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
```