Web3 Basics – Hands-on DApp Interaction Report

Candidate Details

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Task: Web3 and Blockchain Basics: Setup Wallet and Explore DApps
Network Used: Ethereum Sepolia Testnet

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1. Objective

The objective of this task was to gain a foundational understanding of blockchain technology, Web3 concepts, and decentralized applications (DApps) through direct, hands-on experience. By setting up a crypto wallet, navigating an Ethereum test network, and interacting with a real DApp in a risk-free environment, the goal was to understand how users practically interact with blockchain systems.

This exercise helped demystify core Web3 components such as wallets, gas fees, smart contracts, and on-chain transactions, and provided valuable context for future development and participation in decentralized ecosystems.

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2. Blockchain and Web3 Concepts Overview

2.1 Blockchain Fundamentals

A blockchain is a distributed ledger that maintains a continuously growing list of records (blocks) secured using cryptographic techniques. Unlike traditional centralized databases, blockchain data is replicated across multiple nodes, ensuring transparency, immutability, and fault tolerance.

Consensus mechanisms such as Proof of Work (PoW) and Proof of Stake (PoS) are used to validate transactions and add new blocks to the chain. Ethereum has transitioned to Proof of Stake, making transaction validation more energy-efficient while maintaining decentralization and security.

2.2 Smart Contracts

Smart contracts are self-executing programs deployed on the blockchain. They automatically execute predefined logic when conditions are met, without requiring intermediaries. Each smart contract execution consumes gas, which is paid in ETH. Once a transaction is confirmed, it becomes final and immutable on the blockchain.

2.3 Web2 vs Web3

Web2 applications rely on centralized servers and databases, where user data and authentication are controlled by organizations. In contrast, Web3 applications are decentralized, and users interact using wallets instead of usernames and passwords. Wallets give users full ownership of their private keys, assets, and digital identity, enabling user sovereignty.

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3. Crypto Wallet Setup and Configuration

3.1 MetaMask Installation

The MetaMask browser extension was installed directly from the official website: https://metamask.io. This ensured protection against malicious or counterfeit versions of the wallet.

3.2 Wallet Creation and Security

A new wallet was created using MetaMask, and a strong password was set. The Secret Recovery Phrase (seed phrase) consisting of 12 words was securely written down and stored offline. This phrase was never stored digitally or shared with anyone, following best security practices.

3.3 Testnet Configuration

MetaMask was configured to connect to the Ethereum Sepolia testnet by enabling test networks in the advanced settings and switching the active network to Sepolia.

Image-1: MetaMask Wallet Dashboard (Wallet Created)

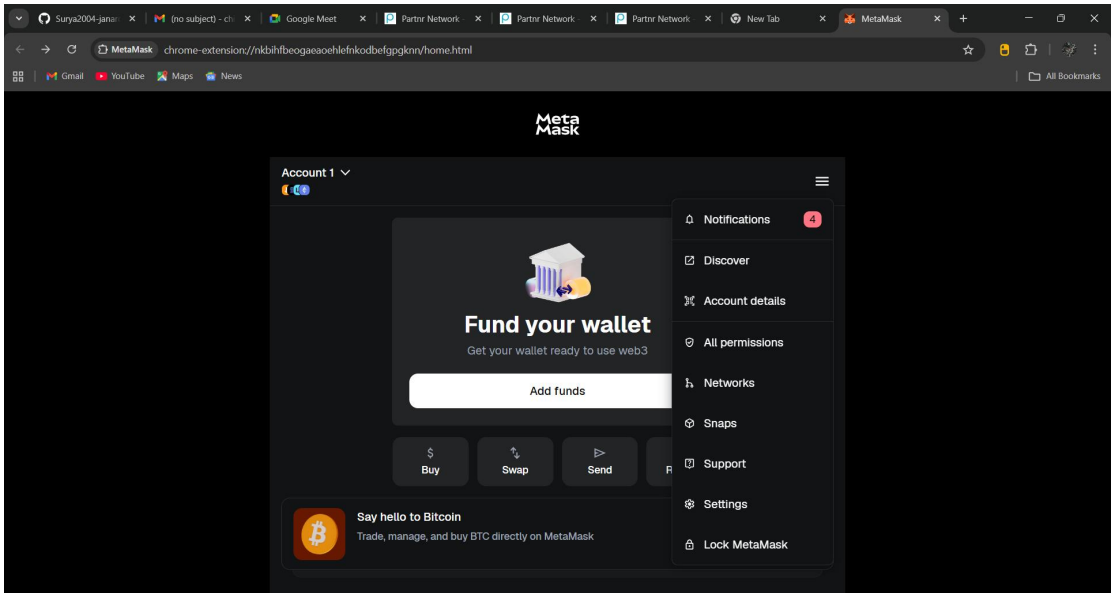
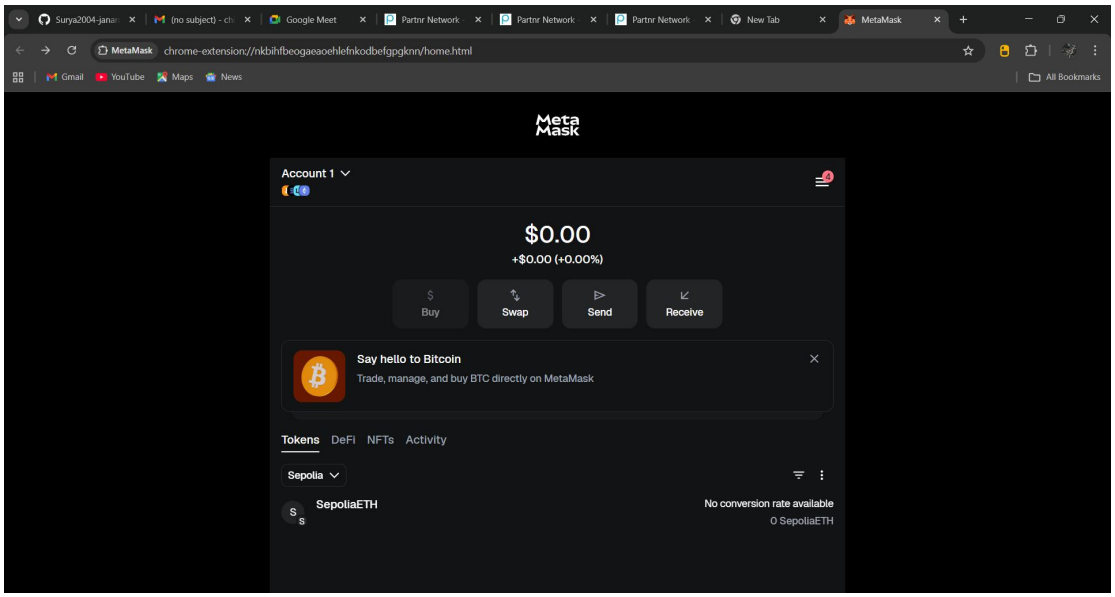


Image-2: MetaMask Configured to Sepolia Testnet



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4. Acquiring Testnet ETH

To perform transactions on the blockchain, testnet ETH was required. A Sepolia faucet was used to request free test ETH by submitting the public wallet address.

After the request, the transaction was verified on Etherscan, confirming that the testnet ETH was successfully transferred to the wallet.

Wallet Public Address:
0xDFEC4Fb0BEa57a813F38d0b322a9E9e2651fA63F

Faucet Transaction Hash:
0x8366a51a4a8f8dffce487f682ebb32a906c034d53dc620de37ad0fdadc8ae846

Etherscan Link (Faucet Transaction):
https://sepolia.etherscan.io/tx/0x8366a51a4a8f8dffce487f682ebb32a906c034d53dc620de37ad0fdadc8ae846

Image-3: Faucet ETH Request Confirmation

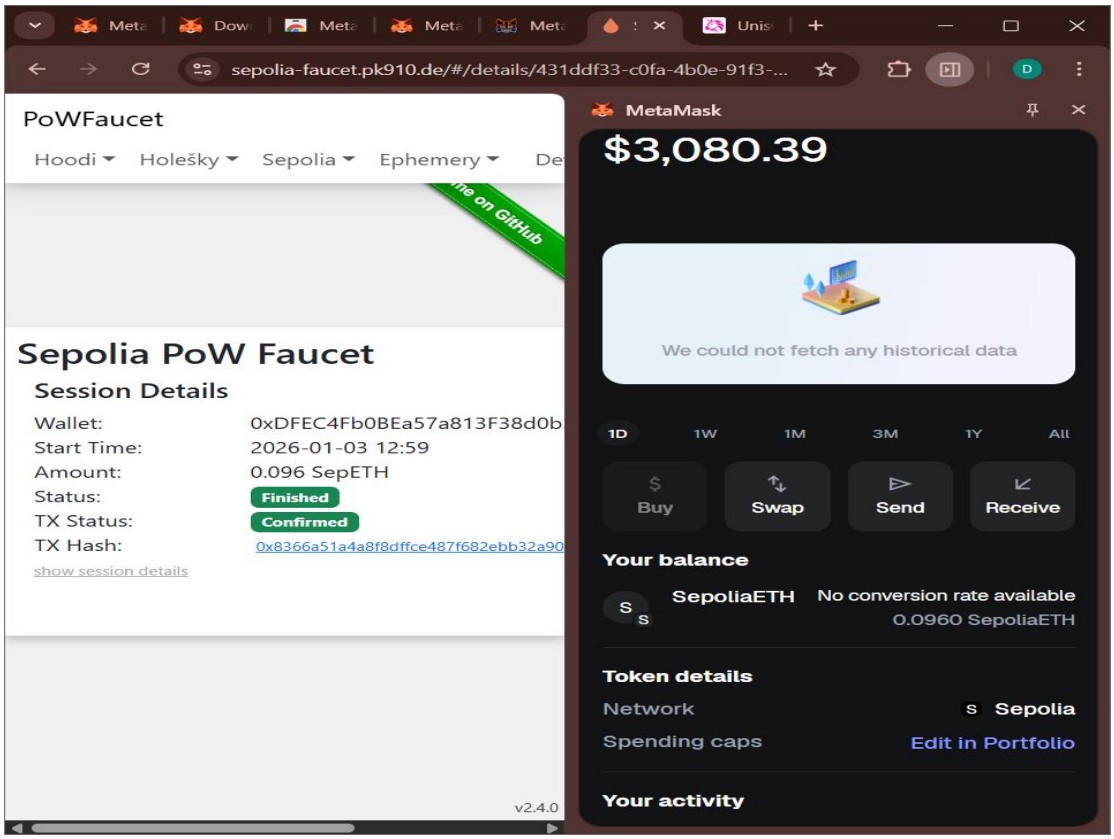


Image-4: MetaMask Showing Sepolia ETH Balance

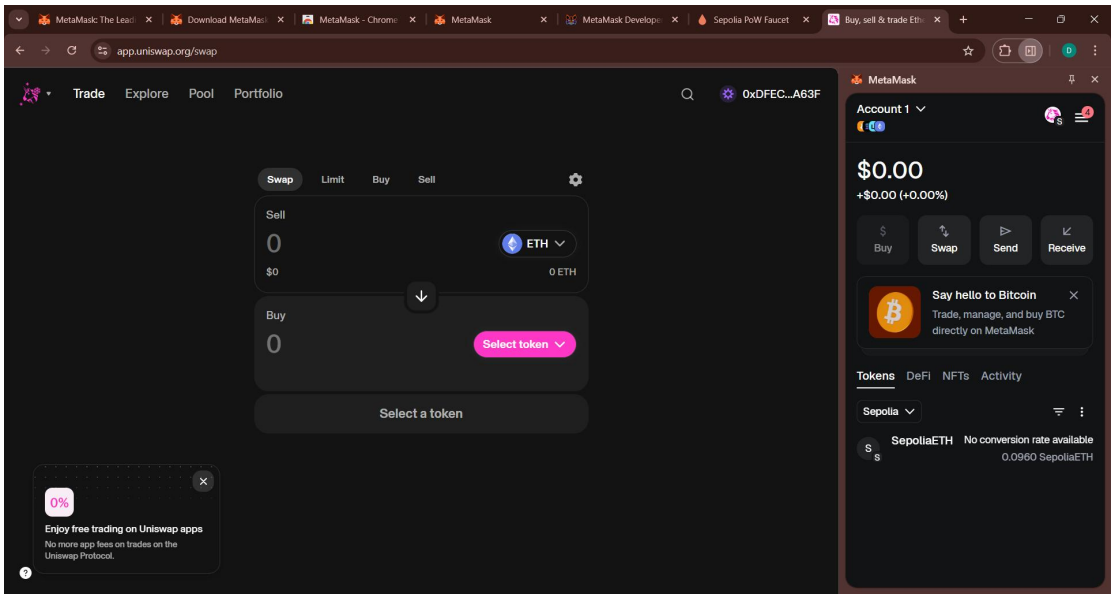
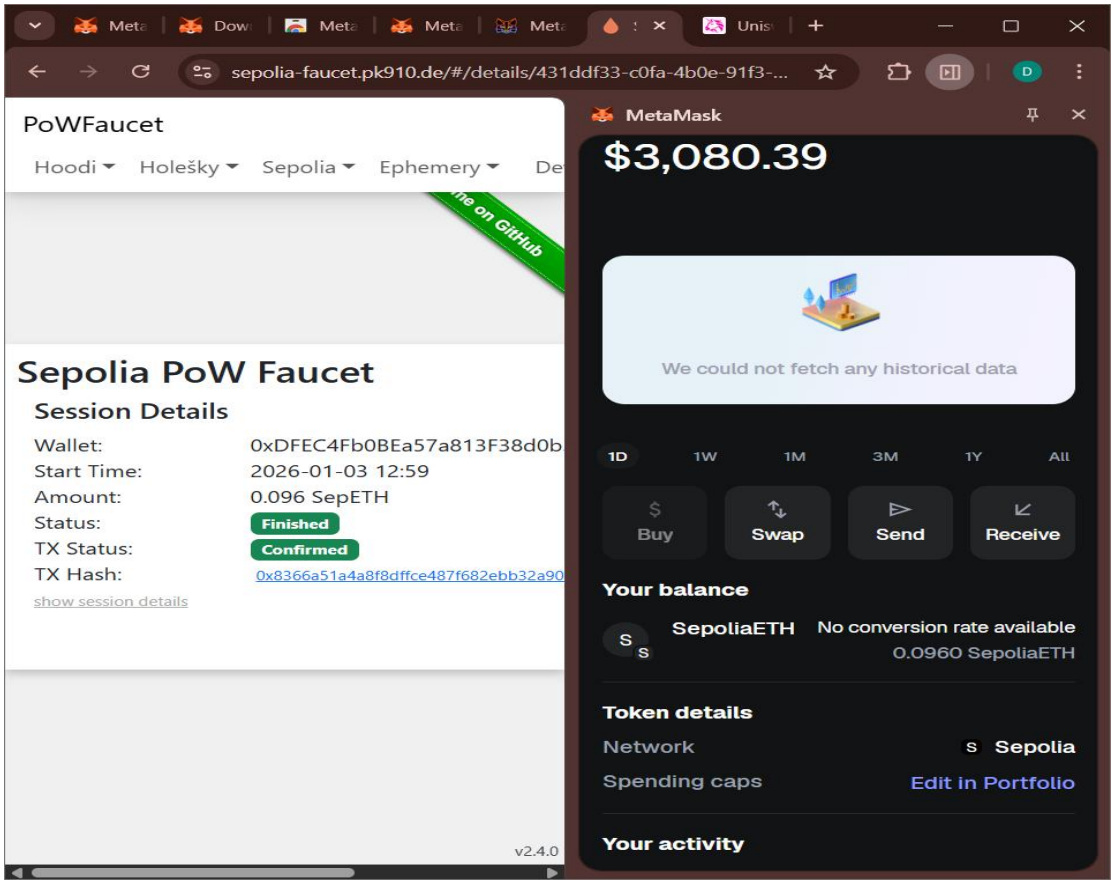


Image-5: Etherscan – Testnet ETH Transaction



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5. DApp Interaction and On-Chain Transaction

5.1 Connecting to a DApp

The MetaMask wallet was connected to the Uniswap decentralized application (https://app.uniswap.org). Care was taken to verify the URL to avoid phishing attacks. The DApp was switched to operate on the Sepolia testnet.

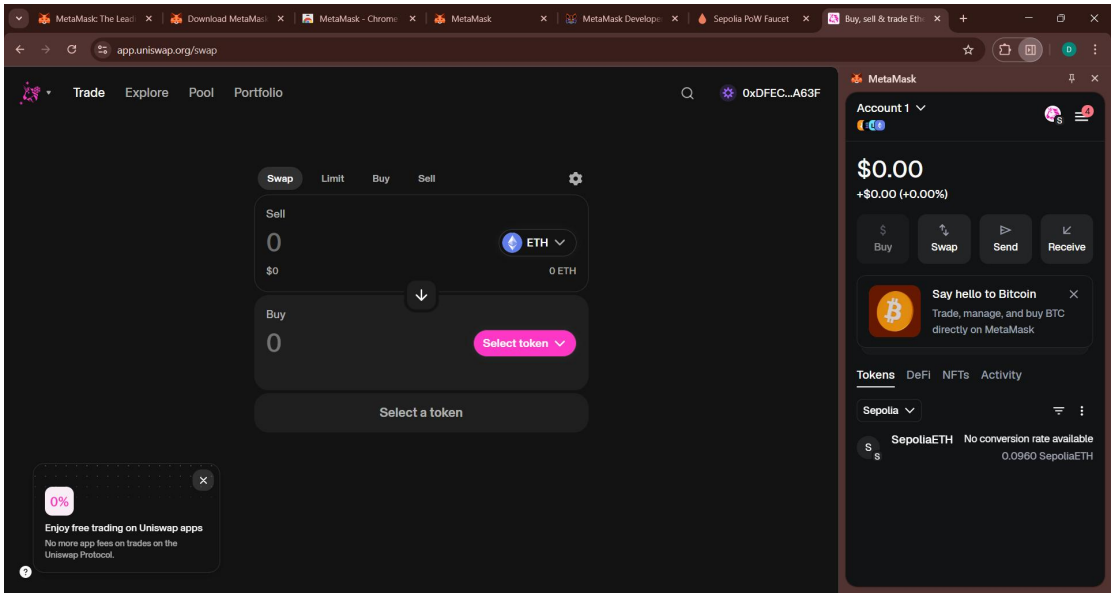
5.2 Executing an On-Chain Transaction

An on-chain transaction was executed by interacting with the Uniswap smart contract. The transaction required wallet approval, gas fee estimation, and final confirmation through MetaMask. After submission, the transaction status was monitored on Etherscan until it was successfully confirmed.

On-Chain Transaction Hash:
0x4de3d3811b8b2a8e5f7a26dccf81ea79ba39cafa7b205b0bbbb1b78d15c3cdd0

Etherscan Link (DApp Transaction):
https://sepolia.etherscan.io/tx/0x4de3d3811b8b2a8e5f7a26dccf81ea79ba39cafa7b205b0bbbb1b78d15c3cdd0

Image-6: Wallet Connected to Uniswap DApp



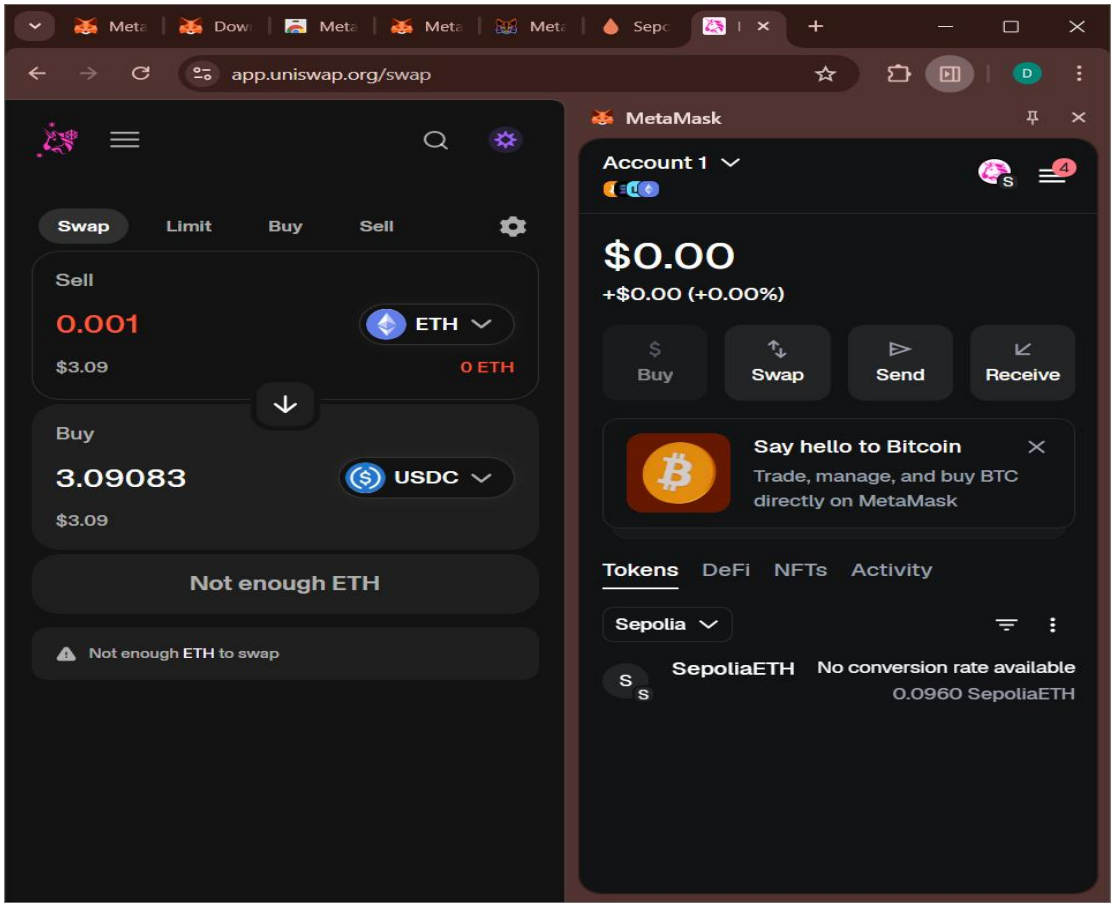
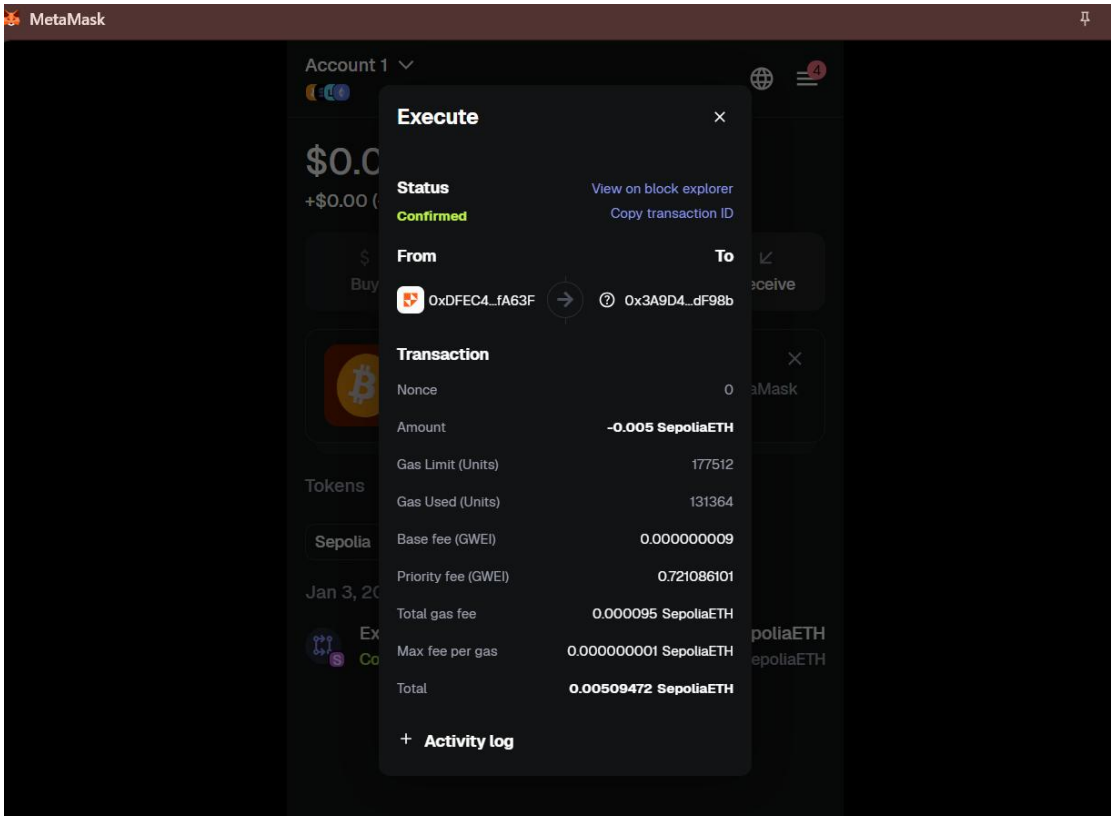


Image-7: Etherscan – DApp Transaction Confirmation



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6. Learning Reflection

This hands-on task helped me clearly understand how blockchain and Web3 systems work from a real user's perspective, rather than just theoretical concepts. Before this activity, my understanding of blockchain was mostly limited to definitions, but interacting directly with a wallet, testnet, and a decentralized application made the concepts much clearer and more practical.

One of the most important learnings was the difference between traditional databases and blockchain technology. Traditional databases are centralized and controlled by a single organization, which means data can be modified or deleted by administrators. In contrast, a blockchain is a distributed ledger where data is stored across many nodes and cannot be easily altered once confirmed. This immutability and transparency provide higher trust, especially in decentralized systems where no single authority controls the data.

I also gained a strong understanding of smart contracts. Smart contracts are programs deployed on the blockchain that automatically execute when predefined conditions are met. Unlike traditional backend logic, smart contracts do not rely on servers or manual intervention once deployed. During the DApp interaction, I observed how a transaction required gas fees and how the contract execution went through different states before reaching final confirmation on the blockchain.

Wallet usage was another major learning area. Using MetaMask showed me how wallets act as the core identity mechanism in Web3. Instead of usernames and passwords, users authenticate and authorize actions using cryptographic keys. This also highlighted the importance of wallet security. The Secret Recovery Phrase (seed phrase) is the most critical element, as anyone with access to it can fully control the wallet. Writing it down offline and avoiding phishing websites are essential best practices for protecting digital assets.

Gas fees and transaction times were also interesting to observe. Even on a testnet, transactions required gas fees, reinforcing the idea that every blockchain operation has a computational cost. Transaction confirmation times varied slightly, which helped me understand how network conditions and block confirmations affect finality.

Overall, this task gave me a practical understanding of the complete Web3 transaction lifecycle—from wallet setup and funding to executing and verifying an on-chain transaction. It built confidence in interacting with decentralized applications and provided a solid foundation for future Web3 development and learning.

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7. Conclusion

This task provided a comprehensive introduction to the Web3 ecosystem through practical experimentation. By creating and securing a wallet, acquiring testnet ETH, interacting with a decentralized application, and verifying transactions on a public block explorer, a clear understanding of the user-facing blockchain workflow was achieved. The experience highlighted both the power and responsibilities of decentralized systems and laid a strong foundation for further Web3 development and exploration.
