DAA HW-14

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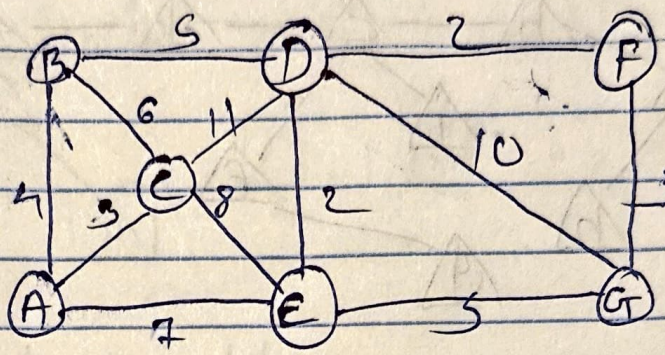
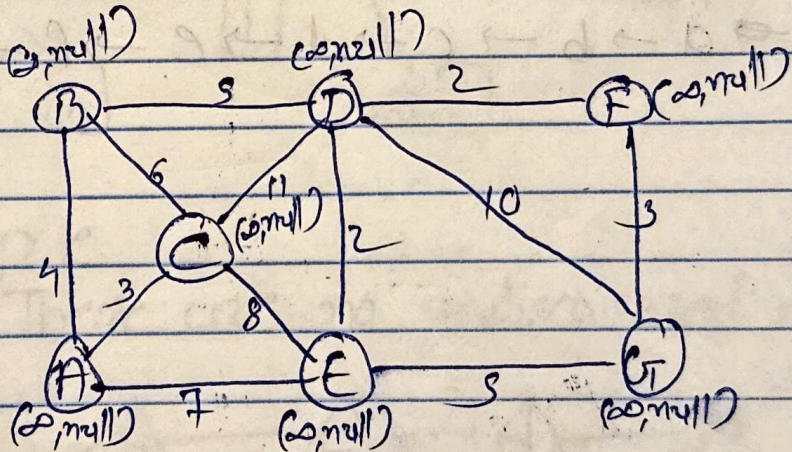
① Given tree



we need to find the shortest path with source A using dijkstra's Algo.

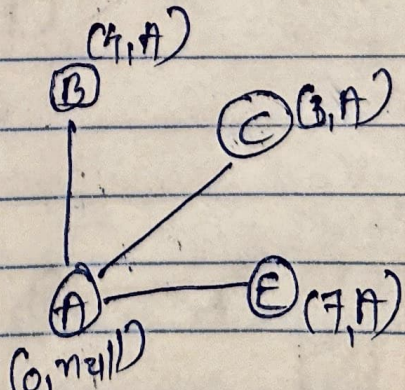
step ①:

All Algo.

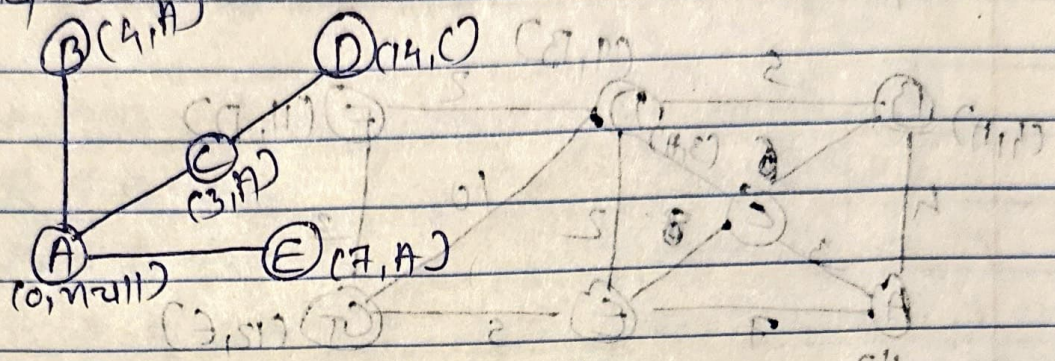


Step ②:

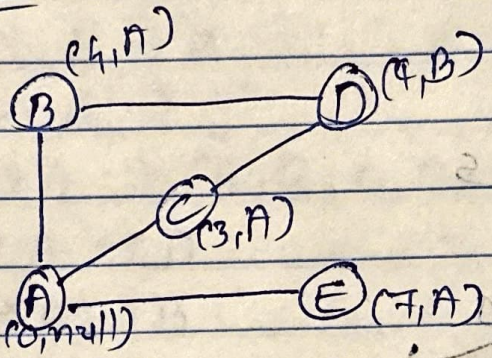
A, C is minimum distance (3, A)



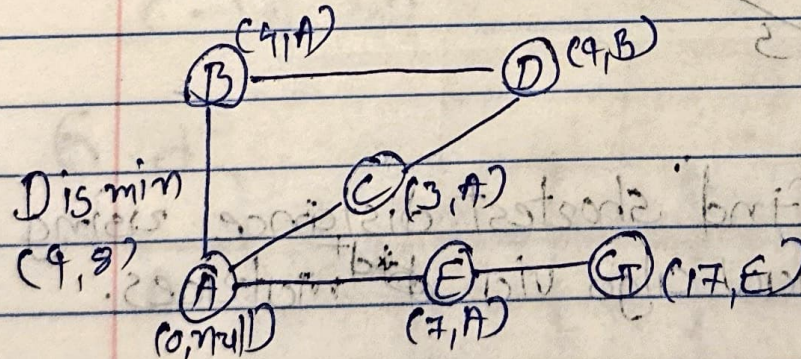
step ③ :



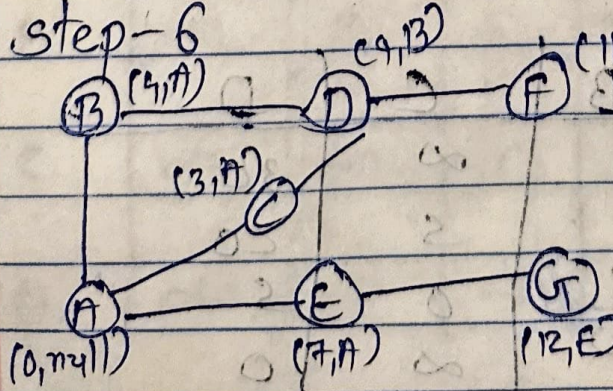
step - 4



step - 5

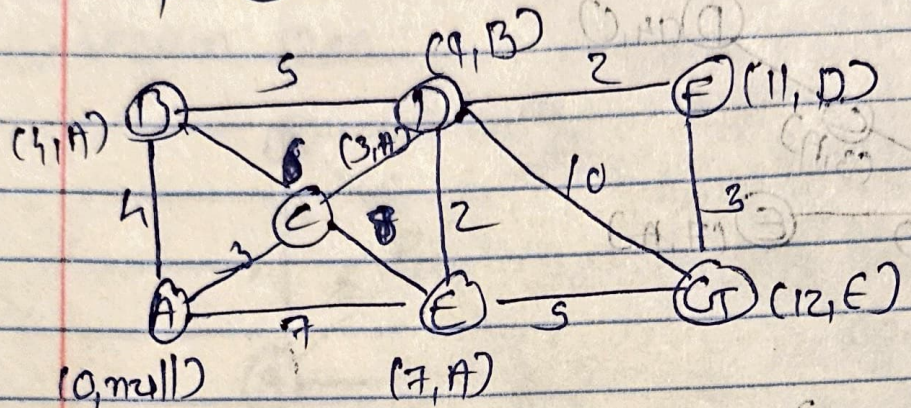


step - 6

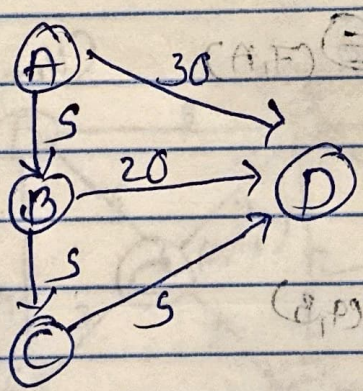


F - is minimum
(11, D)

step - (7):



Ex-2 Given tree is



We need to find shortest distance using floyd warshall algo via d^k matrices.

(1) d^A

	A	B	C	D
A	0	5	∞	30
B	∞	0	5	20
C	∞	∞	0	5
D	∞	∞	∞	0

Not possible paths are

A → A → A
A → A → B
A → A → C
B → A → A
B → A → C
C → A → A
C → A → C
D → A → (A, B, C, D)
D → A → D
B → A → B
B → A → D
C → A → B
C → A → D

⑥ d^B

	A	B	C	D
A	0	5	10	25
B	∞	0	5	20
C	∞	∞	0	5
D	∞	∞	∞	0

Here, below paths are not possible.

A → B → A
A → B → B
B → B → A
B → B → C
C → B → (A, B, C, D)
D → B → (A, B, C, D)
B → B → B
B → B → D

A → B → C is possible (10 < ∞)
A → B → D is possible (25 < 30)

(3) d^c

	A	B	C	D
A	0	5	10	15
B	∞	0	5	10
C	∞	∞	0	5
D	∞	∞	∞	0

here, below path are not possible

A → C → A
A → C → B
A → C → C
B → C → A
B → C → B
B → C → C
C → C → A
C → C → B
C → C → C
C → C → D
D → C → (A, B, C, D)

A → C → D is possible as 15 < 25

B → C → D is possible as 10 < 20

$$d^D = d^C$$