STUDENT PERFORMANCE ANALYSIS

Problem Statement:

- The goal is to analyze student academic performance and predict outcomes using machine learning.

- **Objectives:**

  - Predict pass/fail based on scores
  - Visualize trends by gender, education, and preparation

Dataset Description:

- **Source:** Kaggle - StudentsPerformance.csv
- **Features:**
- **Demographics:** gender, race/ethnicity
- Academic background: parental education, test prep
- Subject scores: math, reading, writing

ML Approach:

- **Preprocessing:**
- Label encoding, feature engineering (average score)
- **Model:**
- Random Forest Classifier
- **Evaluation:**
- Accuracy, classification report

Power BI Dashboard:

- **Dashboard Highlights:**
- **Pie chart:** Test prep completion
- **Bar chart:** Scores by gender
- **Stacked column:** Parental education vs scores
- **Slicers:** Interactive filters for gender, lunch, etc.

Results & Insights:

- ML model accurately predicts pass/fail with high accuracy
- Students with test prep generally perform better
- Gender and parental education influence performance

Conclusion:

- Successfully combined data science with dashboarding
- ML helps predict outcomes early
- Power BI enhances understanding for educators/admins