F – Differences

Time limit: 2 s *Memory limit: 256 MiB*

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	Output
5 10 2 DCDDDCCADA ACADDCCADA DBADDCCBDC DBADDCCADA ABADDCCADC	4

Input	Output
4 6 5 AABAAA BAABBB ABAAAA ABBAAB	2