The Polar Express
Problem ID: polarexpress

It's almost December, and the Polar Express is planning for its annual trip towards the North Pole. The Polar Express is a train with N carts numbered 1 to N, and you are the conductor! However, due to an exceptionally heavy snowstorm, your train recently ran into an accident and veered off-track. Now, the ordering of all of the carts have been scrambled! You cannot leave to pick up the children for Christmas unless you can reorganize the train in the original sorted order.

At the start of every hour, you can move the first K carts from the front of the train to a holding station, which is a stack. At the end of every hour, the magical elves of the holding station will move the carts from the holding station to the back of the train, in reverse order.

For example, suppose the train is currently ordered $1, 2, 5, 4, 3$ from front to back. You can move the first three trains to the holding station. At the end of the hour, your carts will be returned to you, and the train will be ordered as $4, 3, 5, 2, 1$.

Your job is to come up with a sequence of instructions to sort the train, such that cart 1 is at the front and cart N is at the back. However, Christmas is in 1000 hours and you cannot take longer than that to complete your task.

Input

The first line of input consists of a single integer N ($1 \leq N \leq 200$), specifying the number of carts that the train contains.
N lines follow, each of which consists of a single integer, together forming a permutation of the numbers from 1 to N. This permutation specifies the initial order of the train carts.

Output

On the first line of output, print a single integer M, the number days it will take to sort the train.
Print M lines next, the ith of which should consist of a single integer denoting the number of carts to move to the holding station on the ith hour. Each integer printed must be between 1 and N, inclusive.
Your answer will be judged correct if $0 \leq M \leq 1000$, and your given sequence correctly sorts the train carts.

Sample Input 1

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5
3
2
1
4
5
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Sample Output 1

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2
4
2
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