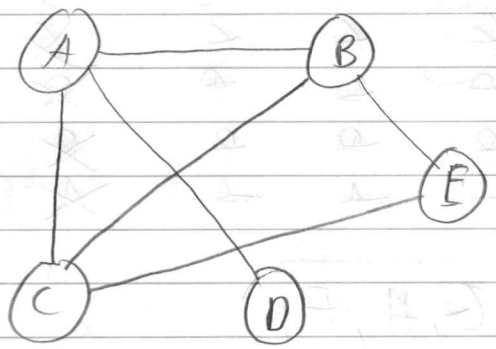
Problem #3

4/8/18

Name: Carlos Flores PID: 5160328

(a) Let A = Alfred, B = Brenda, C = Catherine, D = Dylan, and E = Eric



Corresponding Adjacency Matrix:

	A	B	C	D	E
A	0	1	1	1	0
B	1	0	1	0	1
C	1	1	0	0	1
D	1	0	0	0	0
E	0	1	1	0	0

(b) No, this graph cannot exist even though the sum of degrees is even. A simple graph implies that it is not a multigraph, and there are no loops. Because there are 5 vertices, then there can only be a max of 4 adjacencies in a simple graph (per vertex), so a degree of ~~5~~ 1 is impossible.

C)

C.1) Starting at A: (BFS)

Q_0	Q_1	Q_2	Q_3	Q_4	Q_5	Q_6	Q_7	Q_8
						F	F	~~F~~
					H	H	~~H~~	~~H~~
		G	G	G	G	~~G~~	~~G~~	~~G~~
		E	E	E	~~E~~	E	~~E~~	~~E~~
		C	C	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~
	D	D	~~D~~	~~D~~	~~D~~	~~D~~	~~D~~	~~D~~
	B	~~B~~	~~B~~	~~B~~	~~B~~	~~B~~	~~B~~	~~B~~
A	~~A~~	~~A~~	~~A~~	~~A~~	~~A~~	~~A~~	~~A~~	~~A~~

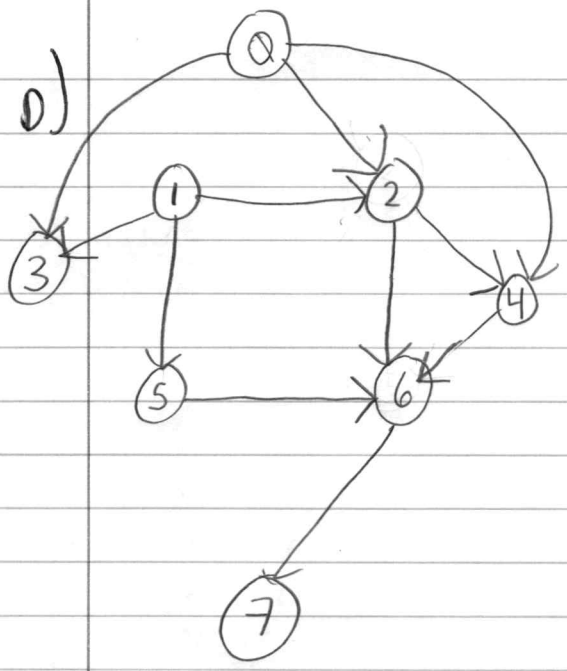
OUTPUT: A, B, D, C, E, G, H, F

C.2) Starting at B: (DFS)

S_0	S_1	S_2	S_3	S_4	S_5	S_6	S_7	S_8
							H	~~H~~
					F	~~F~~	~~F~~	~~F~~
				G	~~G~~	~~G~~	~~G~~	~~G~~
				E	E	E	~~E~~	~~E~~
		C	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~	~~C~~
	D	~~D~~	~~D~~	~~D~~	~~D~~	~~D~~	~~D~~	~~D~~
	B	B	B	~~B~~	~~B~~	~~B~~	~~B~~	~~B~~

OUTPUT: A, D, C, B, G, F, E, H

b)



V	in-degree
(-) 0	0
1	0
2	~~2~~ 1
3	~~2~~ 1
4	~~2~~ 1
5	1
6	3
7	1

(Removing 0)

V	in	V	in	V	in	V	in	V	in	V	in
(-) 0	0	(-) 0	0	(-) 0	0	(-) 0	0	(-) 0	0	(-) 0	0
(-) 1	0	(-) 1	0	(-) 1	0	(-) 1	0	(-) 1	0	(-) 1	0
2	~~1~~ 0	(-) 2	0	(-) 2	0	(-) 2	0	(-) 2	0	(-) 2	0
3	~~1~~ 0	3	0	(-) 3	0	(-) 3	0	(-) 3	0	(-) 3	0
4	1	4	~~1~~ 0	4	0	(-) 4	0	(-) 4	0	(-) 4	0
5	~~1~~ 0	5	0	5	0	5	0	(-) 5	0	(-) 5	0
6	3	6	~~3~~ 2	6	2	6	~~2~~ 1	6	~~1~~ 0	(-) 6	0
7	1	7	1	7	1	7	1	7	1	7	~~1~~ 0
(Removing 1)		(Removing 2)		(Removing 3)		(R4)		(R5)		(R6)	

OUTPUT → {0, 1, 2, 3, 4, 5, 6, 7}