Software Requirements Specifications

BART

Unlocking the Potential of Cryptocurrencies.

Version 1.0 approved
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Introduction

1.1 Purpose

In the present bitcoin trading platform environment, customers frequently encounter difficulties navigating intricate interfaces and obtaining extensive support resources. **BART** seeks to resolve these problems by providing an easy-to-use platform with features that are straightforward, so that users of all skill levels may participate in bitcoin trading with confidence.

1.2 Document Conventions

Text Formatting:
Bold: Used for emphasising the name of application and headings.
Italic: Utilised for citations, placeholders, and to denote variable names.
Lists:
Bulleted Lists: Used for listing items that do not require a specific sequence.
Numbered Lists: Employed for step-by-step instructions, processes, or ordered items.
Priority Assignment:
Each requirement statement is expected to have its own priority, reflecting its relative importance or urgency within the context of the project.

1.3 Intended Audience and Reading Suggestions

Intended Audience:
Developers: Individuals involved in blockchain application development, including blockchain engineers, smart contract developers, and full-stack developers.
Entrepreneurs and Startups: Those looking to leverage blockchain technology for innovative solutions, including founders of blockchain startups or businesses exploring blockchain integration.
Blockchain Enthusiasts: Individuals interested in learning about blockchain technology and its practical applications, including students, researchers, and hobbyists.

Reading suggestions:

Introduction to Blockchain Technology:

Overview of blockchain fundamentals, including distributed ledger technology, consensus mechanisms, and cryptographic principles.
Blockchain Application Development:
Tutorials, guides, and best practices for developing blockchain applications, including smart contracts, decentralized applications (DApps), and blockchain integration with existing systems.

1.4 Product Scope:

We propose the development of a Blockchain Website tailored for cryptocurrency traders and enthusiasts. This platform will offer portfolio management tools, real-time market data visualization, a user-friendly trading interface, curated news and analysis, educational resources, and robust security measures. Our goal is to provide a secure, user-friendly, and informative environment for users to manage their portfolios, execute trades, and stay updated on the latest cryptocurrency trends.

Through personalized dashboards, users can effortlessly track their cryptocurrency holdings and monitor portfolio performance. The platform will empower users with comprehensive market insights, allowing them to make informed trading decisions.

Additionally, our platform will feature interactive charts and graphs, enabling users to visualize market trends and patterns with ease.This will keep users informed about significant developments in the cryptocurrency space, ensuring they stay ahead of the curve.

Educational resources such as tutorials, guides, and articles will be available to help users deepen their understanding of cryptocurrency trading strategies and risk management techniques. Furthermore, our commitment to security includes robust measures such as SSL encryption, two-factor authentication, and secure password hashing to safeguard user accounts and data.

With dedicated customer support channels, including email, live chat, and a support ticket system, users can receive prompt assistance with any inquiries or issues they may encounter. In summary, our Blockchain Website aims to be a trusted platform, empowering users with the tools and knowledge they need to succeed in the world of cryptocurrency trading.

1.5 References:

Level 0 Process Flow
https://www.lucidchart.com

Level 1 Process Flow
https://www.lucidchart.com

Class Analysis Diagram
https://www.lucidchart.com

2. Overall Description

2.1 Product Perspective

BART is a comprehensive blockchain-based platform designed to revolutionize the way users engage with cryptocurrency trading. Envisioned as a standalone product, it integrates with existing cryptocurrency markets and data sources via APIs to provide real-time information and trading capabilities. Its aim is to provide a seamless, user-friendly experience that simplifies the complexities of cryptocurrency trading through advanced portfolio management, educational resources, and market insights.

2.2 Product Functions

- User Authentication: Secure login and account management.
- Personalized Dashboard: Real-time portfolio tracking and market trends visualization.
- Market Data: Live cryptocurrency prices, volumes, and charts.
- Trading Interface: Simplified buying, selling, and trading with various order types.
- Portfolio Management: Tools for tracking performance, gains, and diversification.
- Price Predictions: AI-driven forecasts using historical data.
- News and Analysis: Curated content related to cryptocurrencies and trading.
- Educational Resources: Guides, tutorials, and articles for traders at all levels.
- Security: Advanced measures including SSL, two-factor authentication, and secure hashing.
- Customer Support: Multiple channels for timely assistance.

2.3 User Classes and Characteristics

BART targets a wide range of users, from novices to experienced traders. Novices will benefit from the platform's educational resources and intuitive design, while experienced traders can leverage advanced tools for market analysis and portfolio management. The platform's

design caters to individual traders seeking a comprehensive, secure, and user-friendly trading experience.

2.4 Operating Environment

BART will be web-based, accessible through modern web browsers on desktop and mobile devices. The backend services, including the AI for price predictions and the trading interface, will be hosted on cloud infrastructure to ensure scalability and high availability. The operating environment will be designed to support high volumes of transactions and data processing, with a focus on security and performance.

2.5 Design and Implementation Constraints

The project faces constraints related to ensuring real-time data accuracy, security, and regulatory compliance. Integrating diverse blockchain technologies and APIs efficiently while maintaining a user-friendly interface poses technical challenges. The implementation must also adhere to financial regulations governing cryptocurrency trading, which vary by jurisdiction.

2.6 User Documentation

Comprehensive user documentation will be provided, including a detailed help center with articles, video tutorials, and FAQs to assist users in navigating the platform. Additionally, documentation will cover security practices, trading strategies, and the use of advanced features like price predictions and portfolio management.

2.7 Assumptions and Dependencies

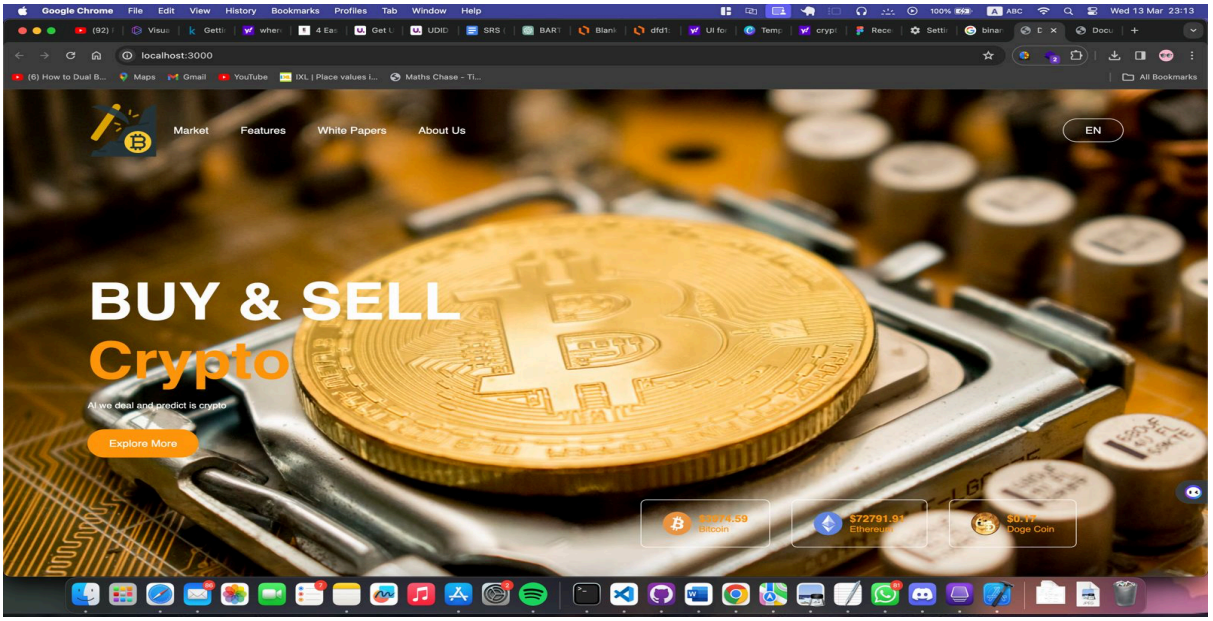
The project's success depends on reliable access to real-time cryptocurrency market data and regulatory approval for trading activities. It assumes user demand for a simplified trading experience and the effectiveness of AI for price predictions. The development is contingent upon the selection of suitable technologies for the frontend, backend, and AI components, as well as the availability of APIs for integrating blockchain data.

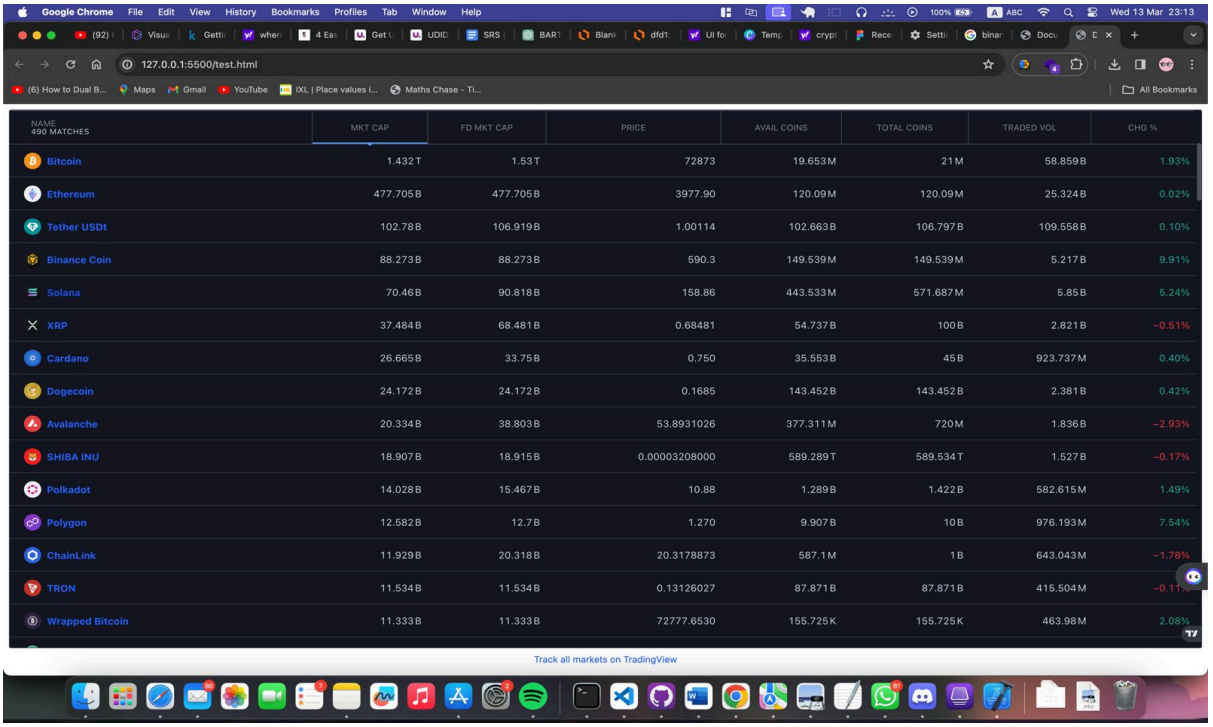
This overview encapsulates the broad vision and detailed features planned for **BART**, highlighting its commitment to simplifying the cryptocurrency trading experience through a user-centered design and innovative technology.

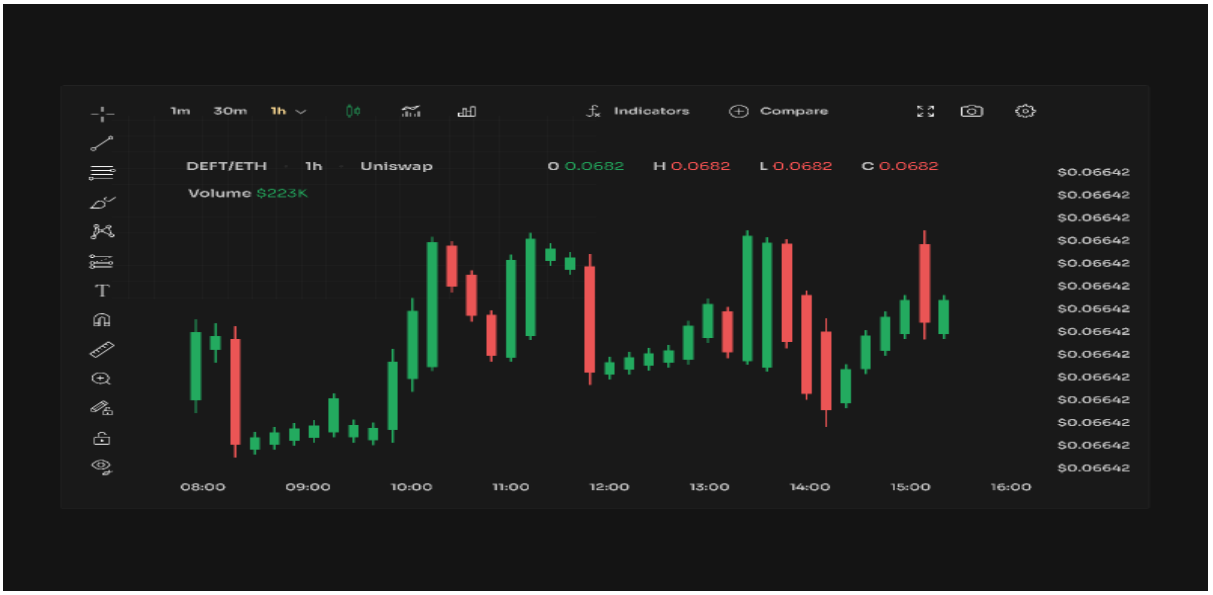
3. External Interface Requirements

3.1 User Interfaces

Web Interface: **BART** will offer a responsive web interface, accessible via desktop and mobile browsers. The design will prioritize usability, with a clean, intuitive layout that allows users to easily navigate the platform, manage their portfolios, and access trading tools and educational resources.
Dashboard: Users will have access to a personalized dashboard that displays real-time portfolio values, market trends, and price alerts. Interactive charts and graphs will visualize market data and personal trading performance.
Educational Section: A dedicated area for tutorials, guides, and articles will help users expand their knowledge on cryptocurrency trading and market analysis.







3.2 Hardware Interfaces

As a web-based application, **BART** does not require direct hardware interfaces. Users will access the platform through devices capable of running a web browser, such as PCs, laptops, tablets, and smartphones. The platform's design will ensure compatibility across a range of devices and screen sizes.

3.3 Software Interfaces

Backend Server: Node.js will serve as the primary technology for the backend, handling user authentication, data processing, and API requests (SI-3.3.1).
Database: A secure database will store user data, transaction histories, and encrypted credentials. The choice of database technology will be based on scalability and security needs.
Blockchain Data API: **BART** will integrate with external APIs, such as the Gemini API, to fetch real-time blockchain data, market trends, and cryptocurrency prices.
AI & Machine Learning: Python will be used for developing the AI models for price predictions, utilising historical data sets to forecast market movements.

3.4 Communications Interfaces

WebSocket Protocol: For real-time updates of market data and notifications, **BART** will use WebSocket connections, providing users with instantaneous information without the need to refresh their browsers.
Email and Live Chat: Customer support will be facilitated through email and live chat interfaces, allowing users to seek help directly from the

platform. These services will ensure encrypted and secure communication for privacy and data protection.
By adhering to these interface requirements, **BART** aims to deliver a secure, user-friendly, and comprehensive platform for cryptocurrency trading. The focus on intuitive user interfaces, coupled with robust software and communications protocols, will ensure a seamless experience for all users, regardless of their trading expertise.

4. System Features

4.1 User Authentication and Security

- *WebSocket Protocol:* For real-time updates of market data and notifications, **BART** will use WebSocket connections, providing users with instantaneous information without the need to refresh their browsers.
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- By adhering to these interface requirements, **BART** aims to deliver a secure, user-friendly, and comprehensive platform for cryptocurrency trading. The focus on intuitive user interfaces, coupled with robust software and communications protocols, will ensure a seamless experience for all users, (using vercel) regardless of their trading expertise.

4.2 Real-Time Market Data Visualization

- Description: A dynamic and interactive interface displaying real-time data on cryptocurrency prices, trading volumes, and market trends. Includes customizable charts and graphs for in-depth market analysis.
- Functionalities:
- Live updates of cryptocurrency prices and market movements.
- Interactive charts for historical data analysis and trend visualisation.
- Customizable dashboard for tracking favourite cryptocurrencies and indicators.

- Benefits: Empowers users to make informed trading decisions based on the latest market data, enhancing the trading experience.

4.3 Portfolio Management

- Description: Advanced tools for users to manage their cryptocurrency portfolios, track performance, and analyse gains and losses over time.
- Functionalities:
- Overview of portfolio holdings and performance metrics.
- Tools for assessing portfolio diversification and risk.
- Historical performance analysis to inform future trading strategies.
- Benefits: Enables users to efficiently manage their investments, optimise portfolio performance, and strategize based on historical data insights.

4.4 AI-driven Price Predictions

- Description: Utilises machine learning algorithms to predict future cryptocurrency prices based on historical market data, helping users to anticipate market movements.
- Functionalities:
- AI models that analyze patterns in historical price data.
- Predictive insights on potential price movements of selected cryptocurrencies.
- Regular updates to prediction models based on new market data.
- Benefits: Provides users with forward-looking insights to aid in strategic trading decisions, potentially enhancing profitability.

4.5 Educational Resources

- Description: A comprehensive library of tutorials, guides, and articles designed to educate users on cryptocurrency trading strategies, risk management, and market analysis.
- Functionalities:
- Step-by-step tutorials for beginners to learn the basics of cryptocurrency trading.
- In-depth guides on technical analysis, trading strategies, and risk management.
- Regularly updated articles on market trends and insights.
- Benefits: Helps users at all levels enhance their trading knowledge and skills, promoting informed trading practices and risk awareness.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- The system shall be capable of handling a minimum of 1000 concurrent users without significant degradation in performance.
- Response times for critical functions such as placing trades or viewing real-time market data shall not exceed 2 seconds under normal operating conditions.

5.2 Safety Requirements

- The platform shall adhere to industry-standard safety protocols to prevent unauthorized access to user accounts and data.
- All financial transactions shall be securely processed to minimize the risk of fraud or errors.

5.3 Security Requirements

- The system shall implement SSL encryption for all data transmitted between the client and server to protect against eavesdropping and data tampering (SR 5.3.1).
- User authentication shall support multi-factor authentication methods to enhance account security.

5.4 Software Quality Attributes

- The system shall undergo regular testing and quality assurance processes to ensure reliability, usability, and performance.
- Codebase shall adhere to best practices and coding standards to facilitate maintainability and scalability.

5.5 Business Rules

- Users must be at least 15 years old to create an account and participate in cryptocurrency trading.
- The platform shall comply with relevant regulations and laws governing cryptocurrency trading in the jurisdictions where it operates.

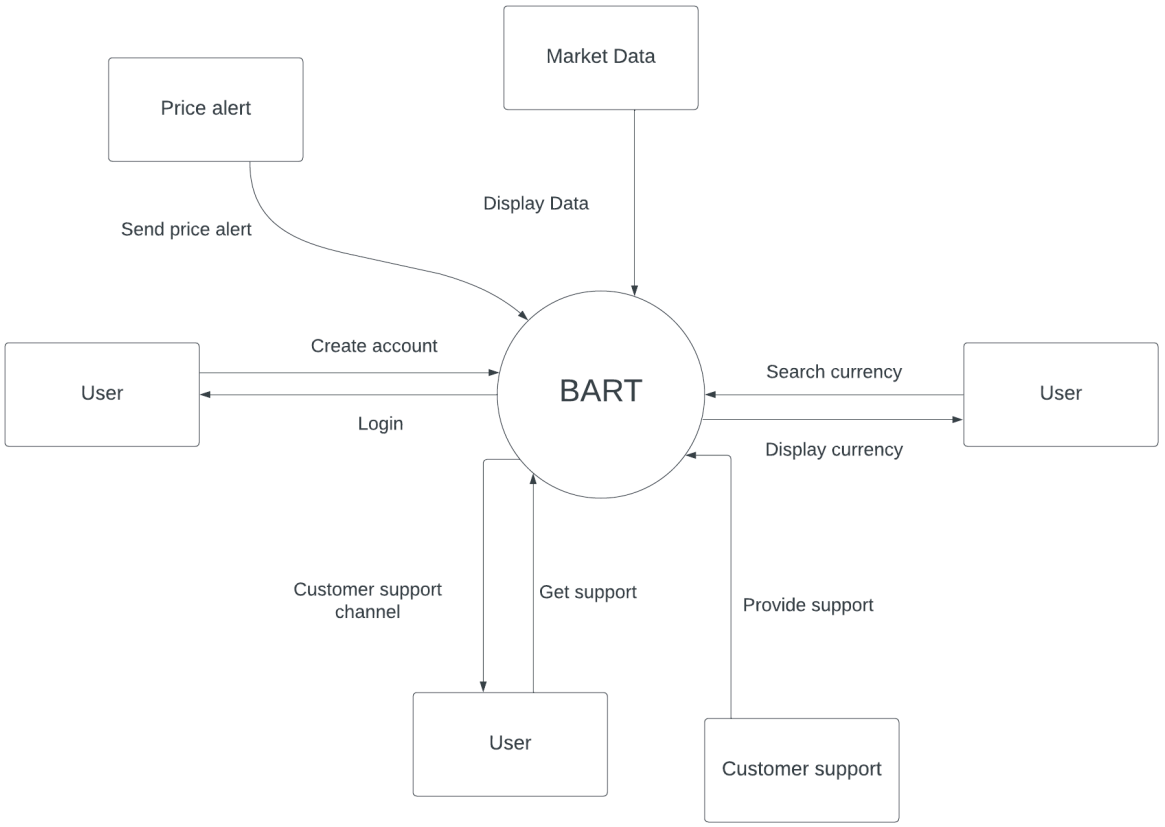
6. Other Requirements

- Database Requirements: The system shall utilize a secure and scalable database solution capable of efficiently storing and retrieving user data, transaction histories, and market information.
- Internationalization Requirements: The platform shall support localization in multiple languages to accommodate users from diverse linguistic backgrounds.
- Legal Requirements: The platform shall comply with all relevant legal regulations and laws governing cryptocurrency trading, data protection, and financial transactions in the jurisdictions where it operates.
- Reuse Objectives: The project shall aim to incorporate reusable components and modules to facilitate future development and maintainability.

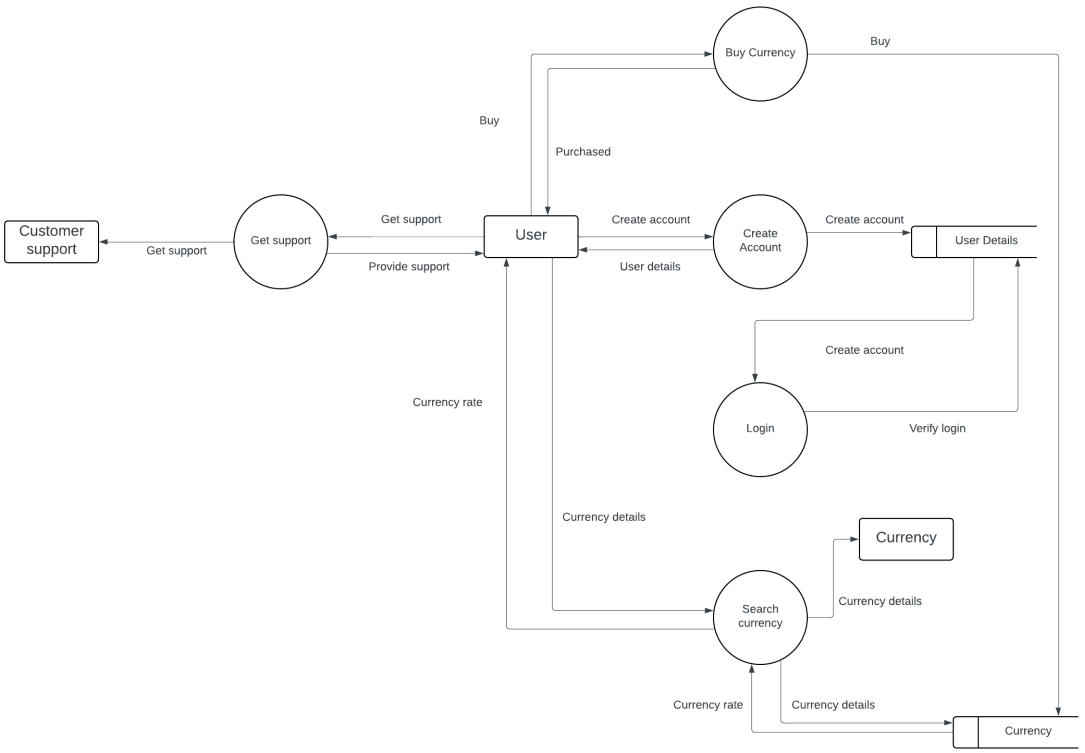
Appendix A: Glossary

- TBD (To Be Determined)

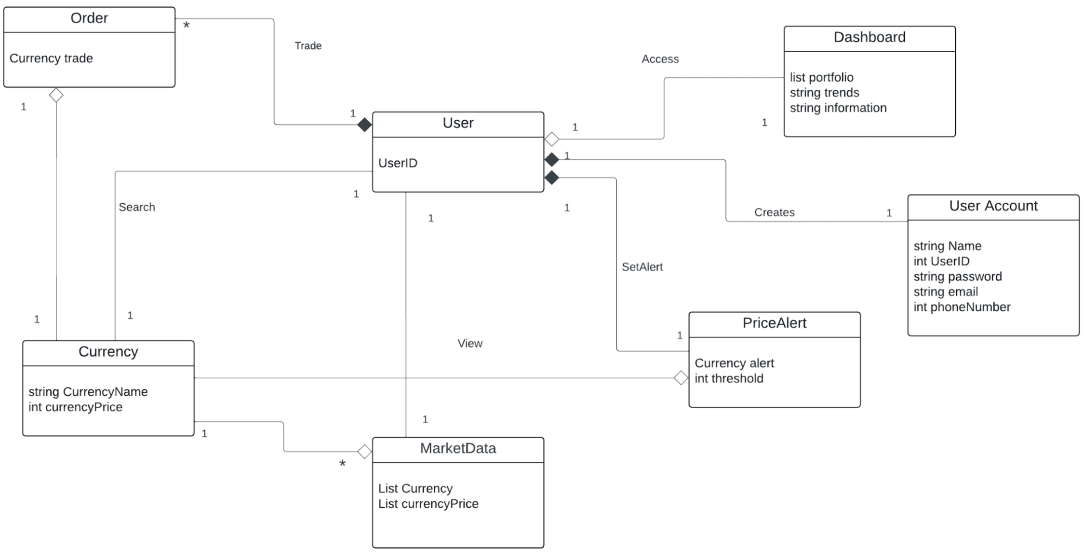
Appendix B: Analysis ModelsDFD (Level 0)



DFD (Level 1)



Analysis Class Diagram



Appendix C: To Be Determined List

- TBD: Software Interface Requirement SIR-3.3.1
- TBD: Security Requirement SR-5.3.1

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