Low Level Design (LLD)

Cryptocurrency Volatility Prediction

Data Preprocessing

- Load CSV using pandas
- Convert date column to datetime
- Forward fill missing values
- Handle infinite values from liquidity ratio

Feature Engineering

- Volatility = (High − Low) / Close
- Rolling Volatility (7-day average)
- Liquidity Ratio = Volume / Market Capitalization
- Moving Averages (7-day, 14-day)

Model Training

- Split data into training and testing sets (80:20)
- StandardScaler applied to numerical features
- RandomForestRegressor trained on scaled data

Evaluation

- MAE, RMSE, R^2 score calculation
- Actual vs Predicted visualization

Model Persistence

- Save trained model and scaler using joblib