

Graduation Card (text)

Luca has been invited to Edoardo's graduation party, where he knows there will be a lot of confetti! He bought a graduation card and now he needs to write a little congratulatory message on it. The message he wants to write is N words long, where the i -th word is W_i .



Figure 1: The graduation card that Luca bought.

Luca knows that he always makes mistakes when writing on little cards. In particular he always overestimates the space he can use to write the message, so he ends up writing the last words much smaller than the first ones. To prevent this, he has decided that each line must contain at most K letters or spaces.

He wants to lay out the message so that the first word is at the beginning of the first line, followed by all the other words. When a word doesn't fit in a line, that word is put on a new one, followed by the other words, and so on. Can you help Luca lay out the message?

Among the attachments of this task you may find a template file `text.*` with a sample incomplete implementation.

Input

The first line contains the integer N , the number of words in the message and K , the maximum length of the line, including the spaces. The following N lines contain one string W_i , the i -th word of the message.

Output






You need to write the message in such a way that each line has at most K characters or spaces, as described above. Between each consecutive word in the same line there must be one space character. Spaces at the end of a line will be ignored.

Constraints

- $1 \leq N \leq 100\,000$.
- $1 \leq K \leq 10^9$.
- $1 \leq |W_i| \leq \min(20, K)$, for each $i = 0 \dots N - 1$, where $|W_i|$ is the length of the i -th word.
- W_i is composed only of lowercase letters of the English alphabet, for each $i = 0 \dots N - 1$.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

- **Subtask 1** (0 points) Examples.

- **Subtask 2** (10 points) $N \leq 3$.

- **Subtask 3** (20 points) $|W_i| = |W_j|$ for each $i = 0 \dots N - 1, j = 0 \dots N - 1$.

- **Subtask 4** (30 points) $N \leq 1000$.

- **Subtask 5** (40 points) No additional limitations.


Examples

input	output
5 8 this is a sample message	this is a sample message
4 10 congrats for your graduation	congrats for your graduation

Explanation

In the **first sample case**, note that the first three words have a cumulative length of $4 + 2 + 1 = 7$ characters, which is less than $K = 8$. However also the spaces between consecutive words matter, so it is not possible to fit the word “a” in the first line (as the line would have $4 + 1 + 2 + 1 + 1 = 9$ characters and spaces).