String Picker

Computer Science Society
Programming Contest
Fall 2009

A sequence $x_1x_2\ldots x_m$ is a *subsequence* of $y_1y_2\ldots y_n$ if $m \leqslant n$ and

$$x_1 = y_{k_1}, x_2 = y_{k_2}, \ldots, x_m = y_{k_m}, \text{ where } 1 \leqslant k_1 < k_2 < \cdots < k_m \leqslant n.$$

In this problem, you are given two strings $x = x_1x_2\ldots x_m$ and $y = y_1y_2\ldots y_n$, and must count the number of ways in which x appears as a subsequence of y, i.e. the number of distinct index sequences $k_1, k_2, \ldots, k_m$ that satisfy the definition of subsequence above. For example, `"cat"` appears as a subsequence of `"chant"` in exactly one way, and `"ram"` appears as a subsequence of `"programming"` in four ways.

Input Format

Each line of input contains two nonempty strings of lowercase letters x and y, separated by one or more blanks.

Output Format

For each line of input, report the number of ways in which x appears as a subsequence of y, as shown in the output sample below.

Input Sample

```
cat chant
ram programming
cob cocbcob
jog mygojobe
contest contest
fragtastic frag
aa aaaa
aaaa aaaaaaaa
aaaaaa aaaaaaaaaaaa
```

Output Sample

```
1 "cat" in "chant"
4 "ram" in "programming"
5 "cob" in "cocbcob"
0 "jog" in "mygojobe"
1 "contest" in "contest"
0 "fragtastic" in "frag"
6 "aa" in "aaaa"
70 "aaaa" in "aaaaaaaa"
924 "aaaaaa" in "aaaaaaaaaaaa"
```