3978 - Obfuscation

Europe - Northwestern - 2007/2008

Problem H - Obfuscation

Time limit: 5 seconds

It is a well-known fact that if you mix up the letters of a word, while leaving the first and last letters in their places, words still remain readable. For example, the sentence ``tihs snetncee mkaes prfecet sesne", makes perfect sense to most people.

If you remove all spaces from a sentence, it still remains perfectly readable, see for example: ``thissentencemakesperfectsense", however if you combine these two things, first shuffling, then removing spaces, things get hard. The following sentence is harder to decypher: ``tihssnetnceemkaesprfecetsesne".

You're given a sentence in the last form, together with a dictionary of valid words and are asked to decypher the text.

Input

On the first line one positive number: the number of testcases, at most 100. After that per testcase:

- One line with a string s: the sentence to decypher. The sentence consists of lowercase letters and has a length of at least 1 and at most 1000 characters.
- One line with an integer n with $1 \leq n \leq 10000$: the number of words in the dictionary.
- n lines with one word each. A word consists of lowercase letters and has a length of at least 1 and at most 100 characters. All the words are unique.

Output

Per testcase:

- One line with the decyphered sentence, if it is possible to uniquely decypher it. Otherwise ``impossible" or ``ambiguous", depending on which is the case.

Sample Input

```
3
tihssnetnceemkaesprfecetsesne
5
makes
perfect
sense
sentence
this
hitehre
2
there
hello
```

```
hitehre
3
hi
there
three
```

Sample Output

```
this sentence makes perfect sense
impossible
ambiguous
```

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