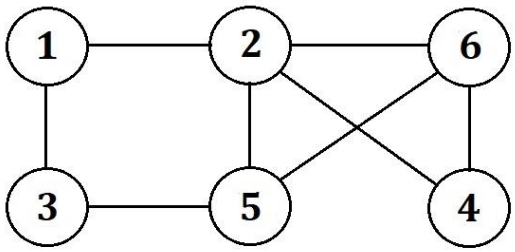
COMP 1805A SUMMER 2017 – ASSIGNMENT 3 NEMANJA ZUTKOVIC (101085982)

1A.

This graph is not a simple graph because deg(v2) = 5 and there are a total 5 vertices. This means the maximum degree of any vertex can only be 4.

1B.



2.

V = {1, 2, 3, 4, 5, 6, 7, 8}
E = {{1, 5}, {2,4}, {2,8}, {3,5}, {3,6}, {3,8}, {4,5}, {5,6}, {6,8}, {7,8}}

3.

	1	2	3	4	5	6	7	8
1	0	0	0	0	1	0	0	0
2	0	0	0	1	0	0	0	1
3	0	0	0	0	1	1	0	1
4	0	1	0	0	1	0	0	0
5	1	0	1	1	0	1	0	0
6	0	0	1	0	1	0	0	1
7	0	0	0	0	0	0	0	1
8	0	1	1	0	0	1	1	0

4.

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

5.

V' = {1, 2, 3, 4, 5, 6, 7, 8}
E' = {(1, 5), (5, 3), (5, 4), (5, 6), (3, 6), (3, 8), (4, 2), (6, 8), (2, 8), (8, 7)}

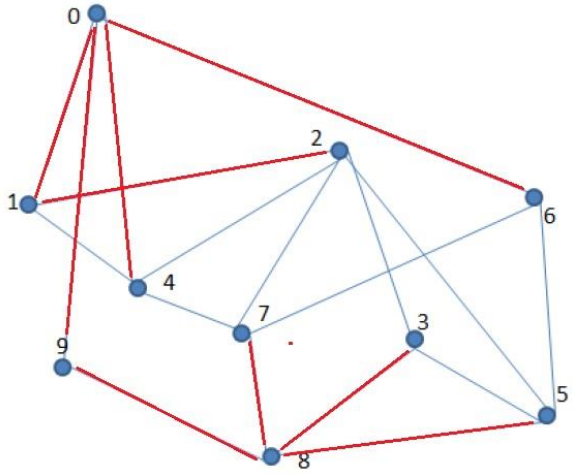
6.

K_3 V'' = {3, 5, 6} E'' = {{3, 5}, {3, 6}, {5, 6}}

	3	5	6
3	0	1	1
5	1	0	1
6	1	1	0

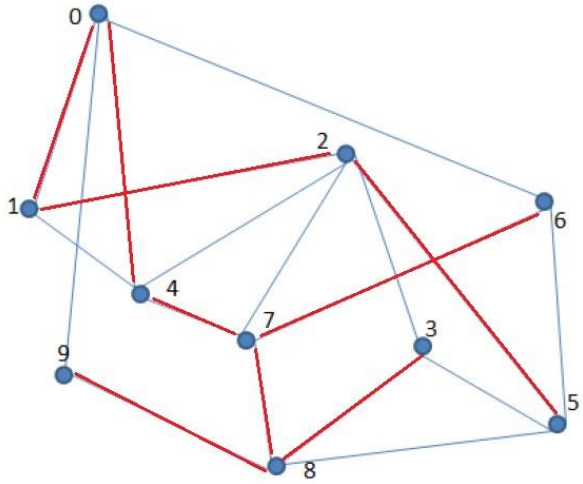
7.
E''' = {{2, 3}, {3, 4}}
|E'''| = 2

8. Student #: 101085982
BFS: 9 ⟶ 0 ⟶ 8 ⟶ 1 ⟶ 4 ⟶ 6 ⟶ 3 ⟶ 5 ⟶ 7 ⟶ 2



0: 1, 4, 6, 9
1: 0, 2
2: 1
3: 8
4: 0
5: 8
6: 0
7: 8
8: 3, 5, 7, 9
9: 0, 8

9. Student #: 101085982
DFS: 5 ⟶ 2 ⟶ 1 ⟶ 0 ⟶ 4 ⟶ 7 ⟶ 6 ⟶ 8 ⟶ 3 ⟶ 9



	0	1	2	3	4	5	6	7	8	9
0	0	1	0	0	1	0	0	0	0	0
1	1	0	1	0	0	0	0	0	0	0
2	0	1	0	0	0	1	0	0	0	0
3	0	0	0	0	0	0	0	0	1	0
4	1	0	0	0	0	0	0	1	0	0
5	0	0	1	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	1	0	0
7	0	0	0	0	1	0	1	0	1	0
8	0	0	0	1	0	0	0	1	0	1
9	0	0	0	0	0	0	0	0	1	0