

Contest Duration: 2025-07-26(Sat) 22:00 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2100&p1=248>) - 2025-07-26(Sat) 23:40 (<http://www.timeanddate.com/worldclock/fixedtime.html?iso=20250726T2240&p1=248>) (local time) (100 minutes)

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## G - Concat (1st)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : 625 points

### Problem Statement

You are given  $N$  strings  $S_1, \dots, S_N$ .

For a sequence  $(A_1, \dots, A_K)$  of length  $K$  where all elements are between 1 and  $N$ , inclusive, define the string  $f(A_1, \dots, A_K)$  as  $S_{A_1} + S_{A_2} + \dots + S_{A_K}$ . Here,  $+$  represents string concatenation.

Among all  $f(A_1, \dots, A_K)$  for the  $N^K$  sequences, find the lexicographically smallest string.

### Constraints

- $1 \leq N \leq 10^5$
- $1 \leq K \leq 10^5$
- $S_i$  is a string consisting of lowercase English letters with length at most 10.
- $N$  and  $K$  are integers.

### Input

The input is given from Standard Input in the following format:

2026-01-02 (Fri)  
05:27:48 +11:00

$N$   $K$

$S_1$

:

$S_N$

## Output

Output the answer.

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### Sample Input 1

[Copy](#)

```
3 2  
abc  
xxx  
abc
```

[Copy](#)

### Sample Output 1

[Copy](#)

```
abcabc
```

[Copy](#)

- $f(1, 1) = \text{abcabc}$
- $f(1, 2) = \text{abcxxx}$
- $f(1, 3) = \text{abcabc}$
- $f(2, 1) = \text{xxxabc}$
- $f(2, 2) = \text{xxxxxx}$
- $f(2, 3) = \text{xxxabc}$
- $f(3, 1) = \text{abcabc}$
- $f(3, 2) = \text{abcxxx}$
- $f(3, 3) = \text{abcabc}$

Among these, the lexicographically smallest is abcabc.

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### Sample Input 2

[Copy](#)

```
4 3  
abcd  
abc  
ab  
a
```

[Copy](#)

## Sample Output 2

[Copy](#)

```
aaa
```

[Copy](#)

---

## Sample Input 3

[Copy](#)

```
3 2
cba
cb
c
```

[Copy](#)

## Sample Output 3

[Copy](#)

```
cbac
```

[Copy](#)

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```
'#telegram)
```

```
url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc416%2Ftasks%2Fabc416_g%3Flang%3Den&title=G%20-
```

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