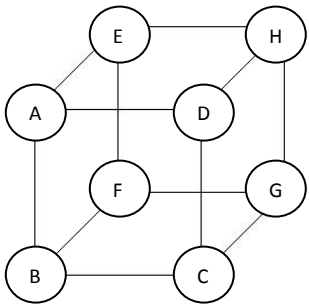


CMSC 57: Discrete Mathematical Structures in Computer Science 2
Exercise 10: Graph Theory (part I)

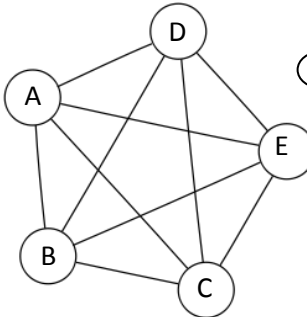
On your paper, write the exercise number and title, your name, student number, section, and the date today; and a self-portrait (do it cartoon style, painting, caricature, etc, as long as you draw yourself). Draw the tables and graphs on your solutions neatly.

1. Show the **incidence** and **adjacency** matrix of the following graph:

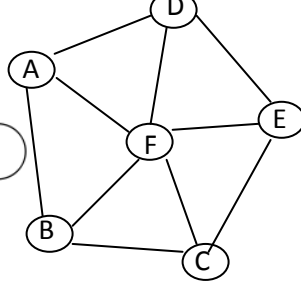
A. 3-cube



B. complete graph K_5



C. wheel graph W_6



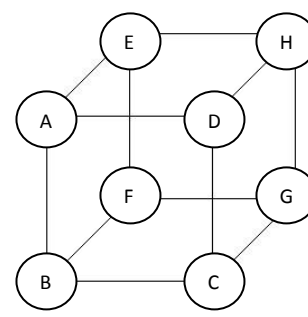
2. In terms of n , how many edges does a complete graph K_n has?
3. In terms of n and m , how many edges does a complete bipartite graph $K_{n,m}$ has?
4. Draw the complement of a 3-cube graph Q_3 (no need to place loops).
5. What is the diameter of any given complete bipartite graph $K_{m,n}$?
6. How many nodes should be removed in a wheel graph W_n to make it disconnected?
7. Give an Eulerian circuit (if any) for the complete bipartite graph $K_{2,3}$ (use your own labels for the nodes).
8. Draw a 4-cube graph and show the 2^n bits as vertices.
9. Show a Hamiltonian cycle from the graph in #8.
10. What kind of special graph does your lovelife represent? Draw it and name the vertices and edges if necessary.

CMSC 57: Discrete Mathematical Structures in Computer Science 2
Exercise 10: Graph Theory (part I)

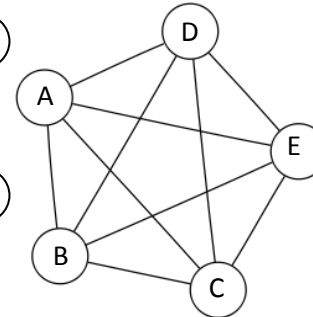
On your paper, write the exercise number and title, your name, student number, section, and the date today; and a self-portrait (do it cartoon style, painting, caricature, etc, as long as you draw yourself). Draw the tables and graphs on your solutions neatly.

1. Show the **incidence** and **adjacency** matrix of the following graph:

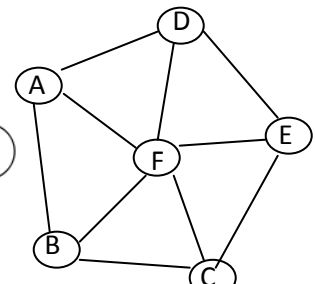
A. 3-cube



B. complete graph K_5



C. wheel graph W_6



2. In terms of n , how many edges does a complete graph K_n has?
3. In terms of n and m , how many edges does a complete bipartite graph $K_{n,m}$ has?
4. Draw the complement of a 3-cube graph Q_3 (no need to place loops).
5. What is the diameter of any given complete bipartite graph $K_{m,n}$?
6. How many nodes should be removed in a wheel graph W_n to make it disconnected?
7. Give an Eulerian circuit (if any) for the complete bipartite graph $K_{2,3}$ (use your own labels for the nodes).
8. Draw a 4-cube graph and show the 2^n bits as vertices.
9. Show a Hamiltonian cycle from the graph in #8.
10. What kind of special graph does your lovelife represent? Draw it and name the vertices and edges if necessary.