1268 – Unlucky Strings

Mr. 'Jotishi' is a superstitious man. Before doing anything he usually draws some strange figures, and decides what to do next.

One day he declared that the names that contain a string **S** as substring is unlucky. For example, let **S** be 'ab', then '**ab**c', 'c**ab**e', 'pqq**ab**', '**ab**' etc are unlucky but 'ba', 'baa' etc are not.

So, he gives you the string **S** and asks you to find the number of names of length **n**, which are lucky, that means you have to find the number of strings that don't contain **S** as substring.

Input

Input starts with an integer **T (≤ 100)**, denoting the number of test cases.

Each case starts with a line containing an integer **n (1 ≤ n ≤ 10^9)**. The next line contains the allowed characters for a name. This non-empty line contains lowercase characters only and in ascending order. The next line contains a string **S (1 ≤ length(S) ≤ 50)**, and **S** contains characters from the allowed characters only.

Output

For each case, print the case number and the total number of names that don't contain **S** as substring. As the number can be very large, print the number modulo **2^{32}**.

Sample Input	Output for Sample Input
3 3 ab ab 4 acd ca 5 ab aaa	Case 1: 4 Case 2: 55 Case 3: 24