COSC229 Tutorials No. 3

(1) Trace the breadth-first search algorithm in page 36 with a graph obtained from the graph in the same page by adding edge (c, g) at the end of the edge list from c. Trace the changes on Q.

(2) Trace the sc-components algorithm in page 37 with a graph obtained from the graph in page 34 by adding edge (g, c) at the end of edge list from g. Do a similar trace by deleting edge (a, b) from the graph in page 35.

(3) Topological sort is to sort vertices of an acyclic graph in linear order in such a way that every edge goes from left to right. An acyclic graph has no cycle.

Example. Ignoring edge costs, the graph in page 41 can be sorted as follows:

![Graph Diagram]

Modify DFS in page 34 for topological sorting. Apply your algorithm to this graph. Hint. Topological ordering will be given in reverse order.

(4) Trace Dijkstra’s algorithm in page 39 with a graph obtained by adding edge (3, 4) with edge cost 10.

(5) Trace Warshall’s algorithm in page 42 with the graph in page 35.

(6) Trace Floyd’s algorithm in page 43 with the graph used in (5). Confirm the first line of the result matrix is the same as the result in (5).

(7) Trace Kruskal’s algorithm in page 46 with a graph obtained by adding a new vertex 7 and adding edge (3, 7) with edge cost 7 and edge (6, 7) with cost 1.

(8) Trace Prim’s algorithm with the same graph used in (8).