I Am TSP

Time Limit 1 sec/Memory Limit 256 MB

Given n strings $s_1, s_2, \ldots, s_n$.

Please find out the shortest string S such that every s_i is a substring of S.

Input Format

- The first line contains an integer n, indicating the number of the strings.

- Then n lines follow. Each contains a string s_i consisting of lowercase English letters.

Output format

- Output the string S.

- If there are multiple possible S, please output the lexicographically smallest one.

Constraints

- $1 \le n \le 18$

sample input #1	sample output #1
4 i love saito asuka	asukalovesaito

sample input #2	sample output #2
11 genshin impact start hee hee hee i am a klee player	amgenshinheeimpactkleeplayerstart