

Given a set S of n strings, each of which is of length k , you have to find a string s such that every string in S is a substring of s , and every substring of s with length k is in S . In other words, the set of substrings of s with length k must be exactly S . Note that a string in S can occur multiple times in s . If such a string s exists, you have to find the shortest possible string, otherwise print “impossible”.

Input Format

The first line of input will specify the numbers n and k , where $1 \leq n \leq 500$ and $2 \leq k \leq 10$. The next n lines will each contain a string of length k . You can assume all strings are distinct and contain only lower-case alphabets.

Output Format

Simply output the shortest possible string satisfying the required property, if it exists, otherwise print the string “impossible”. If there are multiple solutions, any one is okay for the assignment, but as an exercise, try to find the shortest string that is lexicographically smallest.

Sample Input

7 2

ab

bc

ca

bd

dc

be

ea

Sample Output

bdcabeabc