Problem 2876: Count Visited Nodes in a Directed Graph

Problem Information

Difficulty: Hard
Acceptance Rate: 29.86%
Paid Only: No
Tags: Dynamic Programming, Graph, Memoization

Problem Description

There is a **directed** graph consisting of `n` nodes numbered from `0` to `n - 1` and `n` directed edges.

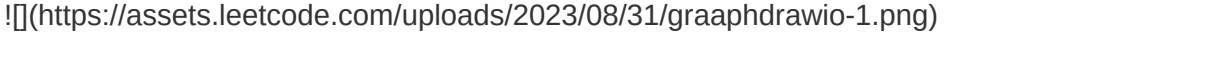
You are given a **0-indexed** array `edges` where `edges[i]` indicates that there is an edge from node `i` to node `edges[i]`.

Consider the following process on the graph:

* You start from a node `x` and keep visiting other nodes through edges until you reach a node that you have already visited before on this **same** process.

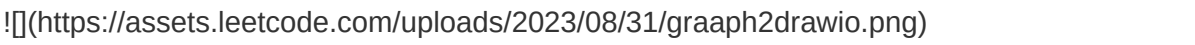
Return _an array_`answer` _where_`answer[i]`_is the number of**different** nodes that you will visit if you perform the process starting from node _`i`.

Example 1:



Input: edges = [1,2,0,0] **Output:** [3,3,3,4] **Explanation:** We perform the process starting from each node in the following way: - Starting from node 0, we visit the nodes 0 -> 1 -> 2 -> 0. The number of different nodes we visit is 3. - Starting from node 1, we visit the nodes 1 -> 2 -> 0 -> 1. The number of different nodes we visit is 3. - Starting from node 2, we visit the nodes 2 -> 0 -> 1 -> 2. The number of different nodes we visit is 3. - Starting from node 3, we visit the nodes 3 -> 0 -> 1 -> 2 -> 0. The number of different nodes we visit is 4.

Example 2:



Input: edges = [1,2,3,4,0] **Output:** [5,5,5,5,5] **Explanation:** Starting from any node we can visit every node in the graph in the process.

Constraints:

* `n == edges.length` * `2 <= n <= 105` * `0 <= edges[i] <= n - 1` * `edges[i] != i`

Code Snippets

C++:

```
class Solution {
public:
vector<int> countVisitedNodes(vector<int>& edges) {

}
};
```

Java:

```
class Solution {
public int[] countVisitedNodes(List<Integer> edges) {

}
}
```

Python3:

```
class Solution:
def countVisitedNodes(self, edges: List[int]) -> List[int]:
```