Beautiful subsequence

Input file:	`D.in`
Output file:	`D.out`
Time limit:	1.5 seconds
Memory limit:	16 megabytes

Subsequence — is a sequence that can be obtained from another sequence by removing some elements without changing the order of remaining elements.

You are given two sequences of positive integers with size n: $a_1, a_2, \ldots, a_n$ and with size m: $b_1, b_2, \ldots, b_m$. The sequence with k integers $c_1, c_2, \ldots, c_k$ is called *beautiful* iff:

- k is an odd number.
- $c_{2*j-1} < c_{2*j}$ and $c_{2*j+1} < c_{2*j}$ for all $1 < 2 * j < k$.
- Sequence $c_1, c_2, \ldots, c_k$ is a *subsequence* of $a_1, a_2, \ldots, a_n$.
- Sequence $c_1, c_2, \ldots, c_k$ is a *subsequence* of $b_1, b_2, \ldots, b_m$.

Find the maximum possible length of a *beautiful* sequence and the number of different *beautiful* sequences with maximum length modulo $10^9 + 9$.

Input

The first line contains a single positive integer n ($1 \le n \le 10^4$) — the size of sequence a.

The second line contains n positive integers a_i ($1 \le a_i \le 20000$) — the sequence a.

The third line contains a single positive integer m ($1 \le m \le 10^4$) — the size of sequence b.

The fourth line contains m positive integers b_i ($1 \le b_i \le 20000$) — the sequence b.

The elements of both sequences are separated by a single space.

Output

Output two integers as an answer for the problem. If there's no answer then output two zeroes.

Scoring

This problem contains 4 subtasks:

1. $1 \le n \le 20$, $1 \le m \le 10$ — 9 points.
2. $1 \le n \le 1000$, $1 \le m \le 20$ — 9 points.
3. $1 \le n \le 500$, $1 \le m \le 500$ — 28 points.
4. $1 \le n \le 10^4$, $1 \le m \le 10^4$ — 54 points.

Examples

D.in	D.out
1 1 1 2	0 0
7 1 5 3 4 2 5 2 5 1 3 5 4 2	3 6
4 1 1 3 2 4 1 3 2 2	3 1