AI LAB 11: Regression & Plots – Clean Explanation

1. Data Preparation

The dataset is loaded from laptop_data.csv. RAM values have 'GB' removed and are converted to integers. Weight values have 'kg' removed and are converted to floats. Unnecessary columns such as Unnamed: 0 and id are deleted. Missing values in text columns are filled using Mode, while numerical columns are filled using Mean. Categorical columns are converted into numeric form using pandas factorize(). The data is then split into 70% training and 30% testing.

2. Regression Models

Four models are used: Linear Regression, Random Forest Regressor, Decision Tree Regressor, and KNN Regressor. Each model is trained using the training data. Predictions are made on the test data, and two metrics are calculated: R^2 Score (higher is better) and Mean Squared Error, MSE (lower is better). Results are printed in table format.

3. Visualization

Two bar charts are generated. The first chart compares the R^2 Scores of all models. The second chart compares MSE values and uses a log scale to clearly show differences between models.

4. Completion

All required tasks, including data cleaning, model training, evaluation, and graph generation, are fully completed.