1. There are n people at a party. Each person shakes hands with every other person. How many handshakes take place?

2. Consider the graph with the following adjacency matrix.

	A	B	C	D	E	F	G
A	0	10	6	4	0	7	0
B	0	0	9	0	11	0	18
C	6	9	0	1	1	0	0
D	4	0	1	0	1	2	0
E	0	0	1	1	0	0	14
F	7	0	0	2	0	0	15
G	0	18	0	0	0	0	0

a. Draw a picture of the graph represented by this adjacency matrix S without the weights.

b. Is the graph directed or undirected? Explain.

c. List the vertices in depth-first order beginning with Vertex A. When there is a choice, process the vertices and edges from left to right.

3. A claim is made that a complete directed graph of n vertices has n(n-1) edges, while a complete undirected graph of n vertices has n(n-1)/2 edges. Is this claim true? If so outline a proof. If not, give a counter example.

4. We have a max-heap where nodes are given IDs starting at 0 for the root node, 1 for the left child, and 2 for the right child. We increase node IDs as we move from left to right across one level of the tree.

   Identify a pattern for moving from a node with label j to its left child and right child. What labels would be found on the left and right children of node j?