

Java Final Project Proposal

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The Stock Trading Simulator

Project Overview:

The Stock Trading Simulator is a Java-based application designed to simulate simplified real-world stock trading behavior in a safe and educational environment. The system allows users to register accounts, view simulated or real-time stock prices, and execute buy/sell orders with virtual funds. Users can manage their portfolios, monitor their trading history, and evaluate performance over time. We plan to implement GUIs, Threads, Networking, and Databases in this system.

Features:

- **User Account System:** Support for user registration, login, and secure session management with persistent virtual account data.
- **Real-Time / Simulated Stock Prices:** Display of live stock prices via API or simulated dynamic pricing with price fluctuation algorithms.
- **Interactive Trading Interface:** Buy/sell stocks with instant feedback, position updates, and visual confirmation of trades.
- **Portfolio Management:** Track current holdings, average buy price, market value, and overall profit/loss in a clean dashboard.
- **Transaction History:** View detailed logs of past trades including time, type (buy/sell), quantity, price, and resulting balance.
- **Stock Price Visualization:** Display line charts or candlestick charts to show historical price movements using JavaFX chart components.

Technologies:

- **JavaFX / Swing:** To build the graphical desktop user interface (buttons, charts, tables, etc.).
- **Java SE 8+:** Object-oriented programming, multithreading, collections, I / O of files and exception handling.
- **MySQL:** Lightweight database for storing user profiles, portfolio data, and transaction logs.
- **JFreeChart / JavaFX Charts:** For displaying price history and trend analysis in a graphical format.
- **HTTP API Integration :** Use libraries like HttpURLConnection or OkHttp to fetch live stock data from APIs such as Alpha Vantage or Yahoo Finance.

Timeline:

Task ID	Task Phase	Task Content	Deadline
T001	System Initialization	Build system with GUIs, networking	2025-03-28
T002	Function enhancement	Add threads to the system for manual connection	2025-04-04
T003	Function enhancement	Implement database modules and import data from database	2025-04-11
T004	Function enhancement	Add login and history checking functions	2025-04-18
T005	Function enhancement	Stock price visualization	2025-04-25
T006	System Testing	Testing system functions using data fetching from APIs	2025-05-02
T007	Error correction	Repair errors discovered in System Testing and generating Final Project Report	2025-05-09