How to Run the Gauss-Seidel Power Flow Simulation

Follow these steps to run the Gauss-Seidel power flow simulation using MATLAB:

1. Prerequisites

Ensure that MATLAB is installed on your system.

2. Files Needed

Ensure the following three files are in the same directory:

- `formybus.m`: MATLAB function to form the Y-Bus matrix.
- `input3.m`: Defines the 7-bus system's bus and line data.
- `main.m`: Main script to run the Gauss-Seidel power flow simulation.

3. Step-by-Step Instructions

Step 1: Launch MATLAB

- Open MATLAB on your system.

Step 2: Set Directory

- Navigate to the directory where the three files are located.
    - Use the `cd` command in the MATLAB Command Window if needed:
      `cd('path_to_your_directory')`

Step 3: Run the Main Script

- Type the following command in the MATLAB Command Window:
  `main`

Step 4: Observe Output

- The script will display:
  - **Y-Bus Matrix:** The computed Y-Bus admittance matrix.
  - **Final Bus Voltages:** The voltage magnitudes and angles for each bus.
  - **Number of Iterations:** The number of iterations required to achieve convergence.

4. Troubleshooting

- **File Not Found:** Ensure all three files are in the same directory.
- **Convergence Issues:** If the simulation does not converge, try adjusting the tolerance level in `main.m`.
- **Data Input Errors:** Verify that all bus and line data are correctly defined in `input3.m`.