SCC120 Week 9 workshop

Graphs

1) Given that you have a directed graph, what is one way to convert this into a simple graph?

2) If a directed graph has n nodes, what is the maximum number of edges that it can have?

3) If a directed graph (that is connected) has n edges, what is the maximum number of nodes that it can have?

4) If a directed graph (that is connected) has n arcs, what is the maximum number of in-arcs for a node in the graph?

5) If a directed graph (that is connected) has n arcs, what is the minimum number of in-arcs for a node in the graph?

6) Why can a directed graph with an odd number of nodes *not* have a density of 0.5?

7) How many edges does a directed graph with a density of 0 have?

8) A partial (reduced) graph must have a lower density than the original graph. Why?

9) A subgraph can have a higher density than the original graph. Why?

10) What is the maximum length of a simple path for a directed graph with n nodes?

11) What is the diameter of a full graph with n nodes?

12) Why do we use a stack for implementing a depth-first traversal?