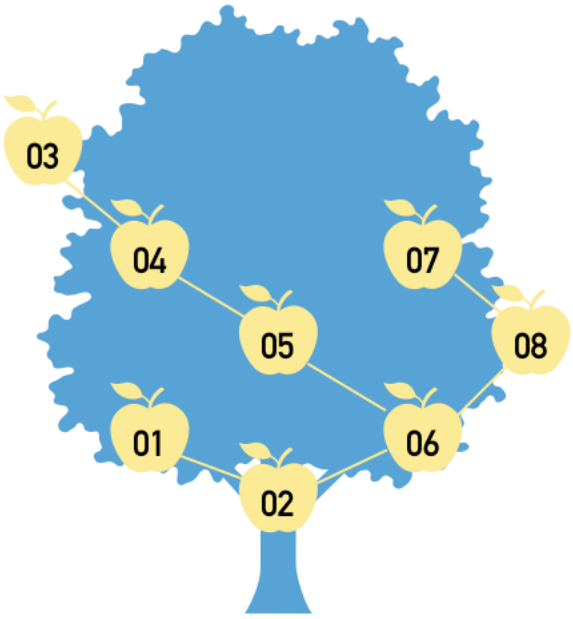
Among the many juicy stone fruits in Vietnam, mangoes are one of the most commonly eaten fruits. Ti also has a mango tree in his backyard and this is an eccentric tree without leaves and totally flattened!!! There is only one root branch grown up from the trunk of the tree and from that branch has the most two other branches up, they are the same but one up to the lefe and one to the right. The branches continue to expand higher with one or two more grown up from it. On each branch we have a mango and each mango has its own value. The value of a mango on the right branch is always larger than the mango on its origin, and is smaller or equal for the mango on the left (see picture).



One morning, Ti came to his tree and tried to count the mangoes on the tree. From Ti standing spot - right to the bottom of the tree, the mangoes in the higher positions might be covered by the others in lower. Since the tree is tall and there are many mangoes on it, he could not follow all of them. Now, he wants you to help him, how many mangoes can he count from the bottom of the tree?

Input
The input consists of two lines. The first line is a positive integer n (1 <= n <= 1.000.000), - the number of mangoes. The second line is a sequence of n positive integers, each separates by a space - the value of mangoes. The value of mangos is listed by their positions. From the lower to higher and from the left to right.

Output
Print in one line the list of value of mangoes that can be observed in ascending order.

Sample input and output:

Input
8
2 1 6 5 8 4 7 3
Output:
1 2 3 6 8

Input
6
1 5 3 4 3 5
Output
1 3 5 5