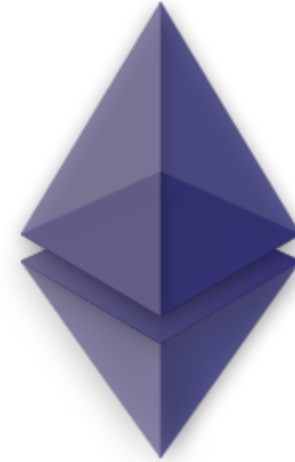


Ethereum Stablecoin

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Introduction

- Developed a USD-pegged Ethereum stablecoin
- Implemented using Solidity smart contracts
- Integrated with Uniswap V3 and Chainlink
- Deployed on Sepolia Testnet



Smart Contract Overview

- Two main contracts:
 - **Stablecoin.sol** (ERC20 token logic)
 - **StablecoinPool.sol** (Manages liquidity and price stability)



Stablecoin.sol

- Key functions
 - *mint* (Allows controlled token supply increase)
 - *burn* (Enables token supply reduction)
 - *setPoolManager* (Centralizes liquidity management)
- Access control
 - Only owner or poolManager can mint/burn

StablecoinPool.sol

- Manages liquidity provision on Uniswap V3
- Key Functions
 - *createPool* (Creates Uniswap pool for token pair)
 - *initializePool* (Sets initial pool price)
 - *addLiquidity* (Adds liquidity to the pool)
 - *rebalance* (Adjusts token supply based on price deviations)
- Interacts with
 - Uniswap V3 contracts
 - Chainlink price feeds
 - Stablecoin token contract

Rebalancing Mechanism

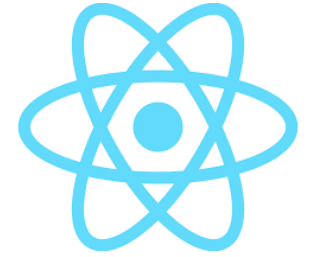
- Monitors ETH/USD price via Chainlink
- Calculates deviation from target price (\$1.00)
- **If price > \$1.00:**
 - Mint tokens
 - Swap tokens for ETH to lower price
- **If price < \$1.00:**
 - Use ETH to buy and burn tokens to raise price

Libraries and Interfaces Used

- **OpenZeppelin Contracts:**
 - ERC20, Ownable, ReentrancyGuard
- **Uniswap V3 Interfaces:**
 - Pool, Factory, Router, Position Manager
- **Chainlink Interfaces:**
 - AggregatorV3Interface for price feeds
- **Solidity Version:**
 - ^0.7.6 for compatibility with Uniswap contracts

Frontend

- React 18 & Tailwind
- Wagmi
 - React hooks simplifying Ethereum integration
 - Manages wallet connections and contract interactions
 - Built on Viem for strong type safety
- Viem
 - Modern TypeScript library for Ethereum
 - Enables type-safe contract interactions
 - Handles data formatting and parsing



viem

wagmi

Account

Status: ● Connected

Address: `0x0954b8B09F77aAa22A8AD176Da989Fe916634480`

Network: Sepolia (11155111)

Disconnect Wallet

Stablecoin Status

Current Price
\$0

Pool Liquidity
0 tokens

Connection
Connected

Peg Status
Unstable

Account

Status: ● Disconnected

Network: Sepolia ()

Connect Injected

Connect Coinbase Wallet

Connect WalletConnect

Connect MetaMask

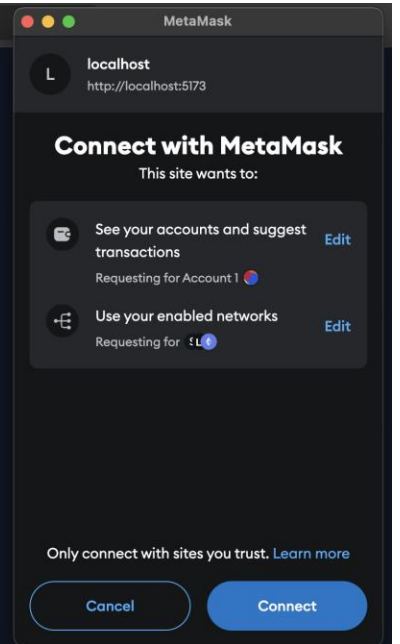
Stablecoin Status

Current Price
\$0

Pool Liquidity
0 tokens

Connection
Not Connected

Peg Status
Unstable



Challenges

- Version compatibility with OpenZeppelin & Solidity (0.7)
- Triggering the rebalance mechanism
- Redeployment of public price function



Conclusion

- Successfully created a USD-pegged stablecoin
- Price stability through automated rebalancing
- Ready for further testing and potential mainnet deployment
- Easy frontend integration with Wagmi & Viem



Questions?

Thank you for your attention!