Homework 5

1. Draw the adjacency list representing the graph in Figure 14.1 on page 620 of your textbook.
2. Draw the adjacency matrix representing the graph in Figure 14.1 on page 620 of your textbook.
3. Draw a connected digraph with 8 vertices and 16 arcs such that each vertex has both in-degree and out-degree 2. Show that you can trace all of the arcs of the graph without lifting your pencil (this is called an Euler tour).
4. A clique (or complete graph), $\mathcal{K}_n$, is a graph with n vertices such that every pair of vertices shares and edge. What does a DFS of the tree look like?
5. What does the BFS of a clique look like?
6. Show that the adjacency matrix of an undirected graph is a symmetric matrix.
7. Perform a topological sort on the CSE courses on slide 22 of Lecture 15.
8. Find the least weight path from LAX to JFK in Figure 14.14 on page 659 of your textbook.
9. Use the Prim-Jarník algorithm to find the minimum-weight spanning tree for Figure 14.14 on page 659 of your textbook.
10. Use Kruskal's algorithm to find the minimum-weight spanning tree for Figure 14.14 on page 659 of your textbook.