1427 – Substring Frequency (II)

A string is a finite sequence of symbols that are chosen from an alphabet. In this problem you are given a string **T** and **n** queries each with a string $\mathbf{P_i}$, where the strings contain lower case English alphabets only. You have to find the number of times $\mathbf{P_i}$ occurs as a substring of **T**.

Input

Input starts with an integer **T (≤ 10)**, denoting the number of test cases.

Each case starts with a line containing an integer **n (1 ≤ n ≤ 500)**. The next line contains the string **T** $\mathbf{(1 \leq |T| \leq 10^6)}$. Each of the next **n** lines contains a string $\mathbf{P_i}$ $\mathbf{(1 \leq |P_i| \leq 500)}$.

Output

For each case, print the case number in a single line first. Then for each string $\mathbf{P_i}$, report the number of times it occurs as a substring of **T** in a single line.

Sample Input	Output for Sample Input
2 5 ababacbabc aba ba ac a abc 3 lightoj oj light lit	Case 1: 2 3 1 4 1 Case 2: 1 1 0

Notes

1. Dataset is huge, use faster I/O methods.
2. If **S** is a string then **|S|** denotes the length of **S**.