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Dynamic Programming - Part XII

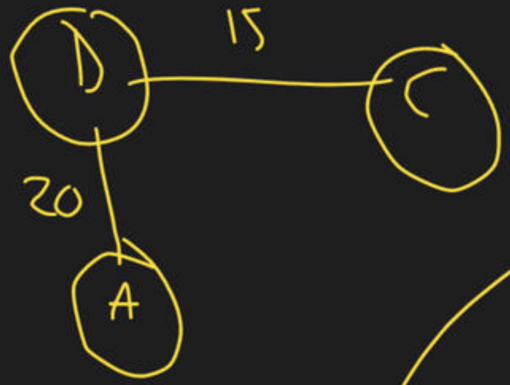
Complete Course on Algorithms - GATE

Subbarao Lingamgunta • Lesson 49 • May 16, 2023

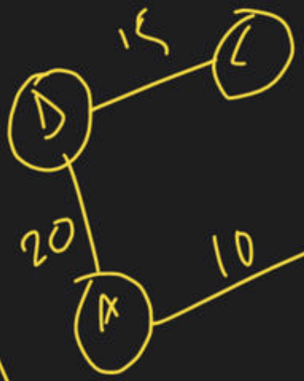
Prims

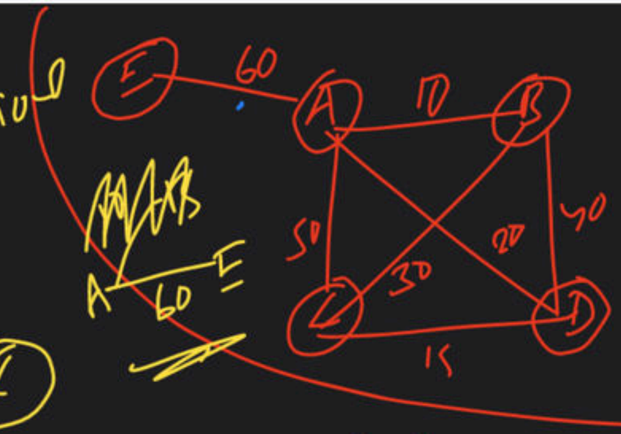
① Take any-vertex & find adjacent of that vertex and take min from them

② Find adj of new vertex & take min all



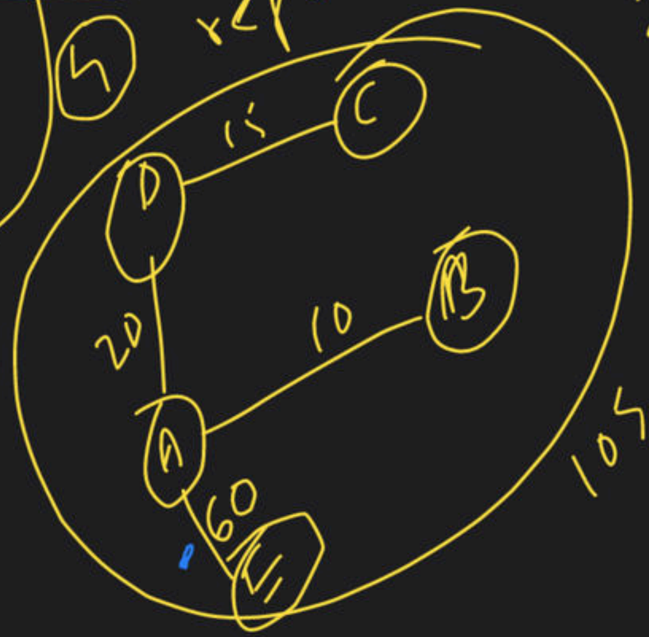
③ repeate previous step



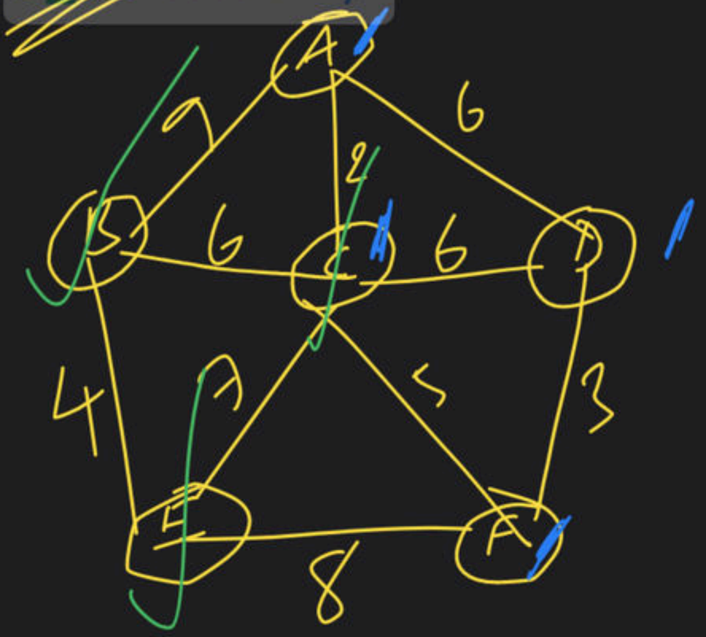


G(V, E)

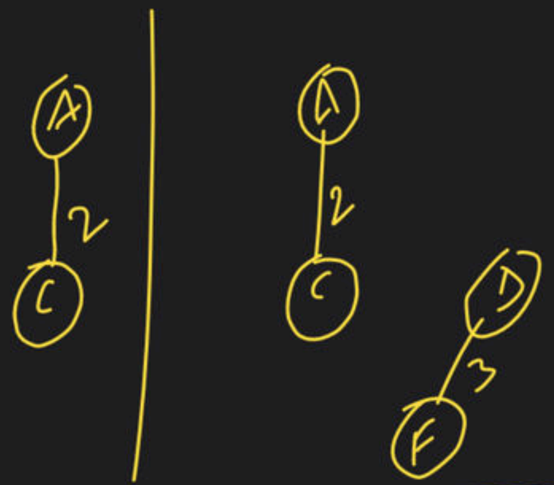
④ repeate previous step

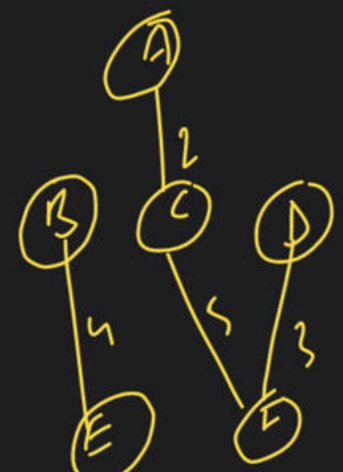


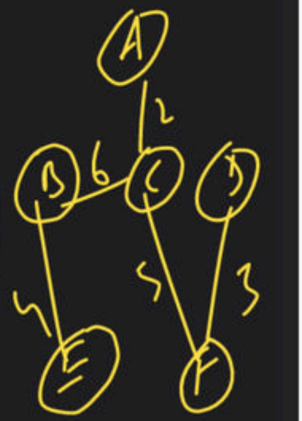
ex



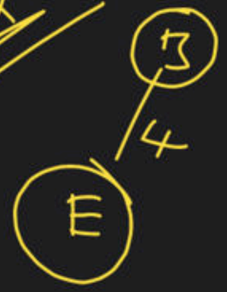
Kruskal

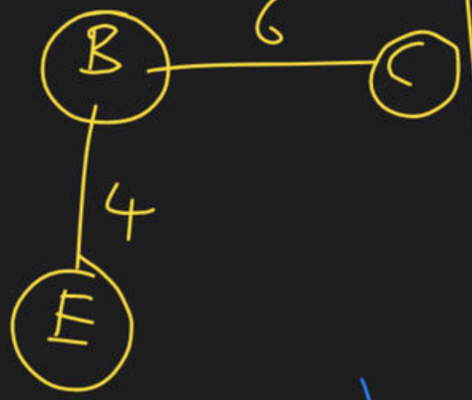


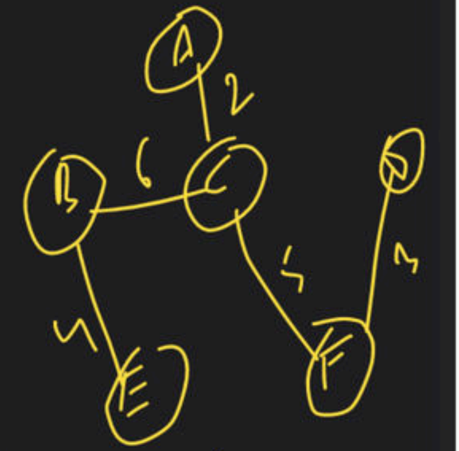




prim







(C,A) (C,F) (F,D) (C,B) (B,E)

Kruskal

Sequence of edges

(A, C) (D, F) (B, E) (C, E) (B, C)
2 3 4 5 6

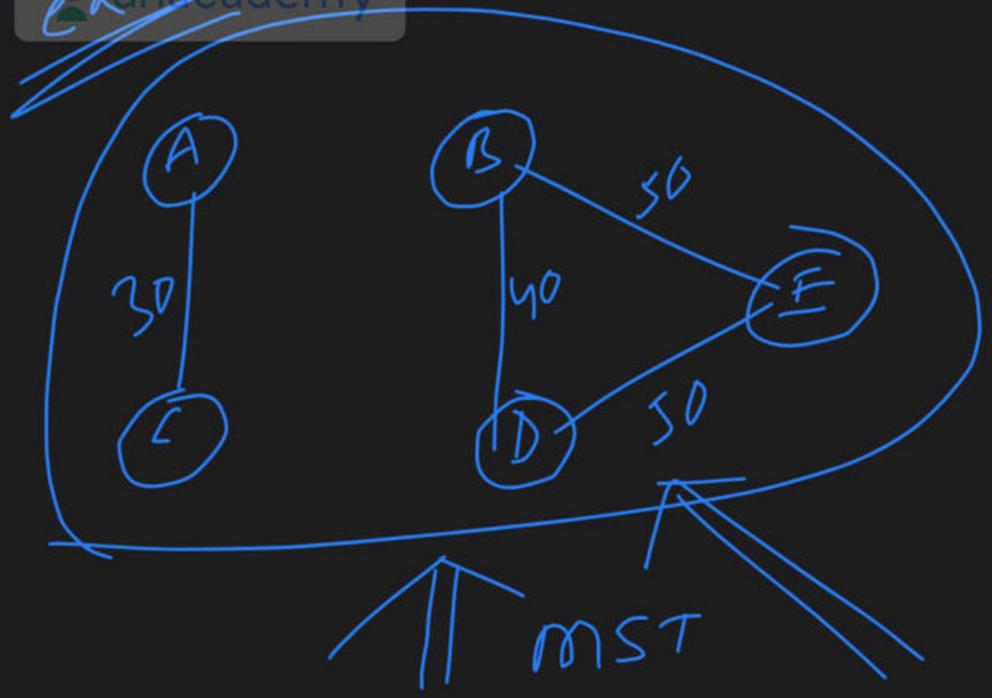
Prim's – edge sequence

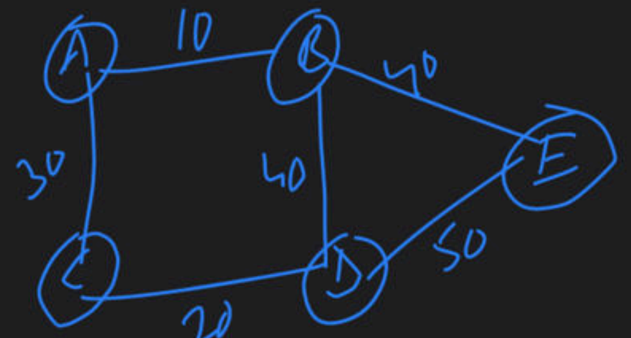
(a) (E, B) (B, C) (C, A) (C, F) (F, D) ⟹ Adj ✓ min ✓

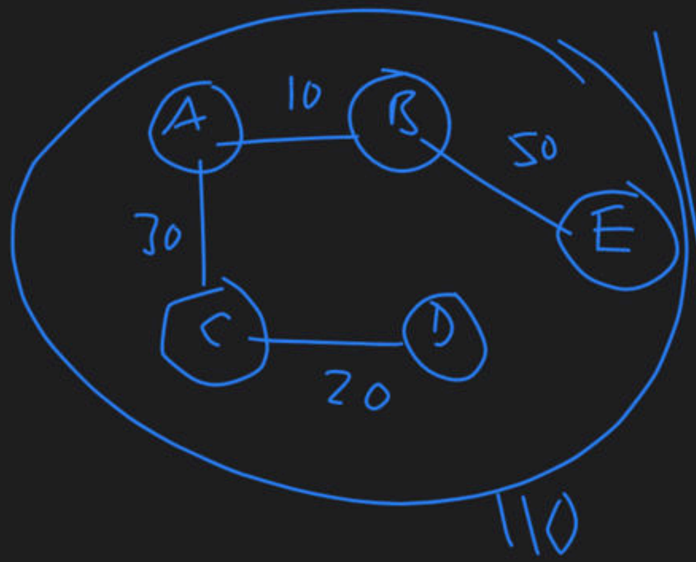
(b) (E, B) (B, C) (C, F) (F, D) (C, A) ⟹ Adj ✗ min ✗

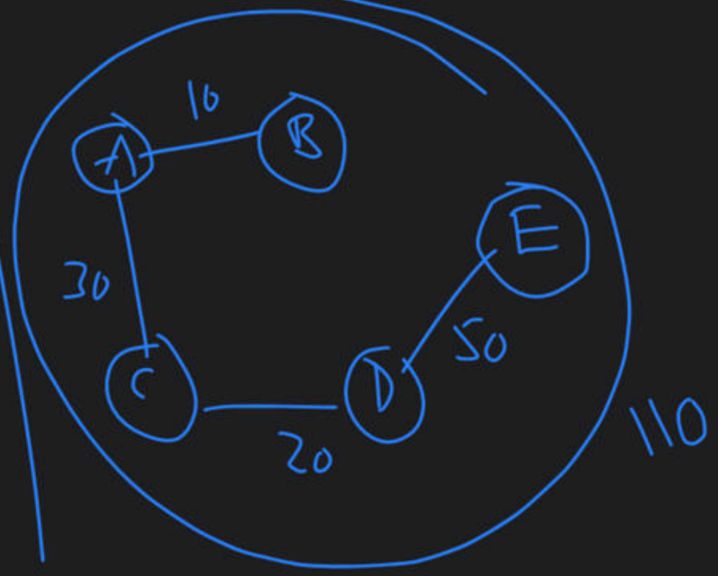
(c) (E, B) (C, A) (C, F) (B, C) (F, D) ⟹ Adj ✗

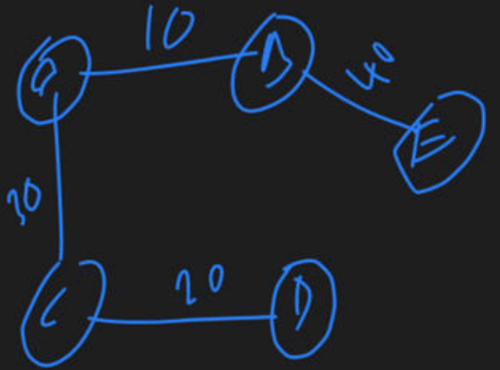
(d) ✗ (E, B) (B, C) (F, D) (C, F) (C, A) ⟹ Adj ✗



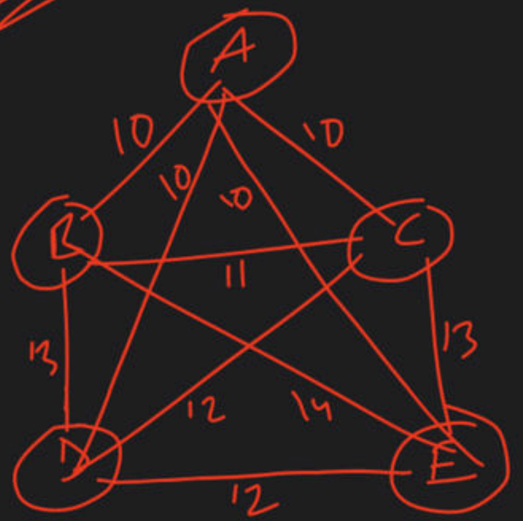




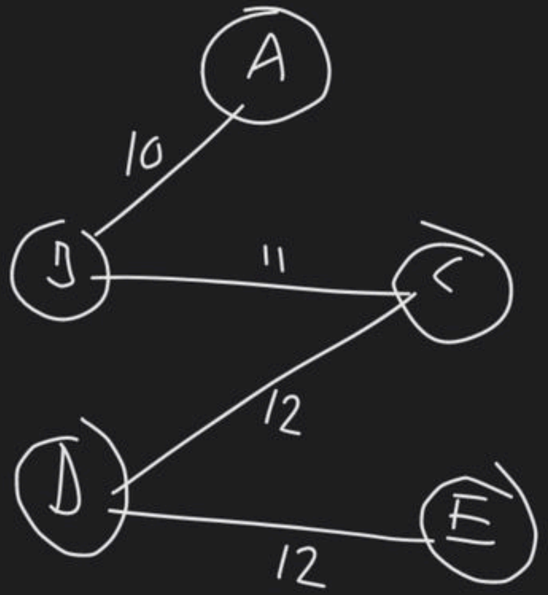




Q4



What is the cost of MST for this graph in such a way that in the MST A will be leaf node?



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