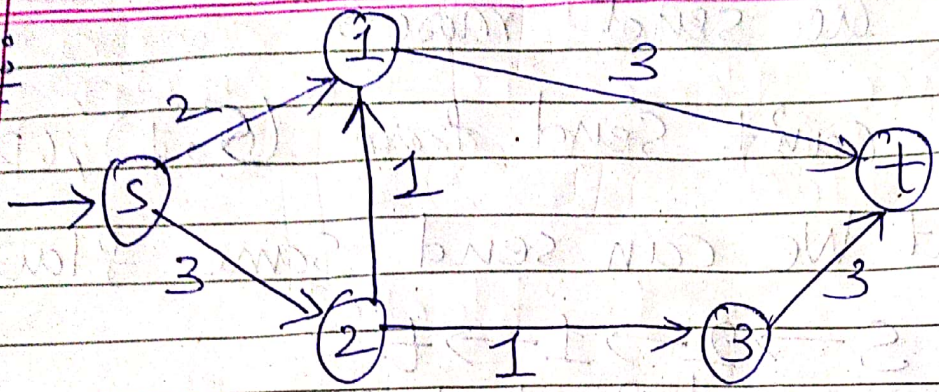
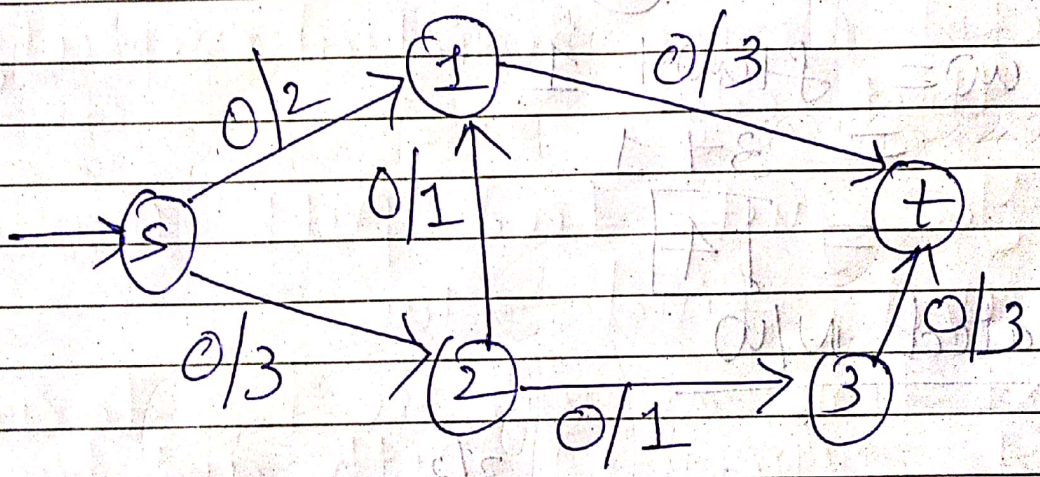
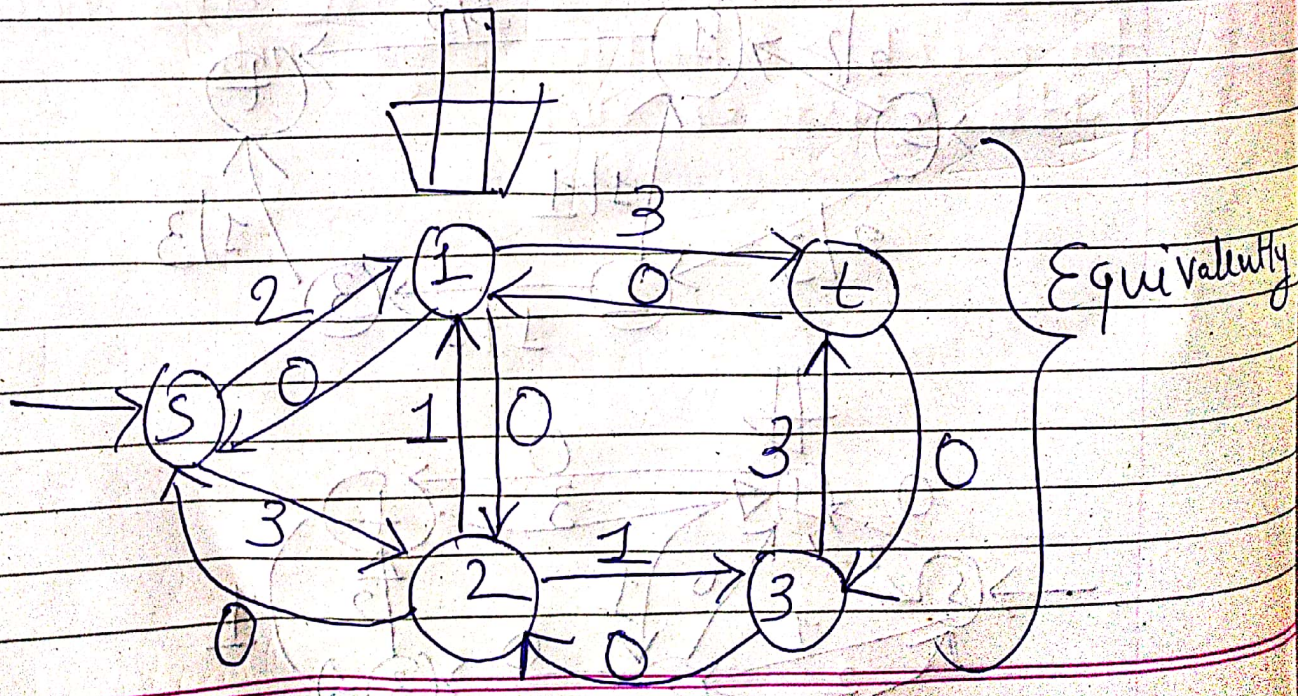
Lab 8

Ex:



→ Find Max flow from s to t.
→ Arcs denote Capacities
→ Initial flow = 0



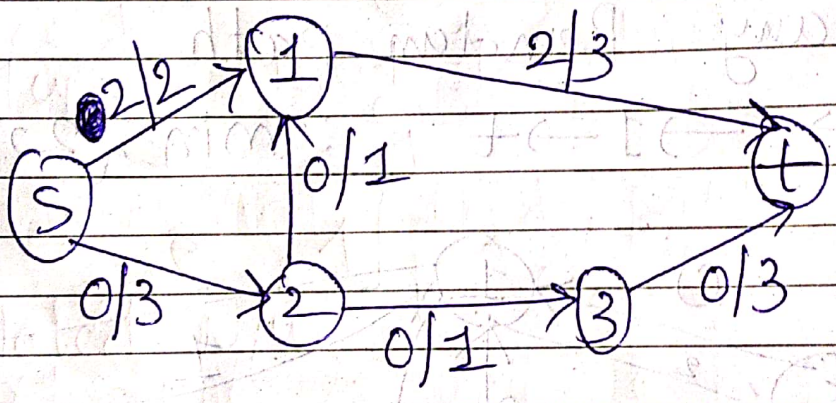


→ Select any Random path from Source to sink such that we can send some flow towards that. i.e. residual Capacity along the path is > 0.

(1) $s \to 1 \to t$

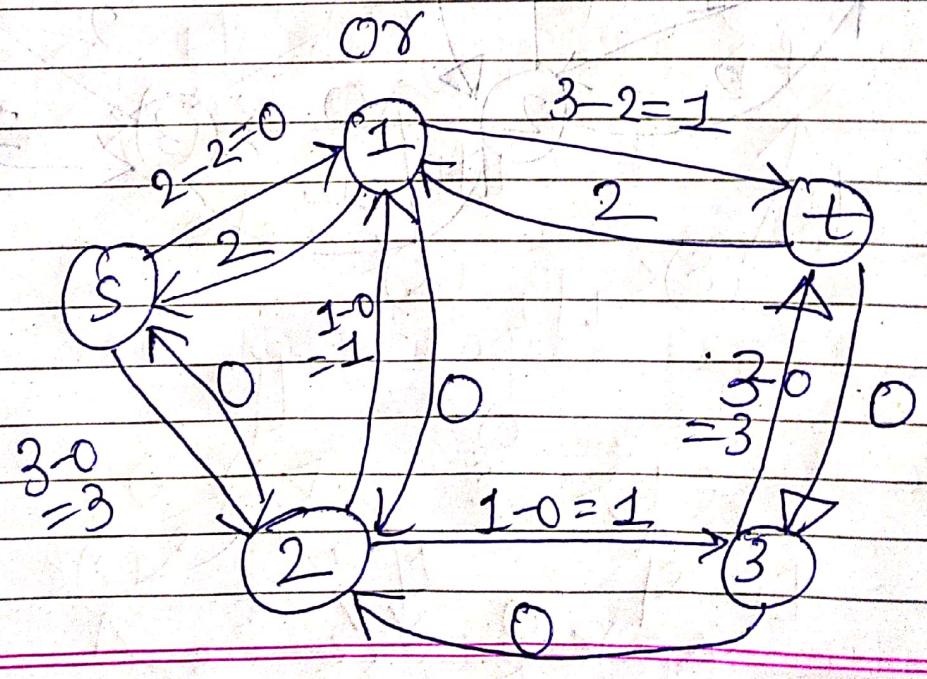
$(s \to 1)$: 2
$(1 \to t)$: 3

Min : 2 ⇒ Bottleneck Capacity



flow = flow + 2
= 0 + 2
= 2

or

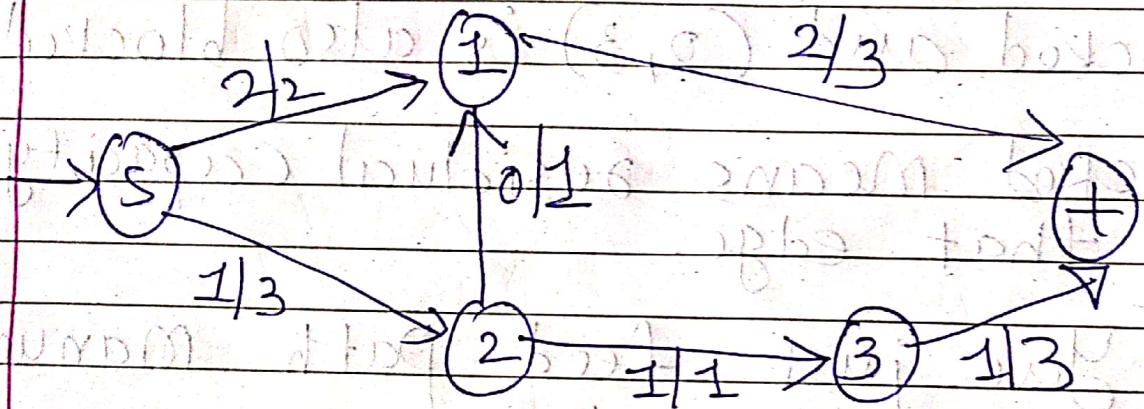


(2) Can we send more along any path?

→ We can't send from S to 1 because residual capacity is 0.

→ We can send from S to 2 as residual capacity = 3-0 = 3 > 0.

Augmenting Path: S → 2 → 3 → t

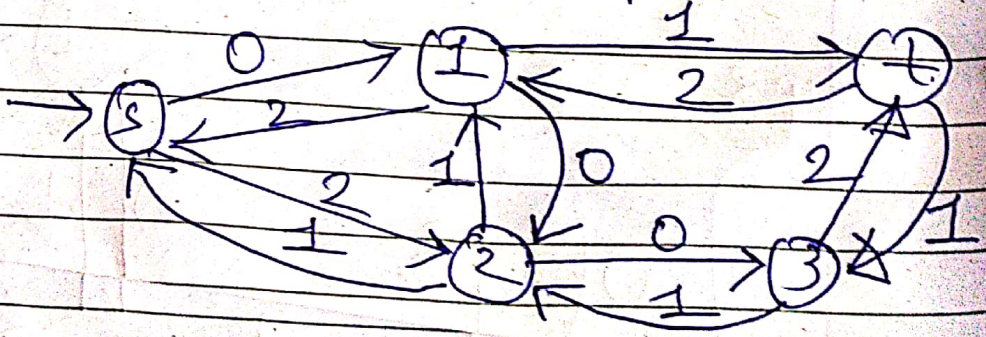


	Residual Capacity
S→2	3
2→3	1
3→t	3

∴ flow = flow + 1
= 2 + 1
= 3

Min: 1 ⇒ Bottleneck Cap.

Equivalently



(3) Can we send more?

→ We can't send from (S,1), (2,3)

→ But We can send same flow from

Aug. Path: S → 2 → 1 → t

	Residual Capacity
S → 2	2
2 → 1	1
1 → t	1

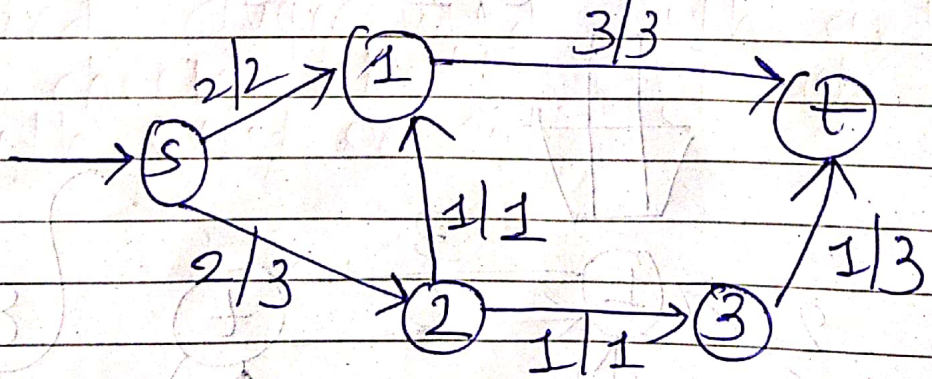
min: (1)

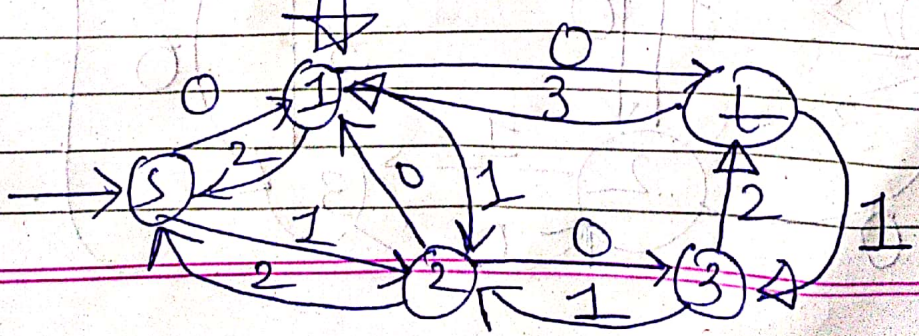
flow = flow + 1

= 3 + 1

= 4

Updated N/W





→ No, We don't have any aug. path because there is no path over which we can send same flow

Why? S → 1 blocked

S → 2 has residual cap. 1 but We can't send any flow from (2,1) or (2,3) because (2,1) is blocked and (2,3) is also blocked.

→ Blocked means residual capacity is 0 for that edge.

Today: You just feed path manually and find flow.

→ Next time we will see how to automatically find augmented path and how to check whether any such path exist or not.