

1. Introduction

This system allows users to convert fiat (traditional) money into USDC (a type of stablecoin) and transfer it to their wallets. The process is automatic and ensures that USDC is sent to users as soon as the fiat is deposited into the bank account. It tracks every transaction carefully to avoid errors and keep everything transparent.

2. System Overview

The system has several key parts:

Fiat Bank: This is the bank where users send their fiat money.

Deposit Detection Module: This part keeps track of when fiat money is deposited into the bank.

Liquidity Manager: Ensures that there's enough USDC available to send to the user.

USDC Treasury: This holds the USDC that will be sent to users.

Transfer Service: Sends the USDC to the user's wallet.

Transaction Monitor: Checks that the USDC was successfully sent to the user.

Reconciliation Ledger: Keeps track of all fiat deposits and USDC transfers.

Audit Log: Stores records of all transactions for transparency and audits.

3. Key Components and Functions

3.1. Fiat Bank

Purpose: Receives the fiat money from the user.

Function: Handles incoming deposits.

3.2. Deposit Detection Module

Purpose: Detects when fiat money is deposited into the Fiat Bank.

Function: Verifies and tracks deposits.

3.3. Liquidity Manager

Purpose: Checks if there's enough USDC in the system.

Function: Makes sure there's enough USDC in the Treasury or retrieves more if needed.

3.4. USDC Treasury

Purpose: Holds the USDC that will be sent to users.

Function: Distributes USDC when a user's fiat deposit is confirmed.

3.5. Transfer Service

Purpose: Sends USDC to the user's wallet.

Function: Initiates the blockchain transaction to transfer USDC.

3.6. Transaction Monitor

Purpose: Confirms that the USDC transfer is successful.

Function: Checks the blockchain to ensure the transaction was completed.

3.7. Reconciliation Ledger

Purpose: Tracks all fiat deposits and USDC transfers.

Function: Ensures that every fiat deposit matches the amount of USDC sent.

3.8. Audit Log

Purpose: Keeps detailed records of every transaction.

Function: Stores logs for auditing and compliance purposes.

4. Transaction Flow

Step 1: User Deposits Fiat to Fiat Bank

The user sends fiat money to the Fiat Bank. Once the deposit happens, the system knows to proceed to the next step.

Step 2: Fiat Deposit Detection

The Deposit Detection Module detects the deposit and verifies it. It then moves the process forward.

Step 3: Liquidity Check

The Liquidity Manager checks if there's enough USDC available in the Treasury or if it needs to pull more from the Liquidity Pool.

Step 4: USDC Transfer to User

After confirming the availability of USDC, the Transfer Service sends the USDC to the user's wallet.

Step 5: Transaction Monitoring

The Transaction Monitor checks that the transfer was successful on the blockchain. If there's a failure, the system will retry or flag it for review.

Step 6: Reconciliation

The Reconciliation Ledger ensures that the fiat money deposited matches the amount of USDC sent. If there's a mismatch, it gets flagged.

Step 7: Record Keeping

The Audit Log keeps detailed records of all transactions for transparency and future reference.

5. System Security

Multi-Signature Treasury: To ensure safety, the USDC Treasury uses multi-signature approval for large transfers.

Transaction Monitoring: The system keeps an eye on blockchain transactions to catch any errors or delays.

Error Handling: If there's an issue with a transaction, the system will retry or flag it for review.

6. Liquidity Management

The Liquidity Manager ensures there's enough USDC available to meet the user's needs. If the Treasury doesn't have enough USDC, it will get more from the Liquidity Pool.

7. Transaction Failure Handling

If the Transfer Service fails to send USDC to the user, the Transaction Monitor retries the transfer. After multiple failures, the transaction will be flagged for review and investigation.

8. Reconciliation and Auditing

Reconciliation Ledger: This keeps track of all the deposits and transfers to make sure everything matches up correctly.

Audit Log: The Audit Log stores records for each transaction. It’s used for auditing and regulatory compliance.

9. Error Recovery

The system is built to handle errors, such as:

- Transactions failing
- Insufficient liquidity for USDC conversion
- Mistakes in tracking deposits and transfers

10. Future Improvements

There’s room to improve the system by adding more liquidity sources, improving the transaction monitoring system, and enhancing the error handling system.

11. Conclusion

This Fiat-to-USDC Conversion System is secure, transparent, and efficient. It automates the entire process of converting fiat to USDC, tracks each step to avoid errors, and ensures everything runs smoothly for users. [\[ExaclidrawLink\]](#)

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