WEB3 AND BLOCKCHAIN BASICS

Wallet setup and DApp exploration

Submitted By:
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Roll No: 23A91A05E9
Course: B.Tech – Computer Science and Engineering
Domain: Blockchain, AI, Web Development
Difficulty: Beginner
Network: Sepolia Testnet
Wallet: MetaMask

Objective & Learning Goals

Objective: To provide a comprehensive introduction to Web3 and blockchain technology, focusing on practical wallet setup and DApp exploration.

Learning Goals:

- Understand the fundamental concepts of Web3 and blockchain.
- Set up a secure Web3 wallet.
- Navigate and interact with decentralized applications (DApps).
- Comprehend the technical underpinnings of blockchain transactions.
- Explain the security considerations related to Web3 and blockchain.

Overview

This report details the practical steps taken to engage with Web3 and blockchain technologies. We begin with an overview of blockchain principles and Web3's role in the decentralized internet. The core of the report covers setting up a Metamask wallet, a crucial tool for interacting with Web3 applications. Finally, we explore several DApps, demonstrating real-world use cases of blockchain technology.

Implementation Steps

1. Wallet Setup (MetaMask)

- **Installation:** Download and install the MetaMask browser extension from the official website.
- **Wallet Creation:** Create a new wallet, securely storing the seed phrase.
- **Network Configuration:** Connect the wallet to the Ethereum Mainnet and other test networks (e.g., Goerli).

2. Exploring DApps

- **Uniswap:** Accessed Uniswap to perform a token swap.
- **Aave:** Explored Aave for lending and borrowing digital assets.
- **OpenSea:** Visited OpenSea to browse and interact with NFTs.

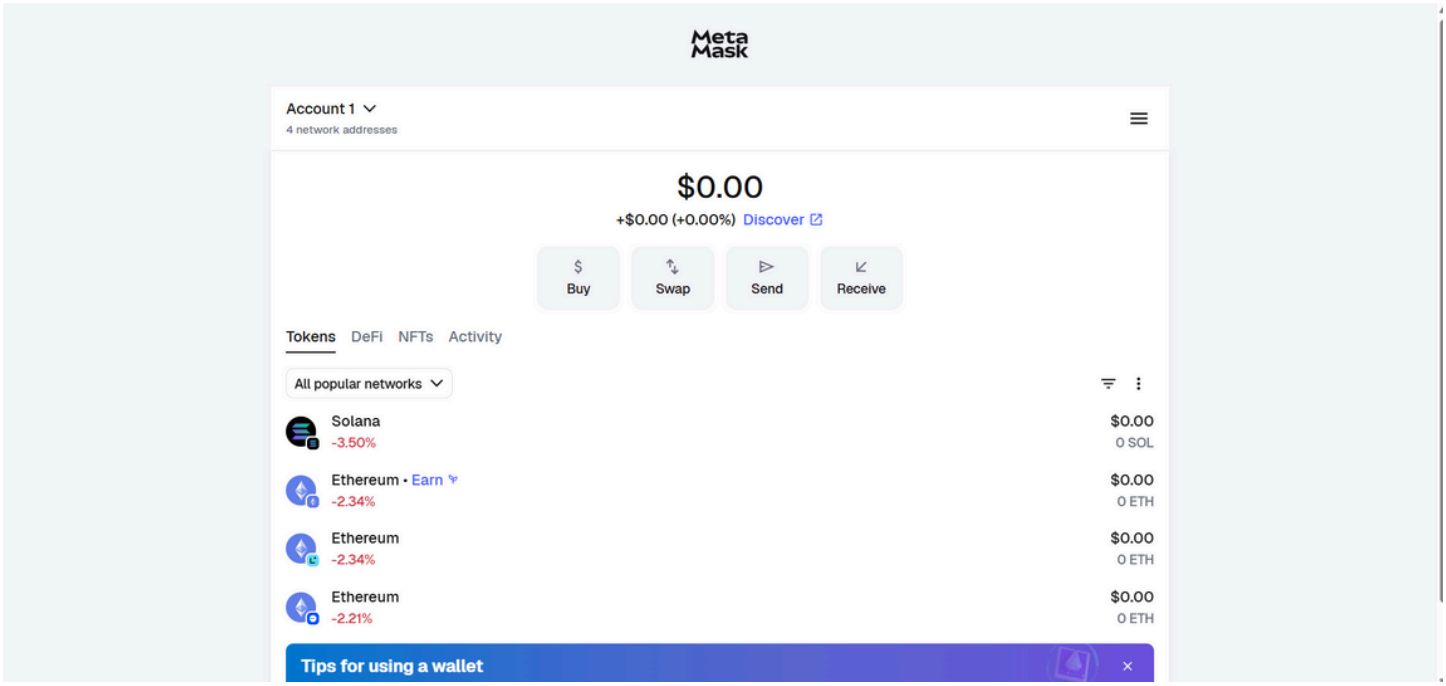
3. Transactions

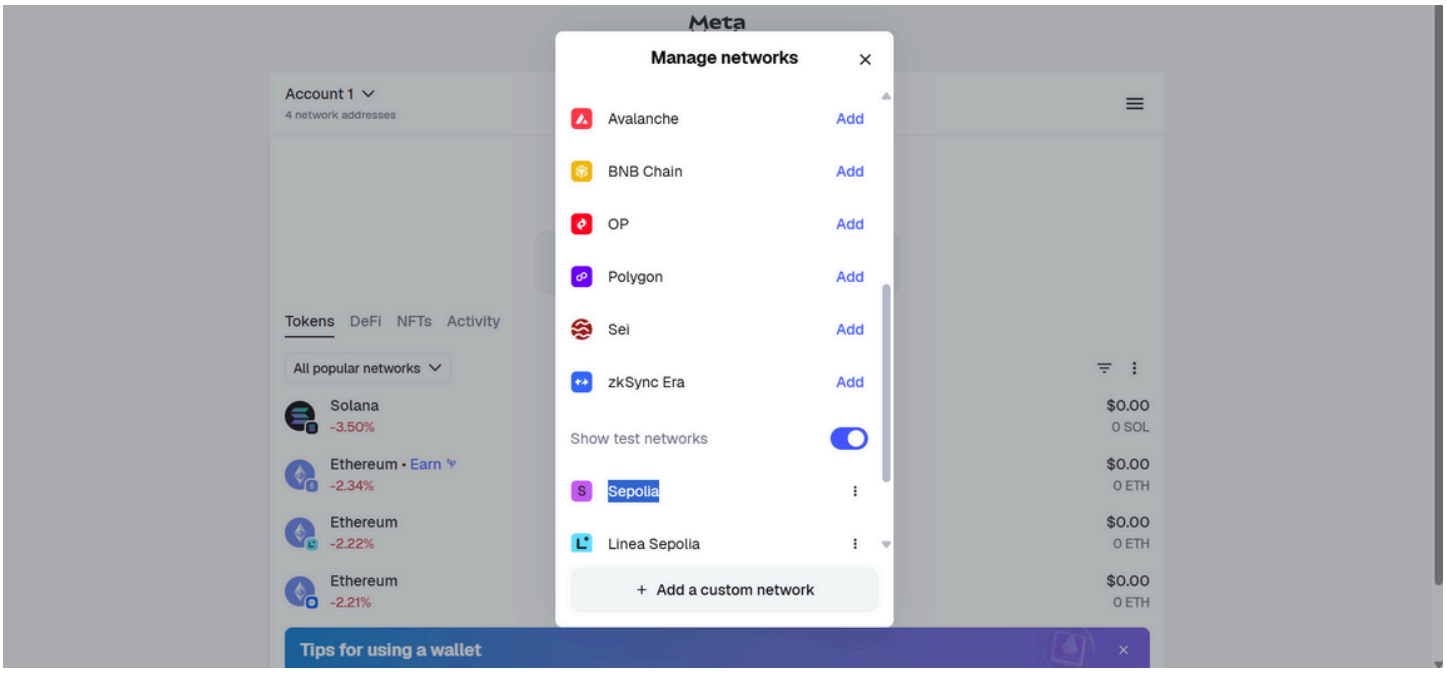
- **Initiating Transactions:** Executed token swaps and NFT purchases.
- **Transaction Monitoring:** Used Etherscan to review the transaction details such as status and associated cost.

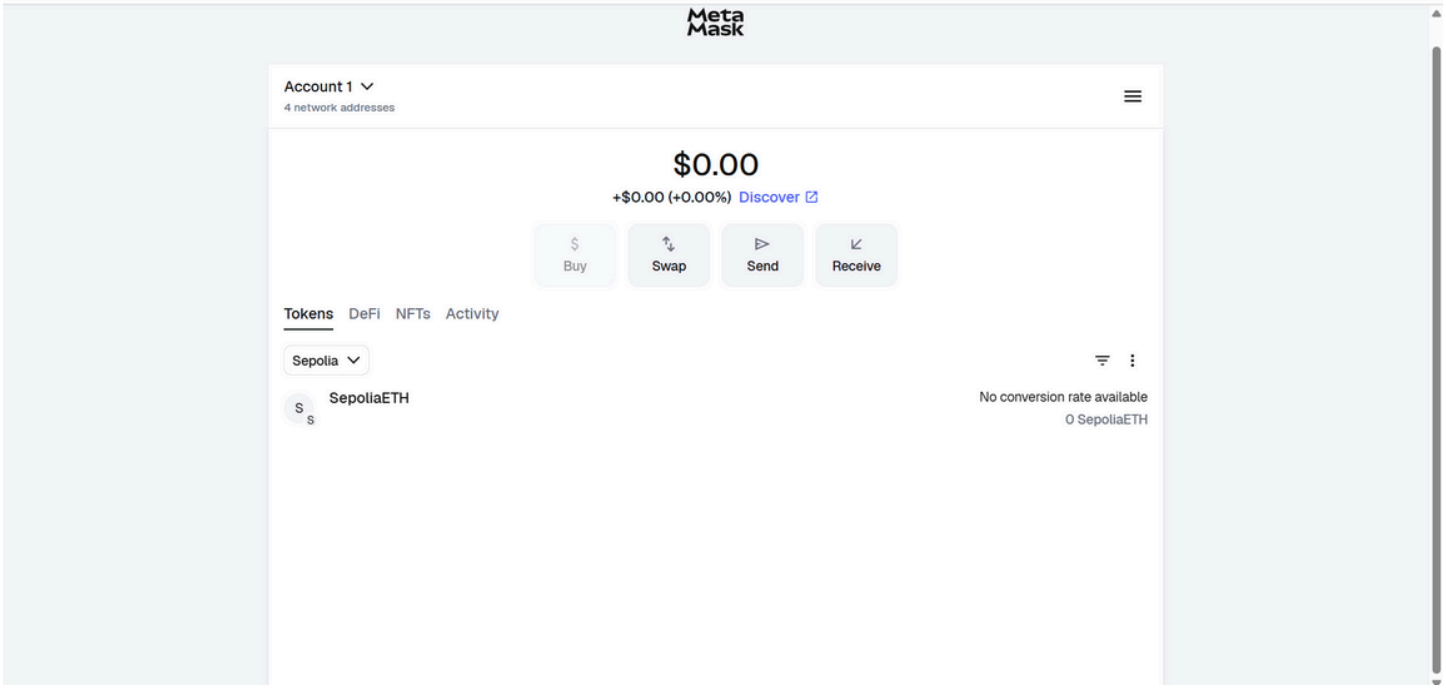
Technical Summary

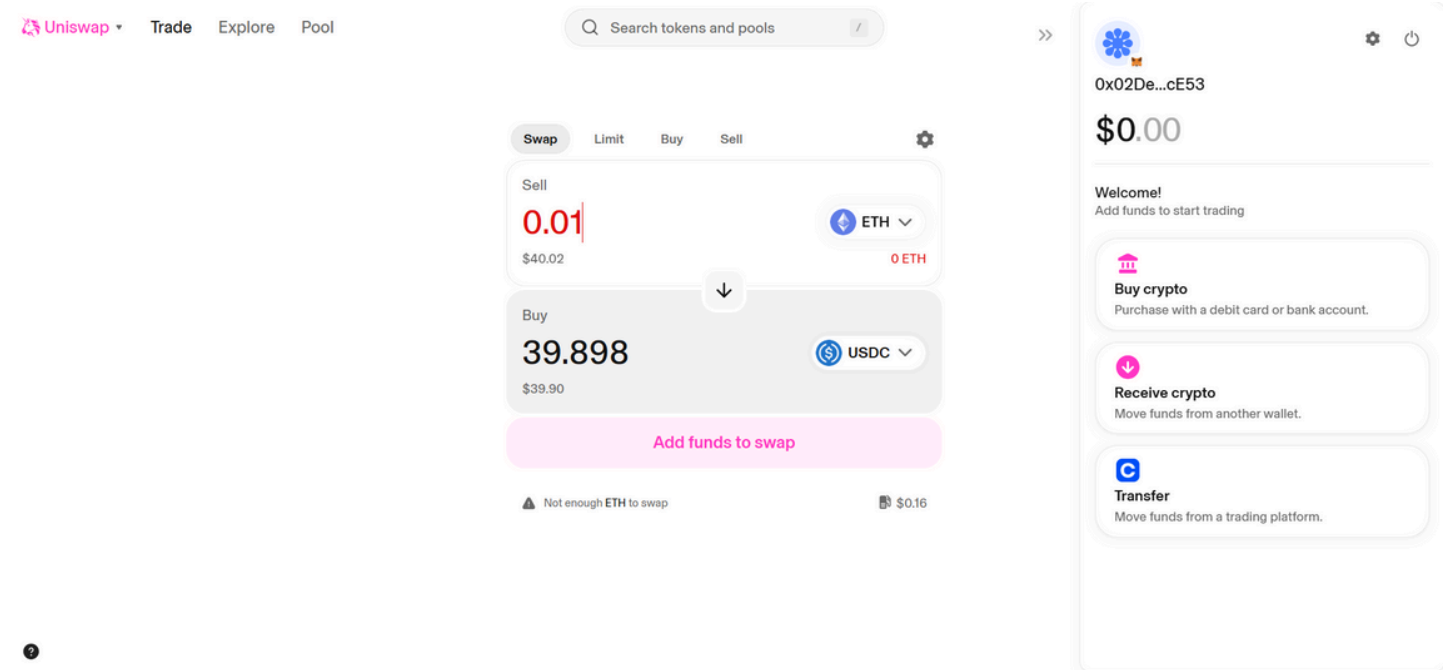
Component	Description	Technology	Purpose
MetaMask Wallet	Browser extension for Web3 interaction	JavaScript, Web3.js	Securely manage crypto assets, connect to DApps
Uniswap	Decentralized exchange protocol	Solidity, Ethereum	Token Swapping
Aave	Decentralized lending and borrowing protocol	Solidity, Ethereum	Borrow and lend crypto assets
OpenSea	NFT marketplace	Ethereum, IPFS	NFT trading
Etherscan	Blockchain explorer	Web-based	View transaction details and blockchain data

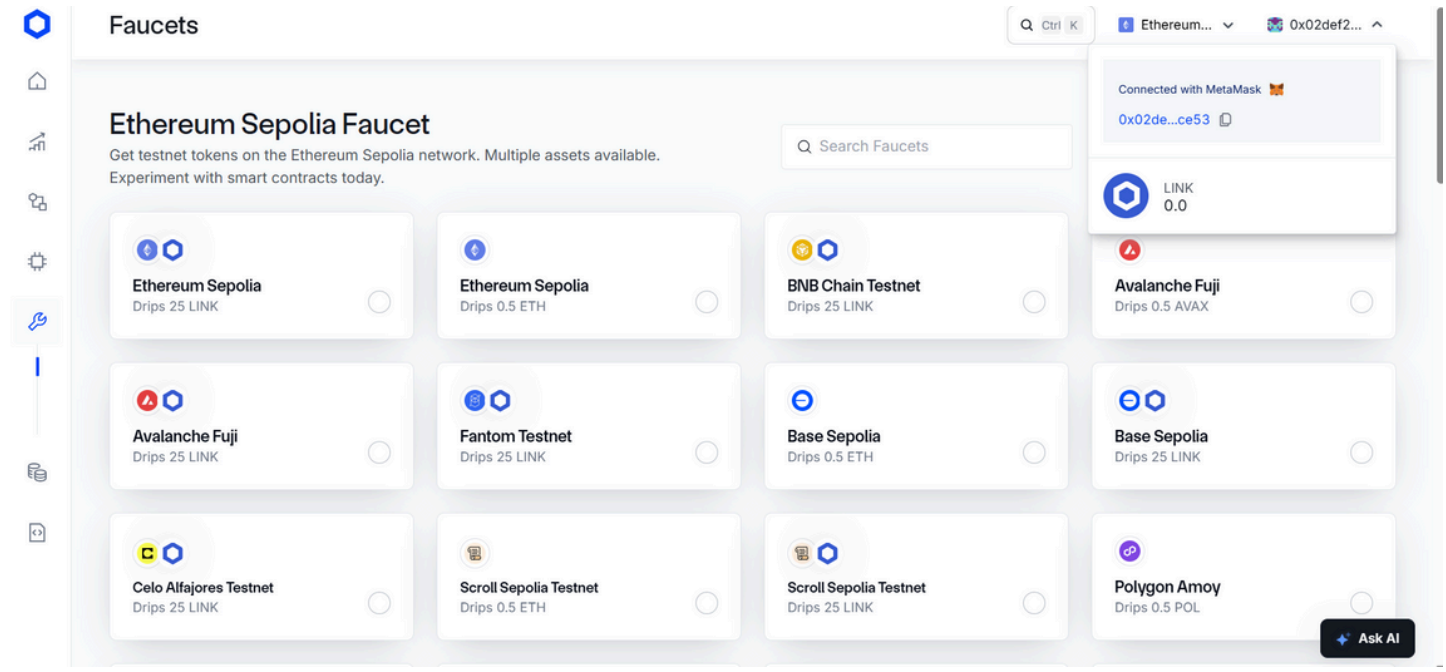
Screenshots


MetaMask
Account 1
4 network addresses
$0.00
+$0.00 (+0.00%) Discover
Buy
Swap
Send
Receive
Tokens DeFi NFTs Activity
All popular networks
Solana
-3.50%
$0.00
0 SOL
Ethereum • Earn
-2.34%
$0.00
0 ETH
Ethereum
-2.34%
$0.00
0 ETH
Ethereum
-2.21%
$0.00
0 ETH
Tips for using a wallet


Manage networks
Avalanche Add
BNB Chain Add
OP Add
Polygon Add
Sei Add
zkSync Era Add
Show test networks
Sepolia
Linea Sepolia
+ Add a custom network
Account 1
4 network addresses
Tokens DeFi NFTs Activity
All popular networks
Solana
-3.50%
$0.00
0 SOL
Ethereum • Earn
-2.34%
$0.00
0 ETH
Ethereum
-2.22%
$0.00
0 ETH
Ethereum
-2.21%
$0.00
0 ETH
Tips for using a wallet


MetaMask
Account 1
4 network addresses
$0.00
+$0.00 (+0.00%) Discover
Buy
Swap
Send
Receive
Tokens
DeFi
NFTs
Activity
Sepolia
SepoliaETH
No conversion rate available
0 SepoliaETH


Uniswap
Trade
Explore
Pool
Search tokens and pools
Swap
Limit
Buy
Sell
Sell
0.01
ETH
$40.02
0 ETH
Buy
39.898
USDC
$39.90
Add funds to swap
Not enough ETH to swap
$0.16
0x02De...cE53
$0.00
Welcome!
Add funds to start trading
Buy crypto
Purchase with a debit card or bank account.
Receive crypto
Move funds from another wallet.
Transfer
Move funds from a trading platform.


Faucets
Ctrl K
Ethereum...
0x02def2...
Connected with MetaMask
0x02de...ce53
LINK
0.0
Ethereum Sepolia Faucet
Get testnet tokens on the Ethereum Sepolia network. Multiple assets available.
Experiment with smart contracts today.
Search Faucets
Ethereum Sepolia
Drips 25 LINK
Ethereum Sepolia
Drips 0.5 ETH
BNB Chain Testnet
Drips 25 LINK
Avalanche Fuji
Drips 0.5 AVAX
Avalanche Fuji
Drips 25 LINK
Fantom Testnet
Drips 25 LINK
Base Sepolia
Drips 0.5 ETH
Base Sepolia
Drips 25 LINK
Celo Alfajores Testnet
Drips 25 LINK
Scroll Sepolia Testnet
Drips 0.5 ETH
Scroll Sepolia Testnet
Drips 25 LINK
Polygon Amoy
Drips 0.5 POL
Ask AI

Conclusion & Acknowledgment

Conclusion

This project gave me practical, hands-on exposure to Web3 and blockchain. I set up and secured a MetaMask wallet and completed a token swap on Uniswap (Testnet), building confidence in how decentralized systems work. I explored key ideas like smart contracts, gas fees, and on-chain transparency, laying a solid base for future work in Blockchain, AI, and Web Development—and motivating me to dive deeper into advanced DApps and Web3 innovations.

Acknowledgment

Thank you to Partnr Network and my university faculty for their support and guidance. I’m also grateful for the learning resources, open-source communities, and documentation that strengthened my understanding of blockchain ecosystems. Their collective help was essential to completing this project and growing my interest in decentralized technologies.