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Answers to Assignment 7 Questions:

1. The graph is stored in an edge list because each vertex has a list of all of its neighbors.
2. First let's define what a connected graph is: A connected graph is a graph where there is a path between any two vertices. The graphs that are connected are graph 1, graph 4, and graph 5. These graphs are connected because there is a path between any two vertices.
3. If the search went the other direction, the output would not change because of the assumption that each node is connected to another node with no direction. If the graphs were directed graphs, then the output would change because all the paths would change based on the direction of each path from one node to another. For example, if there was a directed edge from A to B, that does not mean that there is a directed node from B to A. Therefore, the output would change for directed graphs.
4. Pros and cons for DFS vs BFS:
    a. BFS
        i. con:
            1. Can take up more space because it looks at all paths of a specific length at once.
        ii. pro:
            1. Guaranteed to find the shortest path, if it exists.
            2. BFS will always find the end of a path, if it exists.
            3. If one of the paths are infinite, then BFS can still find the right path.
            4. If the end point is close to the start point, BFS can be quicker.
    b. DFS
        i. con:
            1. If DFS is on the wrong path, then it could take longer to backtrack.
            2. If the right path is rare, then the solution might take a long time.
        ii. pro:
            1. The correct path can be found the quickest, if you are lucky.
5. The big O execution time is O(e + v), where e is the number of edges and v is the number of vertices. This is because when we are trying to find a path between two nodes; each vertex in the edge list is scanned once and each edge within a vertex is scanned once.