# Homework I: Graph Theory

## Vertex and edge sets

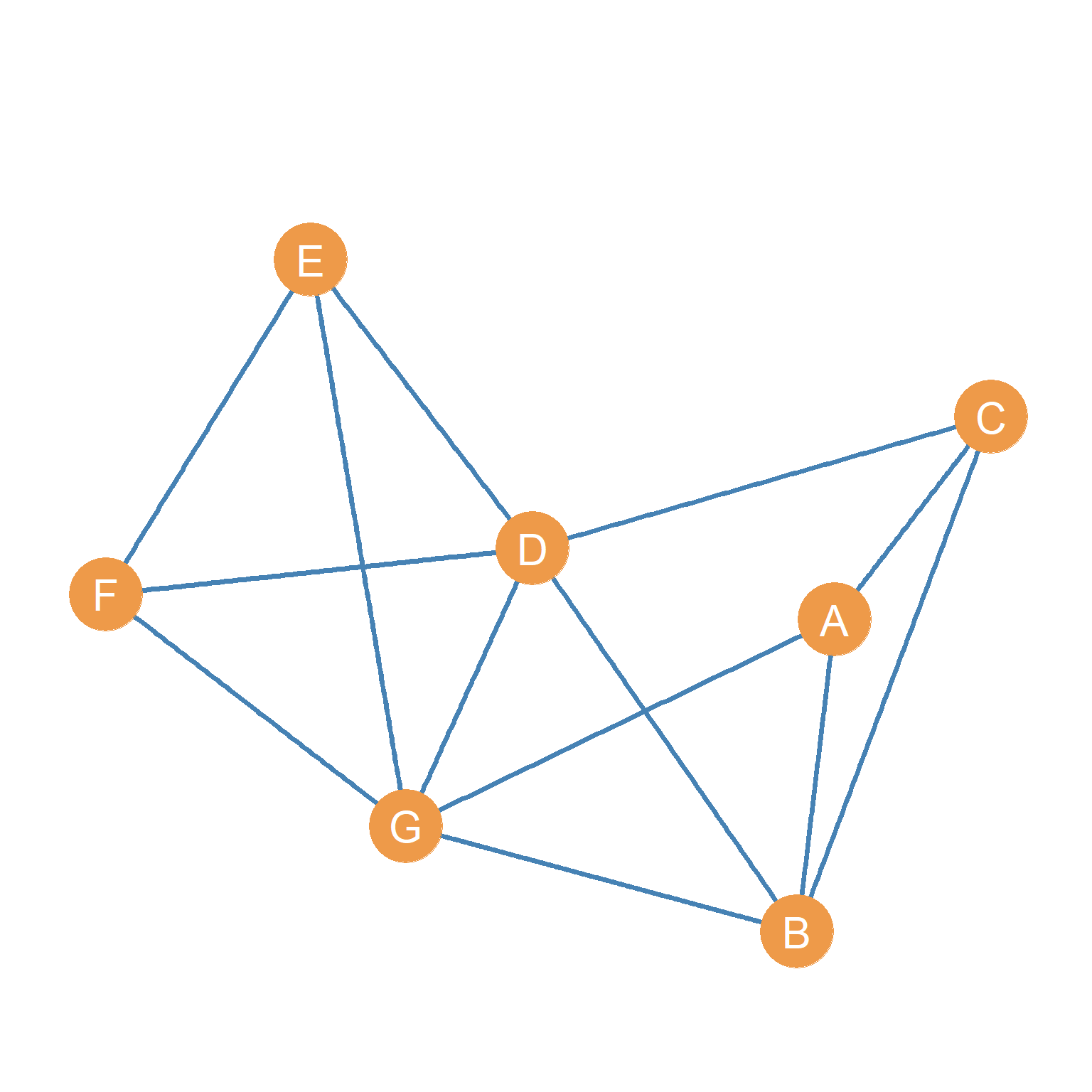


Figure 1: A simple graph.

Consider the graph shown in [Figure 1](#fig-grex1):

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

## Node Neighborhoods

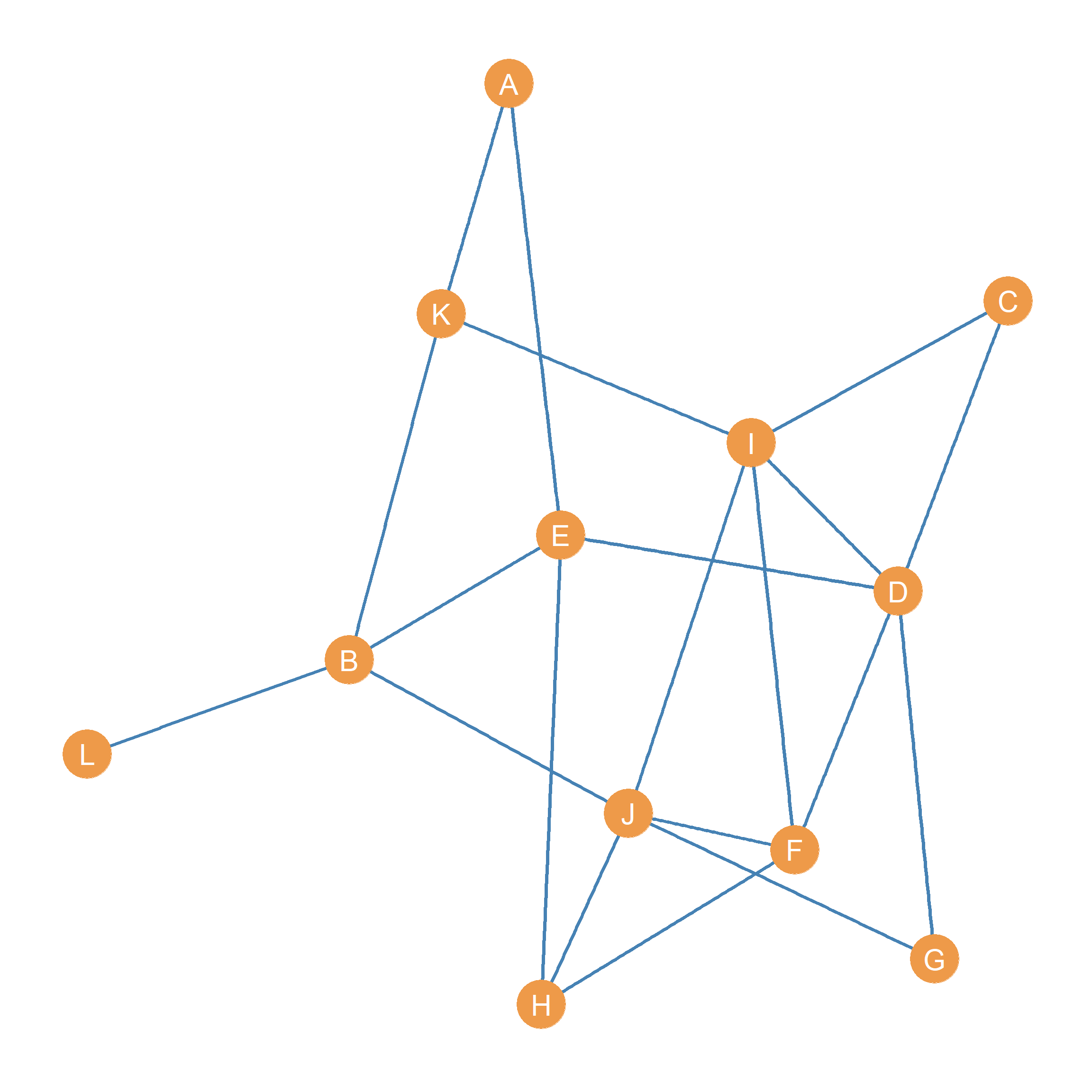


Figure 2: Another simple graph.

Consider the graph shown in [Figure 2](#fig-grex2):

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 *I*?
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](#fig-grex2):

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](#fig-grex1). Draw the **node-deleted** subgraph of this graph that *excludes* nodes *D* and *G*