B. Dima and Two Sequences

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Little Dima has two sequences of points with integer coordinates: sequence $(a_1, 1), (a_2, 2), ..., (a_n, n)$ and sequence $(b_1, 1), (b_2, 2), ..., (b_n, n)$.

Now Dima wants to count the number of distinct sequences of points of length $2 \cdot n$ that can be assembled from these sequences, such that the x-coordinates of points in the assembled sequence will **not decrease**. Help him with that. Note that each element of the initial sequences should be used exactly once in the assembled sequence.

Dima considers two assembled sequences $(p_1, q_1), (p_2, q_2), ..., (p_{2 \cdot n}, q_{2 \cdot n})$ and $(x_1, y_1), (x_2, y_2), ..., (x_{2 \cdot n}, y_{2 \cdot n})$ distinct, if there is such i $(1 \le i \le 2 \cdot n)$, that $(p_i, q_i) \ne (x_i, y_i)$.

As the answer can be rather large, print the remainder from dividing the answer by number m.

Input

The first line contains integer n $(1 \le n \le 10^5)$. The second line contains n integers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10^9)$. The third line contains n integers $b_1, b_2, ..., b_n$ $(1 \le b_i \le 10^9)$. The numbers in the lines are separated by spaces.

The last line contains integer m $(2 \le m \le 10^9 + 7)$.

Output

In the single line print the remainder after dividing the answer to the problem by number m.

Examples

input
1 1 2 7
output
1

input
2 1 2 2 3 11
output
2

Note

In the first sample you can get only one sequence: $(1, 1), (2, 1)$.

In the second sample you can get such sequences : $(1, 1), (2, 2), (2, 1), (3, 2)$; $(1, 1), (2, 1), (2, 2), (3, 2)$. Thus, the answer is 2.