Project 2 - Milestone 1

Bus Class:

The Bus class represents a node in our power system where different components connect. Each bus has a name and nominal voltage level in kilovolts, which defines its rated operating voltage. The class will automatically assign a unique index to each bus using a counter, allowing each bus to be identified in the network.

Transformer Class:

The Transformer class represents a transformer that connects two buses in the power system. It will store the transformer name, the name of the two connected buses, and its series resistance and reactance (the impedance characteristics). This class models how voltage levels will be linked between buses and how the impedance affects power flow between them.

Transmission Line Class:

The transmission line class represents a transmission line connecting two buses in the power system. It stores the line's name, the name of the two connected buses, and the electrical parameters: resistance, reactance, conductance, and susceptance. These parameters define the impedance and admittance characteristics of the line to model real and reactive power flow between buses.

Load Class:

The load class represents an electrical load connected to a specific bus in the power system. It stores the load's name, the name of the bus it is connected to, its real power (MW) and reactive power (MVar). This class models the power consumption at a bus, which will help for power flow calculations.

Generator Class:

The generator class represents a power generator connected to a specific bus in the system. It stores the generator's name, the name of the bus it is connected to, its set voltage, and its real power output (MW). This class will model a power source that regulates voltage and supplies real power to a system.

Class Diagram: