

E. 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", "aaa", "aa", "a", ""}.

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