

7712 Confusing Manuscript

In his latest exploration, Indiana found an ancient manuscript, which he named Ancient Civilization Manuscript (ACM). Indiana believes that deciphering this manuscript will unlock all the mysteries surrounding a certain civilization. After many years of research, Indiana successfully compiles a complete dictionary for the language of this manuscript using many other supporting documents on the civilization.

Problem arises when Indiana tries to decipher the manuscript (with the help of the dictionary). There are too many “similar” words in this language. For example, in Indonesia we have this tongue twister phrase: “kuku kaki kakak kakak ku kayak kuku kaki kakek kakek ku” which translates to “my brothers/sisters’ toenails are like my grandfathers’ toenails”.

Two words A and B are considered *similar* if and only if the edit distance of A and B is **exactly** 1. If you’re wondering, *edit distance* is the minimum number of operations required to transform one string to another. The allowed operations are:

- i. insertion : insert a single character,
- ii. deletion : delete a single character,
- iii. substitution : replace a single character.

For example, “kakak” \rightarrow “kakek” have an edit distance of 1, i.e. substitute the 4th character (‘a’) with ‘e’. On the other hand, “kuku” \rightarrow “ku” have an edit distance of 2, i.e. delete the 3rd and 4th characters.

Given all words in the dictionary, your task is to find the *most confusing* word. The most confusing word is defined as the word with the highest number of similarity (recall what the definition of similar in this problem is) in the dictionary. If there are more than one of such word, output the one which appears first in the given list.

For example, let the words be “kuku”, “kaki”, “kaku”, “koko”, “kak”.

	kuku	kaki	kaku	koko	kak
kuku	-	×	√	×	×
kaki	×	-		×	√
kaku	√	√	-	×	√
koko	×	×	×	-	×
kak	×	√	√	×	-

Check mark (√) denotes that these two words are similar, while cross (×) denotes that they aren’t. In this example, the word “kuku” has 1 other similar word, “kaki” has 2, “kaku” has 3, “koko” has none, and “kak” has 2. Therefore, the most confusing word in this dictionary is “kaku”.

Input

The first line of input contains an integer T ($T \leq 20$) denoting the number of cases. Each case begins with an integer N ($1 \leq N \leq 50,000$) denoting the number of words in the dictionary. The next N lines, each contains a word W_i . W_i consists of only lower case alphabetical character (‘a’-‘z’), and its length is between 1 and 10, inclusive. All words in the dictionary for each case are unique.

Output

For each case, output ‘Case # X : Y ’ (without quotes) in a line where X is the case number (starts from 1), and Y is the answer for this particular case.

Explanation for the sample:

First case: This is the example given in the problem statement.

Second case: There are no similarities among all the given words (all zeroes); output the first word.

Third case: The word “dom” and “pom” have the same number of similarities, i.e. 3. As “dom” appears first in the list, you should output “dom”.

Fourth case: The word “cable” and “able” have the same number of similarities, i.e. 1. As “cable” appears first in the list, you should output “cable”.

Sample Input

```
4
5
kuku
kaki
kaku
koko
kak
3
icpc
jakarta
regional
6
doms
poms
pod
dom
pom
doom
3
agile
cable
able
```

Sample Output

```
Case #1: kaku
Case #2: icpc
Case #3: dom
Case #4: cable
```