3105. Minimum Edge Reversals So Every Node Is Reachable

Difficulty : Hard

https://leetcode.com/problems/minimum-edge-reversals-so-every-node-is-reachable

There is a **simple directed graph** with `n` nodes labeled from `0` to `n - 1`. The graph would form a **tree** if its edges were bi-directional.

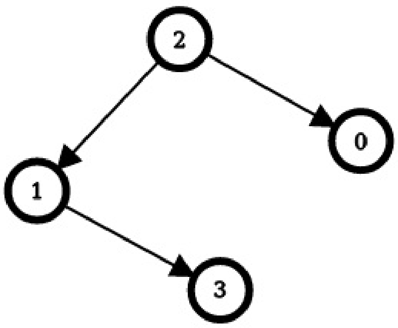
You are given an integer `n` and a **2D** integer array `edges`, where `edges[i] = [`u_i`, `v_i`]` represents a **directed edge** going from node u_i to node v_i.

An **edge reversal** changes the direction of an edge, i.e., a directed edge going from node u_i to node v_i becomes a directed edge going from node v_i to node u_i.

For every node `i` in the range `[0, n - 1]`, your task is to **independently** calculate the **minimum** number of **edge reversals** required so it is possible to reach any other node starting from node `i` through a **sequence** of **directed edges**.

Return *an integer array* `answer`, *where* `answer[i]` *is the* ***minimum*** *number of* ***edge reversals*** *required so it is possible to reach any other node starting from node* `i` *through a* ***sequence*** *of* ***directed edges***.

Example 1:

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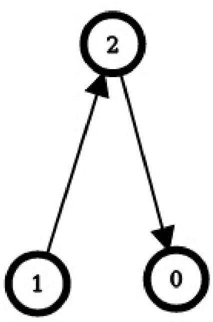
Input: n = 4, edges = [[2,0],[2,1],[1,3]]
Output: [1,1,0,2]
Explanation: The image above shows the graph formed by the edges.
For node 0: after reversing the edge [2,0], it is possible to reach any other node starting from node 0.
So, answer[0] = 1.
For node 1: after reversing the edge [2,1], it is possible to reach any other node starting from node 1.
So, answer[1] = 1.
For node 2: it is already possible to reach any other node starting from node 2.
So, answer[2] = 0.
For node 3: after reversing the edges [1,3] and [2,1], it is possible to reach any other node starting from node 3.
So, answer[3] = 2.
```

Example 2:




```
Input: n = 3, edges = [[1,2],[2,0]]
Output: [2,0,1]
Explanation: The image above shows the graph formed by the edges.
For node 0: after reversing the edges [2,0] and [1,2], it is possible to reach any other node starting from node 0.
So, answer[0] = 2.
```

```
For node 1: it is already possible to reach any other node starting from node 1.
So, answer[1] = 0.
For node 2: after reversing the edge [1, 2], it is possible to reach any other node starting from node 2.
So, answer[2] = 1.
```

Constraints:

- `2 <= n <= 10`^{5}
- `edges.length == n - 1`
- `edges[i].length == 2`
- `0 <=` u_i `== edges[i][0] < n`
- `0 <=` v_i `== edges[i][1] < n`
- u_i `!=` v_i
- The input is generated such that if the edges were bi-directional, the graph would be a tree.