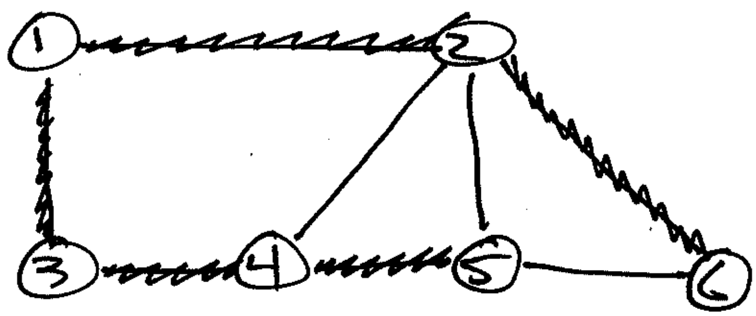
cse 101   1-22-25

Pa2. ext. 1 day

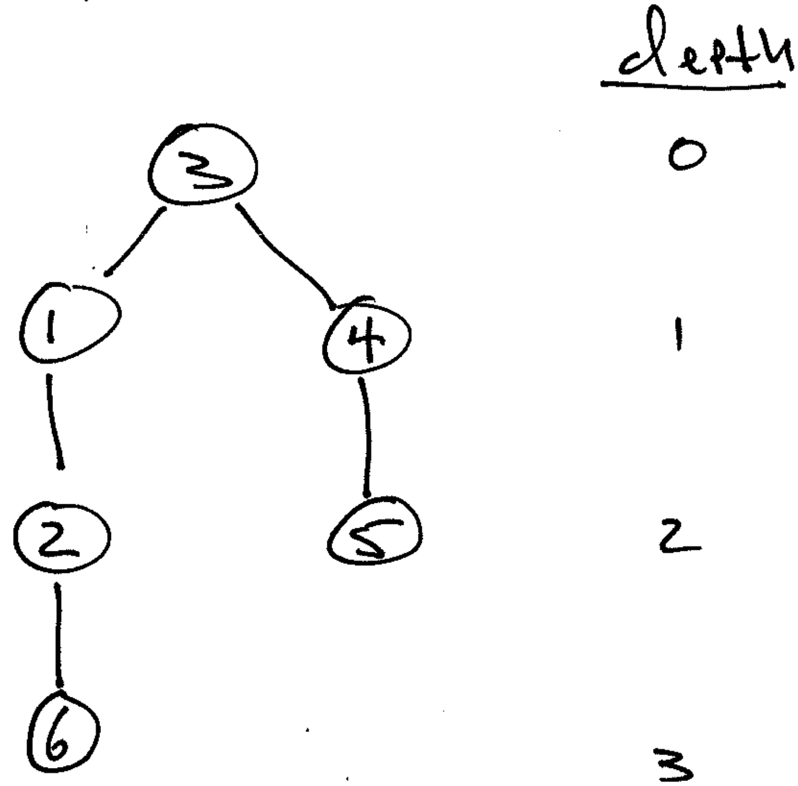
Ex. BFS, s=3



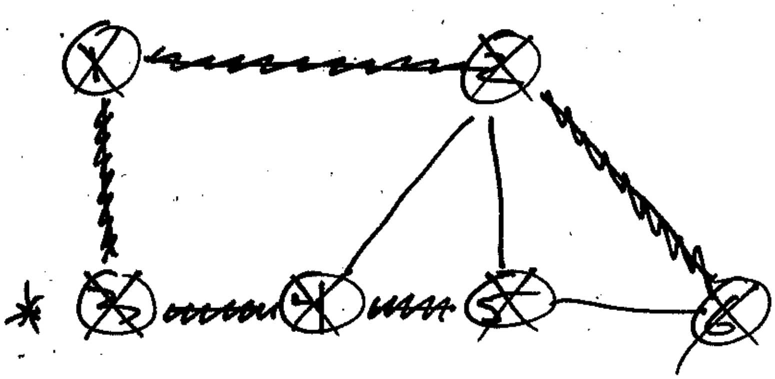
	adj	color	dist	Parent (predecessor)
1	2 3	~~w~~ ~~g~~ b	~~∞~~ 1	~~nil~~ 3
2	1 4 5 6	~~w~~ ~~g~~ b	~~∞~~ 2	~~nil~~ 1
* 3	1 4	~~g~~ b	0	nil
4	2 3 5	~~w~~ ~~g~~ b	~~∞~~ 1	~~nil~~ 3
5	2 4 6	~~w~~ ~~g~~ b	~~∞~~ 2	~~nil~~ 4
6	2 5	~~w~~ ~~g~~ b	~~∞~~ 3	~~nil~~ 2

Q: ~~3~~ ~~1~~ ~~4~~ ~~2~~ ~~5~~ ~~6~~

BFS Tree (Predecessor Subgraph)

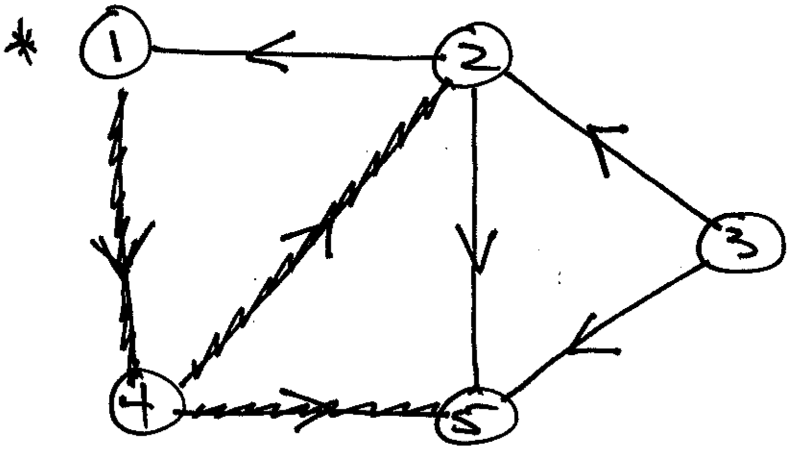


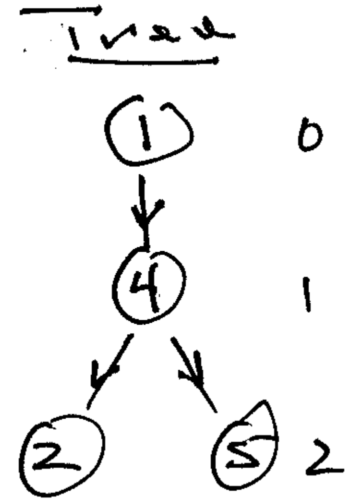
Another way!



Q: ~~3~~ ~~1~~ ~~4~~ ~~2~~ ~~5~~ ~~6~~

Ex. BFS on digraph, $\boxed{S=1}$





Q: ~~1~~ ~~4~~ ~~2~~ ~~5~~

	adj	color	d	p
* 1	4	b	0	n
2	1 5	b	2	4
3	2 5	w	∞	n
4	2 5	b	1	1
5		b	2	4

Defn

Predecessor Subgraph

$$T = (V_p, E_p)$$

$$V_p = \{ x \in V(G) \mid p[x] \neq nil \} \cup \{s\}$$

$$E_p = \{ \underbrace{(p[x], x)} \mid p[x] \neq nil \}$$

$(\cdot, \cdot)$ ordered pair if digraph

$\{\cdot, \cdot\}$ unordered " " graph