

F - Differences

We have a list of N strings S_i . All strings have length M and consist only of characters A, B, C and D. Let us define the distance between two strings X and Y as the number of indices j , where the strings have different characters ($X_j \neq Y_j$). We know that the list of strings S_i contains precisely one special string that has distance K to all other strings. Note that there might be other pairs of strings with a distance of K . We are experiencing problems finding this special string, so please write a program to help us out.

Input data

The first line contains space-separated integers N , M and K . Strings S_i are given in the following N lines.

Input limits

- $2 \leq N, M \leq 10^5$
- $1 \leq K \leq M$
- $NM \leq 2 \cdot 10^7$

Output data

Output the index i of the special string. Strings are numbered from 1 to N as given in the input.

Examples

Input

```
5 10 2
DCDDDCCADA
ACADDCCADA
DBADDCCBDC
DBADDCCADA
ABADDCCADC
```

Output

```
4
```

Input

```
4 6 5
AABAAA
BAABBB
ABAAAA
ABBAAB
```

Output

```
2
```