Fraud Detection System - Project Summary

Project Objectives

1. Detect fraudulent transactions in financial data.
2. Perform exploratory data analysis (EDA) to understand fraud patterns.
3. Preprocess the data for better model performance.
4. Train and evaluate a machine learning model.
5. Optimize performance by handling class imbalance.
6. Save and deploy the model for future predictions.

Tasks Covered

- Data Preprocessing: Checked for missing values, duplicates, and inconsistencies.
- Data Scaling: Standardized numerical features.
- Exploratory Data Analysis (EDA): Boxplots, count plots, correlation analysis.
- Class Imbalance Handling: Applied resampling techniques.
- Feature Selection: Removed highly correlated features.
- Model Training: Used Logistic Regression to classify fraud transactions.
- Model Evaluation: Calculated Accuracy, Precision, Recall, and F1-score.
- Model Saving: Saved the trained model for future use.
- Prediction: Used the trained model for real-world predictions.