Problem B. Bitwise Xor

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

Zhong Ziqian got an integer array $a_1, a_2, \ldots, a_n$ and an integer x as birthday presents.

Every day after that, he tried to find a non-empty subsequence of this array $1 \le b_1 < b_2 < \ldots < b_k \le n$, such that for all pairs (i, j) where $1 \le i < j \le k$, the inequality $a_{b_i} \oplus a_{b_j} \ge x$ held. Here, $\oplus$ is the bitwise exclusive-or operation.

Of course, every day he must find a different subsequence.

How many days can he do this without repeating himself? As this number may be very large, output it modulo 998 244 353.

Input

The first line of the input contains two integers n and x ($1 \le n \le 300\,000$, $0 \le x \le 2^{60} - 1$). Here, n is the size of the array.

The next line contains n integers $a_1, a_2, \ldots, a_n$: the array itself ($0 \le a_i \le 2^{60} - 1$).

Output

Output one integer: the number of subsequences of Ziqian's array such that bitwise xor of every pair of elements is at least x, modulo 998 244 353.

Examples

standard input	standard output
3 0 0 1 2	7
3 2 0 1 2	5
3 3 0 1 2	4
7 4 11 5 5 8 3 1 3	35

Note

In the first example, all $2^3 - 1$ non-empty subsequences are suitable.

in the second example, two non-empty subsequences are not suitable, it is $b = [1, 2]$ and $b = [1, 2, 3]$, that is because $a_1 \oplus a_2 = 0 \oplus 1 = 1$ which is smaller than 2.

In the third example, $b = [1], b = [2], b = [3], b = [2, 3]$ are suitable.