B. Fedor and New Game

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

After you had helped George and Alex to move in the dorm, they went to help their friend Fedor play a new computer game «Call of Soldiers 3».

The game has $(m + 1)$ players and n types of soldiers in total. Players «Call of Soldiers 3» are numbered form 1 to $(m + 1)$. Types of soldiers are numbered from 0 to n - 1. Each player has an army. Army of the i-th player can be described by non-negative integer x_i. Consider binary representation of x_i: if the j-th bit of number x_i equal to one, then the army of the i-th player has soldiers of the j-th type.

Fedor is the $(m + 1)$-th player of the game. He assume that two players can become friends if their armies differ in at most k types of soldiers (in other words, binary representations of the corresponding numbers differ in at most k bits). Help Fedor and count how many players can become his friends.

Input

The first line contains three integers n, m, k $(1 \le k \le n \le 20; 1 \le m \le 1000)$.

The i-th of the next $(m + 1)$ lines contains a single integer x_i $(1 \le x_i \le 2^n - 1)$, that describes the i-th player's army. We remind you that Fedor is the $(m + 1)$-th player.

Output

Print a single integer — the number of Fedor's potential friends.

Examples

input Copy

```
7 3 1
8
5
111
17
```

output Copy

```
0
```

input Copy

```
3 3 3
1
2
3
4
```

output Copy

```
3
```