Baltic OI '18 P5 - Genetics

Time limit: 1.0s **Memory limit:** 1G

Baltic Olympiad in Informatics: 2018 Day 2, Problem 2

For villains that intend to take over the world, a common way to avoid getting caught is to clone themselves. You have managed to catch an evil villain and her $N-1$ clones, and you are now trying to figure out which one of them is the real villain.

To your aid you have each person's DNA sequence, consisting of M characters, each being either `A`, `C`, `G` or `T`. You also know that the clones are not perfectly made; rather, their sequences differ in exactly K places compared to the real villain's.

Can you identify the real villain?

Input

The first line contains the three integers N, M, and K, where $1 \leq K \leq M$. The following N lines represent the DNA sequences. Each of these lines consists of M characters, each of which is either `A`, `C`, `G` or `T`.

In the input, there is exactly one sequence that differs from all the other sequences in exactly K places.

Warning: this problem has rather large amounts of input, and will require fast IO in Java.

Output

Output an integer – the index of the DNA sequence that belongs to the villain. The sequences are numbered starting from 1.

Constraints

Your solution will be tested on a set of test groups, each worth a number of points. Each test group contains a set of test cases. To get the points for a test group you need to solve all test cases in the test group. Your final score will be the maximum score of a single submission.

Group	Points	Limits	Additional Constraints
1	27	$3 \leq N, M \leq 100$	None
2	19	$3 \leq N, M \leq 1800$	All characters are either `A` or `C`.
3	28	$3 \leq N, M \leq 4100$	All characters are either `A` or `C`.

4	26	$3 \leq N, M \leq 4100$	None

Sample Input 1

```
4 3 1
ACC
CCA
ACA
AAA
```

Sample Output 1

```
3
```

Sample Input 2

```
4 4 3
CATT
CAAA
ATGA
TCTA
```

Sample Output 2

```
4
```