D. Sereja ans Anagrams

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Sereja has two sequences a and b and number p. Sequence a consists of n integers $a_1, a_2, ..., a_n$. Similarly, sequence b consists of m integers $b_1, b_2, ..., b_m$. As usual, Sereja studies the sequences he has. Today he wants to find the number of positions q $(q + (m - 1)\cdot p \le n; q \ge 1)$, such that sequence b can be obtained from sequence $a_q, a_{q+p}, a_{q+2p}, ..., a_{q+(m-1)p}$ by rearranging elements.

Sereja needs to rush to the gym, so he asked to find all the described positions of q.

Input

The first line contains three integers n, m and p $(1 \le n, m \le 2\cdot 10^5, 1 \le p \le 2\cdot 10^5)$. The next line contains n integers $a_1, a_2, ..., a_n$ $(1 \le a_i \le 10^9)$. The next line contains m integers $b_1, b_2, ..., b_m$ $(1 \le b_i \le 10^9)$.

Output

In the first line print the number of valid qs. In the second line, print the valid values in the increasing order.

Examples

input
5 3 1 1 2 3 2 1 1 2 3

output
2 1 3

input
6 3 2 1 3 2 2 3 1 1 2 3

output
2 1 2