Problem B
Bubble Bath Sort
Time limit: 10 seconds

Bubble Baths & Beyond has installed a robot to sort their products. All their bubble baths have a serial number by which they are to be sorted, and are in a line from position 1 to position n.

In each round, the robot goes down the line from position 1 first and swaps each pair of adjacent bubble baths if they are out of order. It first compares the baths at positions 1 and 2, then 2 and 3, then 3 and 4, and so on. After comparing positions $n-1$ and n, the robot will stop if the serial numbers are in sorted order. Otherwise, it will return to position 1 and start the next round.

Given the list of the n distinct serial numbers, Bubble Baths & Beyond wants to know how many rounds the robot will take before stopping and how many swaps it will make each round.

Input

The first line of input contains a single integer n ($1 \leq n \leq 500\,000$), which is the number of bubble baths.

The next n lines describe the serial numbers in each position ordered from 1 to n. Each of these lines contains a single integer s ($1 \leq s \leq 10^9$), which is the serial number of this bubble bath. The n serial numbers are distinct.

Output

First, display R, the number of rounds the robot spends before stopping. Then, display R more integers: the number of swaps performed in each round, in order.

Sample Input 1	Sample Output 1
3 668 549 312	2 2 1

Sample Input 2	Sample Output 2
4 711 299 367 113	3 3 1 1

Sample Input 3	Sample Output 3
2 111 222	0