

# Personality Test

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            5 seconds  
Memory limit:         1024 megabytes

There are  $n$  students taking a personality test consisting of  $m$  questions. The students are numbered from 1 to  $n$  and the questions are numbered from 1 to  $m$ . For each question, each student can either answer it with a single uppercase Latin character (A–Z) or not answer it. Let  $S_i$  be a string of  $m$  characters representing the answers of student  $i$ , where the  $j$ -th character of  $S_i$  is an uppercase Latin character if they answered question  $j$ , or a period (.) if they did not.

Two students are considered *similar* if there is a set of at least  $k$  questions where both students answered all questions in the set, and for each question in the set, they answered it with the same answer.

For example, let  $n = 3$ ,  $m = 3$ ,  $k = 2$ ,  $S_1 = \text{BBC}$ ,  $S_2 = \text{..C}$ , and  $S_3 = \text{.BC}$ . In this example, students 1 and 3 are similar since they answered questions 2 and 3 with the same answer, while students 2 and 3 are not similar since they answered only question 3 with the same answer.

You want to find a pair of integers  $(a, b)$  such that  $a < b$  and students  $a$  and  $b$  are similar, or determine if there is no such pair. If there is more than one pair, find the one with the **smallest**  $b$ . If there is still more than one pair, find the one with the **largest**  $a$ .

## Input

The first line of input contains three integers  $n$ ,  $m$ , and  $k$  ( $2 \leq n \leq 5000$ ;  $1 \leq m \leq 3000$ ;  $1 \leq k \leq 5$ ). Each of the next  $n$  lines contains a string of  $m$  characters. The  $i$ -th line contains the string  $S_i$ .

## Output

Output one line containing the integers  $a$  and  $b$  representing the pair of similar students as mentioned in the problem statement, or just the integer -1 if there is no such pair.

## Examples

standard input	standard output
3 3 2 BBC ..C .BC	1 3
3 3 1 BBC ..C .BC	1 2
3 3 3 BBC ..C .BC	-1
4 12 2 GOOD.LUCK.IN WINNING.ICPC ASIA.PACIFIC CHAMPIONSHIP	2 3

## Note

*Explanation for the sample input/output #1*

This is the example in the problem statement.

*Explanation for the sample input/output #2*

Students 1 and 2 are similar.

*Explanation for the sample input/output #3*

There is no pair of similar students.