## Coding Arena

<C*deVita/>
the TCS Coding Contest

Change Default Language

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Rules & Regulations

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### Problem : Collating Sequence

You are writing a book on Physics. Your niece, a Codevita winner, secretly hacked into your computer, and changed the collating sequence of your alphabet, and then protected the collating sequence with a password. When you create an index for the book, you find a strange order, instead of the standard dictionary order.

After a lot of pleading, she says she will reset the sequence if you show you are smart enough to determine the sequence from some information she will give you. She says she will give a set of strings in the letters of the alphabet (in upper case), each of which is in ascending order in the changed collating sequence. You need to use this to determine the order of all the letters in the alphabet in the changed sequence.

You know that your niece is tricky, and may not give complete information. In that case, you know she would expect you to give all possible orders of the letters in the changed sequence which are consistent with the information given to you. In such a case, you know she will give enough information to ensure that there are no more than two possibilities for the collating sequence.

**Input Format:**

The first line gives the number of strings, N, she will give you

The next N lines give a set of strings, in ascending order in the changed collating sequence.

**Output Format:**

If the set of inputs is enough to determine the sequence for the full alphabet, the output is one line with that sequence.

If multiple sequences satisfy the input given, all the sequences must be given, one per line, sorted in normal dictionary order. When this occurs, you may assume that there are no more than two possible sequences.

**Constraints:**

3<N<15
Length of each string ≤ 20

**Example 1**

Input
4
DCEFGHIPQRSTUVWXYZ
IJKLMNOP
CABEZ
DBQR

Output
DCABEFGHIJKLMNOPQRSTUVWXYZ

Explanation
From string 1, EFGHI and PQRSTUVWXYZ are in normal alphabetical order. From string 2, we know that JKLMNO come between I and P. Hence the order for the last 22 letters of the alphabets is EFGHIJKLMNOPQRSTUVWXYZ. From strings 1 and 3, C,D,A and B come before E, and must be the first four letters in the collating sequence. From string 1, D comes before C, and from string 3 C comes before A and A comes before B. Hence the first four letters must be ordered DCAB. Hence the full collating sequence is DCABEFGHIJKLMNOPQRSTUVWXYZ, which is the output.

**Example 2**

Input
4
DCEFGHIPQRSTUVWXYZ
IJKLMNOP
CAEZ
DCBEQR

Output
DCABEFGHIJKLMNOPQRSTUVWXYZ
DCBAEFGHIJKLMNOPQRSTUVWXYZ

Explanation
As before the last 22 letters are ordered EFGHIJKLMNOPQRSTUVWXYZ. Using strings 1,3 and 4, D, C, A, B all occur before E. Hence they must be the first four. From string 1 and string 3, D, C and A are in that order. From string 4, D, C and B are in that order. But no information is available about whether A comes before or after B in the collating sequence. Hence, we must consider both orders as possible. The first four letters in order are DCAB or DCBA. Combining this with the last 22 letters gives the two lines in the output. They are in that order as that is the dictionary order for the two strings.

***Note***:

*Please do not use package and namespace in your code. For object oriented languages your code should be written in one class.*

***Note***:

*Participants submitting solutions in C language should not use functions from <conio.h> / <process.h> as these files do not exist in gcc*

***Note***:

*For C and C++, return type of main() function should be int.*



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**Submit Answer**

I , **YOKESH** confirm that the answer submitted is my own.
I would like to provide attribution to the following sources.

Select Language

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