2764. Is Array a Preorder of Some Binary Tree Premium

Medium | Topics | Hint

Given a **0-indexed** integer **2D array** `nodes`, your task is to determine if the given array represents the **preorder** traversal of some **binary** tree.

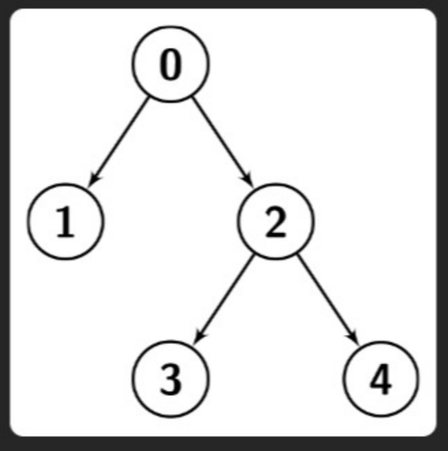
For each index `i`, `nodes[i] = [id, parentId]`, where `id` is the id of the node at the index `i` and `parentId` is the id of its parent in the tree (if the node has no parent, then `parentId == -1`).

Return `true` *if the given array represents the preorder traversal of some tree, and* `false` *otherwise.*

Note: the **preorder** traversal of a tree is a recursive way to traverse a tree in which we first visit the current node, then we do the preorder traversal for the left child, and finally, we do it for the right child.

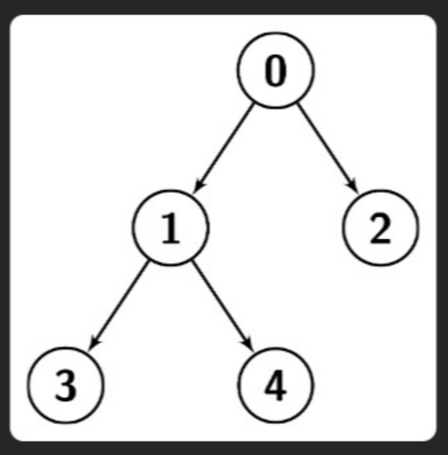
Example 1:

> **Input:** nodes = [[0,-1],[1,0],[2,0],[3,2],[4,2]]
> **Output:** true
> **Explanation:** The given nodes make the tree in the picture below.
> We can show that this is the preorder traversal of the tree, first we visit node 0, then we do the preorder traversal of the right child which is [1], then we do the preorder traversal of the left child which is [2,3,4].



Example 2:

> **Input:** nodes = [[0,-1],[1,0],[2,0],[3,1],[4,1]]
> **Output:** false
> **Explanation:** The given nodes make the tree in the picture below.
> For the preorder traversal, first we visit node 0, then we do the preorder traversal of the right child which is [1,3,4], but we can see that in the given order, 2 comes between 1 and 3, so, it's not the preorder traversal of the tree.



Constraints:

- `1 <= nodes.length <= 10^5`
- `nodes[i].length == 2`
- `0 <= nodes[i][0] <= 10^5`
- `-1 <= nodes[i][1] <= 10^5`
- The input is generated such that `nodes` make a binary tree.

Seen this question in a real interview before? 1/5

Yes No

Accepted 1.2K | Submissions 1.9K | Acceptance Rate 65.9%

Topics

Stack Tree Depth-First Search Binary Tree

Hint 1

Think of using the stack data structure.

Hint 2

Put the first node in the stack.

Hint 3

Iterate over the array and check if the node at the top of the stack is its parent; if it's not, then pop the last element of the stack and check until you reach the parent of the current node in the array.

Hint 4

If the stack gets empty at any point, then the array is not the preorder.

Discussion (3)