Утегенов Батырхан Елембетұлы [ADS-Lab-04]: Submit a solution

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A B C D E F G H I J

Submit a solution for J-106664. Balanced Binary Search Tree

Time limit: 1 s
Real time limit: 5 s
Memory limit: 256M

Problem J: 106664. Balanced Binary Search Tree

You have an array with 2^N - 1 elements in it. You want to build the Binary Search Tree on this array, adding elements in order of their appearance array (from left to right). But there is a probability that the tree would be imbalanced. That's why you decided to shuffle your array to obtain **perfec balanced** Binary Search Tree (i.e. BST with prefect binary tree underneath) after adding elements (from left to right, again). Your task is to print yo array after appropriate shuffle. If there are several possible shuffles, print the array after applying any of them.

Note, that you are not asked for building Binary Search Tree, but only for shuffling array.

Input format

The first line of input consists of single integer N that describes the length of the array ($1 \leqslant N \leqslant 15$).

The next line contains 2^N - 1 integers a_i - elements of the array ($0 \leqslant a_i \leqslant 2 \cdot 10^9$).

It is guaranteed that there are no duplicates in the array.

Output format

Print 2^N - 1 integers - elements in your array after applying required shuffle.

Examples

Input

```
2
3 5 1
```

Output

```
3 5 1
```

Input

```
2
1 3 5
```

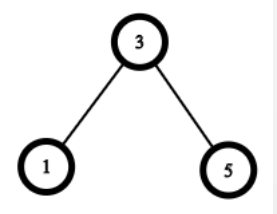
Output

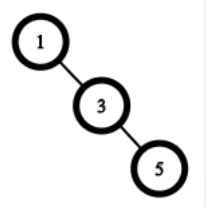
```
3 1 5
```

Notes

In the first sample given array can be used for building balanced BST (left picture).

In the second sample given array gives such chain tree (right picture), so it must be shuffled.





Note, that for both samples [3, 5, 1] and [3, 1, 5] are correct answers

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Hint: Use divide and conquer method (recall advanced sorting algorithms) and implement recursive function to solve this problem

Submit a solution

Language: g++ - GNU C++ 11.4.0

File Choose File No file chosen

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Previous submissions of this problem

Run ID	Time	Size	Problem	Language	Result	Failed test	View source	View report
1897	1006:59:27	2169	J	g++	OK	N/A	View	View

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