Students

There are some changes going on at the TUM (Thomas Underwood University Markistan). Students have been re-belling all over the campus: lecture halls have been barricaded, mensa food has been refused, chairs have been tipped over... Lea has been following the news about the situation in Markistan with great interest. When she found out what the actual reason behind all this ruckus is, she wanted to help because it seemed to her that the problem could be solved with ease: all German documents published by the TUM must no longer use the word "`student`", but rather "`studierender`". The same is true for "`studentin`"/"`studierende`" and "`studenten`"/"`studierende`". So, Lea now wants to write a short program to do this, but to save precious time and work, she decides to only replace the patterns: "`entin`" will be replaced by "`ierende`", "`enten`" by "`ierende`", and "`ent`" by "`ierender`". (In particular, this means that "`enten`" should not be replaced by "`ierenderen`", and "`entin`" should not be replaced by "`ierenderin`".) Please help Lea and the TUM so that all students may once again attend their courses peacefully.

Input

The first line of the input contains an integer t, the number of test cases. t test cases follow.

Each test case starts with an integer n, the number of lines of the text. n lines follow, containing the text.

Output

For each test case, output "Case #i:" where i is its number, starting at 1. Beginning in the next line, output the input text modified by replacing the above mentioned patterns.

Constraints

- $t = 1$

- $1 \le n \le 1000$

- The input text contains at most 100000 characters.

- The input text contains only the lowercase alpha-numeric characters "a" to "z" or "0" to "9", or ".", ",", ":", "!", "?", "-", a space, or a line break.

Sample Input 1

```
1
3
ich bin ein student
a potent element went through a vent
ein zentner enten enthaelt keine studenten
```

Sample Output 1

```
Case #1:
ich bin ein studierender
a potierender elemierender wierender through a vierender
ein zierenderner ierende ierenderhaelt keine studierende
```