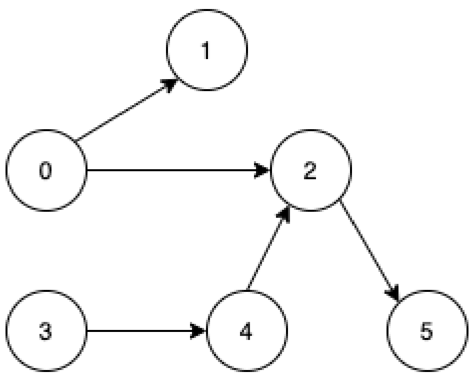
Minimum Number of Vertices to Reach All Nodes

Given a **directed acyclic graph**, with n vertices numbered from 0 to n-1, and an array edges where edges[i] = [$from_i$, to_i] represents a directed edge from node $from_i$ to node to_i.

Find *the smallest set of vertices from which all nodes in the graph are reachable*. It's guaranteed that a unique solution exists.

Notice that you can return the vertices in any order.

Example 1:

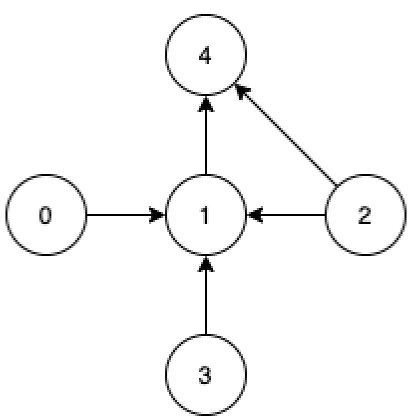


Input: n = 6, edges = [[0,1],[0,2],[2,5],[3,4],[4,2]]

Output: [0,3]

Explanation: It's not possible to reach all the nodes from a single vertex. From 0 we can reach [0,1,2,5]. From 3 we can reach [3,4,2,5]. So we output [0,3].

Example 2:



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

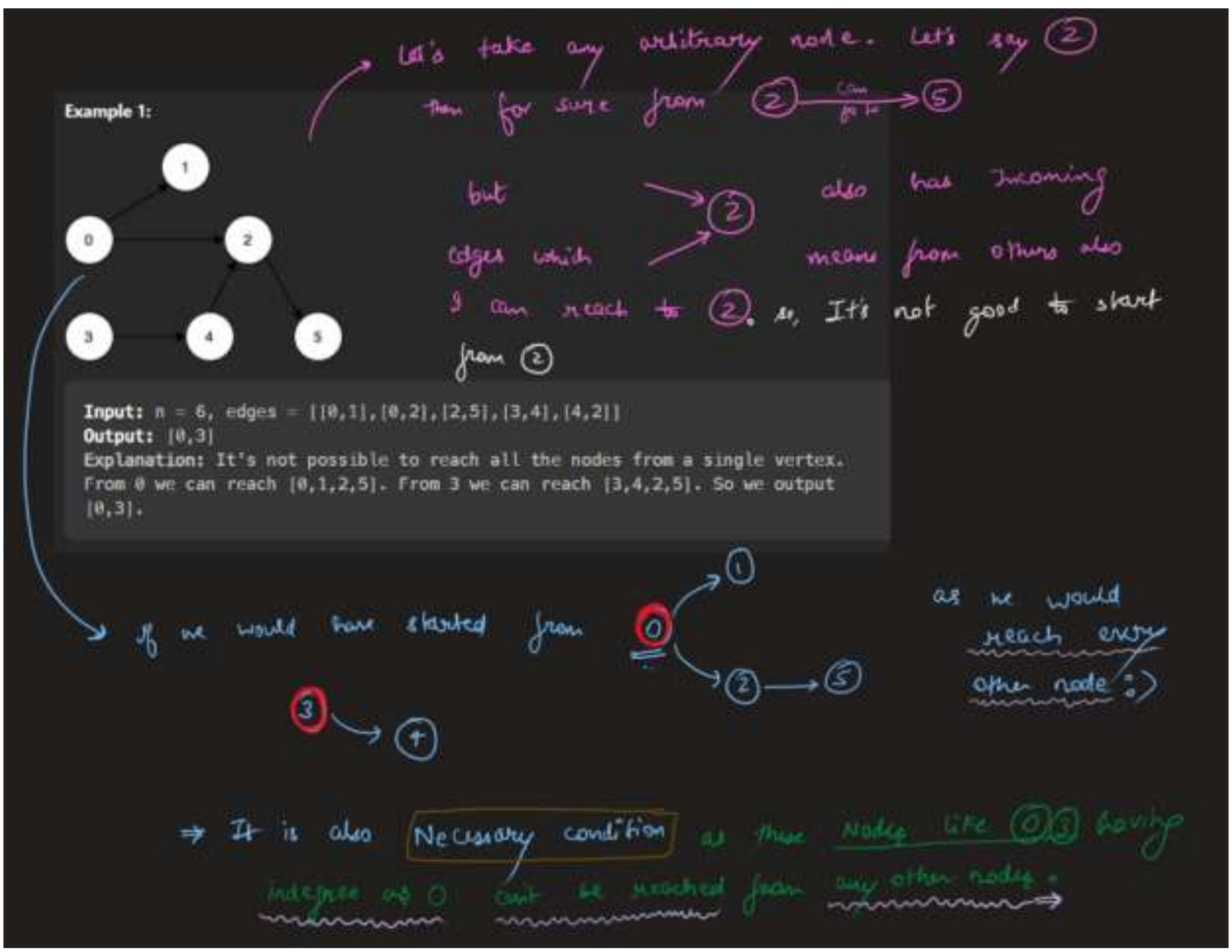
Output: [0,2,3]

Explanation: Notice that vertices 0, 3 and 2 are not reachable from any other node, so we must include them. Also any of these vertices can reach nodes 1 and 4.

Constraints:

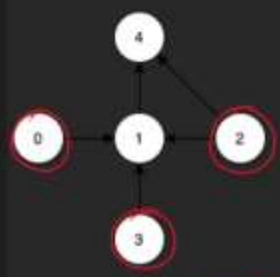
- 2 <= n <= 10^5
- 1 <= edges.length <= min(10^5, n * (n - 1) / 2)
- edges[i].length == 2
- 0 <= $from_i$, to_i < n
- All pairs ($from_i$, to_i) are distinct.

Solution Approach:



⇒ Thus, find out all the nodes with Indegree (i.e Incoming edges) as Zero

Example 2:

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time : O(Edges) → As we are going on to every edge in the worst case.

Space : O(N) → Need an array indegree to store indegree of N vertices.