping substrings equal to p that can be found in s'. He wants to make this number as big as possible.

More formally, let's define as maximum value of over all s' that can be obtained by removing exactly x characters from s. Dreamoon wants to know for all x from 0 to $|s|$ where $|s|$ denotes the length of string s.

Input

The first line of the input contains the string s ($1 \leq |s| \leq 2\,000$).

The second line of the input contains the string p ($1 \leq |p| \leq 500$).

Both strings will only consist of lower case English letters.

Output

Print $|s| + 1$ space-separated integers in a single line representing the for all x from 0 to $|s|$.

Examples

input
aaaaa aa

output
2 2 1 1 0 0

input
axbaxxb ab

output
0 1 1 2 1 1 0 0

Note

For the first sample, the corresponding optimal values of s' after removal 0 through $|s| = 5$ characters from s are {"**aaa**aa", "**aaaa**", "**aa**a", "**aa**", "a", ""}.

For the second sample, possible corresponding optimal values of s' are {"axbaxxb", "**ab**axxb", "axb**ab**", "**abab**", "**ab**a", "**ab**", "a", ""}.