Substring search
P79329_en

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

aabaaaabaaab
3
aaba
aaaa
baab

bbbbbbbb
1
bb
```

Sample output

```
Case 1:
2
1
0

Case 2:
7
```

Problem information

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