Aim

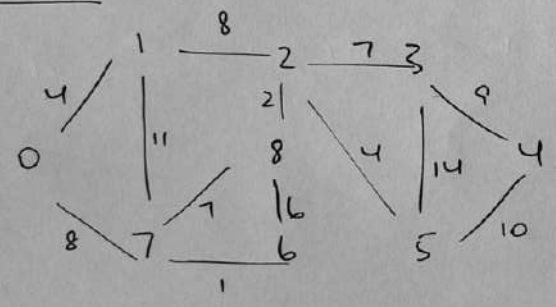
To implement Prims and Kruskal's algorithm

Algorithm

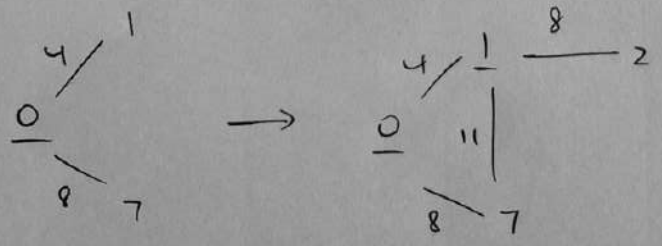
Prims Algorithm:

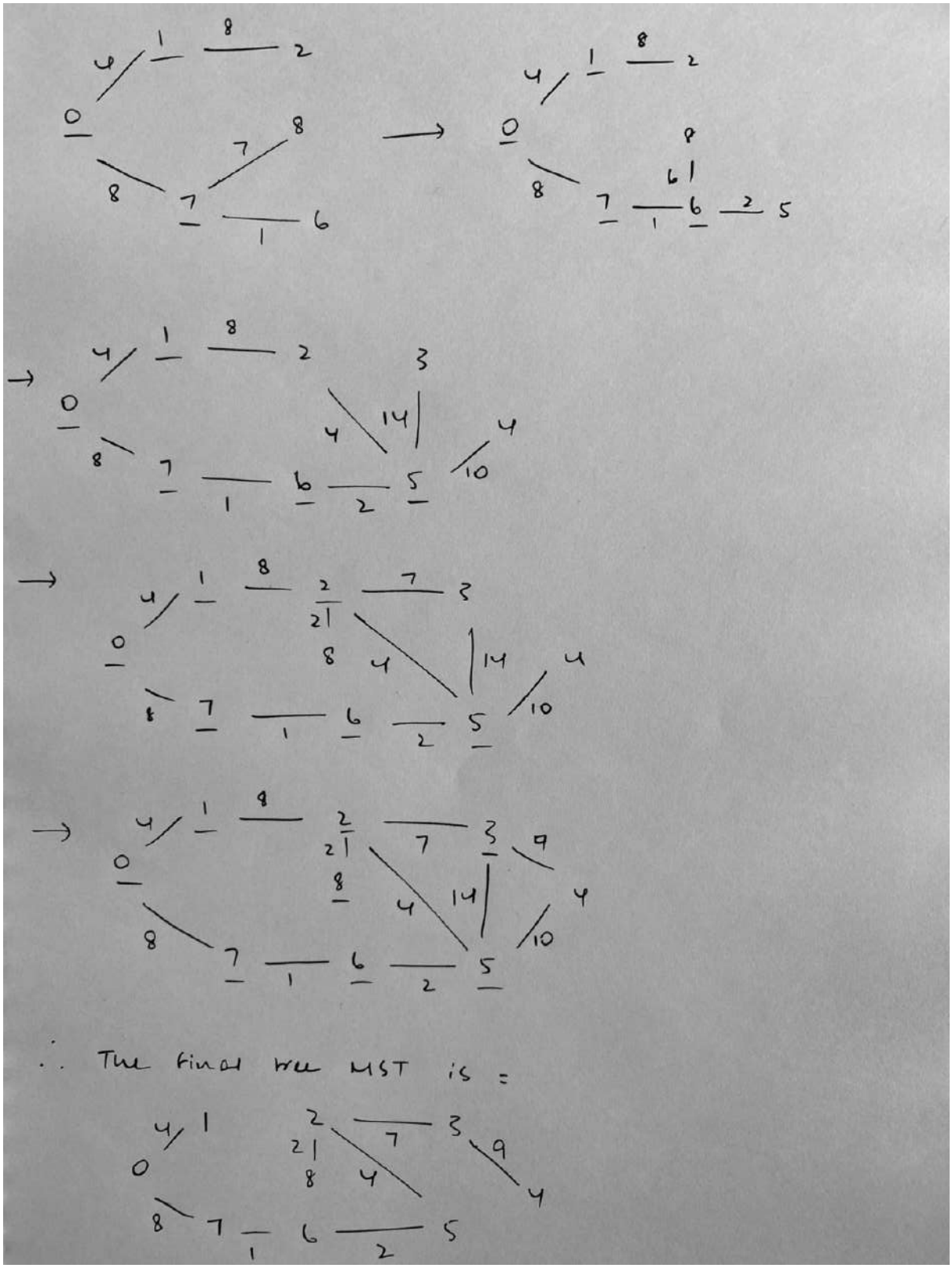
Start with any node
Get the adjacent nodes
Traverse to the minimum weighted one if the node has not been traversed already
Repeat the steps with all the new front nodes

Example:



starting at 0 : underlined = traversed

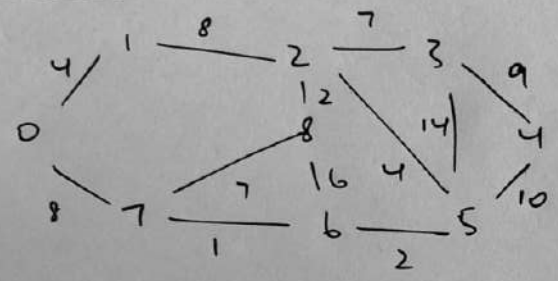


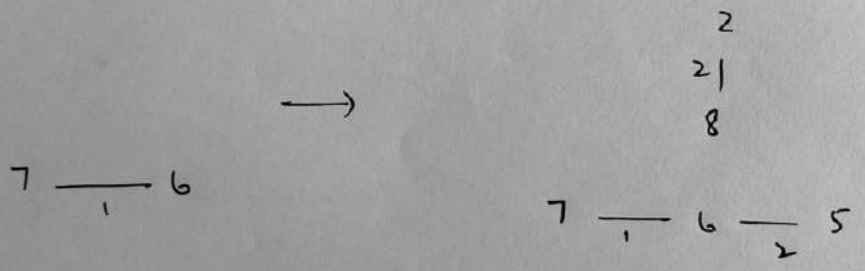

∴ The final MST is =

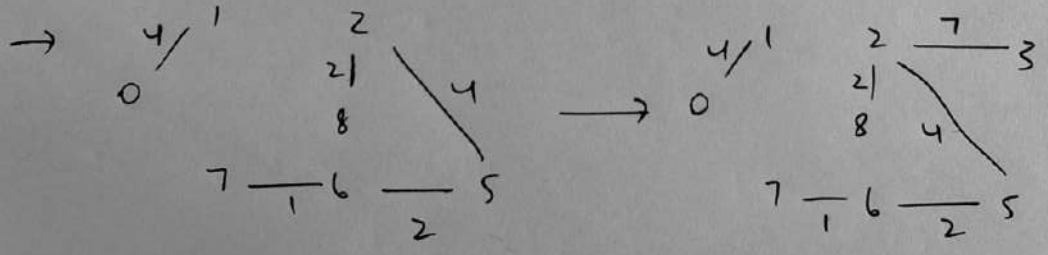
Kruskals Algorithm:

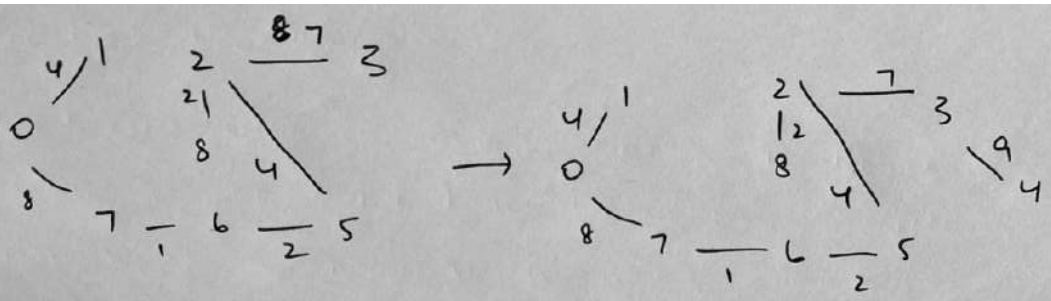
Find edge with minimum weight and add it
If the newly added nodes form a cycle,
remove it and move to next minimum
Repeat these steps till all nodes are added

Example:









Since all nodes are added, the MST has been formed

Result:

The above algorithms work to find a minimum spanning tree from any graph given.

Aim

TO implement Dijkstras Algorithm

Algorithm

choose a starting point to find the shortest paths from, weight = 0

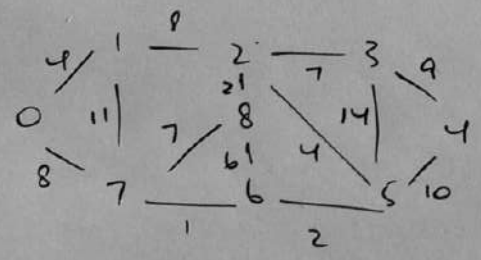
Go to the next node with least weight

If the node has not been visited

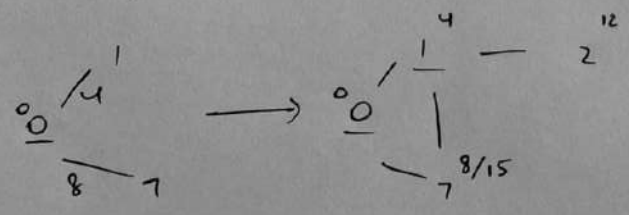
Add the weight of the parent node to the child.

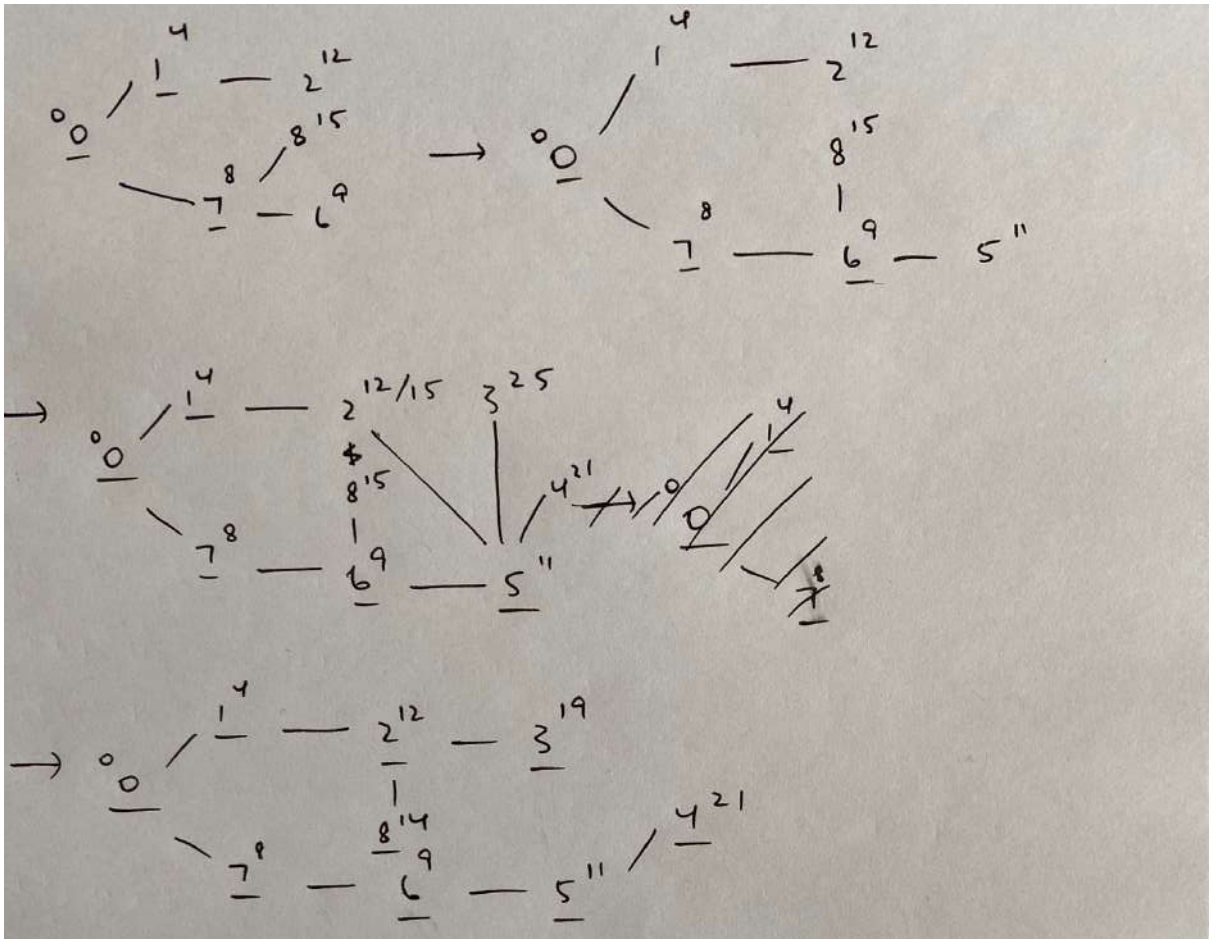
Do this until all nodes are included.

Example:



→ Starting at 0





The final paths from 0 to x weigh:

$0 \to 1 : 4$

$0 \to 2 : 12$

$0 \to 3 : 19$

$0 \to 4 : 21$

$0 \to 5 : 11$

$0 \to 6 : 9$

$0 \to 7 : 8$

$0 \to 8 : 14$