ECE30018 Problem Solving Studio, Fall 2023

P9. Shiritori

| Submission due: 1:00 PM, 21 Nov Tue

Shiritori

Shiritori is a game to enumerate words such that the last letter of a proceeding word appears at the beginning of the succeeding word.

For a given set of words, you want to find a scenario of Shiritori where every word appears exactly once, and the resulting word sequence is least among all feasible Shiritori scenarios in lexicographical order.

Write a program that finds such a solution for a given set of words.

Input

- The input is given via standard input.
- The first line has an integer N for $3 \le N \le 1000$ representing the number of words.
- From the second to the (N+1)-th line, a word is given. Each word consists of only lowercase alphabet letters. The length of a word does not exceed 20.

Output

- The output must be printed via standard output.
- Print a word in a line in the solution sequence. If there is no possible solution, print one line containing a zero.

Test cases

Input 1

```
6
alabama
around
trigger
drawing
gambler
rocket
```

Output 1

```
alabama
around
drawing
gambler
rocket
trigger
```

Input 2

```
3
playlist
fever
radio
```

Output 2

```
0
```