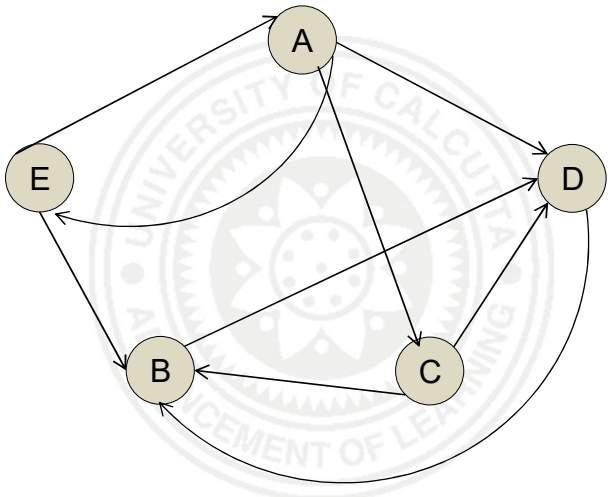
Reaching all nodes of connected Graph

Assignment 01

1

A Directed Graph Topology



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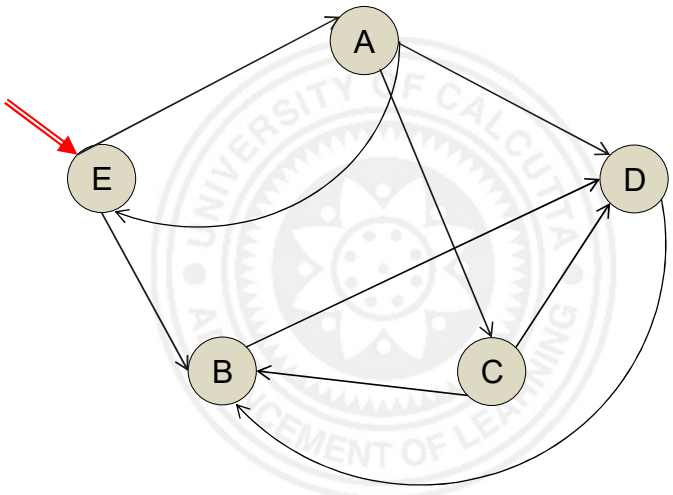
2

A Directed Graph Topology



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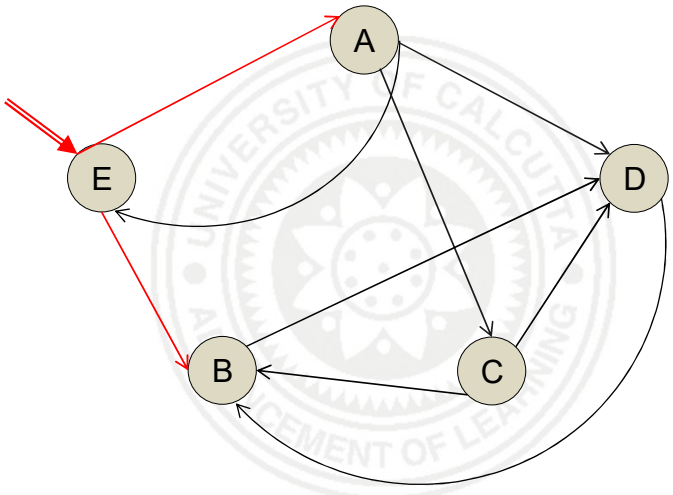
A Directed Graph Topology



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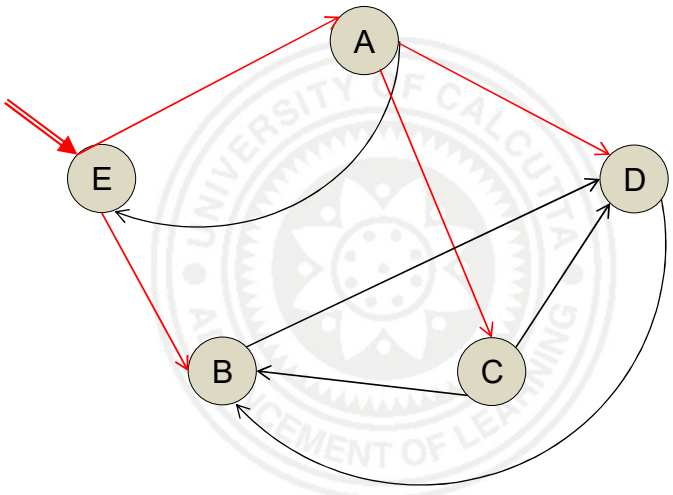
A Directed Graph Topology



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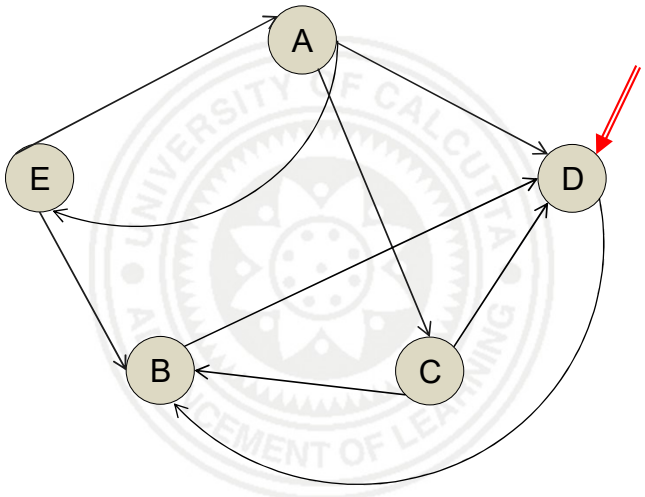
A Directed Graph Topology



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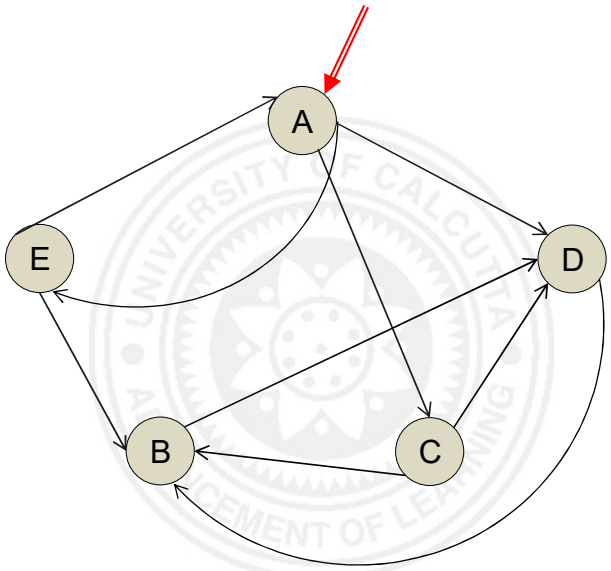
A Directed Graph Topology



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Task 1.1

- Write an algorithm to check if a node, say A, is good to be the first node to traverse to all the nodes in the network.
- Your solution must be a generic program that should work for any directed and connected graph topology.

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Hints

- To start with, store the given directed graph using the Adjacency Matrix.
- Initiate the **NodesCovered** list with {A}
- Add all nodes reachable in 1-hop from A to **NodesCovered** list – count the number
- Add all nodes reachable from the **NodesCovered** list in 1 hop – count the number

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Hints

- Continue the process till one of the following conditions is true
  - No new node can be explored from current **NodesCovered** list
    - Number of covered nodes is less than N
    - A fails as Initiator
  - **NodesCovered** list has all N nodes in it
    - A qualifies as a possible Initiator

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Task 1.2

- Improve your solution to list all the nodes for the given use case, that are good to be initiator nodes for CL algorithm.
- Once again, your solution must be a generic program that should work for any directed and connected graph topology.

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