

Dijkstra's Algorithm - Easy Notes

Step-by-Step Process

1. Start at the source node (v_1) and set its distance to 0.
2. For all directly connected nodes, update their distances from v_1 .
3. Pick the next closest node (v_2) (the one with the smallest cost).
4. Check all neighbors of v_2 :
 - Calculate total cost from v_1 to these nodes.
 - Update the cost if a shorter path is found.
5. Repeat Steps 3-4 until all nodes are processed.
6. The final distances give the shortest path from v_1 to all nodes.

Tricks to Remember

- Always pick the node with the smallest cost first.
- Update distances only if a shorter path is found.
- Keep repeating until all nodes are done.

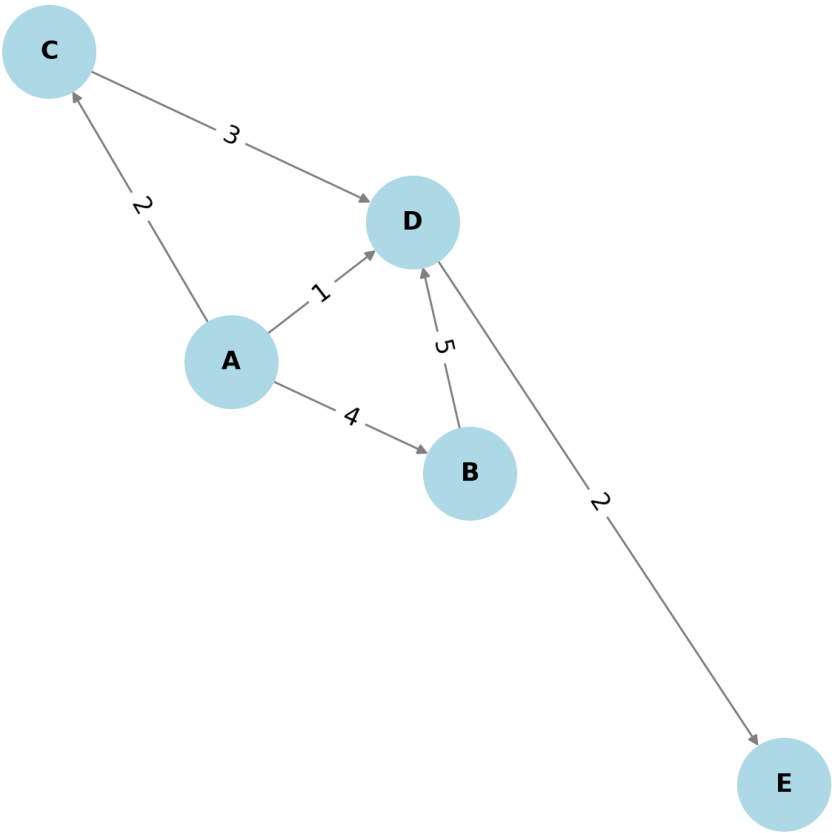
Quick Summary for Exam Notes

1. Start at v_1 (distance = 0).
2. Update directly connected nodes.
3. Pick the next closest node (v_2).
4. Update neighbor distances if a shorter path is found.
5. Repeat until all nodes are processed.
6. The final table gives the shortest paths.

Example Graph Representation (Visualized)

Dijkstra's Algorithm - Graph Visualization

(4)
A ----- B
| \ |
(2) | \ (1) | (5)
| \ |
C ---- D
 \ /
(3) (2)
 \ /
E



Graph Details:

- Vertices (Nodes) = {A, B, C, D, E}
- Edges (Weighted Connections):
 - A -> B (4), A -> C (2), A -> D (1)
 - B -> D (5), C -> D (3), D -> E (2)

Follow these steps, and you will never forget Dijkstra's Algorithm!