

## Decoder

Lili and Bibi want to encode their message so only they can understand it. Lili suggests to make an array of 26 characters as the key and replace each character of the original message to the character on the array. Bibi thinks that it is too mainstream, then she suggests to make several keys instead of only one key. They both agree and start making a program to encode their message, but they forgot to make the program to decode them. Help them to make the decoder program.

### Format Input

The first line will be an integer  $T$ , denoting the number of test cases.

Each test cases will contain two integers  $N$  and  $M$ , each denoting the number of keys they made and the length of the message they want to decode.

The next  $N$  lines will each contain 26 characters, the key to encode the message.

The next line will have a string of word with length equal to  $M$ , the encoded message.

Then there will be  $M$  numbers ( $C_1, C_2, \dots, C_n$ ), which key is used for the  $K$ -th letter in the string.

### Format Output

For each test case, print "Case #X: "(X starts from 1).

Then on the same line, print the original message.

### Constraints

$1 \leq T \leq 10$

$1 \leq N \leq 5$

$1 \leq M \leq 10,000$

$1 \leq C_1, C_2, \dots, C_n \leq N$

The message will contain only uppercase letter.

Sample Input	Sample Output
2 2 11 BCDEFGHIJKLMNOPQRSTUVWXYZA MNOPQRSTUVWXYZABCDEFGHIJKLYZ UTFPFUHUBBX 1 2 1 1 2 2 1 2 2 1 2 3 14 QWERTYUIOPASDFGHJKLZXCVBNM FGHRSTUBCDEIJKLMNOPQVWXYZA PQRSTUMNOWXABCDHIJKLYZVEFG ZSKQGKTQVLLSLQ 1 2 3 2 1 2 3 2 1 2 3 2 1 2	Case #1: THEORIGINAL Case #2: TESTONETWOTEST

### Note

Explanation for the first case

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Alphabet: ABCDEFGHIJKLMNOPQRSTUVWXYZ

1st Key : BCDEFGHIJKLMNOPQRSTUVWXYZA

2nd Key : MNOPQRSTUVWXYZABCDEFGHIJKLYZ

Using first key to encode, A becomes B, B becomes C, C becomes D, etc.

Using second key to encode, A becomes M, B becomes N, C becomes O, etc.

to decode, you must do the same but from key to original, so B becomes A, C becomes B, etc in using the first key or M becomes A, N becomes B, etc using second key.

At first, Lili and Bibi have "THEORIGINAL" as the original message, then they encode their message to "UTFPFUHUBBX". You are tasked to find the original message.