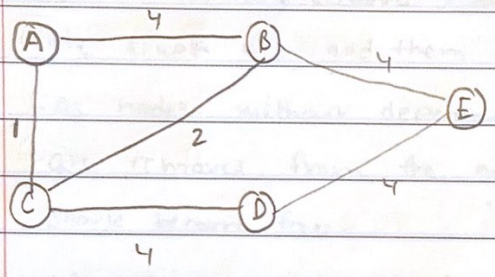
Prim's Algorithm – Minimum Spanning Tree #9

MST - is a subset of the edges of a connected, edge-weighted undirected graph that connects all the vertices together, without any cycles and with the minimum possible total edge weight.



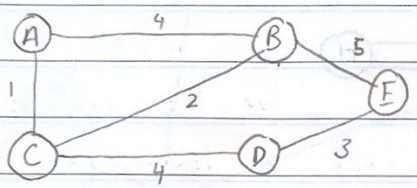
So basically with MST, you will go to the next node, that has the smallest weight until you set to all of the nodes.

Time Complexity

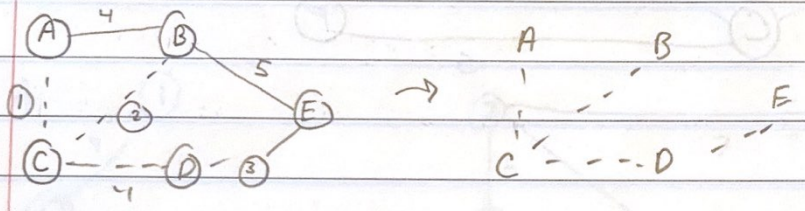
$O(V^2)$, for adjecency matix

$O(V \log V + E \log V)$ for adjecency list

Kruskal's Algorithm #10



1) Find the minimum edge of all
2) Check if the edge create cycle
3) if not, include in the MST
4) repeat til there are V-1 edges



Approach to Implement Algorithm

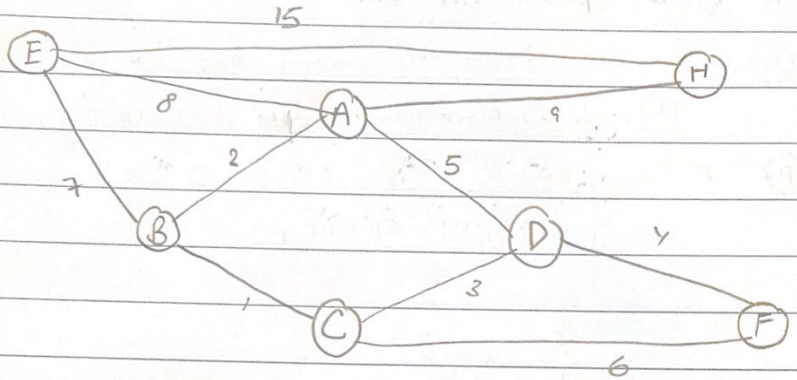
1) priority Queue
2) Union-find

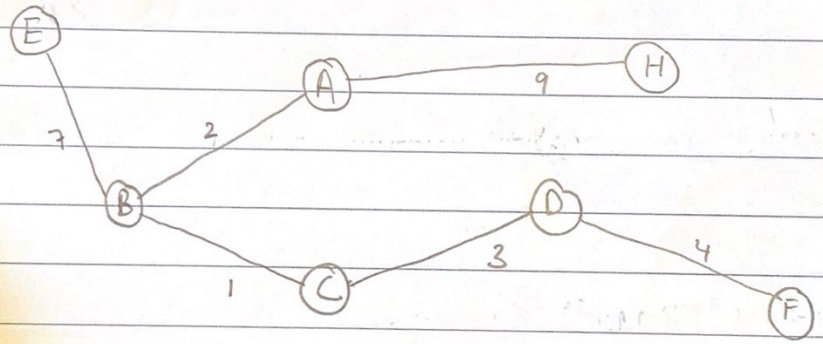
Time complexity

O(E log E)

Kruskals / Prims Problem Solving Practice

#1)



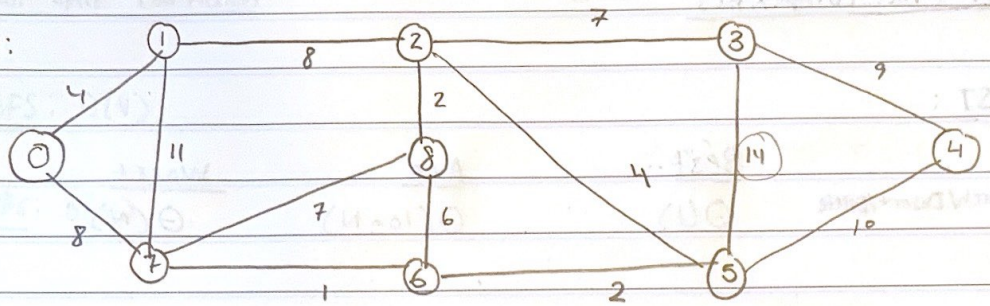


total weight: 28

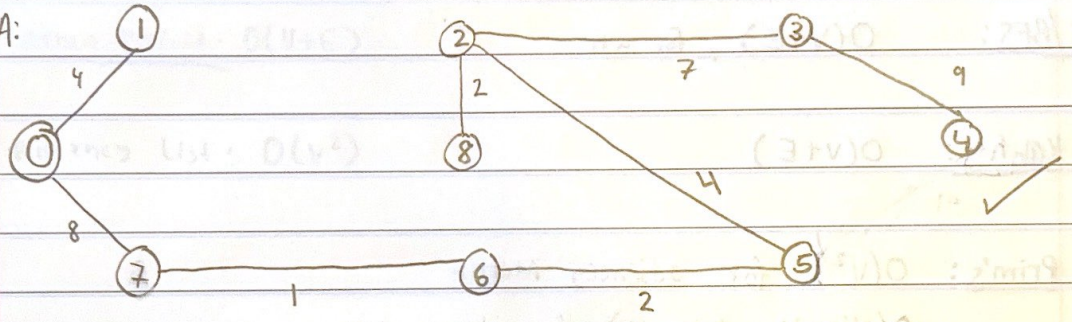
Notes:

1) No cycles
2) Heaviest edge must be excluded
3) Count(E) = Nodes - 1
4) There is NO other possible solutions!

#2) Q:



A:



Things to remember: 1) Can't have a cycle

2) Can't have largest weight edge

When doing kruskals/prims remember that they are both same when solving using the graph, But when coding are different!