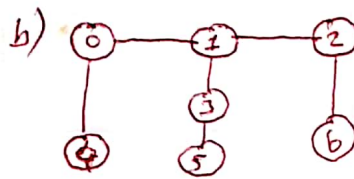
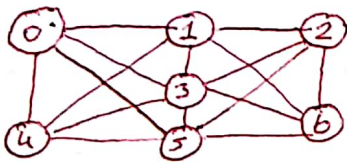


#CSE-222-HW8#

Feder Sommer

161044046

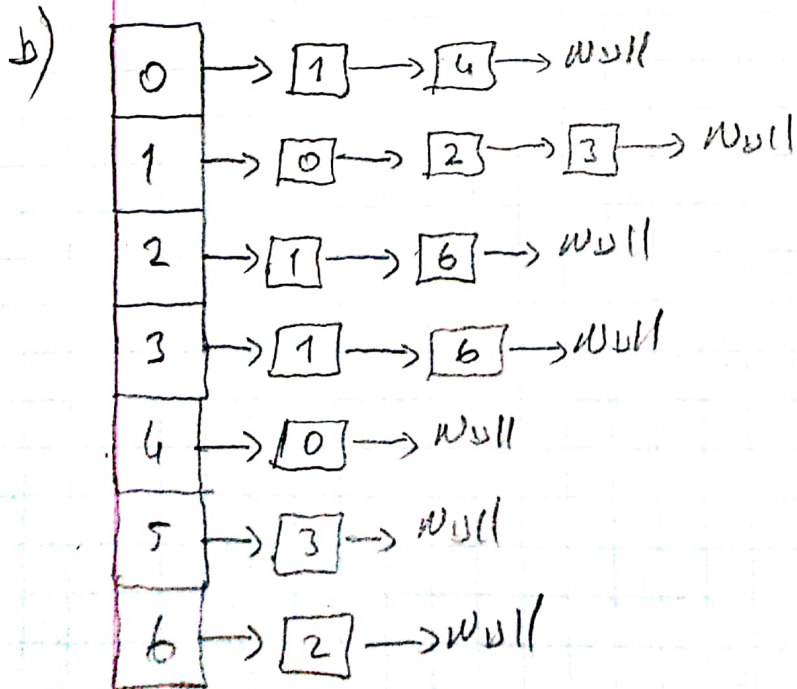
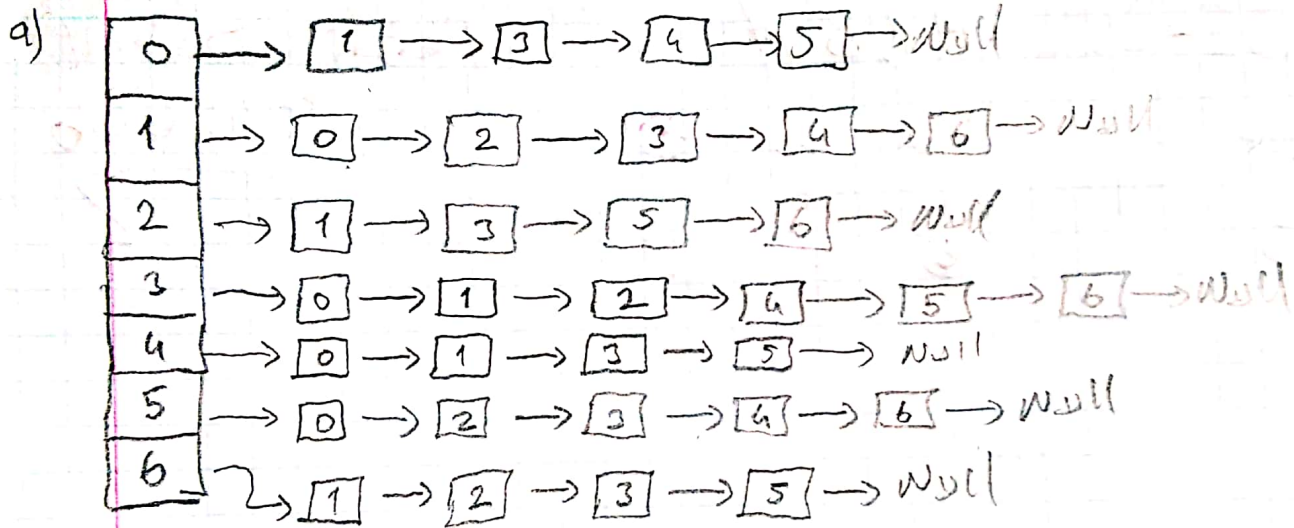
(1) a)



Adjacency List \Rightarrow

- a)
- $0 \rightarrow \{1, 3, 5, 4\}$
 - $1 \rightarrow \{0, 4, 3, 6, 2\}$
 - $2 \rightarrow \{1, 3, 6, 5\}$
 - $3 \rightarrow \{0, 1, 2, 6, 5, 4\}$
 - $4 \rightarrow \{0, 1, 3, 5\}$
 - $5 \rightarrow \{0, 4, 3, 2, 6\}$
 - $6 \rightarrow \{1, 2, 3, 5\}$

- b)
- $0 \rightarrow \{4, 1\}$
 - $1 \rightarrow \{0, 2, 3\}$
 - $2 \rightarrow \{1, 6\}$
 - $3 \rightarrow \{1, 5\}$
 - $4 \rightarrow \{0\}$
 - $5 \rightarrow \{3\}$
 - $6 \rightarrow \{2\}$



+ Adjacency Matrix

	0	1	2	3	4	5	6
0	0	1	0	1	1	1	0
1	1	0	1	1	1	0	1
2	0	1	0	1	0	1	1
3	1	1	1	0	1	1	1
4	1	1	0	1	0	1	0
5	1	0	1	1	1	0	1
6	0	1	1	1	0	1	0

	0	1	2	3	4	5	6
0	0	1	0	0	1	0	0
1	1	0	1	1	0	0	0
2	0	1	0	0	0	0	1
3	0	1	0	0	0	1	0
4	1	0	0	0	0	0	0
5	0	0	0	1	0	0	0
6	0	0	1	0	0	0	0

NOTE For undirected graphs, the graph density is;

$$D = |E| / |V|^2$$

$$+ |V_a| = 7$$

$$|E_a| = 16$$

$$|V_b| = 7$$

$$|E_b| = 6$$

$$D_a = \frac{16}{7^2} = 16/49 = 0,32 \quad D_b = \frac{6}{7^2} = 6/49 = 0,122$$

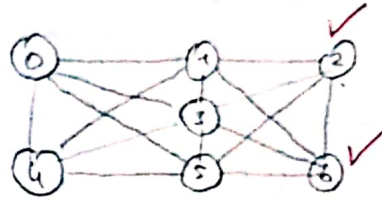
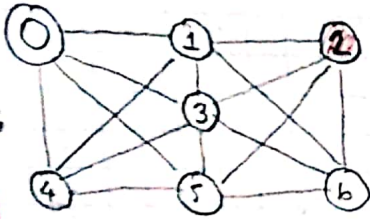
The maximum number of edges for undirected graph is $\binom{|V|}{2}$, so the maximal density is 1 (for complete graphs) and minimal density is 0.

(First Graphs)



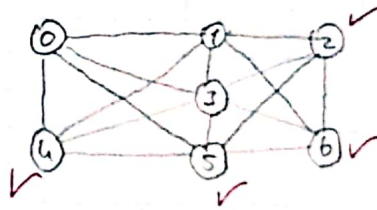
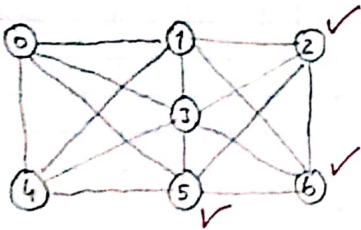
DFS

Discovery
order:
2



Discover order:
2, 6

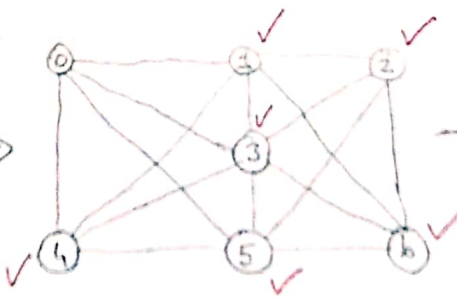
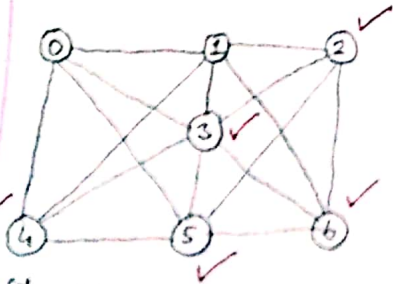
Discovery
2, 6, 5



Discovery order:
2, 6, 5, 4

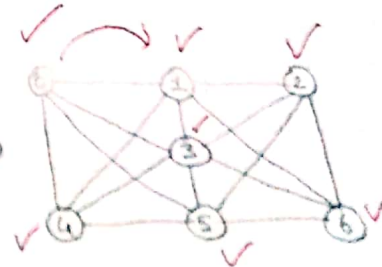
Discovery

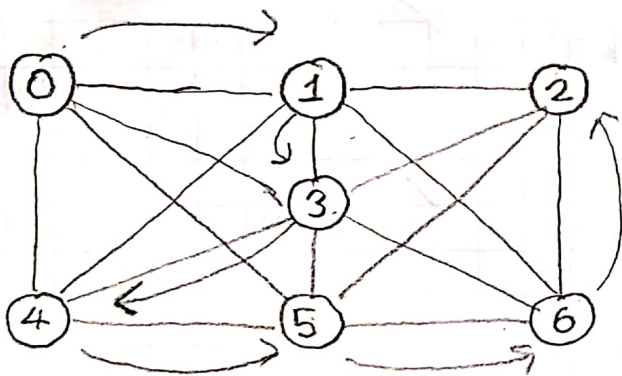
2, 6, 5, 4, 3



Discovery

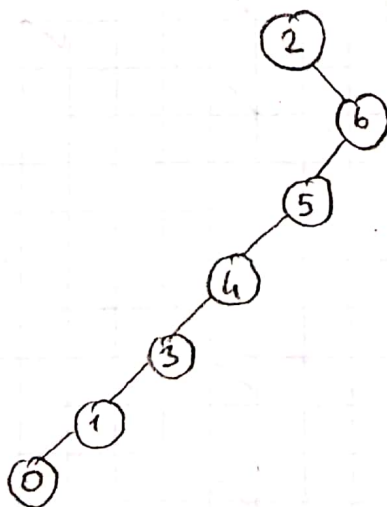
2, 6, 5, 4, 3, 1

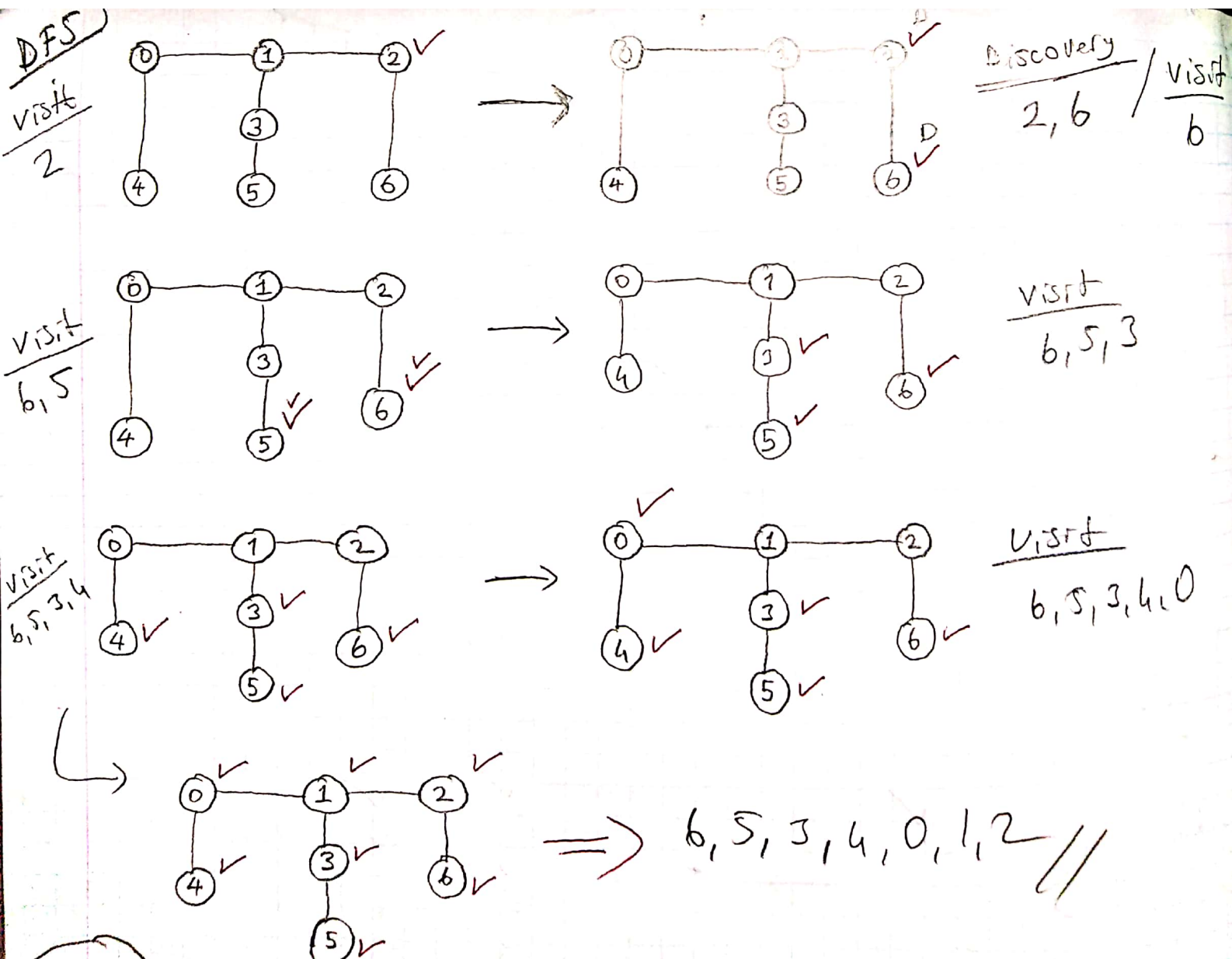




→ 0, 1, 3, 4, 5, 6, 2

Tree

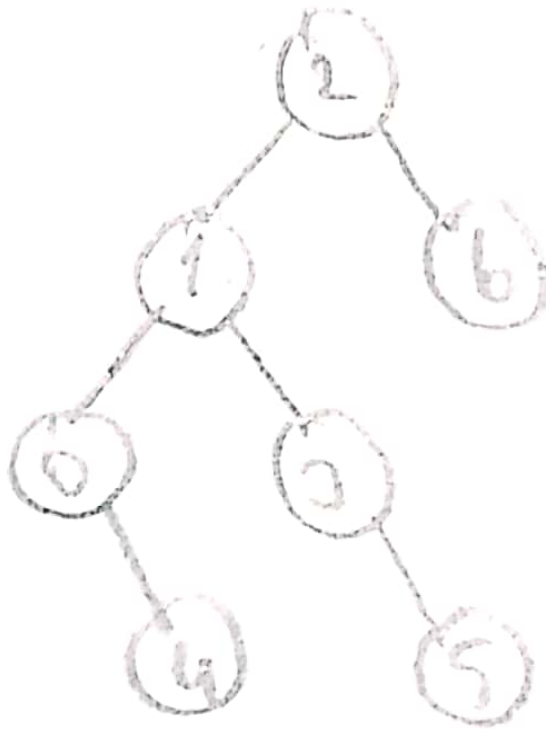




*

Q2

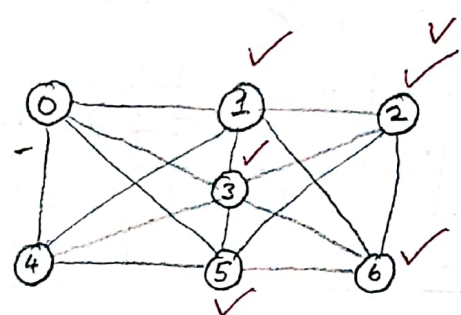
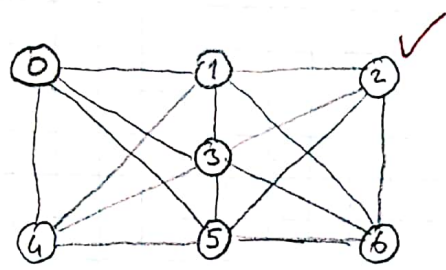
DFS



(2, 6, 1, 3, 5, 0, 4)

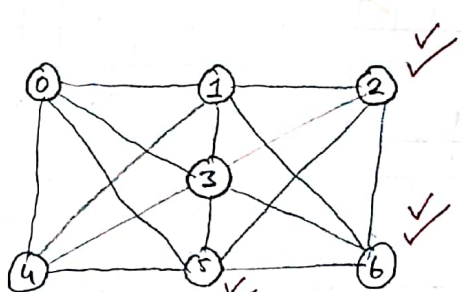
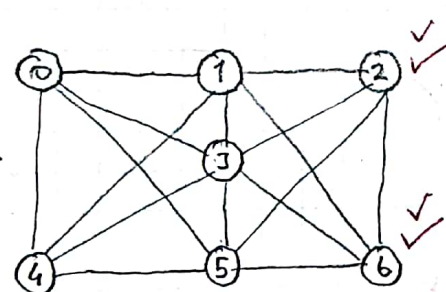
BFS

Visit
2



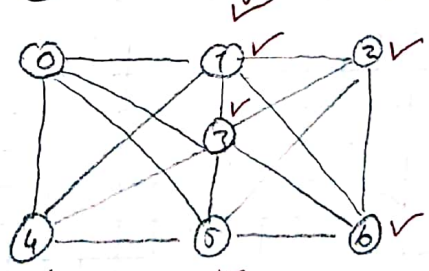
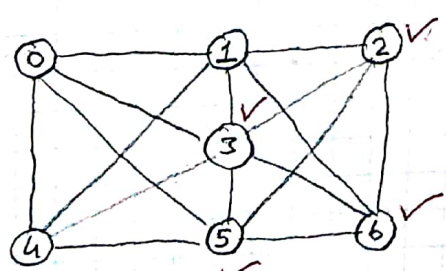
Visit = 2
Queue = 6, 5, 3

Visit
2, 6



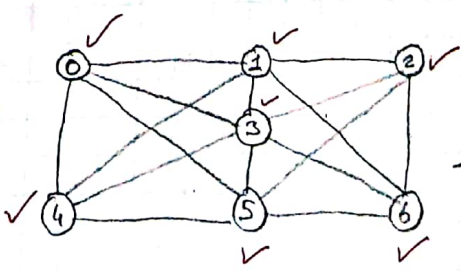
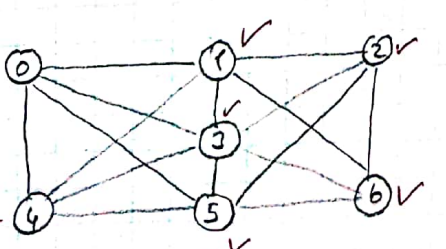
Visit:
2, 6, 5

Visit
2, 6, 5, 3



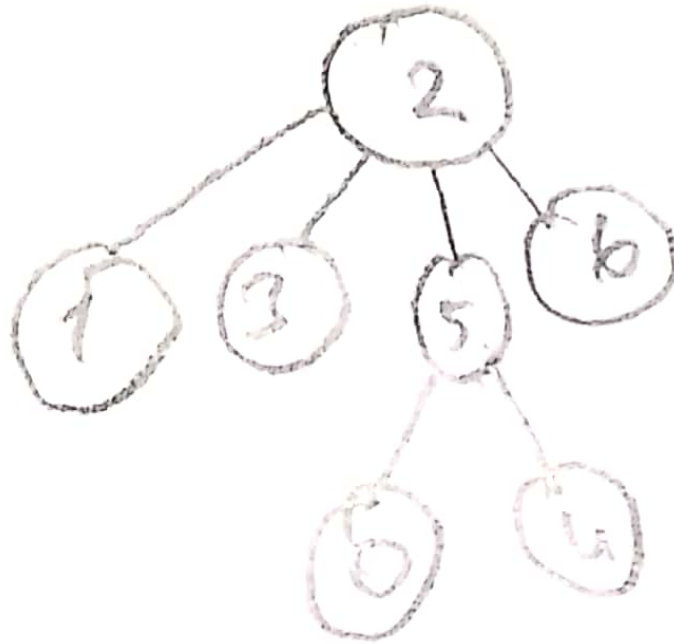
Visit
2, 6, 5, 3, 1

Visit
2, 6, 5, 3, 1, 4



Visit
2, 6, 5, 3, 1, 4, 0

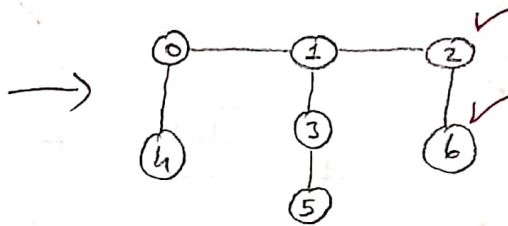
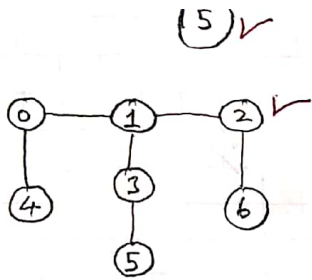
BFS
Q1



(2, 6, 5, 3, 1, 4, 0)

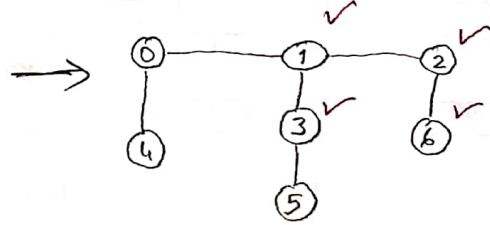
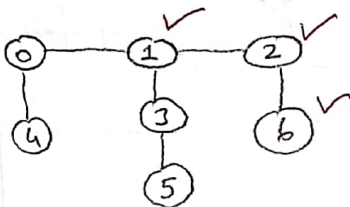
BFS

visit
2



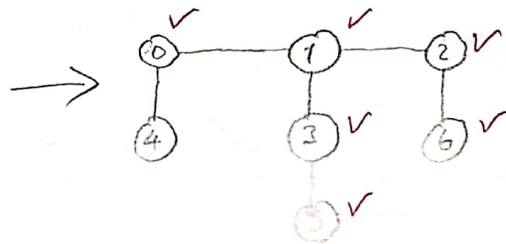
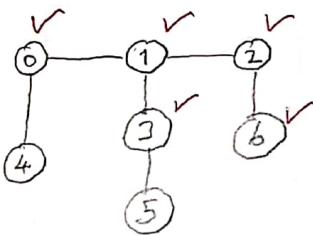
visit
2, 6

visit
2, 6, 1

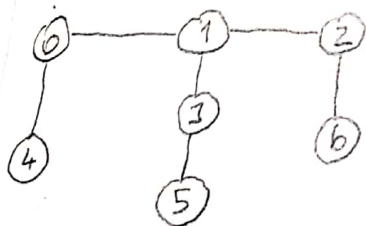


visit
2, 6, 1, 3

visit
2, 6, 1, 3, 0



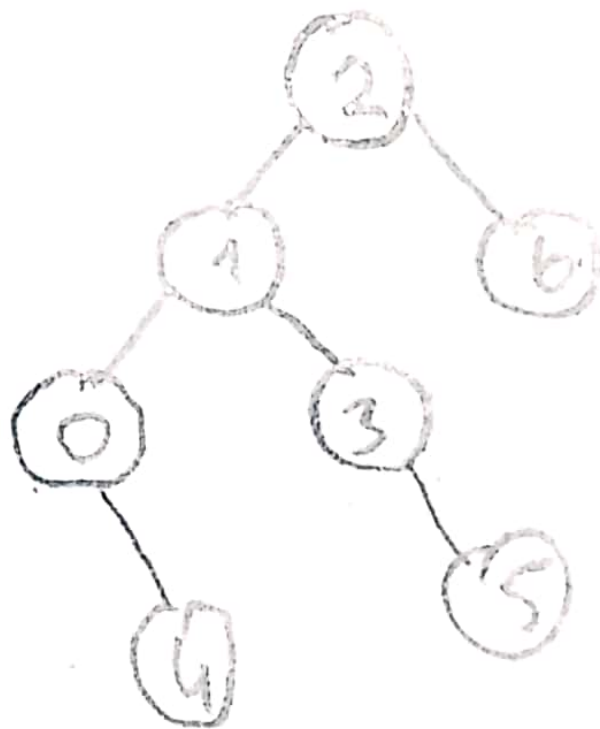
visit
2, 6, 1, 3, 0, 5



visit
2, 6, 1, 3, 0, 5, 4, /

BFS

Q2



(2, 6, 1, 3, 0, 5, 4)