# E. Little Elephant and Strings

time limit per test: 3 seconds memory limit per test: 256 megabytes input: standard input

output: standard output

The Little Elephant loves strings very much.

He has an array a from n strings, consisting of lowercase English letters. Let's number the elements of the array from 1 to n, then let's denote the element number i as  $a_i$ . For each string  $a_i$   $(1 \le i \le n)$  the Little Elephant wants to find the number of pairs of integers l and r  $(1 \le l \le r \le |a_i|)$  such that substring  $a_i[l...r]$  is a substring to at least k strings from array a (including the i-th string).

Help the Little Elephant solve this problem.

If you are not familiar with the basic notation in string problems, you can find the corresponding definitions in the notes.

#### Input

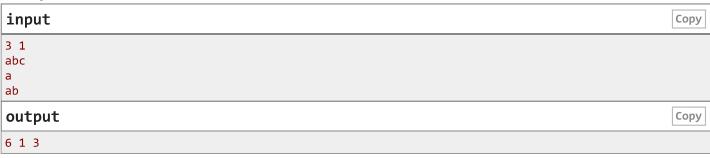
The first line contains two space-separated integers — n and k ( $1 \le n, k \le 10^5$ ). Next n lines contain array a. The i-th line contains a non-empty string  $a_i$ , consisting of lowercase English letter. The total length of all strings  $a_i$  does not exceed  $10^5$ .

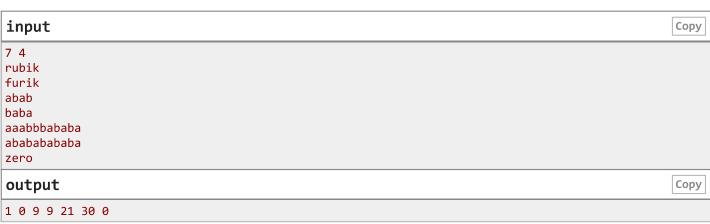
### Output

On a single line print n space-separated integers — the i-th number is the answer for string  $a_i$ .

Please, do not use the %Ild specifier to read or write 64-bit integers in C++. It is preferred to use the cin, cout streams or the %I64d specifier.

#### **Examples**





## Note

Let's assume that you are given string  $a=a_1 a_2 ... a_{|a|}$ , then let's denote the string's length as |a| and the string's i-th character as  $a_i$ .

A substring a[l...r]  $(1 \le l \le r \le |a|)$  of string a is string a  $_{l}$  a  $_{l+1}$ ... a  $_{r}$ .

String a is a substring of string b, if there exists such pair of integers l and r  $(1 \le l \le r \le |b|)$ , that b[l ... r] = a.