# Assignment 3

**Due date: Monday, 28th Sep 2023** **Total Marks:100**

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**Instructions:**

- All questions must be in a single notebook.
- You must follow the file naming conventions, submission file should be named as RollNo.ipynb/.py (i.e. i23-xxxx.ipynb where xxxx is your Roll Number)
- Make use of headings for each question in notebook.
- Any question with Error is not acceptable.
- Late submissions are not allowed and will be marked at zero.
- **You are only allowed to use simple Python, NumPy and Pandas to solve this assignment. You are not allowed to use any library which is not taught yet.**
- **You are not allowed to manually manipulate the timetable.**

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1. Load and Read Timetable Data
   - Read the timetable data for Fast Islamabad using Pandas. Ensure the data is loaded properly and is in a usable format. (Marks: 5)

2. Clean the Data
   - Remove unnecessary rows, such as extra header rows or irrelevant data, from the timetable using appropriate Pandas functions. (Marks: 5)

3. Query Classes by Subject
   - Prompt the user to input a subject name (without section details). Return all the classes for that subject across the week, including the time, day, and room number. (Marks: 10)

4. Query Classes by Subject and Day
   - Ask the user to input a subject name (without section details) and a specific day (e.g., Monday). Return all the classes of that subject on the specified day.
   - Apply the same logic for lab sessions. (Marks: 10 for lectures, 10 for labs)

5. Query Classes by Subject, Section, and Week
   - Ask the user to enter a subject and section (e.g., "AI 2022 A"). Return all the classes of that subject for that section across the entire week, showing time, room number, and day.
   - Do the same for lab sessions. (Marks: 10 for lectures, 10 for labs)

6. Generate a Custom Timetable for a Batch
    - Create a custom timetable for a specific batch (e.g., "AI 2022"). Ask the user to input the batch name, then extract all classes for that batch across the week. The result should be saved in an Excel file, with any slots not belonging to the batch marked as free.

(Marks: 20)

7. Create a Teacher’s Timetable
    - Load a course allocation list and map it to the timetable. Ask the user to input a teacher's name, and return a timetable showing all the classes assigned to that teacher across the week. Generate and display a custom timetable for that teacher. (Marks: 20)