CP2410 Practical 11

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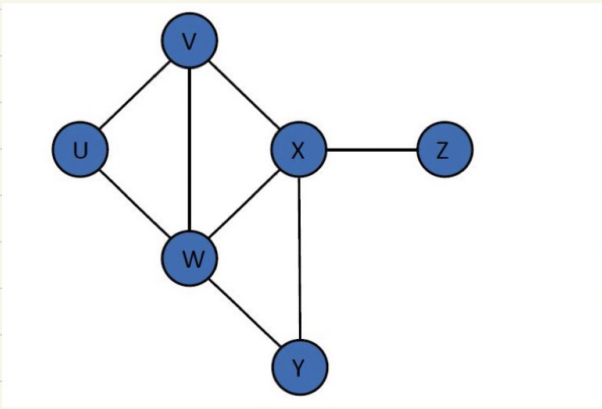
Question 1

Q 1.



a) adjacent list.

vertex	adjacent vertices
u	(v, w)
v	(u, w, x)
w	(u, v, x)
x	(v, w, y)
y	(w, x)
z	(x)

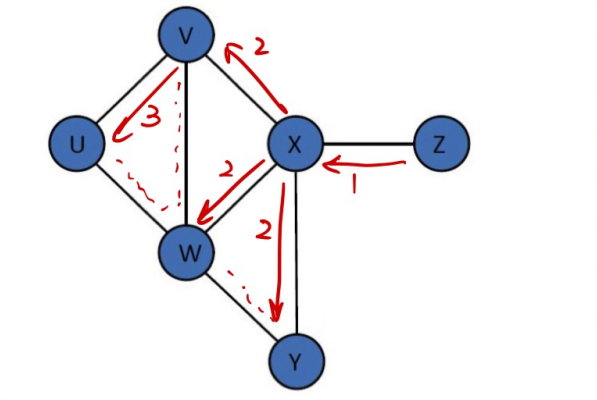
b) adjacent matrix

	u	v	w	x	y	z
u	0	1	1	0	0	0
v	1	0	1	1	0	0
w	1	1	0	1	1	0
x	0	1	1	0	1	1
y	0	0	1	1	0	0
z	0	0	0	1	0	0

Question 2

The breadth-first search method goes over all edge nodes in alphabetical order, outputs unvisited nodes, keeps a record of visited nodes, and stores edge nodes in a queue. Once all edge nodes of the current node are visited, we will dequeue a new node from queue as current node, untill no more nodes left in the queue.

Q 2.



Queue

FIFO

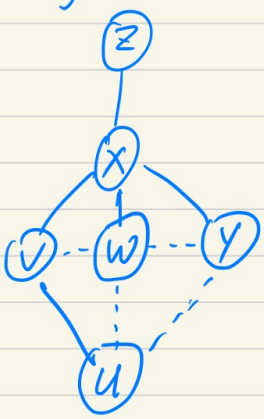
BFS . starting at node "Z".

Output : Z X V W Y U

For each steps, the queue:

1. Z
2. X
3. V W Y
4. W Y U
5. Y U
6. U
7. (empty)

Spinning Tree.



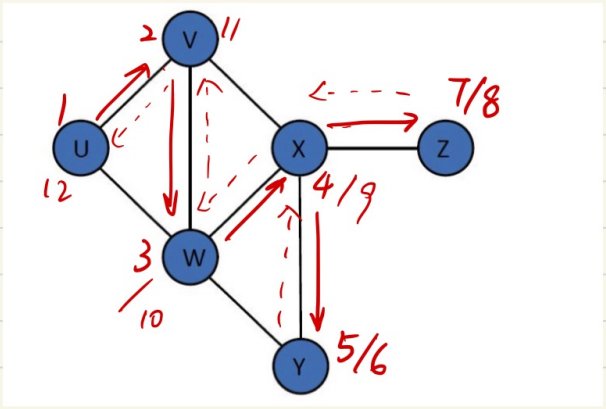
BFS Level

Lv 1 : Z
Lv 2 : X
Lv 3 : V W Y
Lv 4 : U.

Question 3

Depth-first search method will keep going to next unvisited edge node in alphabetical-order, keep track of visited nodes, store visit path in a stack, until all edge nodes of current node are visited. Then, backtrack to the previous node by pop from the stack, untill no more nodes left in the stack.

Q3.



Stack.

LIFO

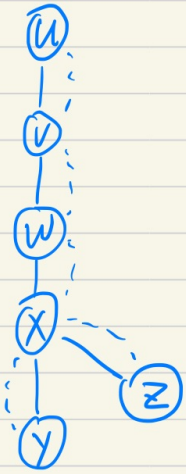
DFS. Starting at node "U"

Output: U V W X Y Z

Each steps, the stack:

1. U
2. UV
3. UVW
4. UVWX
5. UWWXY
6. UVWX
7. UVWXZ
8. UVWX
9. UVW
10. UV
11. U
12. (empty)

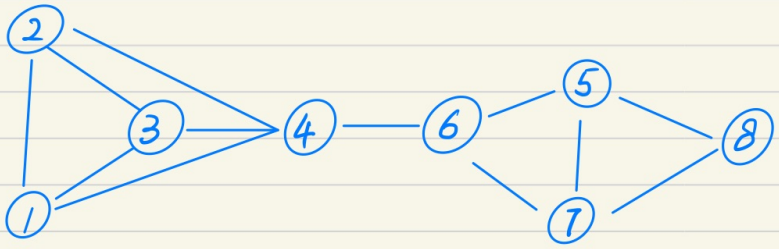
Spanning Tree



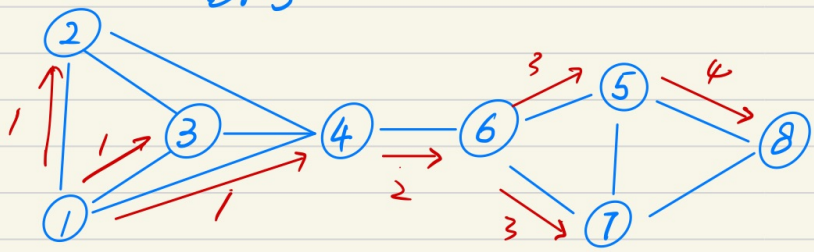
Question 4

Q4.

a).

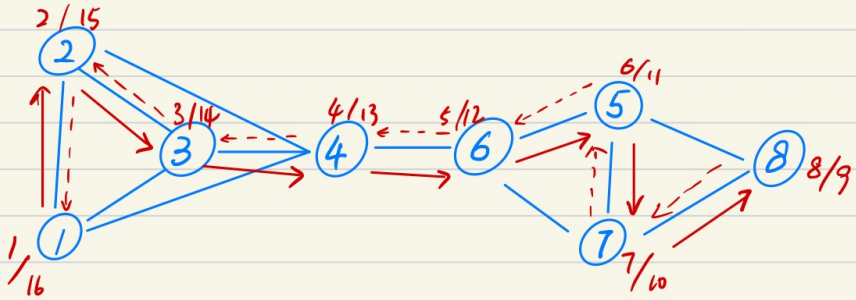


b) BFS



Output : 1, 2, 3, 4, 6, 5, 7, 8

c). DFS.



Output : 1, 2, 3, 4, 6, 5, 7, 8