

**Baltic Olympiad in Informatics 2018, Day 2****ID: day2/genetics**

April 27 - May 1, 2018

english-jury-1

**Time Limit: 2 s | Memory Limit: 1024 MB**

## Genetics

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	$3 \leq N, M \leq 100$	
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	$3 \leq N, M \leq 4100$	

**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
```