Graph Exercises:

1. Draw an undirected graph with 5 vertices (label them 1 through 5) and edges connecting:

   - (1, 2), (1, 3), (2, 4), (3, 5), (4, 5)

   - Create an adjacency list representing the graph.

   - Create an adjacency matrix for the same graph.

2. Draw a directed graph with 4 vertices (label them A, B, C, and D) and directed edges:

   - A -> B, A -> C, B -> D, C -> D, D -> A

   - Write the adjacency list for the directed graph.

   - Draw the adjacency matrix to show directionality (using `1` for an edge and `0` for no edge).

3. Provide a weighted undirected graph with 4 vertices and the following weighted edges:

   - (1, 2) with weight 3, (1, 3) with weight 5, (2, 4) with weight 7, (3, 4) with weight 2

   - Create an adjacency list showing each vertex's connections with the weights.

   - Create an adjacency matrix where each entry includes the weight or `0` if no edge exists.

4. Draw a simple undirected, non-weighted graph with 6 vertices connected as:

   - (1, 2), (1, 4), (2, 3), (3, 5), (5, 6), (4, 6)

   - Draw the adjacency list.

   - Create an adjacency matrix for the same graph.