**Project Description: Nurse Scheduling Round 2 - Heuristics**

**Objective:**

Develop a heuristic approach to solve an altered version of the nurse scheduling problem without the use of Gurobi. Then, feed your solution as a warm start to the Gurobi model provided and run the optimization.

**Problem Alterations:**

1. Different tasks are required for each day of the week.

2. There are no adherence tasks to consider.

3. The primary aim is to minimize the number of nurses required.

4. The secondary objective is to decrease the frequency of location changes for the nurses.

Objective is calculated as

100\*num\_nurses\_needed + num\_changes\_in\_location

5. Nurses must work consecutive days (this could run over the weekend, i.e., S, Su, M, Tu is valid)

6. Nurses must work at most 4 days

7. Nurses must work at most 10 hours a day

8. Nurses may change locations several times, but we have the goal to limit the total number of changes.

**Resources Provided:**

A notebook containing code that employs Gurobi to address the problem will be provided as a reference.

**Criteria for Evaluation:**

1. Quality of Ideas: Your heuristic should be innovative and effective in addressing the constraints and objectives.

2. Organization of Presentation: The presentation of your approach, results, and findings should be clear and structured.

3. Effectiveness of Solution: The solution's efficiency will be tested against a larger dataset to determine its scalability and robustness.

**Team Formation:**

Form groups consisting of 2 to 3 members.

**Submission Requirements:**

1. Code: A well-documented code implementing your heuristic.

2. Write-Up: A comprehensive description detailing your approach, the rationale behind the choices made, any potential challenges faced, and key findings.

3. Team Contributions: A clear breakdown explaining each team member's contribution to the project.