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CS 261

1.) The graph in the provided code is stored as edge list as each vertex structure holds its neighbors.
2.) The first graph is connected as there is a path from A to B and B to C, so therefore A and C are connected. The second graph is not connected as there are no edges to or from B. The third graph is not connected, but the B vertex does not connect to any other vertices. The fourth graph is connected as you can reach every vertex. The fifth is also connected. A graph is connected if every vertex can be accessed by a path.
3.) The output would not change is it was a non-directed graph as each edge allows for movement both ways. The directed graph may not have the same output as there could be some edges that do not allow movement backwards.
4.) The pros of DFS is that is can find the solution quickly, but can backtrack on its route, making the spectrum of speed quite wide. It can also fail to find a solution if it finds an infinite path. A BFS, on the other hand, is slower, but will always find the correct path as it evaluates every single option available.
5.) The Big O execution time is O(E) where E is the number of edges in the graph.