Problem J. Justice For Everyone

Input file:	*standard input*
Output file:	*standard output*
Time limit:	10 seconds
Memory limit:	512 mebibytes

Suppose you have n pairwise different numbers on a desk, denoted by $a_1, a_2, \ldots, a_n$ (order matters). In one turn, you can choose two different indices $i_1 < i_2$ and simultaneously increase a_{i_1} and a_{i_2} by one. The only condition is that the numbers on the desk should be different in every moment. Your task is to find the number of ways to obtain pairwise different numbers $b_1, b_2, \ldots, b_n$ (in exactly this order). As this number can be very large, print it modulo 998 244 353.

Input

The first line of the input contains a single integer n ($1 \le n \le 30$). The second and the third lines of the input contain n space-separated integers each: the arrays a_i and b_i respectively ($1 \le a_i, b_i \le 200$). All a_i are guaranteed to be pairwise different, same for b_i.

Output

Print the answer modulo prime number 998 244 353.

Examples

standard input	standard output
3 1 2 3 3 4 5	1
3 1 2 3 7 8 9	42
3 1 4 7 3 6 9	6

Note

In the first sample, the only way is to make operations in the order $\{2, 3\}, \{1, 3\}, \{1, 2\}$.

In the third sample, we can make the three operations $\{1, 2\}, \{2, 3\}, \{1, 3\}$ in any order.