

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 from 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 ($1 \leq k \leq n \leq 20; 1 \leq m \leq 1000$).

The i -th of the next $(m + 1)$ lines contains a single integer x_i ($1 \leq x_i \leq 2^n - 1$), 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
7 3 1 8 5 111 17
output
0

input
3 3 3 1 2 3 4
output
3