

- A. Cody's Jams
- B. Dance Around The Clock
- C. Polynesiaglot
- D. Password Security

[Contest Analysis](#)

[Questions asked](#)

Submissions

Cody's Jams

10pt	Not attempted 353/478 users correct (74%)
10pt	Not attempted 323/346 users correct (93%)

Dance Around The Clock

10pt	Not attempted 270/304 users correct (89%)
15pt	Not attempted 98/246 users correct (40%)

Polynesiaglot

5pt	Not attempted 164/201 users correct (82%)
10pt	Not attempted 126/152 users correct (83%)
10pt	Not attempted 110/123 users correct (89%)

Password Security

10pt	Not attempted 140/173 users correct (81%)
20pt	Not attempted 27/106 users correct (25%)

Top Scores

Stacy992	100
shhuang	100
xeina	100
Javanochka	100
sim3995	100
Leylaa	100
nnetogrof	100
WYOCMWYH	100
Devushka	100
KashinYana	100

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	<div>Solve D-small-1</div>
Small input 2 20 points	<div>Solve D-small-2</div>

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 **P<sub>1</sub>**, **P<sub>2</sub>**, ..., **P<sub>N</sub>**, 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

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

Small dataset 1

**N** = 1.

Small dataset 2

$1 \leq N \leq 50$ .

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: ABCDEFGHIJKLMNOPQRSTUVWXYZ
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.

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