310. Minimum Height Trees

Description

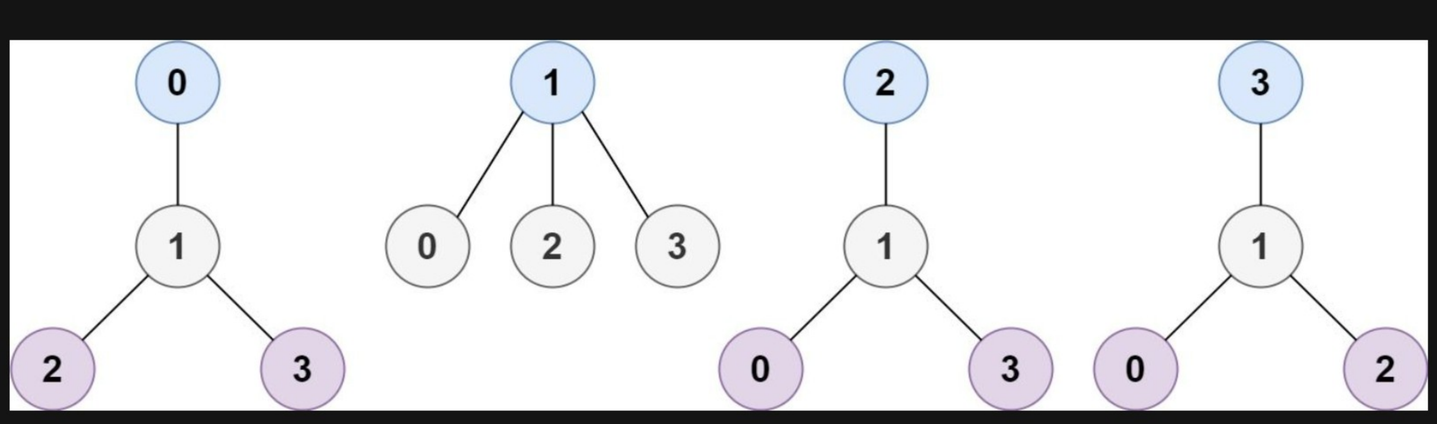
A tree is an undirected graph in which any two vertices are connected by *exactly* one path. In other words, any connected graph without simple cycles is a tree.

Given a tree of `n` nodes labelled from `0` to `n - 1`, and an array of `n - 1` `edges` where `edges[i] = [a_i, b_i]` indicates that there is an undirected edge between the two nodes `a_i` and `b_i` in the tree, you can choose any node of the tree as the root. When you select a node `x` as the root, the result tree has height `h`. Among all possible rooted trees, those with minimum height (i.e. `min(h)`) are called **minimum height trees** (MHTs).

Return *a list of all **MHTs'** root labels*. You can return the answer in **any order**.

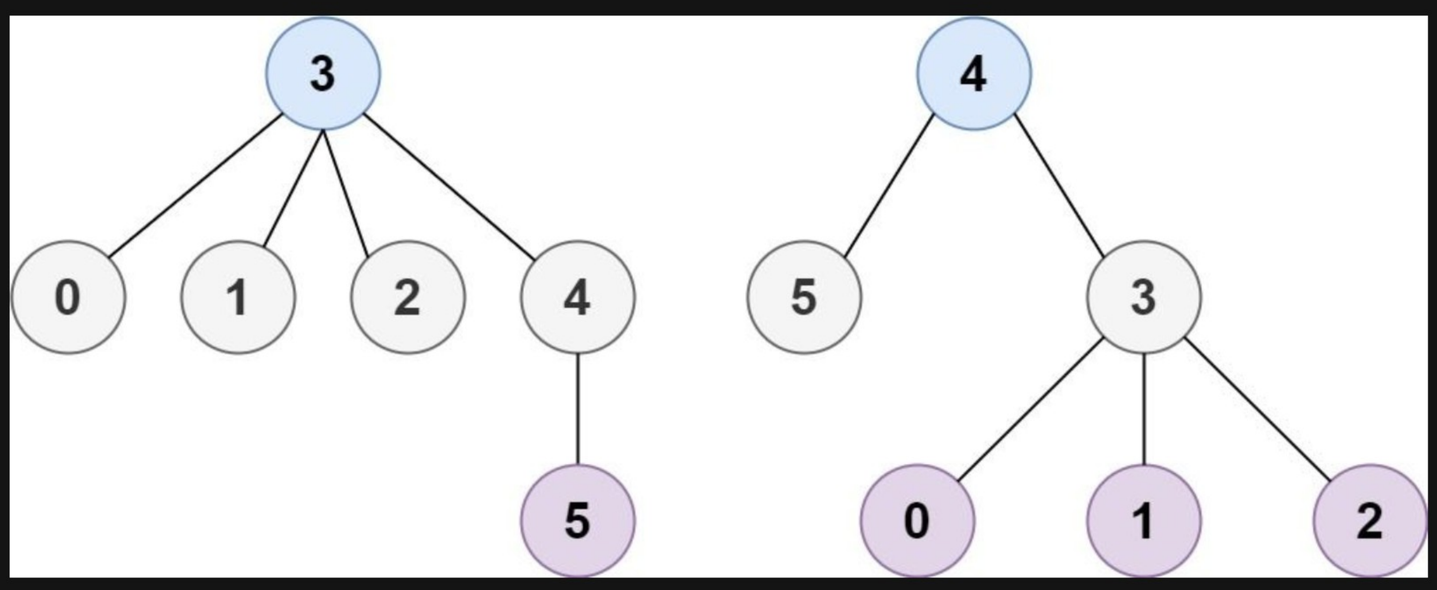
The **height** of a rooted tree is the number of edges on the longest downward path between the root and a leaf.

Example 1:




```
Input: n = 4, edges = [[1,0],[1,2],[1,3]]
Output: [1]
Explanation: As shown, the height of the tree is 1 when the root is the node with label 1 which is the only MHT.
```

Example 2:




```
Input: n = 6, edges = [[3,0],[3,1],[3,2],[3,4],[5,4]]
Output: [3,4]
```

Constraints:

- `1 <= n <= 2 * 10^4`
- `edges.length == n - 1`
- `0 <= a_i, b_i < n`
- `a_i != b_i`
- All the pairs `(a_i, b_i)` are distinct.
- The given input is **guaranteed** to be a tree and there will be **no repeated** edges.