CPE334 Final Project Presentation

STONKS: Stock Analysis Platform
Project By Group 1 Section 31

This presentation is one of the assessment activities of CPE334 Software Engineering Course of Computer Engineering (International Program), Faculty of Engineering, King Mongkut's University of Technology Thonburi, Semester 1/2024

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Introduction Section

Introduction ⭐

In today's rapidly evolving financial landscape, the need for accessible and comprehensive stock analysis tools has become increasingly vital, particularly for newcomers to the investment world. STONKS is a web-based application designed to bridge the gap between complex financial data and informed investment decisions and making stock analysis more accessible to both novice and experienced investors.

What is STONKS? 📈

STONKS is being developed as a comprehensive stock analysis and visualization platform that combines powerful analytical tools with an intuitive user interface. The project aims to democratize financial analysis by providing users with professional-grade tools wrapped in an accessible format. By integrating stock screening and important information for investors, STONKS creates a unified platform that serves both as an analytical tool and a learning environment.

Problem Statement 🤔

Many potential investors face significant barriers when entering the stock market, including:

- Complexity of financial data and analysis
- Difficulty in making informed investment decisions
- Limited access to comprehensive educational resource

Project Objectives 🤗

1. Simplify the stock analysis process through intuitive visualization and screening tools
2. Empower users with clear analytical insights and company information as the factors for investment.
3. Offer predictive analytics and risk assessment tools through using real-time machine learning for considering whether to choose to invest or not.

Target Group 👬

1. Novice investors seeking to enter the stock market
2. Experienced investors requiring comprehensive analysis tools
3. Individuals interested in learning about business and finance
4. Users seeking a unified platform for portfolio management and analysis

Main Features

1. Stock Visualization Interactive Dashboard with Prediction Graph
2. Insight information of each companies or each stocks
3. Mobile Web App Compatibility

Functional Requirements

1. Stock Quotes and Market Data
2. Interactive Charts with Prediction
3. Financial ratio calculation (P/E, P/B, etc.) (Optional)
4. Valuation metric computation
5. Company fundamental analysis (Optional)
6. Financial Reports and Press Release (Optional)

Non-functional Requirements

1. Usability
    - Easy-to-use interface
    - Intuitive Navigation
2. Performance
    - Fast loading times
    - Responsive Design
3. Reliability
    - System uptime and stability
    - Data accuracy and integrity

Non-functional Requirements (cont.)

4. Scalability
    - Ability to handle increasing user loads and data volumes
5. Maintainability
    - Ease of updating and modifying the system
6. Portability
    - Compatible with different devices.

Elicitation/Requirements Gathering

Interviews

- Conduct interviews with investors or stock interests to understand their needs for stock analysis, which we could get some insights for adapting for our group project for having better features

Observation

- Spend time observing some investors or stock interests on using other software, focusing on how their stock analysis is being managed and how the value of the stock has been predicted to get the future result, along with other factors for investment.

Workshop Session

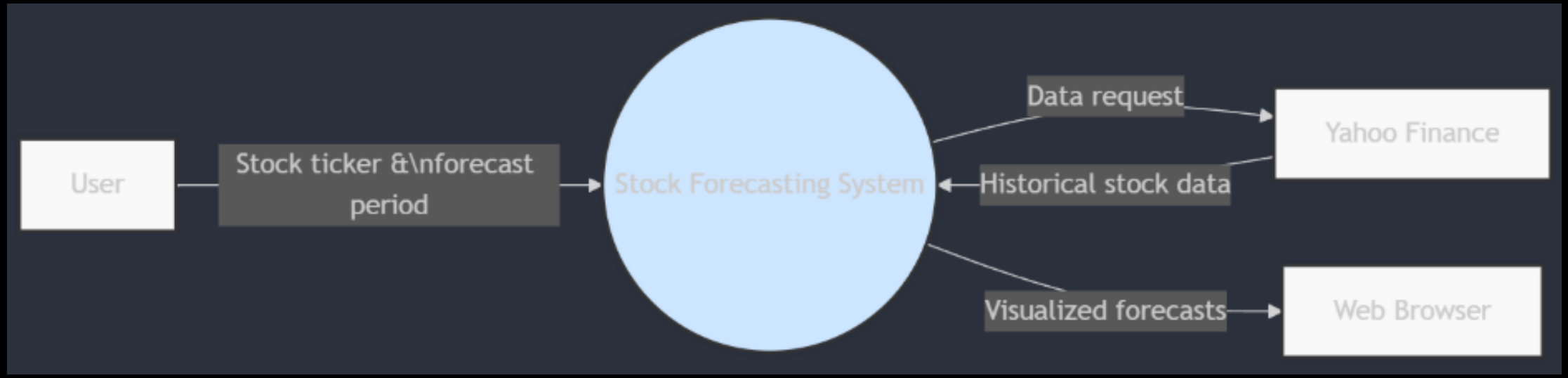
- Organize a workshop involving multiple stakeholders to collaboratively discuss the desired features and identify conflicting requirements of the stock analysis platform.

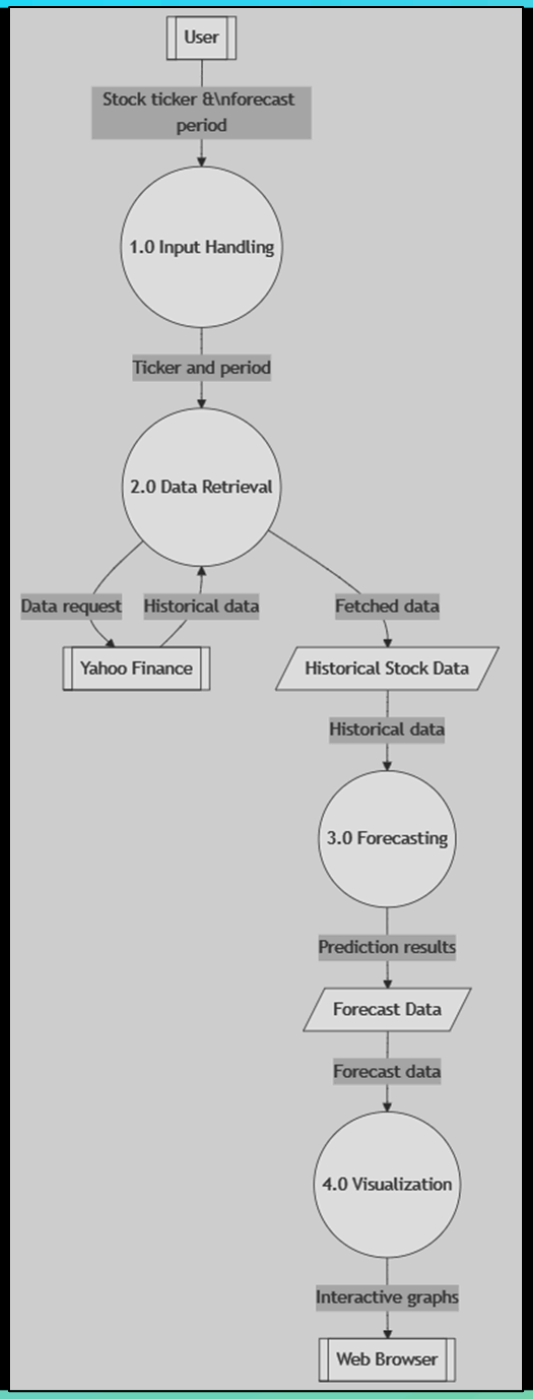
Prototyping

- Create a prototype of the STONK stock analysis platform for gathering feedback on usability and feature preferences.

Software Architecture

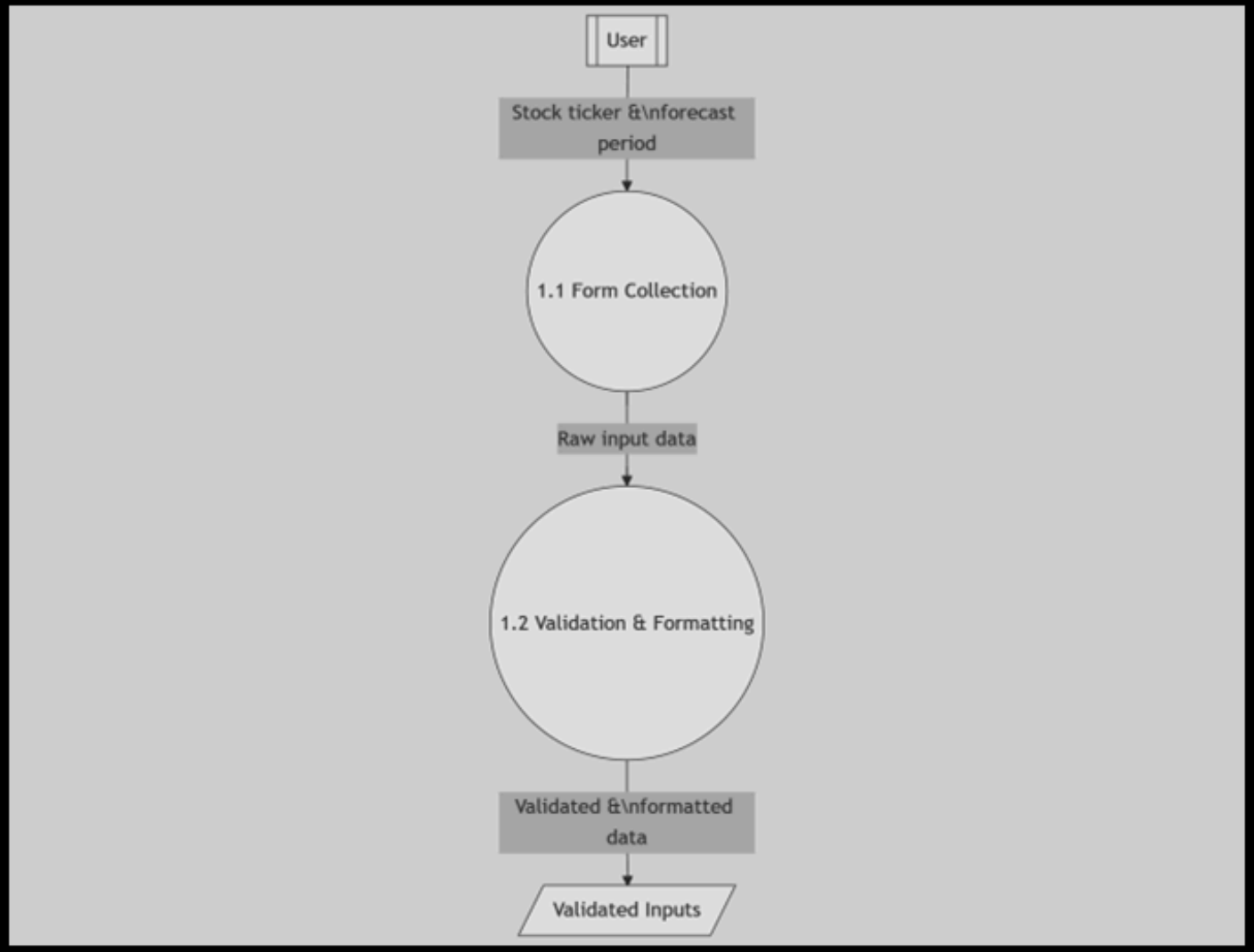
Context-level DFD



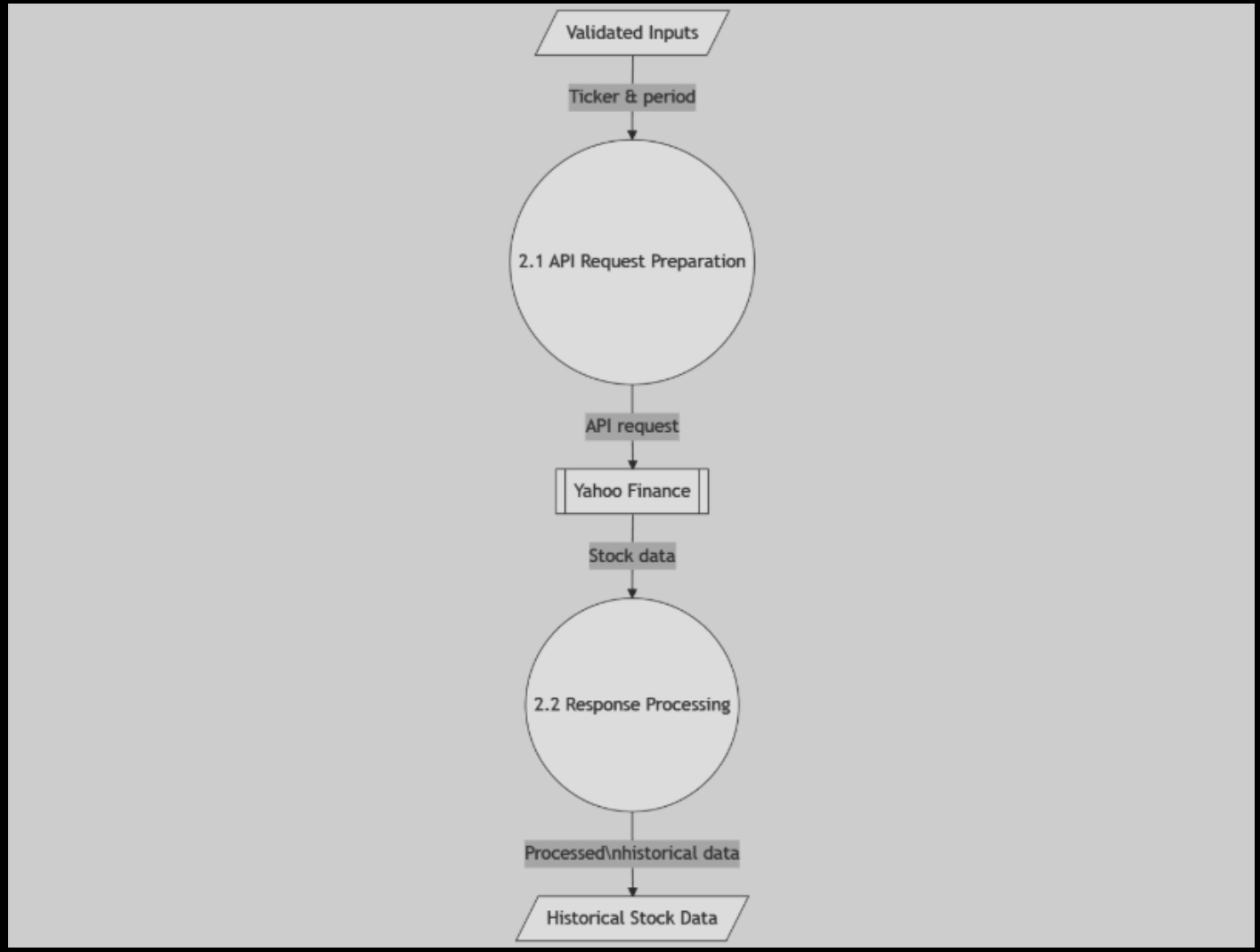

User
Stock ticker &\nforecast period
1.0 Input Handling
Ticker and period
2.0 Data Retrieval
Data request
Historical data
Fetched data
Yahoo Finance
Historical Stock Data
Historical data
3.0 Forecasting
Prediction results
Forecast Data
Forecast data
4.0 Visualization
Interactive graphs
Web Browser

Level-1 DFD

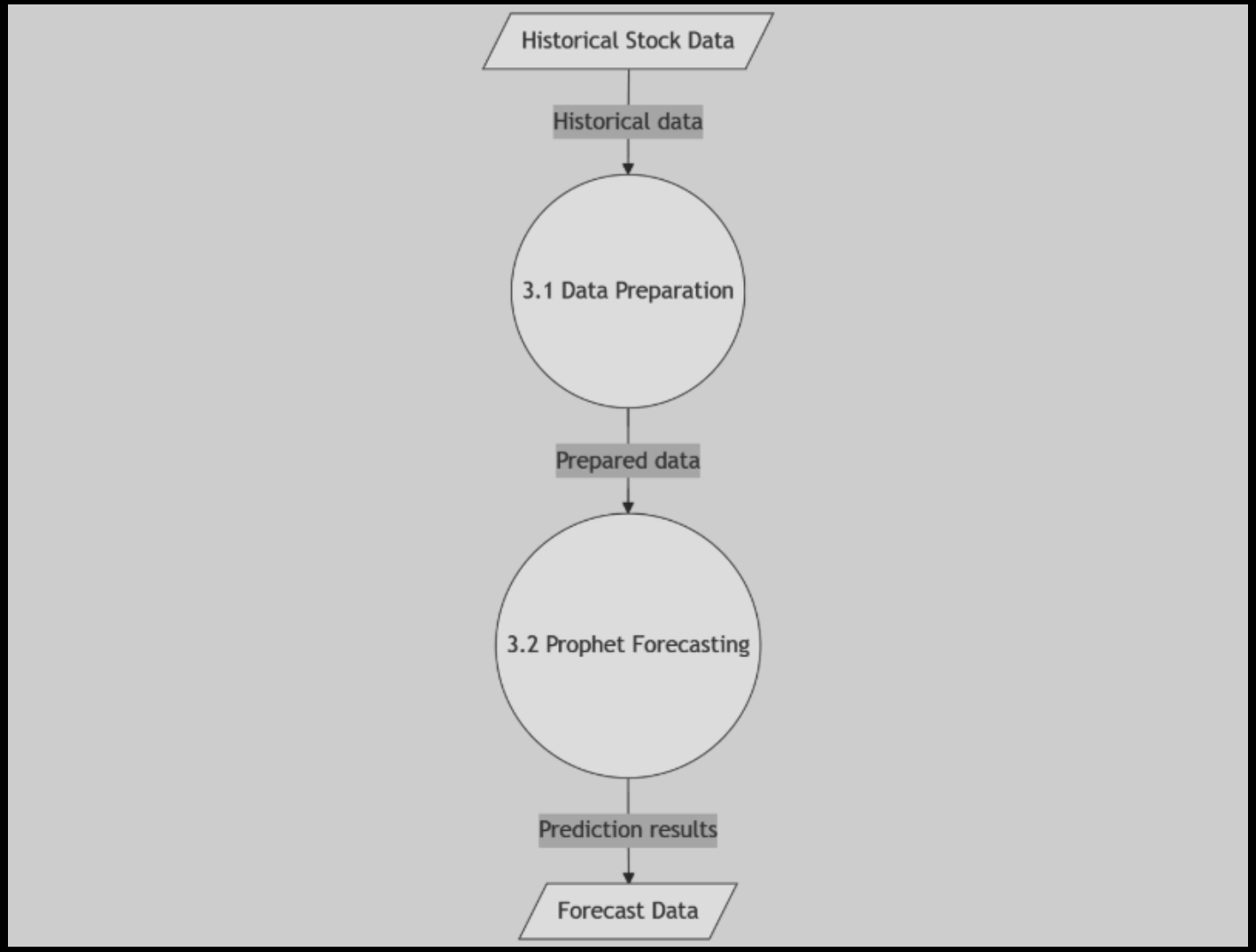
Level-2 DFD: Form Collector of the Stock Ticker



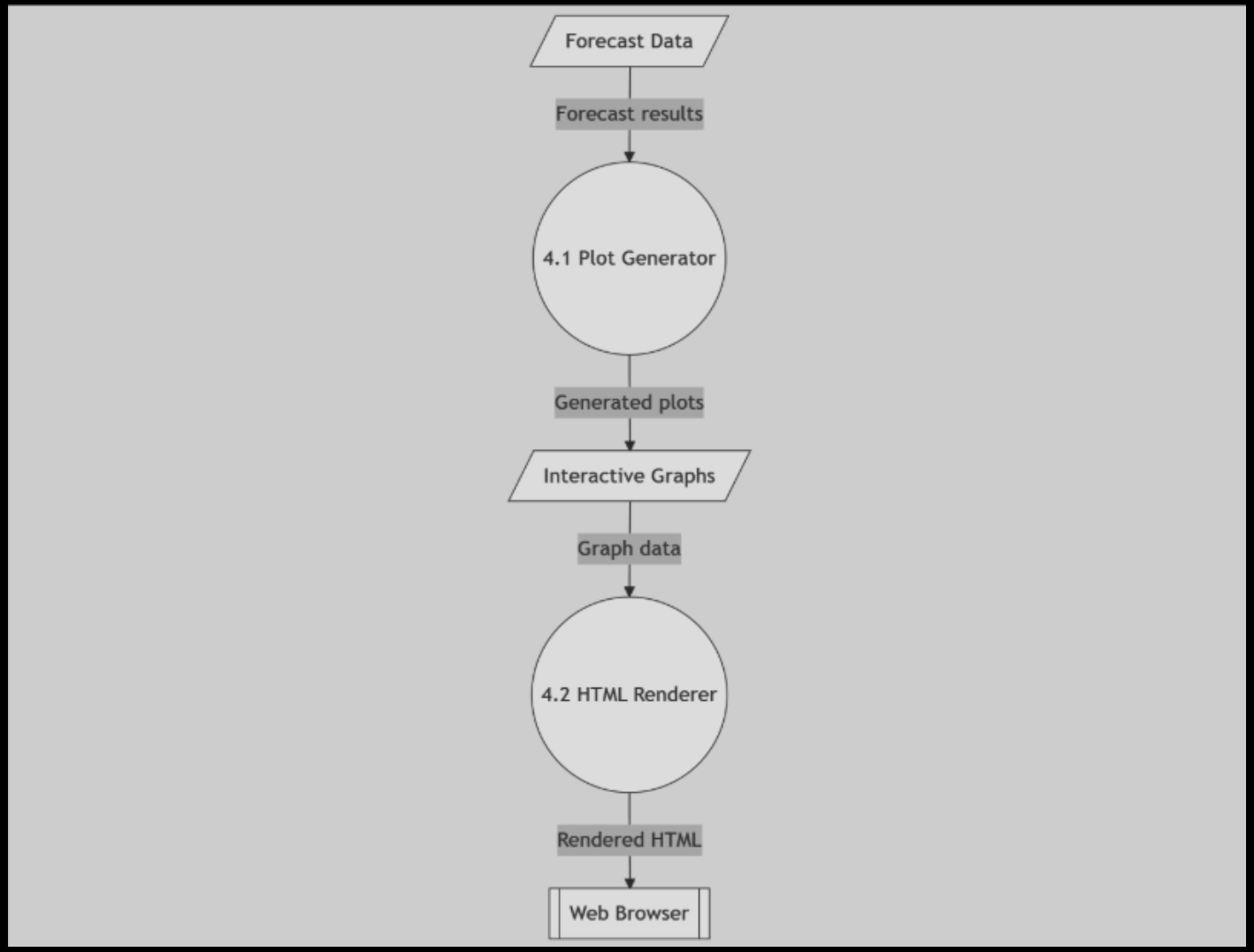
Level-2 DFD: API Retriever from Yahoo Finance



Level-2 DFD: Predictor/Forecaster



Level-2 DFD: Graph Visualizer



Functional UI Designs

Demonstration Time

Working Process

Sprint 1: Homepage and UI Design

Sprint 2: Graph Designing

Sprint 3: Backend management on API (Yahoo Finance)

Sprint 4: Model Training for Prediction Features

> Each sprint takes 2 weeks in process.

Some Aj. Chaiyong's Inspirations On the Project

Business Analysis for Further Developments

Conclusions

- **Democratizing Finance**: Simplifies financial analytics for both novice and experienced investors.
- **Innovative Features**: Interactive dashboards, ML-powered predictions, and detailed company insights.
- **User-Centric Development**: Iterative design using Scrum and feedback from interviews/workshops.
- **Key Strengths**: Ease of use, comprehensive tools, and intuitive design.
- **Improvement Areas**: UI theme refinements, enhanced homepage content, and deeper engagement.
- **Future Focus**: Design system optimization, advanced analytics, and content enhancements.

Thank You For Watching! 🙏❤️

Any Questions? 🙋‍♂️🙋‍♀️ ?