Final Project– Proposal

- Project Description: This project focuses on analyzing the operational performance and service efficiency of the **Metropolitan Transportation Authority (MTA)**, which manages New York City's subway and bus systems. The dataset includes multiple performance dimensions such as daily ridership, mean distance between failures, lost time incidents, station-level data, and major service disruptions.
The goal is to extract meaningful insights from these datasets to understand system performance trends, identify operational bottlenecks, and evaluate how effectively the MTA meets its service quality objectives

- Group Members & Roles:
    1. Amr Mohamed : data collecting
    2. Mohamed Mamdouh Fathy : data collecting
    3. Bishoy Mina El Mallah : data cleaning
    4. Paula Sameh Sobhy : data analysis
    5. Abanoub Shawket Ragheb : data visualization

- Team Leader: Amr Mohamed
- Objectives:

    1. **Assess Ridership Trends:**
       Analyze daily and yearly subway and bus ridership patterns to identify peak demand periods and long-term usage trends.
    2. **Evaluate System Reliability:**
       Measure subway and bus reliability through indicators such as mean distance between failures and major incident frequency.
    3. **Analyze Service Efficiency:**
       Compare key performance indicators (KPIs) across years to evaluate how effectively MTA services are meeting performance targets.
    4. **Identify Improvement Opportunities:**
       Highlight operational areas where delays, incidents, or low reliability affect service quality and customer satisfaction.
    5. **Forecast Future Demand:**
       Use historical data to estimate future ridership and performance needs to support planning and resource allocation.

- Tools & Technologies: EXCEL,SQL,POWER BI,PYTHON,TABLUE
- Milestones & Deadlines :
    1. first 2 weeks of October : data collecting
    2. second 2 weeks of October : data cleaning
    3. first 2 weeks of November : data analysis

4. second 2 weeks of November : data visualization
- KPIs (Key Performance Indicators): Each team should customize the following KPIs based on their project requirements.
    1. Mean Distance Between Failures (MDBF)
    2. On-Time Performance (OTP)
    3. Major Incidents Count
    4. Daily Ridership
    5. Lost Time per Incident
    6. Revenue Miles per Bus

1. Data Cleaning & Processing

- ...% of missing/duplicate data handled (Target: 100%)

2. Analysis & Insights

- ...% of agreed business questions answered (Target: ≥ 90%)

3. Visualization & Reporting

- Dashboard load time (Target: < 5s)
- Dashboard usability (≥ 80% users navigate without help)

4. Final Documentation & Presentation

- Final report completeness (Target: 100%)
- Number of actionable recommendations (≥ 3)