

XOR sum

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

You have an array of n k -bit numbers $a_1, a_2, \dots, a_n$.

You need to calculate $\sum_{i=1}^n \sum_{j=i+1}^n (a_i \oplus a_j)^x$.

Operation $a \oplus b$ is bitwise exclusive OR of two numbers a and b .

Since the answer can be very large, output it modulo 998 244 353.

Input

The first line of the input contains three integers n, k, x ($1 \leq n, k, n \cdot k \leq 300\,000$, $1 \leq x \leq 3$) — length of an array, number of bits in each number and the power of exclusive OR operations results in the sum.

Next n lines contain array elements.

The i -th of them contains string $s_0, s_1, \dots, s_{k-1}$, consisting of '0' and '1'.

Then $a_i = \sum_{i=0}^{k-1} s_i \cdot 2^i$.

Output

Print one number — the remainder of division of the sum of x -th powers of exclusive OR results of all pairs of numbers in the array by 998 244 353.

Scoring

Subtask	Score	Additional constraints	Scoring	Required subtasks
1	5	$n \leq 5000, k \leq 30$	subtask	—
2	5	$n \cdot k \leq 5000$	subtask	—
3	5	$k \leq 30, a_i = 2^{b_i}$ for some b_i	subtask	—
4	10	$k \leq 20$	subtask	—
5	10	$x = 1, n \cdot k \leq 300\,000$	subtask	—
6	15	$x \leq 2, n \cdot k \leq 100\,000$	subtask	—
7	10	$x \leq 2, n \cdot k \leq 300\,000$	subtask	6
8	15	$n \cdot k \leq 100\,000$	subtask	2,6
9	10	$n \cdot k \leq 200\,000$	subtask	1,2,6,8
10	15	$n \cdot k \leq 300\,000$	subtask	1,2,3,4,5,6,7,8,9

Examples

standard input	standard output
3 3 1 101 001 001	2
2 6 3 101111 011001	19683

Explanations

In the first sample array contains integers $[5, 4, 4]$, and the answer is $(5 \oplus 4) + (5 \oplus 4) + (4 \oplus 4) = 1 + 1 + 0 = 2$.

In the second sample array contains integers $[61, 38]$, and the answer is $(61 \oplus 38)^3 = 27^3 = 19683$.