Daniel Beyer

beyerda@oregonstate.edu

CS 261 Date: 08/02/16 Assignment 7 – Written Portion

1. How is the graph stored in the provided code? Is it represented as an adjacency matrix or list?

It appears to be stored as an edge list, as only the edges appear next to each vertex.

2. Which of the 3 graphs are connected? How can you tell?

Graphs 2 and 3 are connected because all vertices are reachable, while in graph 1 not all vertices are reachable.

3. Imagine that we ran each depth-first and breadth-first searches in the other direction (from destination to source). Would the output change at all? Would the output change if the graphs were directed graphs?

The output would not change if the graph is not directed. If the graphs were changed to directed, the output would change due to single direction edges.

4. What are some pros and cons of DFS vs BFS? When would you use one over the other?

DFS Pros – Can potentially find the solution faster while using less memory

DFS Cons – Can potentially get stuck down infinite paths and never find a solution, and can also result in a lot of backtracking.

BFS Pros – Will always end up finding a solution since it searches multiple paths at once BFS Cons – Not as memory efficient as DFS

5. What is the Big O execution time to determine if a vertex is reachable from another vertex? O(E+V), where E is the number of edges and V is the number of vertices.