Homework I: Graph Theory

Vertex and edge sets

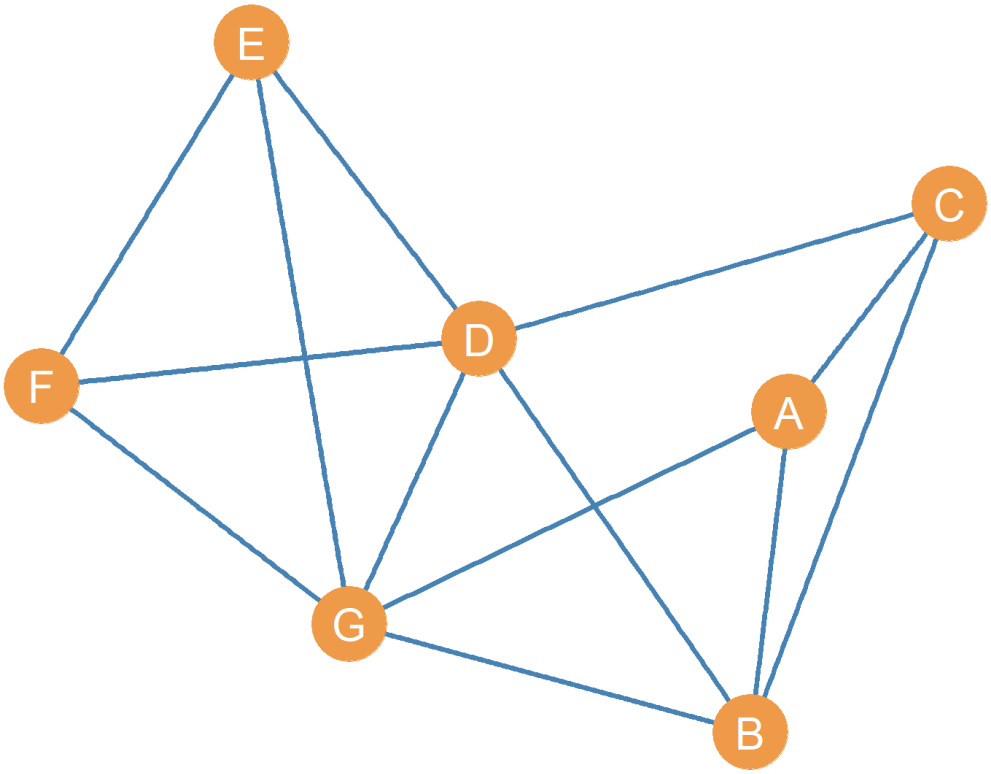

Figure 1: A simple graph.

Consider the graph shown in Figure 1:

1. Write down the **vertex set** of the graph:

2. Write down the **edge set** of the graph:

Node Neighborhoods

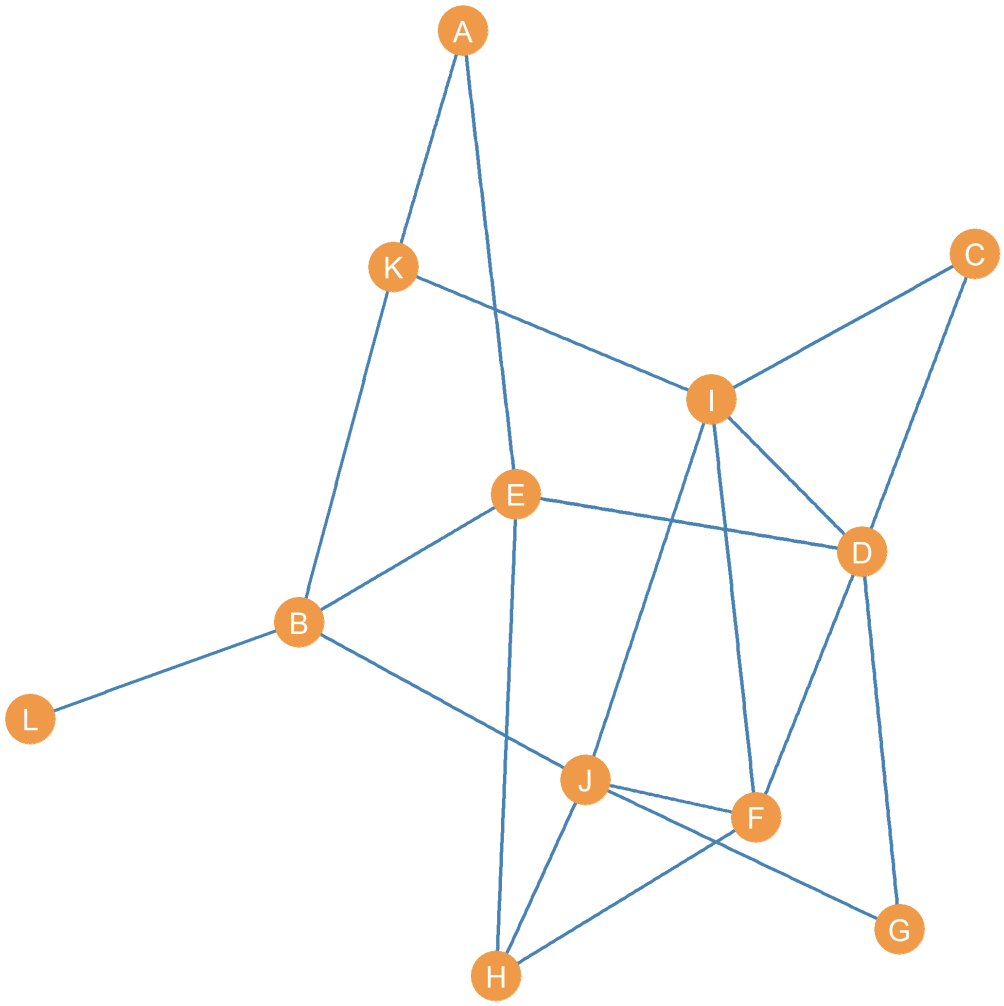

Figure 2: Another simple graph.

Consider the graph shown in Figure 2:

1. Write down the **neighborhood** of node *D*

2. Write down the **neighborhood** of node *K*

3. What is the **intersection** of the neighborhoods of nodes *D* and *E*?

4. What is the **intersection** of the neighborhoods of nodes *E* and *F*?

5. What is the **union** of the neighborhoods of nodes *H* and *J*?

Node Degree

Consider the graph shown in Figure 2:

1. What is the **degree** of node *B*?

2. What is(are) the node(s) with the largest **degree**?

3. What is(are) the node(s) with the smallest **degree**?

Subgraphs

1. Go back to Figure 1. Draw the **node-deleted** subgraph of this graph that *excludes* nodes *D* and *G*