Gifts in Place

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	1024 megabytes

There are n people sitting around a round table, numbered from 1 to n in clockwise order. For each $i = 1, 2, \ldots, n$, the i-th person is adjacent to the $((i \bmod n) + 1)$-th person.

There are n gifts, numbered from 1 to n. Initially, for each $i = 1, 2, \ldots, n$, the i-th person receives the p_i-th gift. However, due to a hasty distribution, at least one person ends up with the wrong gift. Under the correct plan, for each $i = 1, 2, \ldots, n$, the i-th person should receive the q_i-th gift.

You can perform operations where each operation allows swapping the gifts held by any two adjacent people. Find the minimum number of operations required so that everyone receives the correct gift.

Input

There are multiple test cases. The first line of the input contains an integer T $(1 \le T \le 10^3)$, indicating the number of test cases. For each test case:

The first line contains an integer n $(3 \le n \le 3 \times 10^3)$.

The second line contains n distinct integers $p_1, p_2, \ldots, p_n$ $(1 \le p_i \le n)$.

The third line contains n distinct integers $q_1, q_2, \ldots, q_n$ $(1 \le q_i \le n)$.

It is guaranteed that the sum of n over all test cases does not exceed 3×10^3.

Output

For each test case, output two lines:

The first line contains an integer k, indicating the minimum number of operations.

The second line contains k integers $x_1, x_2, \ldots, x_k$, where the i-th integer x_i indicates that, in the i-th operation, you swap the gifts held by the x_i-th person and the $((x_i \bmod n) + 1)$-th person.

If there are multiple valid solutions, you may output any of them.

Example

standard input	standard output
2 3 1 2 3 3 2 1 4 3 4 1 2 1 2 3 4	1 3 4 2 3 1 2