
Problem A. Random XOR

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

There is an array a containing n integers. Also, there is initially empty array b . Some elements of a are going to be added to b . Each element is added with probability P independently from others. Then the value of s is to be computed:

$$s = \oplus_{i=0}^{|b|} b_i$$

where $\oplus$ is bitwise exclusive OR (if the array b is empty, s equals to zero). You are required to compute the expected value of s^2 .

Input

The first line of input contains three integers n , X and Y . The probability P is equal to $\frac{X}{Y}$.

The second line contains n integers a_i divided by spaces — elements of the array a .

$$\begin{aligned} 1 &\leq n \leq 10^5 \\ 0 &\leq X < 10^9 + 7 \\ 0 &< Y < 10^9 + 7 \\ X &\leq Y \\ 0 &\leq a_i < 10^9 + 7 \end{aligned}$$

Output

The answer can be always represented as a fraction $\frac{u}{v}$ where u and v are co-prime numbers and $v \neq 0 \pmod{10^9 + 7}$. You are required to output only one number — $u \times v^{-1} \pmod{10^9 + 7}$.

Example

standard input	standard output
3 1 2 2 8 10	42