

Functional Requirements

1. User Authentication and Authorization

- Sign up: Users should be able to create accounts using email, username, and password.
- Login: Users should be able to log in using their credentials.
- Password recovery: Users should be able to reset their passwords if they forget them.
- Role management: Admin roles for managing the system and user roles for trading.

2. User Dashboard

- Overview of the user's portfolio including current balance, stock holdings, and recent transactions.
- Display key metrics such as total profit/loss, available balance, and investment value.

3. Market Data

- Real-time stock prices: Fetch and display real-time prices for various stocks.
- Historical data: Provide historical price data for stocks for analysis.
- Stock details: Show detailed information about each stock, including price charts, company information, and news.

4. Trading Functionality

- Buy/Sell stocks: Users should be able to place buy and sell orders for stocks.
- Order types: Support for market orders, limit orders, and stop orders.
- Order history: Display a history of all past transactions and order statuses.
- Portfolio management: Users can view and manage their stock portfolio.

Non-Functional Requirements

5. Performance

- The application should handle a large number of concurrent users and transactions without significant performance degradation.
- Real-time data updates should be processed with minimal latency.

6. Scalability

- The system should be scalable to accommodate growth in user base and trading activity.
- Utilize scalable infrastructure, such as cloud-based services, to ensure high availability.

7. Security

- Ensure secure storage of user data and transactions.
- Use encryption for data transmission and storage.
- Implement measures to prevent unauthorized access and ensure data integrity.

8. Usability

- User-friendly interface: Ensure the UI is intuitive and easy to navigate.
- Responsive design: The app should be accessible on various devices, including desktops, tablets, and smartphones.

9. Reliability

- High availability: Ensure the app is available with minimal downtime.
- Backup and recovery: Implement regular data backups and a recovery plan in case of data loss or system failure.

10. Maintainability

- Codebase should be well-documented and modular to facilitate easy updates and maintenance.
- Implement version control and continuous integration/continuous deployment (CI/CD) practices.

11. Compliance

- Ensure compliance with relevant regulations and standards, such as GDPR for data protection.
- Adhere to financial regulations and guidelines for stock trading simulators.

Additional Features (Optional)

12. API Integration

- Integrate with financial data providers for real-time stock prices and news.
- Provide API access for users who want to connect their own trading algorithms.

By following these requirements, you can build a comprehensive and effective stock trading simulator app that caters to the needs of both novice and experienced traders.