

3. LLD – Low-Level Design Document

1. Streamlit Components

A. Input Section

- Text: coin, symbol, date
- Numeric: price, 1h, 24h, 7d, 24h_volume, mkt_cap, liquidity_ratio, price_change_24h
- Autofill dropdown

B. Buttons

- Predict Single
- Predict Batch
- Download PDF
- Download Batch CSV
- Toggle Help
- Toggle Dark Mode

2. Functions (Detailed)

prepare_model_df_from_ui_dict()

- Cleans UI inputs
- Selects only numeric model features
- Ensures correct order

generate_pdf()

- Creates structured PDF report using ReportLab
- Includes input values + prediction

save_history_csv()

- Appends:
 - UI input values
 - prediction
 - timestamp

- o mode
to prediction_history.csv

Model Prediction Flow

UI Inputs

↓ clean/format

```
model_df = prepare_model_df_from_ui_dict()
```

↓

```
pred = model.predict(model_df)
```

↓

save to history + show + PDF

3. Data Structures

- UI dictionary
 - Pandas DataFrame for model
 - NumPy arrays for predictions
 - CSV for history
 - PDF for reports
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4. Error Handling

- Missing features
- Incorrect data types
- Empty batch inputs
- Missing model file
- Failure to read CSV