

Word Chain

You have to write a program to chain some words. A word is properly chained if it starts with a trailing sub-string of its predecessor word with a minimum overlap of three (3) characters. Given a number of words, you have to reorder them to appropriately chain them. The first word in the input is used as a starting word in the chain. It may happen that there is no chaining possible for a given set of words. If chaining is possible, assume that there will be a unique word chain. Note: A word is a sequence of alphabetic characters.

Input specification:

The first line will be an integer N, indicating the number of words that will follow. Assume N will never be greater than twenty (20). The next N lines of input will contain words, which are to be chained. Assume that the maximum length of a word will never exceed thirty (30) characters.

Output specification:

Your program should output the chain of words, one word on a separate line. If there is no chain possible from the given words, the program should print IMPOSSIBLE followed by a newline character.

Sample Input and Output:

Input:

```
2
start
finish
```

Output:

```
IMPOSSIBLE
```

Input:

```
8
whisper
format
perform
sonnet
person
```

shopper
workshop
network

Output:

whisper
person
sonnet
network
workshop
shopper
perform
format