Problem L. Limited Swaps

Time limit: 2 seconds
Memory limit: 512 megabytes

Lina is playing with n cubes placed in a row. Each cube has an integer from 1 to n written on it. Every integer from 1 to n appears on exactly one cube.

Initially, the numbers on the cubes from left to right are $a_1, a_2, \ldots, a_n$. Lina wants the numbers on the cubes from left to right to be $b_1, b_2, \ldots, b_n$.

Lina can swap any two adjacent cubes, but only if the difference between the numbers on them is at least 2. This operation can be performed at most 20 000 times.

Find any sequence of swaps that transforms the initial configuration of numbers on the cubes into the desired one, or report that it is impossible.

Input

The first line contains a single integer n — the number of cubes ($1 \le n \le 100$).

The second line contains n distinct integers $a_1, a_2, \ldots, a_n$ — the initial numbers on the cubes from left to right ($1 \le a_i \le n$).

The third line contains n distinct integers $b_1, b_2, \ldots, b_n$ — the desired numbers on the cubes from left to right ($1 \le b_i \le n$).

Output

If it is impossible to obtain the desired configuration of numbers on the cubes from the initial one, print a single integer -1.

Otherwise, in the first line, print a single integer k — the number of swaps in your sequence ($0 \le k \le 20\,000$).

In the second line, print k integers $s_1, s_2, \ldots, s_k$ describing the operations in order ($1 \le s_i \le n - 1$). Integer s_i stands for "swap the s_i-th cube from the left with the $(s_i + 1)$-th cube from the left".

You do not have to find the shortest solution. Any solution satisfying the constraints will be accepted.

Examples

standard input	standard output
5 1 3 5 2 4 3 5 1 4 2	5 2 1 2 4 1
4 1 2 3 4 4 3 2 1	-1

Note

In the first example test, the configuration of numbers changes as follows:

$$1\ \underline{3\ 5}\ 2\ 4 \ \to\ \underline{1\ 5}\ 3\ 2\ 4 \ \to\ 5\ \underline{1\ 3}\ 2\ 4 \ \to\ 5\ 3\ 1\ \underline{2\ 4} \ \to\ \underline{5\ 3}\ 1\ 4\ 2 \ \to\ 3\ 5\ 1\ 4\ 2$$

In the second example test, making even a single swap in the initial configuration is impossible.