

Problem D - Soup of words

Description

Orlando was looking at his soup while his mother was in the kitchen. He was playing with the letters in his soup, and suddenly, he noticed that had a secret power. He could change the words morphing one word to another replacing the letter in a mysterious order.

Orlando has changed the letters of some words, you have to find an algorithm that find out the morphing order from the original word to the morphed one. The rules are simple:

- 1 - In each step you just can change one letter from the previous word.
 - 2 - A letter can be changed just once.
 - 3 - All the letters in the word must change.
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Input

Input consists of strings (one per line) each of which will consist of one to twenty valid characters. There will be no invalid characters in any of the strings. Your program should read to the end of file.

Output

For each morphing you should print all the words in the correct order to convert the first one in the morphed one

Example

Input:

```
6 5
remar
pitos
remas
remos
retos
ritos
5 4
pato
lisa
```

pata
pita
pisa

Ouput:

remar
remas
remos
retos
ritos
pitos
pato
pata
pita
pisa
lisa
