

Problem I. Ignore Submasks

Input file: *standard input*
Output file: *standard output*
Time limit: 1 second
Memory limit: 512 mebibytes

You are given an array of n integers, a_1, a_2, \dots, a_n . Each integer is between 0 and $2^k - 1$, inclusive.

Let's say that $f(x)$ is the smallest i , such that $(a_i \& x) \neq a_i$, or 0, if there are no such i . ($a \& b$) is the bitwise AND operation.

Find $f(0) + f(1) + \dots + f(2^k - 1)$. As this value may be very large, find it modulo 998 244 353.

Input

The first line contains two integers: n, k ($1 \leq n \leq 100, 1 \leq k \leq 60$).

The next line contains n integers: a_1, a_2, \dots, a_n ($0 \leq a_i < 2^k$).

Output

Print one integer: $f(0) + f(1) + \dots + f(2^k - 1)$, modulo 998 244 353.

Examples

standard input	standard output
2 1 0 1	2
2 2 2 1	4
5 10 389 144 883 761 556	1118

Note

In the first example, $f(0) = 2, f(1) = 0$.

In the second example, $f(0) = 1, f(1) = 1, f(2) = 2, f(3) = 0$.