D. Dima and Two Sequences

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 ($1 \leq i \leq 2 \cdot n$), that $(p_i, q_i) \neq (x_i, y_i)$.

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

Input

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

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

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.