DATA620 Assignment 1

Alice Ding

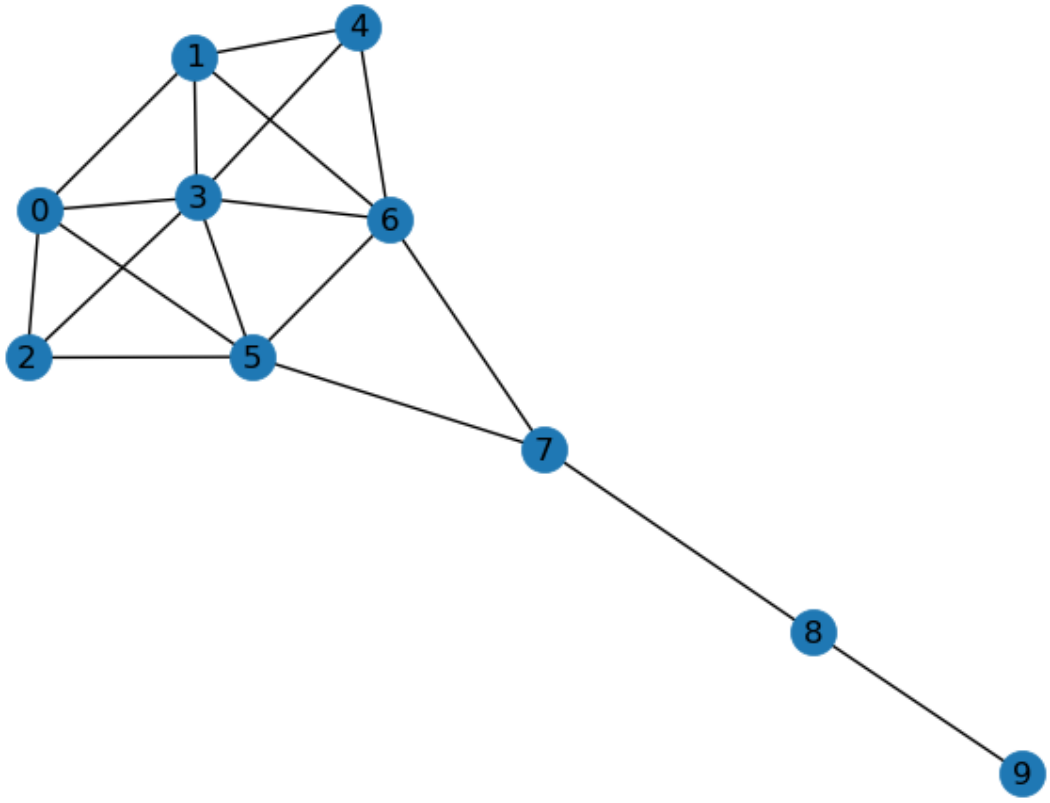
I'll be using `networkX`'s `krackhardt_kite_graph` function for this assignment to view a basic graph and then try to recreate it.

In [ ]:
```
# Step 1: Importing Packages
import networkx as nx
import matplotlib.pyplot as plt

# Step 2: Creating the Graph
graph = nx.krackhardt_kite_graph()

# Step 3: Making a Sample Graph
b = nx.betweenness_centrality(graph)
d = nx.degree_centrality(graph)
c = nx.closeness_centrality(graph)

# Seed initialization
pos = nx.spring_layout(graph, seed=1234)
nx.draw(graph, pos, with_labels=True)
plt.show()
```



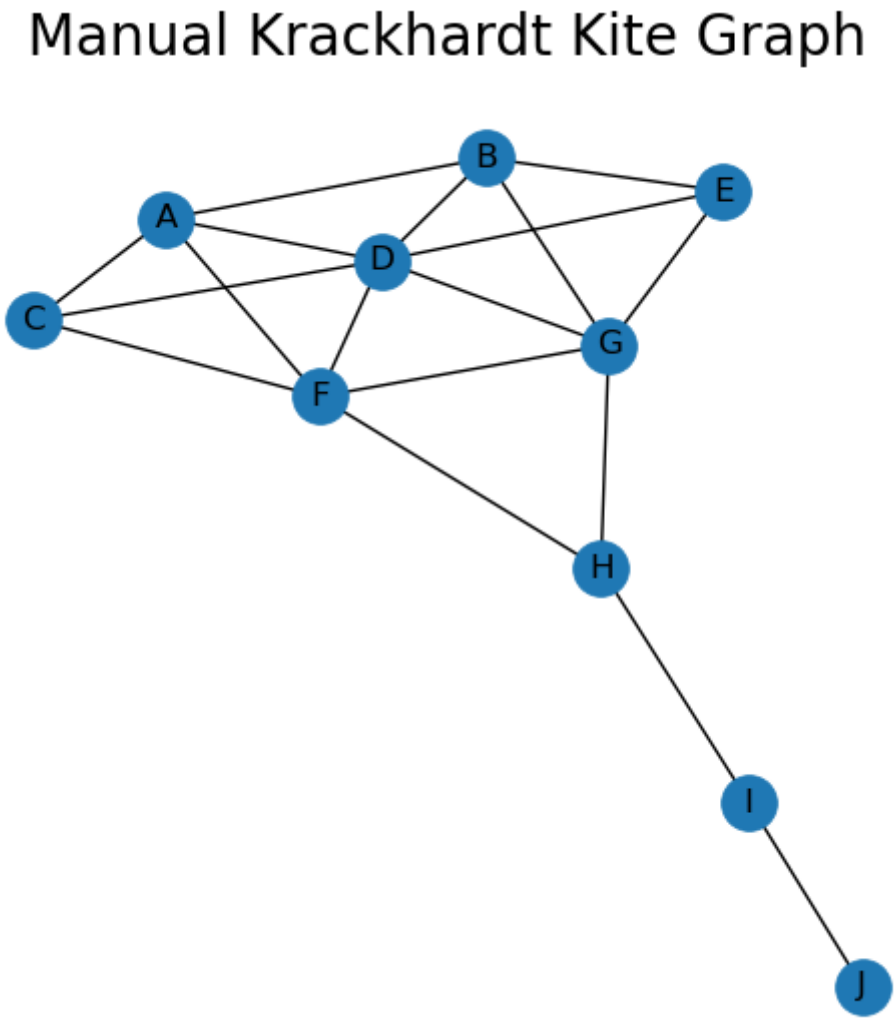
This is what using the package looks like, but what if I tried to make it manually?

In [ ]:
```python
# Step 1: Initialize a Graph
manual = nx.Graph()

# Step 2: Add 10 Nodes
manual.add_nodes_from(['A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J'])

# Step 3: Indicate Edges
manual.add_edges_from([('A', 'B'), ('A', 'C'), ('A', 'D'), ('A', 'F'),
                       ('B', 'D'), ('B', 'E'), ('B', 'G'),
                       ('C', 'D'), ('C', 'F'),
                       ('D', 'E'), ('D', 'F'), ('D', 'G'),
                       ('E', 'G'),
                       ('F', 'G'), ('F', 'H'),
                       ('G', 'H'),
                       ('H', 'I'),
                       ('I', 'J')])

# Step 4: Draw Graph
plt.figure(figsize=(5, 5))
nx.draw(manual, node_size=400, with_labels=True)
plt.title("Manual Krackhardt Kite Graph", fontsize=20)
plt.show()
```



Just to summarize, what's some info about this graph?

In [ ]:
```
print('Number of nodes', len(manual.nodes))
print('Number of edges', len(manual.edges))
print('Average degree', sum(dict(manual.degree).values()) / len(manual.nodes))
```

```
Number of nodes 10
Number of edges 18
Average degree 3.6
```