1609. Even Odd Tree

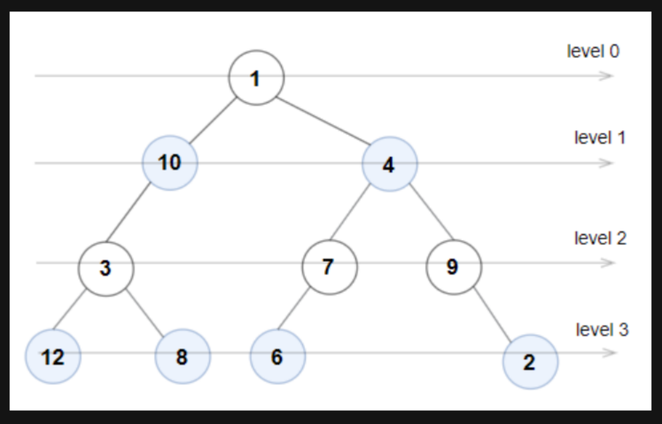
Description

A binary tree is named **Even-Odd** if it meets the following conditions:

- The root of the binary tree is at level index `0`, its children are at level index `1`, their children are at level index `2`, etc.
- For every **even-indexed** level, all nodes at the level have **odd** integer values in **strictly increasing** order (from left to right).
- For every **odd-indexed** level, all nodes at the level have **even** integer values in **strictly decreasing** order (from left to right).

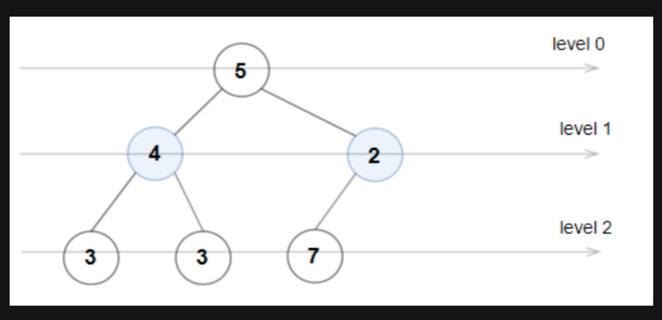
Given the `root` of a binary tree, *return* `true` *if the binary tree is* ***Even-Odd****, otherwise return* `false`.

Example 1:



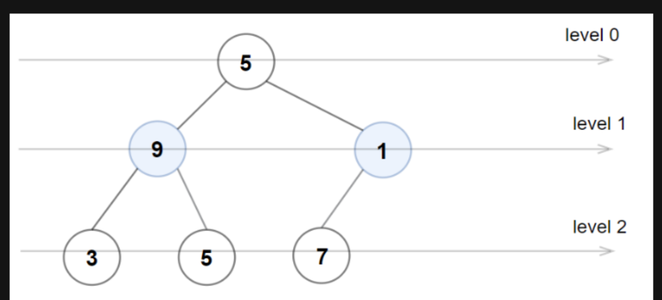

```
Input: root = [1,10,4,3,null,7,9,12,8,6,null,null,2]
Output: true
Explanation: The node values on each level are:
Level 0: [1]
Level 1: [10,4]
Level 2: [3,7,9]
Level 3: [12,8,6,2]
Since levels 0 and 2 are all odd and increasing and levels 1 and 3 are all even and decreasing, the tree is Even-Odd.
```

Example 2:




```
Input: root = [5,4,2,3,3,7]
Output: false
Explanation: The node values on each level are:
Level 0: [5]
Level 1: [4,2]
Level 2: [3,3,7]
Node values in level 2 must be in strictly increasing order, so the tree is not Even-Odd.
```

Example 3:




```
Input: root = [5,9,1,3,5,7]
Output: false
Explanation: Node values in the level 1 should be even integers.
```

Constraints:

- The number of nodes in the tree is in the range `[1, 10^5]`.
- `1 <= Node.val <= 10^6`