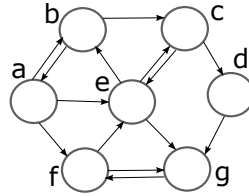11/2/17
Lab Worksheet

1. **BFS**

(a) Run BFS on the graph above, starting on vertex a. Assume that vertices are ordered alphabetically in the adjacency lists. Write the BFS time stamps into the vertices. Draw the tree edges into the graph and show how the tree is stored in the predecessor array.

(b) Is the BFS-tree the same or different from the DFS-tree?

(c) For which graphs do DFS and BFS have the same traversal trees?

2. **Dijkstra**
   Run Dijkstra's algorithm on the graph below, with source vertex v_0.

(a) Show all the different stages of the algorithm, including d-values for each vertex, the set S, the priority queue, the vertex extracted from the priority queue, and the tree edges stored in the predecessor array. Also draw the shortest path tree edges into the graph.
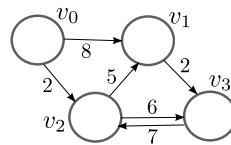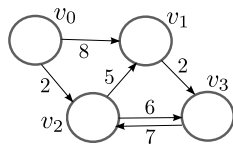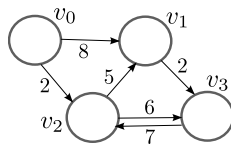

Q:

π: 0 1 2 3

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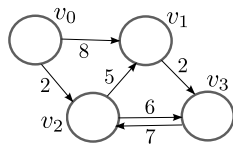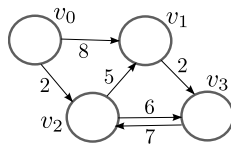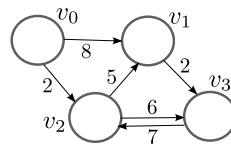
(b) List the shortest paths from v_0 to all other vertices.