R. Ayman and K Beautiful Sub Grid

time limit per test: 2 seconds

memory limit per test: 256 megabytes

The last night Ayman got a very nice problem idea to put it in the **ACM Egypt Grand Contest 01**, but as it was a very tiring day for him and it was very late, he wasn't able to write an interesting story for that problem so he will give it to you as it is:

Given a grid of n rows, each row contains exactly m characters (only uppercase English letters), you should find a k beautiful sub grid in it.

Ayman defined a k beautiful sub grid as:

1. It is a square,
2. Its sides are parallel to the grid sides,
3. It contains at least k distinct letters.

Ayman wants from you to tell him what's the smallest k beautiful sub grid in the given grid.

Input

First line will contain 3 integers n, m, and k $(1 \leq n, m, k \leq 1000)$ $-$ the number of rows and columns in the grid and the minimum number of distinct letters to make a k beautiful sub grid respectively.

Then n lines will follow containing m characters each $-$ the description of the grid. (All characters will be in uppercase English letters)

The horizontal lines are numbered starting from one from top to bottom, the vertical lines are numbered starting from one from left to right.

Output

If there is no answer print -1.

Otherwise print two lines, the first line the minimum **side length** of the k beautiful sub grid. The second line the top-left cell (x, y) of the k beautiful grid. If there are multiple answers choose the one with the smallest x, if there are still multiple answers choose the one with smallest y.

Examples

input Copy

```
7 6 3
ABGJRM
BABCDJ
BEFGHT
NIBCXE
JABCDA
HTDRSS
RERTHJ
```

output Copy

```
2
1 2
```

input Copy

```
3 3 5
ABC
BCS
SSA
```

output Copy

```
-1
```

ICPC Assiut University Training - Juniors Phase 1 Sheets-2022

Public

Participant

→ Group Contests

- Juniors Phase 1 Practice #5 (Bitmask, Bitset, Bits)
- Juniors Phase 1 Practice #4 (Binary search , Two pointers)
- Juniors Phase 1 Practice #3 (STL 2)
- Juniors Phase 1 Practice #2 (STL 1)
- Juniors Phase 1 Practice #1 (Prefix sum , Frequency Array)

Juniors Phase 1 Practice #4 (Binary search , Two pointers)

Finished

Practice

→ About Time Scaling

This contest uses time limits scaling policy (depending on a programming language). The system automatically adjusts time limits by the following multipliers for some languages. Despite scaling (adjustment), the time limit cannot be more than 30 seconds. Read the details by the link.

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
315004216	Apr/11/2025 15:36	Accepted
315004081	Apr/11/2025 15:35	Accepted
315003950	Apr/11/2025 15:34	Wrong answer on test 19