2479. Maximum XOR of Two Non-Overlapping Subtrees

Description

There is an undirected tree with `n` nodes labeled from `0` to `n - 1`. You are given the integer `n` and a 2D integer array `edges` of length `n - 1`, where $edges[i] = [a_i, b_i]$ indicates that there is an edge between nodes a_i and b_i in the tree. The root of the tree is the node labeled `0`.

Each node has an associated **value**. You are given an array `values` of length `n`, where `values[i]` is the **value** of the i^{th} node.

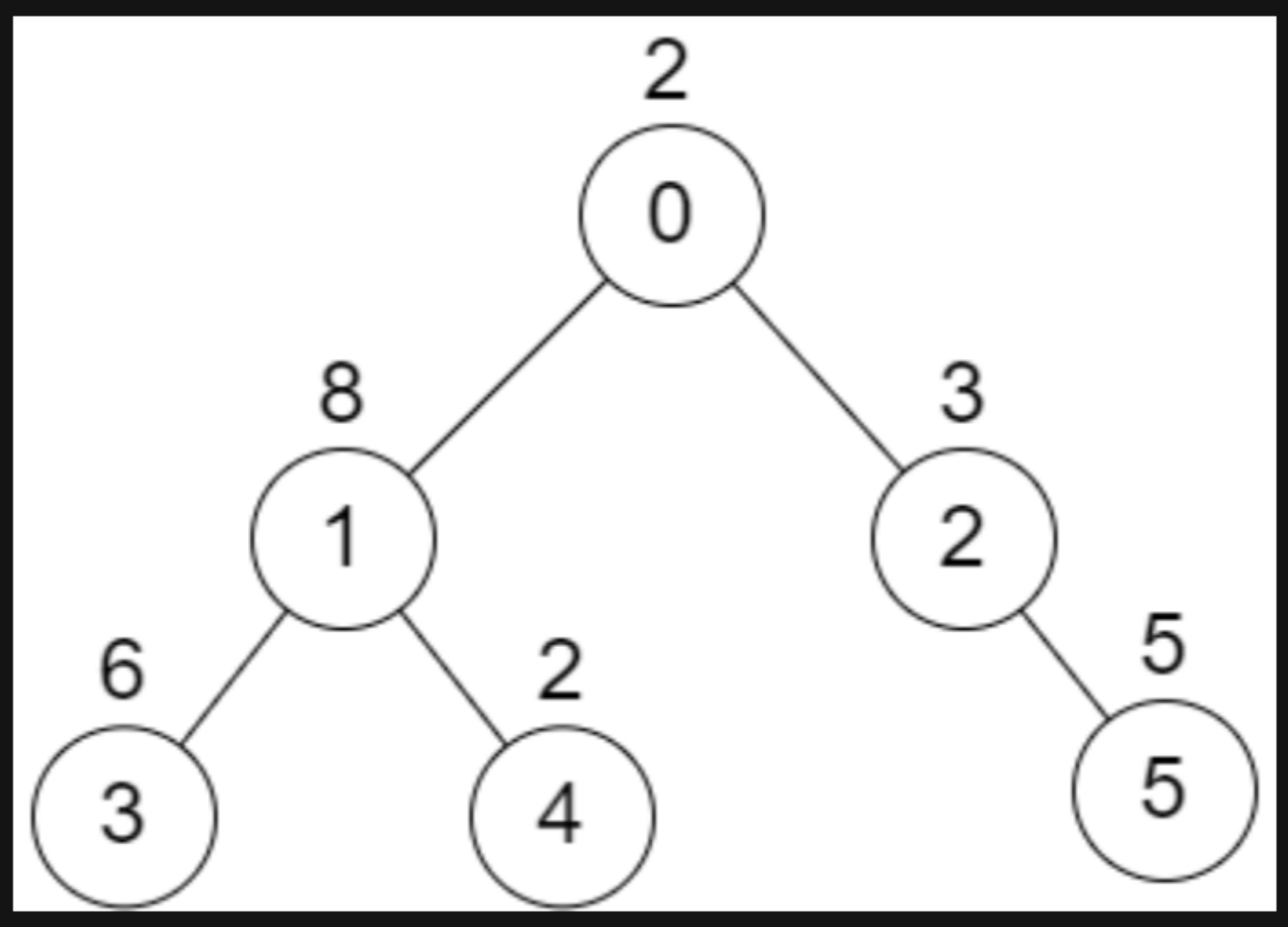
Select any two **non-overlapping** subtrees. Your **score** is the bitwise XOR of the sum of the values within those subtrees.

Return *the **maximum** possible **score** you can achieve*. *If it is impossible to find two nonoverlapping subtrees*, return `0`.

Note that:

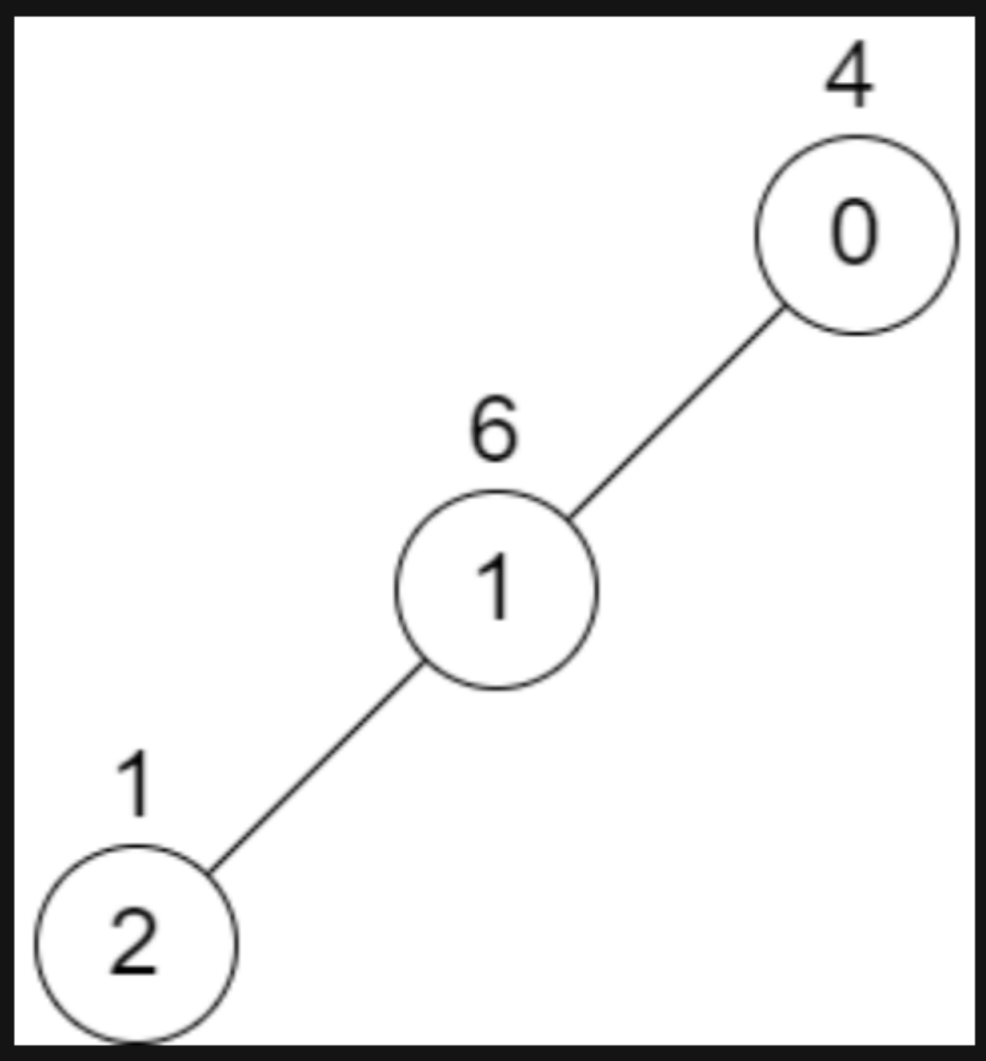
- The **subtree** of a node is the tree consisting of that node and all of its descendants.
- Two subtrees are **non-overlapping** if they do not share **any common** node.

Example 1:



```
Input: n = 6, edges = [[0,1],[0,2],[1,3],[1,4],[2,5]], values = [2,8,3,6,2,5]
Output: 24
Explanation: Node 1's subtree has sum of values 16, while node 2's subtree has sum of values 8, so choosing these nodes will yield a score of 16 XOR 8 = 24. It can be proved that is the maximum possible score we can obtain.
```

Example 2:



```
Input: n = 3, edges = [[0,1],[1,2]], values = [4,6,1]
Output: 0
Explanation: There is no possible way to select two non-overlapping subtrees, so we just return 0.
```

Constraints:

- $2 <= n <= 5 * 10^4$
- `edges.length == n - 1`
- $0 <= a_i, b_i < n$
- `values.length == n`
- $1 <= values[i] <= 10^9$
- It is guaranteed that `edges` represents a valid tree.