

Assignment 7 Questions

- 1) The graph stored in the provided code is stored as an edge list. This is because it is an array of Vertices that hold their neighbors within the structure rather than having a 2D array. So each vertex contain all of its edges in the form of connections to neighbors.
- 2) Here are the graph connections:
  - (1) Graph1 = connected, you can go A -> B -> C
  - (2) Graph2 = connected, you can go A->H->B->D->B->E->C->G->C->F
  - (3) Graph3 = disconnected, at least in how mine seeded, there were whole vertices with no edges at all
  - (4) Graph4 = connected, inverse of 3 since there appears that each vertex had many edges
  - (5) Graph5 = connected, every vertex was connected to every other vertex
- 3) The output would not change when switching destination and source, since we are comparing one another and not specifying a direction to determine neighbors. Where these directional graphs that would make a difference since some vertices would be unreachable from one locations but reachable from another.
- 4) BFS has an advantage of always finding the best path at the cost of time but DFS has the potential to find a path first (but not necessarily the best/fastest path). BFS is good for exploratory search into a data set/structure while DFS will get you to a destination or deepest point within a structure faster.
- 5) The big O time would be  $O(N+E)$  since either the number of edges or the number of vertices would weigh on how much time it would take to traverse to the destination node.