Problem B. Number Game

Input file:	standard input
Output file:	standard output
Time limit:	1 second
Memory limit:	256 megabytes

MianKing and GreenKing are playing a game. Initially there are K integers on the blackboard and a set S.

MianKing and GreenKing take turns to operate and MianKing will operate first.

In each operation the player can choose an integer x on the blackboard which is not a Bad Number(Will be defined below), then choose an integer y in S.

The player should guaranteed that $y \leq x$ and if there is no y that satisfies $y \leq x$ in the set S, the player cannot choose this x.

Then the player will replace x with $x - y$ on the blackboard.

If a player cannot do any operations, the player loses this game.

GreenKing is a bad woman, she wants to choose a subset of size K from $\{1...n\}$ to ensure that she can win the game(Assuming that both players are smart enough). Now you need to help her calculate how many subset of $\{1...n\}$ satisfies the above conditions.

The answer may be very large, so you only need to output answer mod 998244353.

We call a number is a Bad Number, if and only if it has an even number of 1 in the binary representation.

For example, $0, 3, 996$ are all Bad Numbers and $1, 7$ are not Bad Numbers.

Input

The first line has three integers $n, K, |S|$

The second line has $|S|$ distinct integers denotes the set S.

$1 \leq n \leq 10^{18}$

$1 \leq K \leq min(n, 100)$

$\forall x \in S, 1 \leq x \leq 20$

$|S| > 0$

Output

Output the answer mod 998244353.

Examples

standard input	standard output
5 2 1 2	6
1000 100 10 1 2 3 4 5 6 7 8 10 11	896262428