Autocomplete

(problem from Facebook Hackercup)

Since you crave state-of-the-art technology, you have just purchased a phone with a great new feature: autocomplete! Your phone's version of autocomplete has some pros and cons. On the one hand, it's very cautious. It only autocompletes a word when it knows exactly what you're trying to write. On the other hand, you have to teach it every word you want to use.

You have N distinct words that you'd like to send in a text message in order. Before sending each word, you add it to your phone's dictionary. Then, you write the smallest non-empty prefix of the word necessary for your phone to autocomplete the word. This prefix must either be the whole word, or a prefix which is not a prefix of any other word yet in the dictionary. What's the minimum number of letters you must type to send all N words?

Input

Input begins with the number of test cases $1 \leq T \leq 100$. For each test case, there is first a line containing the integer $1 \leq N \leq 100000$. Then, N lines follow, each containing a word to send in the order you wish to send them.

Output

For each test case number t, starting with $t = 1$, print a line "`Case #`t`: `" followed by the minimum number of characters you need to type in your text message.

Examples

Sample input 1

```
5
5
hi
hello
lol
hills
hill
5
a
aa
aaa
aaaa
aaaaa
5
aaaaa
aaaa
aaa
aa
a
6
to
be
or
not
two
bee
3
having
fun
yet
```

Sample output 1

```
Case #1: 11
Case #2: 15
Case #3: 11
Case #4: 9
Case #5: 3
```

Limits

Time limit is 1 second.

Memory limit is 256 megabytes.