Problem D. **Password Security**

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 1 10 points	Solve D-small-1
Small input 2 20 points	Solve D-small-2

Problem

You just bought your young nephew Andrey a complete set of 26 English wooden alphabet letters from A to Z. Because the letters come in a long, linear package, they appear to spell out a 26-letter message.

You use **N** different passwords to log into your various online accounts, and you are concerned that this message might coincidentally include one or more of them. Can you find any arrangement of the 26 letters, such that no password appears in the message as a continuous substring?

Solving this problem

This problem has 2 Small inputs and no Large input. You must solve the first Small input before you can attempt the second Small input. You will be able to retry either of the Small inputs (with a time penalty).

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of one line with an integer **N**, and then another line with **N** different strings of uppercase English letters $\mathbf{P_1}$, $\mathbf{P_2}$, ..., $\mathbf{P_N}$, which are the passwords.

Output

For each test case, output one line containing `Case #x: y`, where x is the test case number (starting from 1) and y is a permutation of the entire uppercase English alphabet that contains no password as a continuous substring, or the word `IMPOSSIBLE` if there is no such permutation.

Limits

$1 \le \mathbf{T} \le 100$.
$1 \le$ length of $\mathbf{P_i} \le 26$, for all i. (Each password is between 1 and 26 letters long.)
$\mathbf{P_i} \ne \mathbf{P_j}$ for all $i \ne j$. (All passwords are different.)

Small dataset 1

$\mathbf{N} = 1$.

Small dataset 2

$1 \le \mathbf{N} \le 50$.

Sample

Input

```
7
1
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1
X
1
QQ
5
XYZ GCJ OMG LMAO JK
3
AB YZ NM
6
C PYTHON GO PERL RUBY JS
2
SUBDERMATOGLYPHIC UNCOPYRIGHTABLES
```

Output

```
Case #1: QWERTYUIOPASDFGHJKLZXCVBNM
Case #2: IMPOSSIBLE
Case #3: ABCDEFGHIJKLMNOPQRSTUVWXYZ
Case #4: ABCDEFGHIKLMNOPQRSTUVWXYJZ
Case #5: ZYXWVUTSRQPOMNLKJIHGFEDCBA
Case #6: IMPOSSIBLE
Case #7: THEQUICKBROWNFXJMPSVLAZYDG
```

For each of the non-`IMPOSSIBLE` cases, the sample output shows only one possible answer. There are many valid answers for these inputs.

Note that only sample cases #1, #2, and #3 would appear in Small dataset 1. Any of the sample cases could appear in Small dataset 2.