Problem I. Lost Table

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

Er-Tostik had a table of size $n \times m$ with positive integers. Aldar-Kose decided to prank Er-Tostik and stole the table, but told Er-Tostik the maximum value in each row and column. Aldar-Kose will only return the table if Er-Tostik can tell how many different tables can have these maximum values. As their number can be very large, Aldar-Kose only asks to find this value modulo $10^9 + 7$. Help Er-Tostik to get his table back.

Input

The first line of input contains two integers n and m ($1 \le n, m \le 2 \cdot 10^5$): the dimensions of the table.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 10^9$): the maximum values in each row.

The third line contains m integers $b_1, b_2, \ldots, b_m$ ($1 \le b_j \le 10^9$): the maximum values in each column.

Output

Output a line with a single integer: the number of different tables satisfying the conditions. Since the answer can be very large, output it modulo $10^9 + 7$.

Note that, as Aldar-Kose is mischievous, the input might not be consistent with any table at all. In such case, naturally, the correct answer is 0.

Examples

standard input	*standard output*
3 3 2 2 3 2 3 3	89
1 1 1 2	0
5 5 2 2 3 3 3 2 2 2 3 3	49049891
12 13 2 2 2 3 3 4 4 4 4 5 5 5 2 3 3 3 3 4 5 5 5 5 5 5 5	808346164
2 3 2 3 3 1 5	0