

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 'abc', 'cabe', 'pqqab', '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** ($1 \leq n \leq 10^9$). 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** ($1 \leq \text{length}(\mathbf{S}) \leq 50$), 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	Case 1: 4
3	Case 2: 55
ab	Case 3: 24
ab	
4	
acd	
ca	
5	
ab	
aaa	