Substring search
Quart Concurs de Programació de la UPC - Final (2006-10-04)

You are given a string \( s \) and many short patterns, all of the same length. The string \( s \) and the patterns are composed only of ‘a’ and ‘b’ characters. For every given pattern, you must tell how many times it is included in \( s \). Can you do it efficiently, both in time and in space?

Input
Input starts with a number \( t \), followed by \( t \) cases. Each case begins with a non-empty string \( s \), followed by a number \( p \geq 1 \), followed by \( p \) non-empty patterns. The only characters in \( s \) and in the patterns are ‘a’ and ‘b’. The length of \( s \) is at most \( 10^6 \). All the patterns of the same case have the same length, which is at most 60. No given pattern is longer than \( s \).

Output
For every case, print the case number starting at 1 followed by the number of times that each given pattern is included in \( s \). Print a blank line after every case.

Sample input

```
2
aabaaaabaab
3
aaba
aaaa
baab
bbbbbbbbb
1
bb
```

Sample output

```
Case 1:
2
1
0

Case 2:
7
```

Problem information

Author: Salvador Roura
Generation: 2013-09-02 15:37:47

http://www.jutge.org