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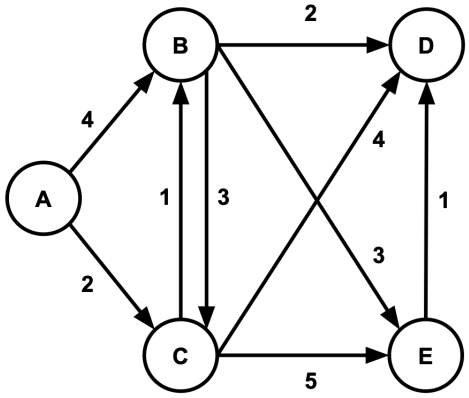
Dijkstra Algorithm

Shortest path from one node to every other node.

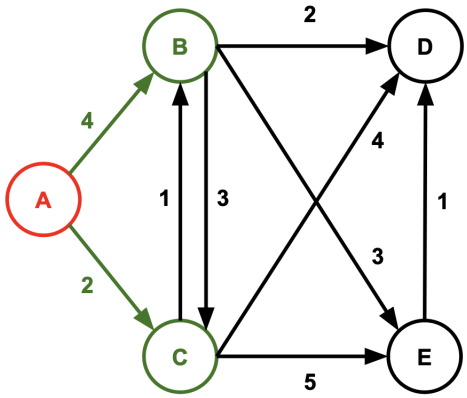
For every step we have to compute the minimal possible distance (the distance expanding by one vertex the selected nodes) from the starting node to every another node.

Step 0: We have a graph with the corresponding values to the edges.



Unvisited Nodes: $\{A, B, C, D, E\}$

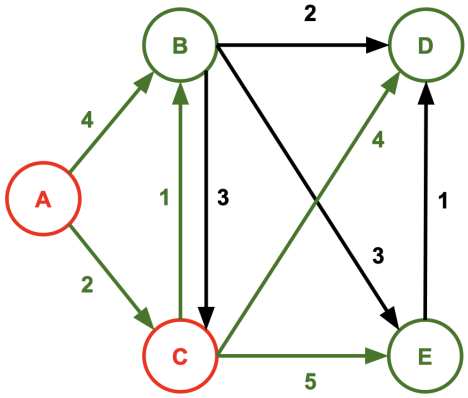
Step 1: Pick the starting node.



Unvisited Nodes: $\{B, C, D, E\}$

$$c_A = 0, c_B = 4, c_C = 2, c_D = \infty, c_E = \infty$$

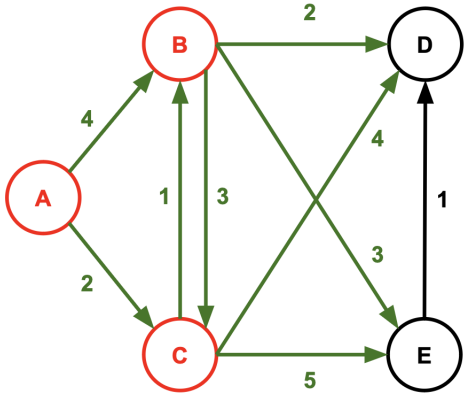
Step 2: Pick the unvisited node with the shortest cost.



Unvisited Nodes: $\{B, D, E\}$

$$c_A = 0, c_B = 3, c_C = 2, c_D = 6, c_E = 7$$

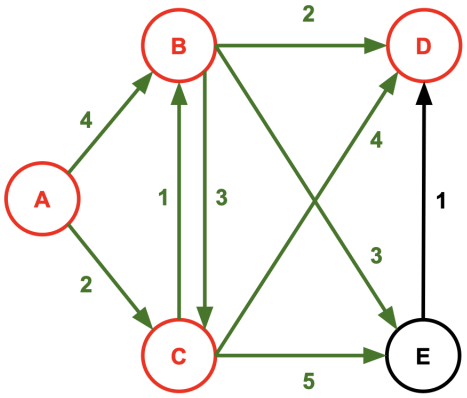
Step 3: Pick the unvisited node with the shortest cost.



Unvisited Nodes: $\{D, E\}$

$$c_A = 0, c_B = 3, c_C = 2, c_D = 5, c_E = 6$$

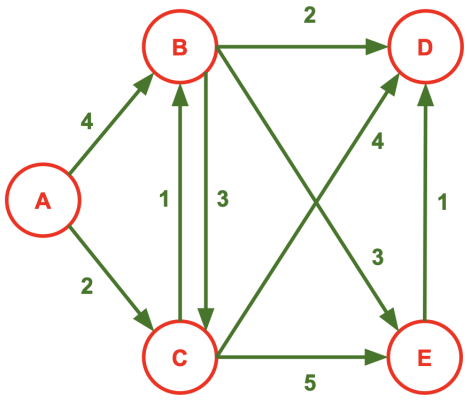
Step 4: Pick the unvisited node with the shortest cost.



Unvisited Nodes: $\{E\}$

$$c_A = 0, c_B = 3, c_C = 2, c_D = 5, c_E = 6$$

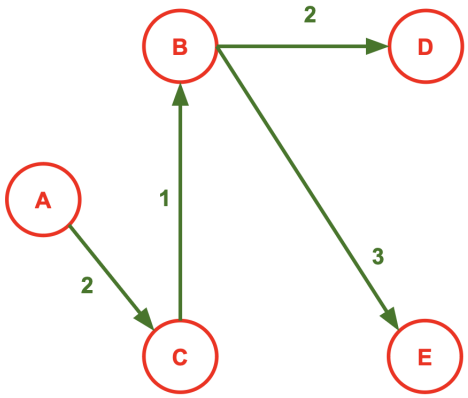
Step 5: Pick the unvisited node with the shortest cost.



Unvisited Nodes: {}

$$c_A = 0, c_B = 3, c_C = 2, c_D = 5, c_E = 6$$

Step 6: We finally have the shortest path to every node.



Unvisited Nodes: {}

$$c_A = 0, c_B = 3, c_C = 2, c_D = 5, c_E = 6$$
