**Task -1**

House Price Prediction using LightGBM

Objective: Predict house sale prices based on property features.

Dataset: train.csv (with target SalePrice) and test.csv (for predictions).

Libraries: NumPy, Pandas, scikit-learn, LightGBM.

Data Preprocessing: - Handle missing values for categorical and numerical features. - Fill LotFrontage by neighborhood median. - Encode quality columns with numerical mapping.

Feature Engineering: - TotalSF = GrLivArea + TotalBsmtSF + GarageArea. - Boolean features: HasGarage, HasPool, HasFireplace.

Encoding: One-hot encoding for categorical variables.

Model: LightGBM Regressor with n\_estimators=2000, learning\_rate=0.01.

Validation: 5-fold cross-validation (KFold).

Target Transformation: Log-transform y for training stability.

Training: Fit model on train folds, predict on validation and test sets.

Evaluation: Calculate RMSE on log-transformed target.

Submission: Exponentiate predictions, save submission.csv.

Result: submission.csv ready for Kaggle or other evaluation platforms.

