



The Penguin and BST preorder traversals

locked

Problem

Submissions

Leaderboard

Discussions

Bob the penguin has been recently interested in binary search trees, but he has just found out how to draw a binary search tree and write down its preorder traversal in a separate paper, but he lost his drawings and all he has now is the preorder traversal of these trees. Can you help him reconstruct the tree?

Your task will be to reconstruct the tree then print the BFS traversal of it.

Input Format

- The first line contains N where N is the number of nodes
- The second line contains N integers separated by spaces that represent the preorder traversal

Constraints

- $1 \leq N \leq 1000000$
- $0 \leq \text{preorder}[i] < N$

Output Format

- One line with N spaces separated elements representing the BFS traversal of the constructed tree

Sample Input 0

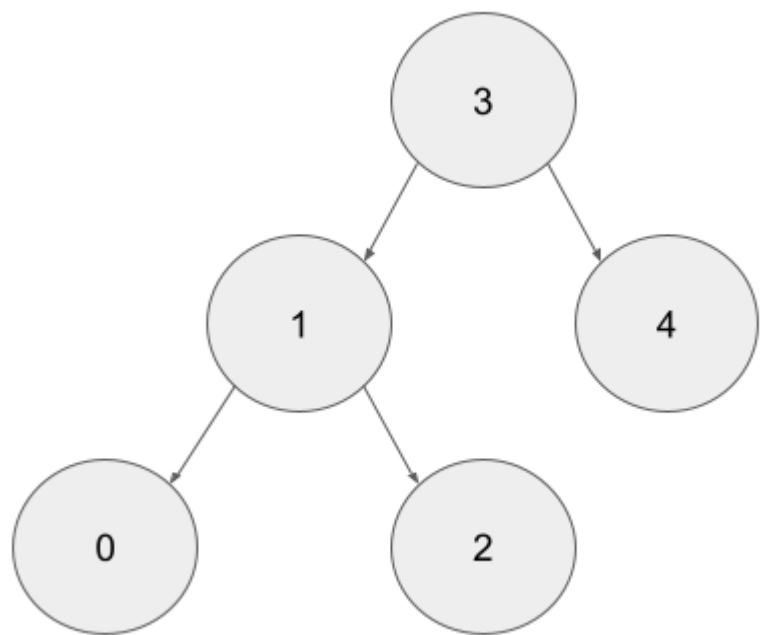
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5
3 1 0 2 4
```

Sample Output 0

3 1 4 0 2

Explanation 0

Given 3 1 0 2 4 as the preorder, we know that the preorder traversal starts with the node its right subtree so 3 here should be the root and all values smaller than it will be generated be in the left and 4 is in the right. The final generated tree is as follows



When we do BFS on it (print it level by level) the output will be 3 1 4 0 2