

Problem F: Halfway Through the Book

- Time Limit: 2 sec

Problem Statement

A book titled “Immense Catalog of Permutation Compilation” is published by JAG Publisher. This book is extremely lengthy, with a total of $2^N - 1$ pages. Each page contains one of the non-empty subsequences (not necessarily contiguous) of a permutation P of length N (i.e., a rearrangement of $(1, \dots, N)$). Each subsequence appears exactly once in lexicographical order. In other words, on the page k , you’ll find the k -th lexicographically smallest subsequence of P among all non-empty subsequences.

You’ve tried to read the entire book but gave up. However, you want to impress your friends by claiming that you read half of it, so you need to find the sequence on the exact middle page, which is page 2^{N-1} . Your task is to determine this sequence.

Input

The input consists of a single test case of the following format.

$$\begin{matrix} N \\ P_1 \ P_2 \ \dots \ P_N \end{matrix}$$

The first line contains an integer N , where N represents the length of permutation P . N is between 1 and 10,000. The second line contains N integers P_1, \dots, P_N ($1 \leq P_i \leq N$) which represent the permutation P .

Output

On the first line, print M , which represents the length of the sequence on page 2^{N-1} . On the second line, print M integers Q_1, Q_2, \dots, Q_M , which represent the subsequence on page 2^{N-1} .

Sample Input 1	Sample Output 1
3 2 1 3	2 2 1
Sample Input 2	Sample Output 2
6 3 6 2 1 5 4	4 3 6 1 5