One of the earliest encrypting systems is attributed to Julius Caesar: if the letter to be encrypted is the m-th letter in the alphabet, replace it with the $(m + k)$-th where k is some fixed integer. Caesar used $k = 3$, or a $\rightarrow$ d, as the key to the encryption. That is, "a" would be encrypted to "d", "b" would be "e", and so on until "z" would be "c". For example, for a $\rightarrow$ k, the sentence "`this is a test`" would become "`drsc sc k docd`".

Now you have an encrypted sentence, and you know a decrypted word in that sentence. Your task is to find all the possible keys to the encryption.

Input

The input starts with a line containing a number, n, followed by n sets of encrypted sentence/decrypted word pairs. Each set has two lines, the first line is the encrypted sentence which contains only words separated by a space with no punctuation, the second line contains a word which is one of the decrypted word of the sentence above it. All words are in lowercase letters. You may assume a word is at most 16 characters long, and a line has no more than 70 characters.

Output

The output has n lines of character(s), corresponding to the n sets of encrypted sentence/decrypted word pairs.

The line consists of lowercase letter(s) of possible key(s). That is, if the plaintext "a" is encrypted to "x", then '`x`' would be in the line.

Each line of characters must be sorted in alphabetical order.

Sample Input

```
2
drsc sc k docd
test
dl ruvd doha hp pz
we
```

Sample Output

```
k
hl
```