

Problem J. Permutations

Input file: permutations.in
Output file: permutations.out
Time limit: 1 second
Memory limit: 256 megabytes

Let's take two permutations: $A = (a_1, a_2, \dots, a_N)$ and $B = (b_1, b_2, \dots, b_N)$. We can define their product as permutation $C = A \times B = (c_1, c_2, \dots, c_N)$, where $c_i = a_{b_i}$. For example, for $A = (3, 5, 1, 2, 4)$ and $B = (2, 3, 5, 4, 1)$, their product is $C = (5, 1, 4, 2, 3)$.

It is well-known that in common case multiplication of permutations is not commutative (i.e. $A \times B \neq B \times A$). Example:

$$(3, 5, 1, 2, 4) \times (2, 3, 5, 4, 1) = (5, 1, 4, 2, 3)$$

$$(2, 3, 5, 4, 1) \times (3, 5, 1, 2, 4) = (5, 1, 2, 3, 4)$$

But there are some pairs, multiplication of which is commutative. Example:

$$(3, 4, 2, 5, 1) \times (4, 1, 5, 3, 2) = (5, 3, 1, 2, 4)$$

$$(4, 1, 5, 3, 2) \times (3, 4, 2, 5, 1) = (5, 3, 1, 2, 4)$$

You are given permutation A . Count number of such permutations B that $A \times B = B \times A$, and output it modulo P .

Input

First line of input file contains 2 integer numbers: N and P ($1 \leq N \leq 10^5$, $2 \leq P \leq 10^9$). On the second line there are N different integer numbers: a_1, a_2, \dots, a_N — permutation A ($1 \leq a_i \leq N$). All numbers in lines are separated by spaces.

Output

Output file must contain one integer number K — answer for the task ($0 \leq K \leq P - 1$).

Example

permutations.in	permutations.out
5 100 3 4 2 5 1	5

Permutations for example:

1 2 3 4 5

2 5 4 1 3

3 4 2 5 1

4 1 5 3 2

5 3 1 2 4