Home

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ICPC亚洲区域赛银川赛站网络预选赛

F. Fancy's Game

Time Limit: 3 s **Memory Limit: 256 MB**

统计 (/contest/1/problem/7/statistics)

描述 提交 返回比赛 (/contest/1)

Description

Fancy is a smart girl. She has known many English words though she is very young. She likes playing such a word game: sticking many words one after another, until the total length is no less than a given constant L. The constraint is that the last letter of the previous word must be the same as the first letter of the next word. Each word can be used more than one time.

Because Fancy knows so many words, she can always finish the game in a minute. To make the game more difficult, she wants to make a lexicographically smallest sequence. Can you help her? Please note the sharing letter of two adjacent words appears only **once**in the result sequence.

Input

There are multiple test cases.

The first line of each test case contain two integers $N$and L($1 <= N <= 50$, $1 <= L <= 2000$), indicating the number of words Fancy has known, and the minimum length of the sequence. Then Nlines followed, each contains a word Fancy can use. The length of every word is between 2 and 100. The words contain lower case letters only.

Output

Output a lexicographically sequence for each test case. If there is no solution, output "-1" instead.

Examples

input :

```
3 5
aad
cba
abca
2 10
abcde
efghi
```

output :

```
abcaad
-1
```

 (http://112.126.101.92/contest/1/problem/7?locale=zh-cn)  (http://112.126.101.92/contest/1/problem/7?locale=en)

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