KIBUR COLLEGE

DEPARTMENT OF COMPUTER SCIENCE

WEB PROGRAMMING and SOFTWARE ENGINEERING

GROUP PROJECT

SIMPLE CRYPTOCURRENCY WEB APP

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Simple Cryptocurrency Web App

Introduction

Background: The emergence of digital currencies, notably Bitcoin, has transformed traditional financial landscapes by introducing decentralized and secure methods of conducting transactions. Bitcoin's block-chain technology ensures transparency, immutability, and security, making it an ideal candidate for innovative applications in various sectors. In the realm of e-commerce, Bitcoin presents an unparalleled opportunity to create a platform that operates solely on this Cryptocurrency. This documentation outlines the comprehensive development plan for an e-commerce application dedicated exclusively to facilitating buying, selling, and trading using Bitcoin.

Existing Technologies: Conventional e-commerce platforms predominantly rely on fiat currencies, necessitating users to link bank accounts or credit cards to facilitate transactions. While some platforms have incorporated Cryptocurrency as an alternative payment option, they often support a variety of digital currencies and are not exclusively tailored to Bitcoin. Consequently, there remains a notable gap in the market for an e-commerce solution that solely focuses on leveraging the benefits of Bitcoin. By circumventing the complexities associated with fiat currencies and embracing the security and decentralization offered by Bitcoin, this project aims to address this gap and provide users with a seamless, efficient, and secure platform for conducting e-commerce transactions.

In contrast to fiat-based transactions, Bitcoin transactions offer several advantages, including:

Decentralization: Bitcoin operates on a decentralized network, eliminating the need for intermediaries such as banks or financial institutions. Transactions are peer-to-peer, allowing for greater autonomy and reduced dependency on centralized authorities.

Security: Bitcoin transactions are secured through cryptography techniques, ensuring the integrity and authenticity of each transaction. The use of public and private keys enhances security, mitigating the risk of fraud and unauthorized access.

Anonymity: While Bitcoin transactions are recorded on a public ledger (blockchain), users can maintain a level of anonymity as transactions are not directly linked to personal information. This pseudonymous nature offers privacy and discretion to users.

Global Accessibility: Bitcoin transactions can be conducted globally, without the need for currency conversion or geographical limitations. This enables seamless cross-border transactions, fostering inclusive and accessibility.

By harnessing these inherent advantages, the proposed e-commerce application seeks to revolutionize the way users engage in online transactions, offering a streamlined and secure platform exclusively dedicated to Bitcoin transactions. Through intuitive user interfaces, robust security measures, and innovative features

tailored to the Bitcoin ecosystem, the application aims to redefine the standards of e-commerce in the digital age.

Functional Requirements

User Registration and Authentication: Users should be able to register an account on the platform using an email address or mobile number. The registration process should include password creation and verification. Secure authentication mechanisms such as two-factor authentication (2FA) should be implemented to enhance account security.

Bitcoin Wallet Integration: Users should have the ability to integrate their Bitcoin wallets with the application. Wallet functionality should include checking Bitcoin balances, viewing transaction history, and generating addresses for receiving payments. The platform should support multiple wallet providers to accommodate different user preferences.

Listing Items for Sale: Sellers should be able to create listings for products they wish to sell, specifying the price in Bitcoin. Each product listing should include detailed descriptions, images, and relevant categories to facilitate easy browsing for buyers. Sellers should have the option to edit or delete their listings as needed.

Buying Products: Users should be able to browse through available listings and purchase items using Bitcoin. The platform should provide a seamless checkout process, allowing users to review their orders before confirming the purchase. Upon successful completion of a transaction, the purchased item should be marked as sold, and the corresponding Bitcoin payment should be transferred to the seller's wallet.

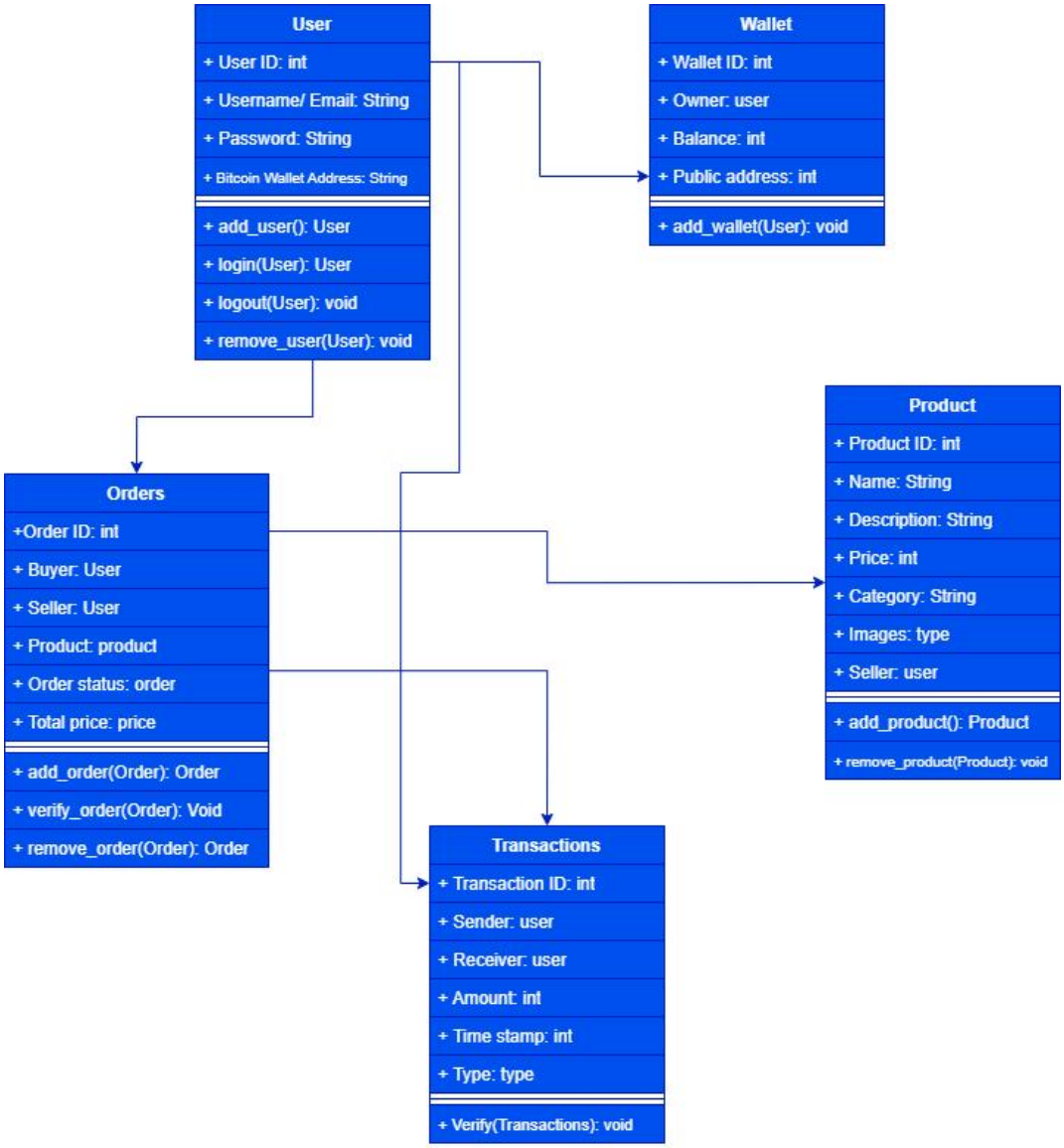
Trading Products: Users should have the option to engage in peer-to-peer trading of products with other users on the platform. The platform should facilitate communication between buyers and sellers to negotiate prices and terms. Secure escrow services should be implemented to ensure that both parties fulfill their obligations before the transaction is finalized.

Security Features: Robust security measures should be implemented to safeguard users' Bitcoin holdings and personal information. The platform should employ encryption techniques to protect sensitive data, including user credentials and transaction details. Regular security audits and updates should be conducted to identify and address potential vulnerabilities.

These functional requirements form the foundation of the e-commerce application dedicated exclusively to facilitating buying, selling, and trading using Bitcoin. By fulfilling these requirements, the platform aims to deliver a seamless, efficient, and secure user experience, thereby revolutionizing the way users engage in online transactions with Bitcoin.

Diagrams

Class Diagram for Bitcoin E-commerce App



- **User**:
    - Represents application users
    - Attributes:
        - User ID
        - Username/email
        - Password

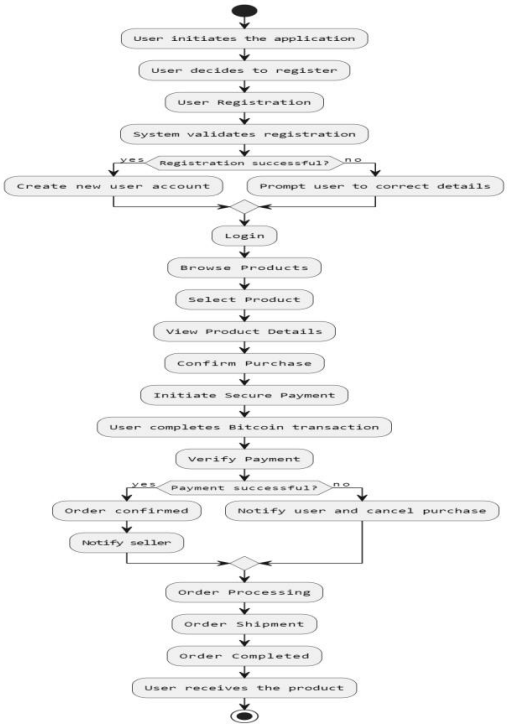
        - Bitcoin wallet address (potentially)
- **Product**:
    - Represents products for sale
    - Attributes:
        - Product ID
        - Name
        - Description
        - Price (in Bitcoin)
        - Category
        - Images
        - Seller (linked to User class)
            - **Order**:
        - Represents purchase orders
        - Attributes:
            - Order ID
            - Buyer (linked to User class)
            - Seller (linked to User class)
            - Product (linked to Product class)
            - Order status (e.g., pending, processing, completed, canceled)
            - Total price (in Bitcoin)
- **Transaction**:

- Represents Bitcoin transactions
- Attributes:
    - Transaction ID
    - Sender (linked to User class)
    - Receiver (linked to User class)
    - Amount (in Bitcoin)
    - Time stamp
    - Type (e.g., payment for order, transfer between wallets)

- **Wallet**:
    - Represents user Bitcoin wallets
    - Attributes:
        - Wallet ID
        - Owner (linked to User class)
        - Balance (in Bitcoin)
        - Public address for receiving payments
- **Relationships**:
    - A User can have one Wallet (One-to-One)
    - A User can create many Orders (One-to-Many)
    - A User can be involved in many Orders as buyer or seller (Many-to-Many)
    - An Order is associated with one Product (One-to-One)

- An Order is placed by one User (One-to-Many)
- An Order is fulfilled by another User (One-to-Many)
- A Transaction can be linked to an Order (One-to-One)
- A Transaction involves a sender and receiver (both linked to User)

Activity Diagram: User Registration to Product Purchase



This activity diagram illustrates the flow of actions within the application, from user registration to product purchase:

Start: User initiates the application.

User decides to register: User chooses to create a new account.

User Registration: User enters registration details (email/mobile number, password).

System validates registration: The system validates the entered

information and checks for existing accounts.

Registration successful: If valid, a new user account is created.

Registration failed: If invalid or duplicate, the system prompts the user to correct or choose a different email/mobile number.

Login: User logs in with registered credentials or existing account.

Browse Products: User browses through available product listings.

Select Product: User selects a product they wish to purchase.

View Product Details: User reviews product details (description, images, price).

Confirm Purchase: User confirms their intention to purchase the selected product.

Initiate Secure Payment: The system initiates a secure payment process using Bitcoin.

User completes Bitcoin transaction: User completes the Bitcoin transaction through their preferred wallet.

Verify Payment: The system verifies the successful completion of the Bitcoin transaction.

Payment successful: If verified, the order is confirmed, and the seller is notified.

Payment failed: If verification fails, the user is notified, and the purchase process is canceled.

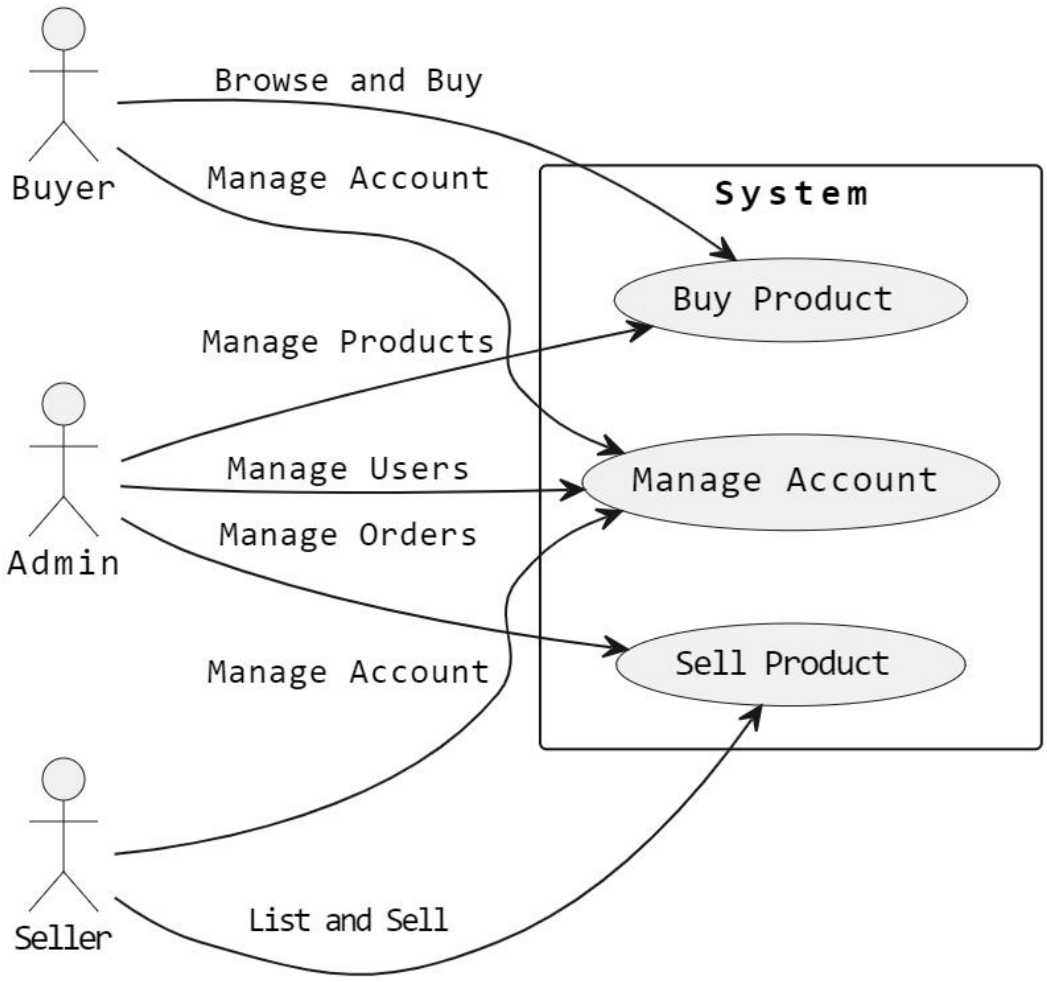
Order Processing: The seller prepares the order for shipment.

Order Shipment: The seller ships the purchased product to the buyer.

Order Completed: The order is marked as completed upon successful delivery.

End: User receives the product, and the transaction is finalized.

Use Case Diagram: Actors and Interactions



This use case diagram showcases the various interactions between users (actors) and the system, including primary functionality like buying, selling, and trading:

- **Actors**:
  - Buyer: Represents users who purchase products on the platform.
  - Seller: Represents users who list and sell products on the platform.
  - Admin (Optional): Represents an administrator with functionality like managing users, products, and system settings.
- **Use Cases**:
  - Buy Product: Buyer browses products, selects an item, initiates secure payment, and receives the purchased product.
  - Sell Product: Seller lists a product, sets a price, processes buyer orders, and ships the sold items.
  - Manage Account (Optional): User manages their profile information, payment methods, and order history.
- **Relationships**:
  - Buyer interacts with the system to browse, purchase products, and manage their account.
  - Seller interacts with the system to list, sell products, process orders, and manage their account.
  - Admin (Optional) interacts with the system to manage users, products, and maintain the platform.

Conclusion

Future Potential and Market Landscape:

The rise of Bitcoin and other Cryptocurrency has sparked a growing interest in integrating them into mainstream financial activities. This e-commerce app positions itself at the forefront of this trend, offering a unique platform specifically designed for Bitcoin transactions.

By creating a secure and user-friendly environment, the app can attract both experienced Cryptocurrency users and those new to Bitcoin. As the Cryptocurrency market matures and adoption increases, the user base for this app has the potential to expand significantly.

Competitive Advantage:

Several existing e-commerce platforms offer Cryptocurrency payment options alongside traditional fiat currencies. However, this app differentiates itself by focusing solely on Bitcoin transactions. This allows for a more streamlined user experience optimized for the specific needs of Bitcoin users. Additionally, the app can leverage the inherent benefits of Bitcoin, such as:

- **Decentralization:** Eliminates dependence on third-party financial institutions, potentially reducing transaction fees and increasing user control over their funds.
- **Security:** Bitcoin transactions are built on a secure blockchain network, offering enhanced security and fraud prevention

compared to traditional payment methods.

- **Transparency:** The public nature of the blockchain allows for transparent record-keeping and transaction verification.

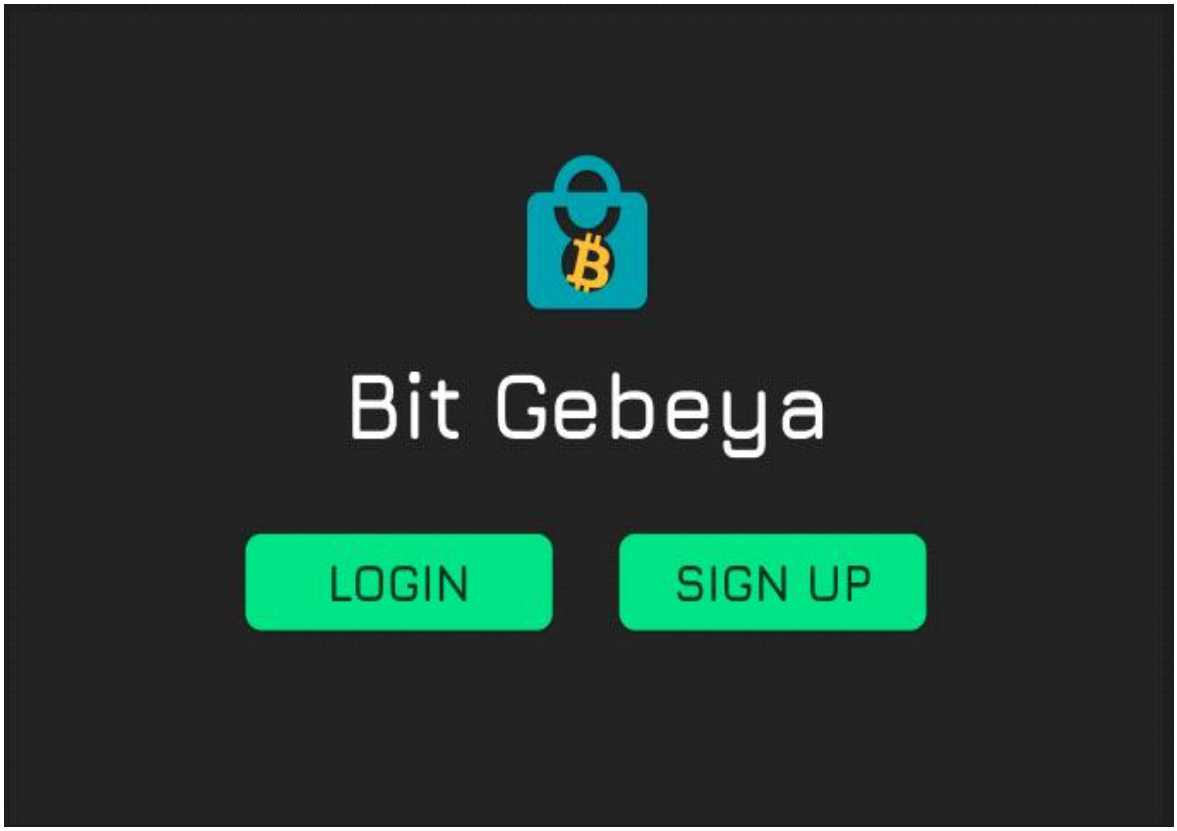
Future Considerations:

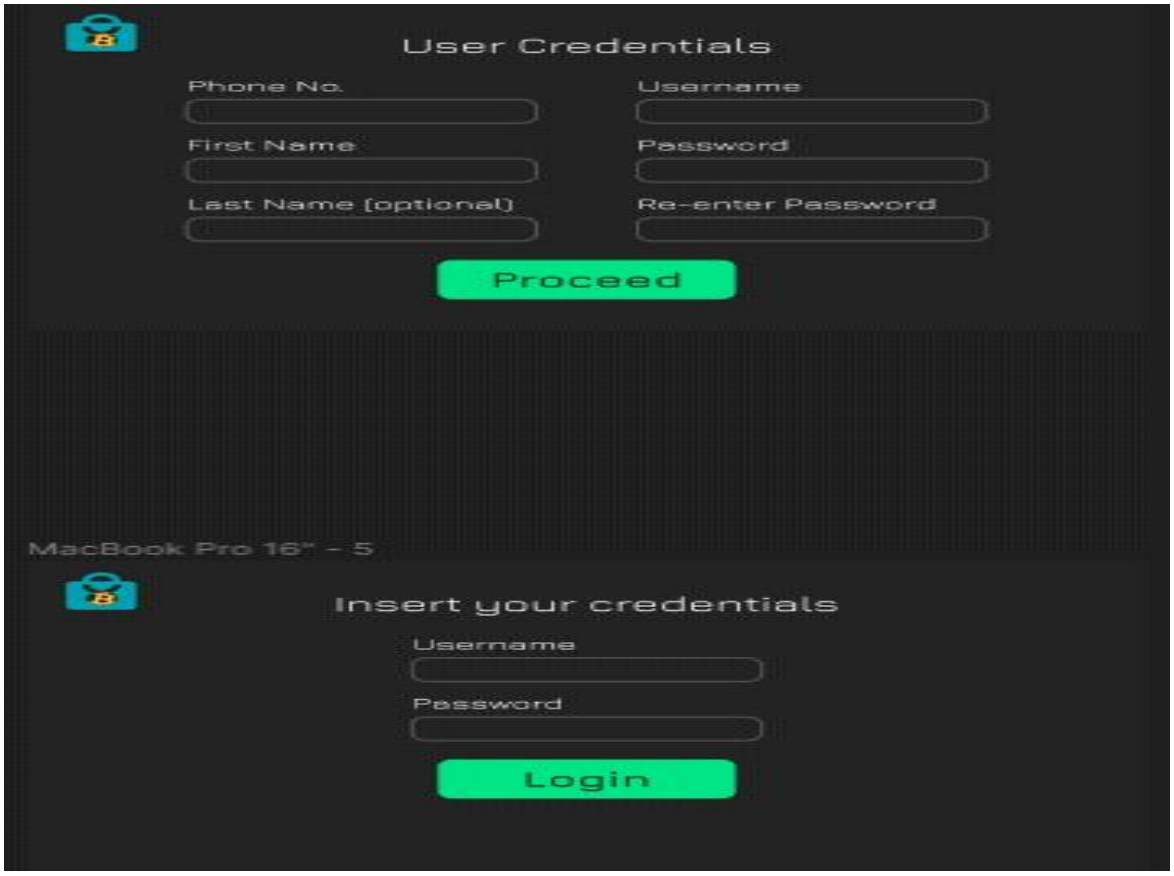
While focusing on Bitcoin initially, the app can be designed with future scalability in mind. Integration with other popular Cryptocurrency could be explored as the market evolves. Additionally, features like escrow services can be further enhanced to ensure secure transactions and protect both buyers and sellers.

The apps user interface and functionality can be continuously improved based on user feedback and market trends. Implementing features like advanced search filters, product reviews, and loyalty programs can further enhance user experience and encourage platform engagement.

Overall Impact:

This Bitcoin-centric e-commerce app has the potential to revolutionize the online shopping experience for Cryptocurrency users. By offering a secure, user-friendly platform specifically designed for Bitcoin transactions, the app can not only cater to a growing market segment but also contribute to the wider adoption of cryptocurrencies in everyday commerce.


Bit Gebeya
LOGIN
SIGN UP


User Credentials
Phone No.
Username
First Name
Password
Last Name (optional)
Re-enter Password
Proceed
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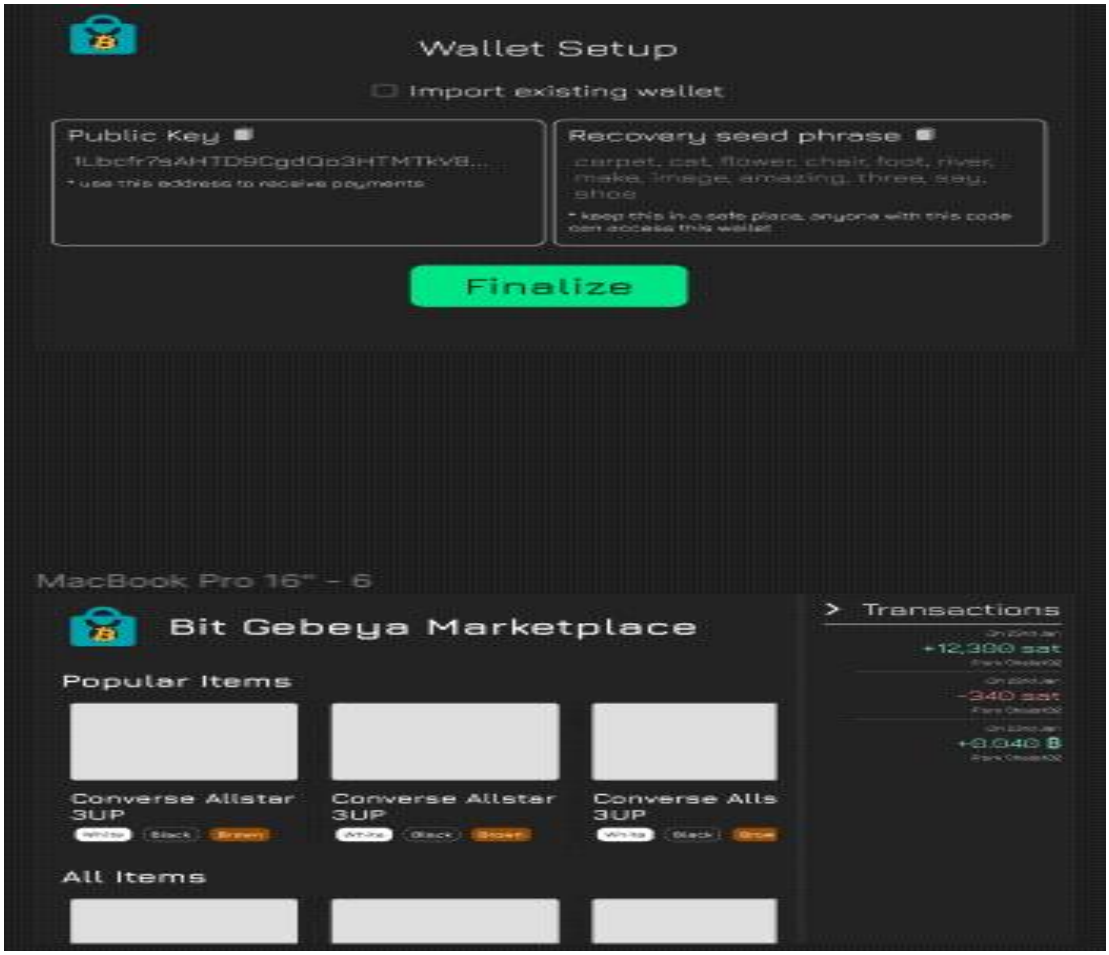
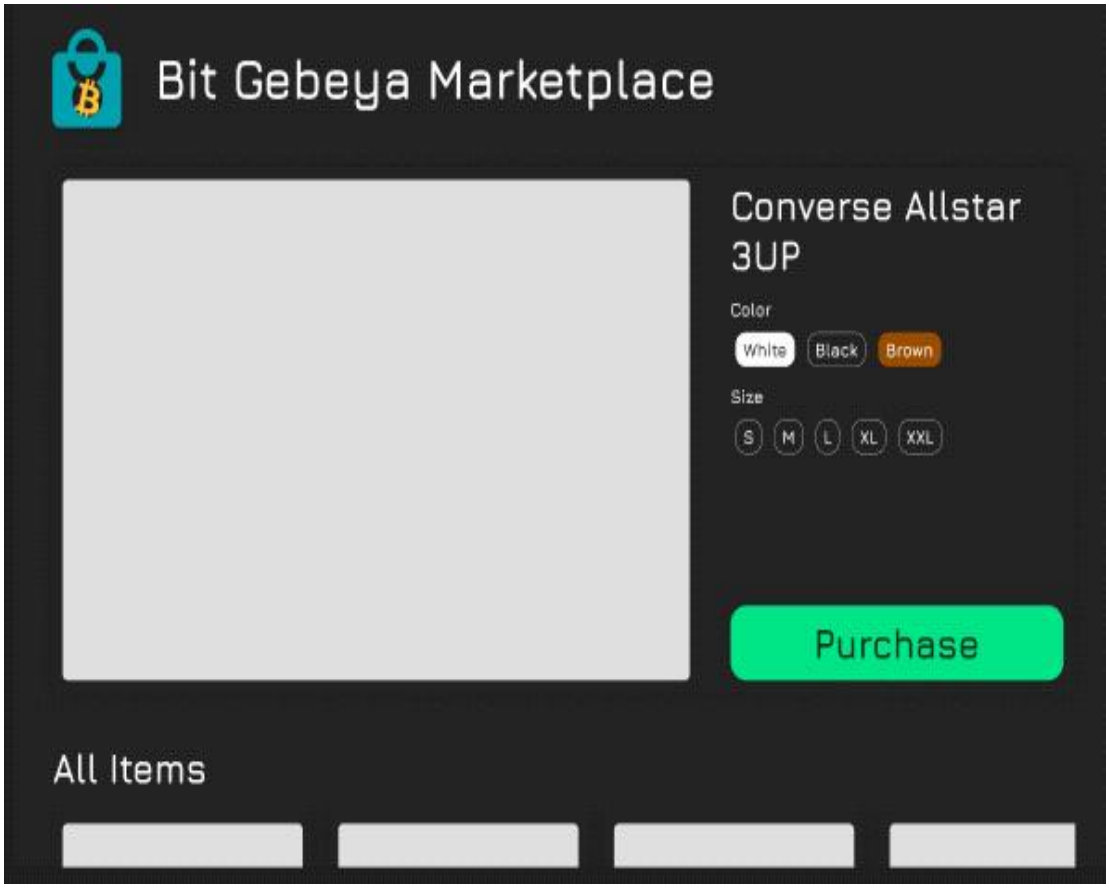
Insert your credentials
Username
Password
Login


Wallet Setup
Import existing wallet
Public Key
1Lbcfr7sAHTD9CgdQo3HTMTkV8...
* use this address to receive payments
Recovery seed phrase
carpet, cat, flower, chair, foot, river, make, image, amazing, three, say, shoe
* keep this in a safe place, anyone with this code can access this wallet
Finalize
MacBook Pro 16" – 6
Bit Gebeya Marketplace
Popular Items
Converse Allstar 3UP
Converse Allstar 3UP
Converse Alls 3UP
All Items
> Transactions
+12,380 sat
-340 sat


Bit Gebeya Marketplace
Converse Allstar 3UP
Color
White
Black
Brown
Size
S
M
L
XL
XXL
Purchase
All Items


OBJ
OBJ