

Hashing Collision

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 512 megabytes

Recently, Colin learned how the string hashing algorithm works. Generally speaking, it is used to convert a string into an integer.

The good and widely used way to define the hash of a string s of length n (indexed from 1) is

$$\text{hash}(s) = \left(s[1] + s[2] \cdot p + s[3] \cdot p^2 + \dots + s[n] \cdot p^{n-1} \right) \bmod m = \left(\sum_{i=0}^{n-1} s[i+1] \cdot p^i \right) \bmod m$$

where p and m are some chosen, positive numbers. It is called a polynomial rolling hash function.

But Colin doesn't understand how to choose appropriate p and m , so he often encounters hashing collision problems. Consider two substrings s_1, s_2 of the string s such that $s_1 \neq s_2$ but $\text{hash}(s_1) = \text{hash}(s_2)$ holds; then we say that there is a hashing collision between s_1 and s_2 .

Now given a string s of length n , and two integers p and m chosen by Colin. He wants to know how many ways there are to choose integers l_1, r_1, l_2, r_2 satisfying $1 \leq l_1 \leq r_1 \leq n, 1 \leq l_2 \leq r_2 \leq n$, and there is a hashing collision between $s[l_1, r_1]$ and $s[l_2, r_2]$

Input

The first line contains three integers n, p, m ($1 \leq n \leq 3000, 1 \leq p, m \leq 2 \times 10^9$).

The second line contains n integers $s[1], s[2], \dots, s[n]$ ($0 \leq s[i] \leq 2 \times 10^9$), the i -th integer represents the value of the i -th character of string s .

Output

A single integer represents the answer.

Examples

standard input	standard output
4 2 6 1 2 1 2	4
4 2 5 1 2 1 2	10

Note

For the first example, the hashing results of each substring:

$$\text{hash}(s[1, 1]) = 1, \text{hash}(s[2, 2]) = 2$$

$$\text{hash}(s[3, 3]) = 1, \text{hash}(s[4, 4]) = 2$$

$$\text{hash}(s[1, 2]) = (1 + 2 \cdot 2) \bmod 6 = 5$$

$$\text{hash}(s[2, 3]) = (2 + 1 \cdot 2) \bmod 6 = 4$$

$$\text{hash}(s[3, 4]) = (1 + 2 \cdot 2) \bmod 6 = 5$$

$$\text{hash}(s[1, 3]) = (1 + 2 \cdot 2 + 1 \cdot 2^2) \bmod 6 = 3$$

$$\text{hash}(s[2, 4]) = (2 + 1 \cdot 2 + 2 \cdot 2^2) \bmod 6 = 0$$

$$\text{hash}(s[1, 4]) = (1 + 2 \cdot 2 + 1 \cdot 2^2 + 2 \cdot 2^3) \bmod 6 = 1$$

The ways to select parameters in the answer:

- $l_1 = 1, r_1 = 1, l_2 = 1, r_2 = 4$
- $l_1 = 3, r_1 = 3, l_2 = 1, r_2 = 4$
- $l_1 = 1, r_1 = 4, l_2 = 1, r_2 = 1$
- $l_1 = 1, r_1 = 4, l_2 = 3, r_2 = 3$