EET 109 FDLF Assignment Details

Instructor: Parikshit Pareek

Objective

You will implement the Fast Decoupled Load Flow (FDLF) method in Python to solve AC power flow problems. Deadline `Monday, September 1st, 12 Noon`.

Steps to Follow

1. Implement your solver in a file named `<EnrollmentNo>.py`.

2. The file must define:
   ```
   run_fdlf(case_file: str, tol: float = 1e-6, max_iter: int = 1):
   ```
   and return:
   ```
   return {
            "bus_angles": [0.0] * len(ppc["bus"]),
            "bus_voltages": [1.0] * len(ppc["bus"]),
            "iterations": 0,
            "time_total": time_total,
            "time_solve": time_solve
        }
   ```

3. Your code must:

   - Work for pandapower cases.
   - Use `pandapower.makeYbus` for Y-bus construction.
   - Converge within tolerance ε and max N iterations will be decided during evaluation.

Marking Scheme

- **Accuracy (40%):** Compared against reference Newton-Raphson solution.

- **Runtime (20%):** Relative to the fasted code with a threshold of time.

- **Overhead (30%):** How much percentage of time your code takes with respect to the time take by `Backslash` or `Linear System Solving`.

- **Special Test (10%):** How can it be special if you know what it is?

Standing Instructions

- Submit only one file: `<EnrollmentNo>.py` using this Link .

- Do not hardcode bus numbers or results.

- Do not import extra libraries (only Python stdlib + pandapower allowed).

- If your code fails to run, you will receive zero marks.