Web3 and Blockchain Basics: Setup Wallet and Explore DApps

Name: Nallamilli Haritha

Wallet Address (Sender): 0x21c1743E7B2d0156A0e9b1A0804dc8d241B4E463

Wallet Address (Receiver): 0x9E7F1F519ec9332bab90764094417FB25c9ac483

Network Used: Ethereum Sepolia Testnet

Transaction Hash:

0xbb32a3ae7cfd2ade82e04c30c80e002bf4e260ef1eac3f8838f03565616da19b

Etherscan Link:

https://sepolia.etherscan.io/tx/0xbb32a3ae7cfd2ade82e04c30c80e002bf4e260ef1eac3f8838f03565616da19b

Amount Sent: 0.0001 SepoliaETH

Transaction Status: Successful

1. Introduction

In recent years, the concept of Web3 has gained significant attention as the next phase of the internet. Web3 represents a decentralized internet where users have complete ownership over their data, digital identities, and financial assets. This shift is enabled by blockchain technology, which ensures transparency, immutability, and trustless transactions.

As part of exploring Web3 and blockchain fundamentals, I performed a task involving:

- Creating a **MetaMask Web3 wallet**
- Adding the **Ethereum Sepolia Test Network**
- Requesting **test ETH from a faucet**
- Sending ETH to another wallet address
- Verifying the transaction on **Etherscan**

2. What is Web3?

Web3 is the third generation of the internet, built on decentralized blockchain networks. It enables decentralized applications (dApps), DeFi, NFTs, and many new digital technologies. Key Features of Web3:

- **Decentralization:** No single authority controls the system.
- **Ownership:** Users own digital identity and cryptocurrency directly.
- **Transparency:** Every transaction is publicly recorded on blockchain.
- **Security:** Cryptographic encryption ensures secure interactions.

3. Crypto Wallet and MetaMask

A crypto wallet does not store cryptocurrency physically; instead, it stores **private keys** that allow users to access and manage digital assets on blockchain networks.

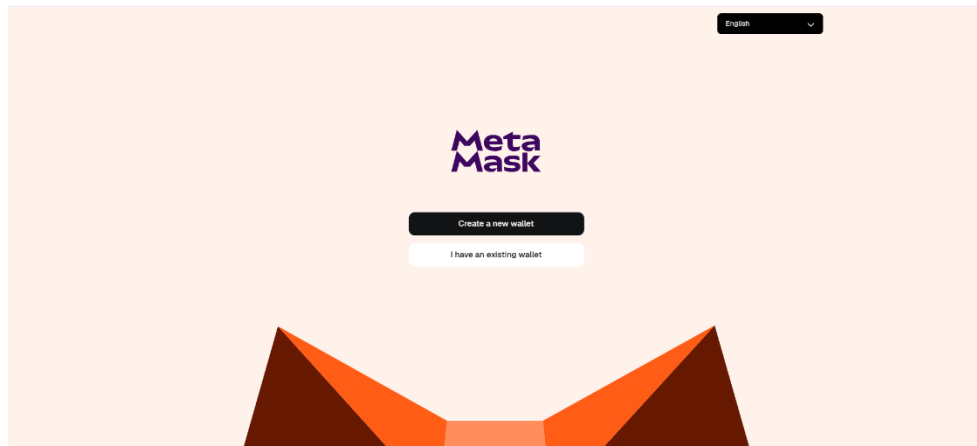**MetaMask** is one of the most widely used Web3 wallets. It works as:

- A **browser extension** and **mobile app**
- A tool for interacting with Ethereum networks and dApps
- A secure container for managing multiple accounts
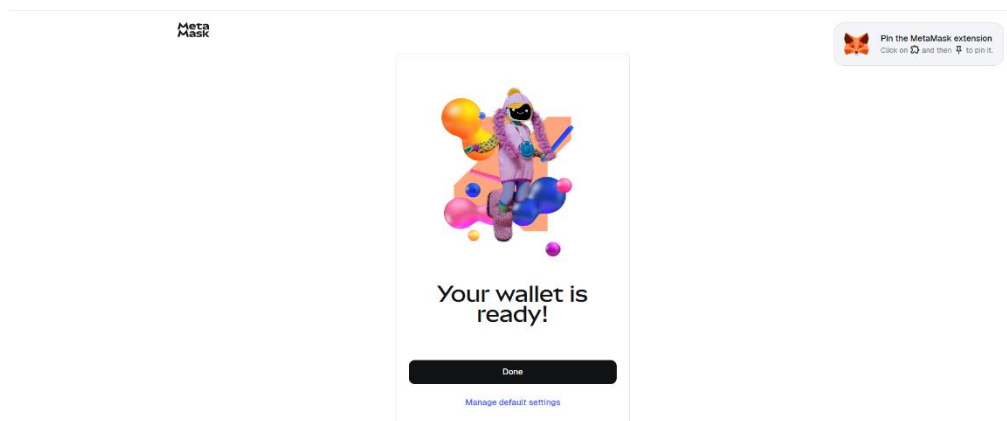
Wallet Setup Steps

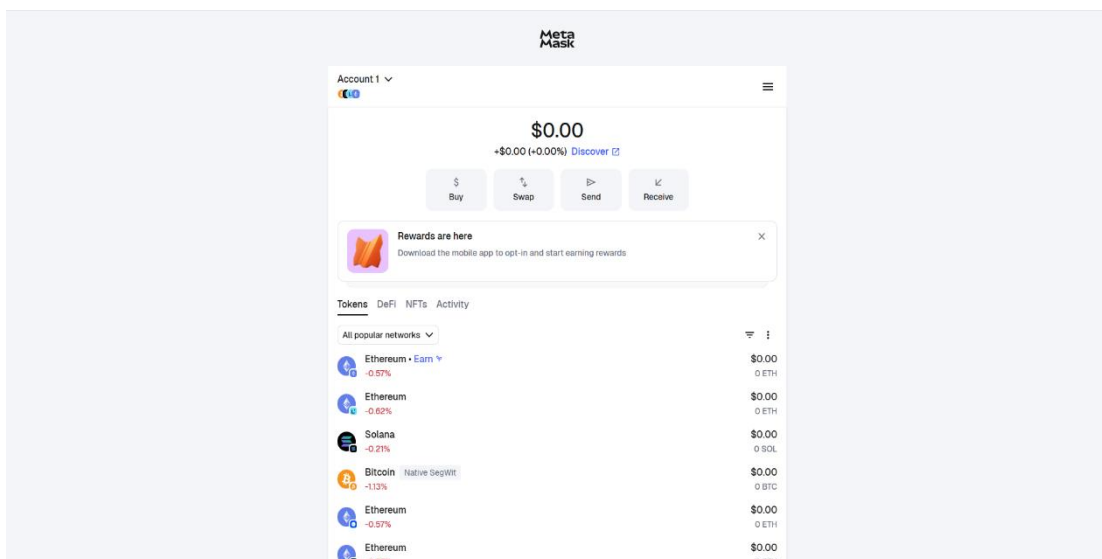1. Installed MetaMask extension from the official website.
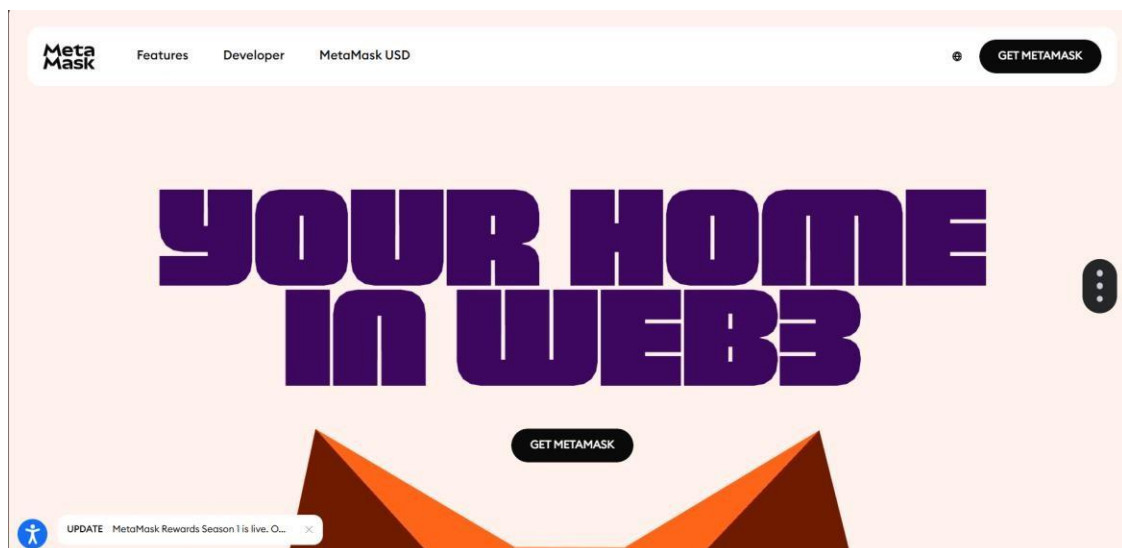
2. Created a new wallet and set a strong password.

3. Received a **Secret Recovery Phrase (12 words)**.
4. Stored the recovery phrase **offline**, as anyone with it can access the wallet.
5. After setting a strong password.

6. After completing the wallet setup, the MetaMask interface appears as shown below.

4. Adding the Sepolia Test Network

By default, MetaMask shows the Ethereum Mainnet. Since real ETH has monetary value, developers use **test networks**.
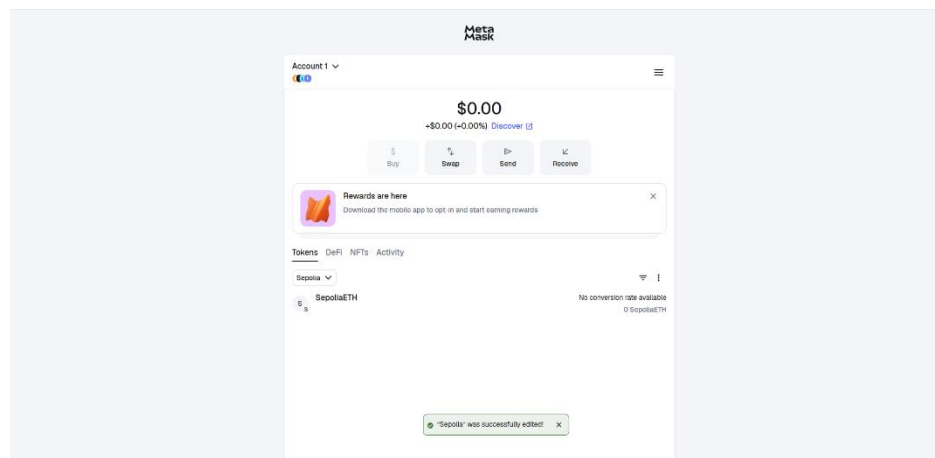
Sepolia Testnet is used for:

- Practicing transactions
- Deploying and testing smart contracts
- Learning Web3 without using real money

Steps to Add Sepolia Network

1. Open MetaMask → Settings → Networks
2. Enabled *"Show Test Networks"*
3. Search for **Sepolia Testnet**
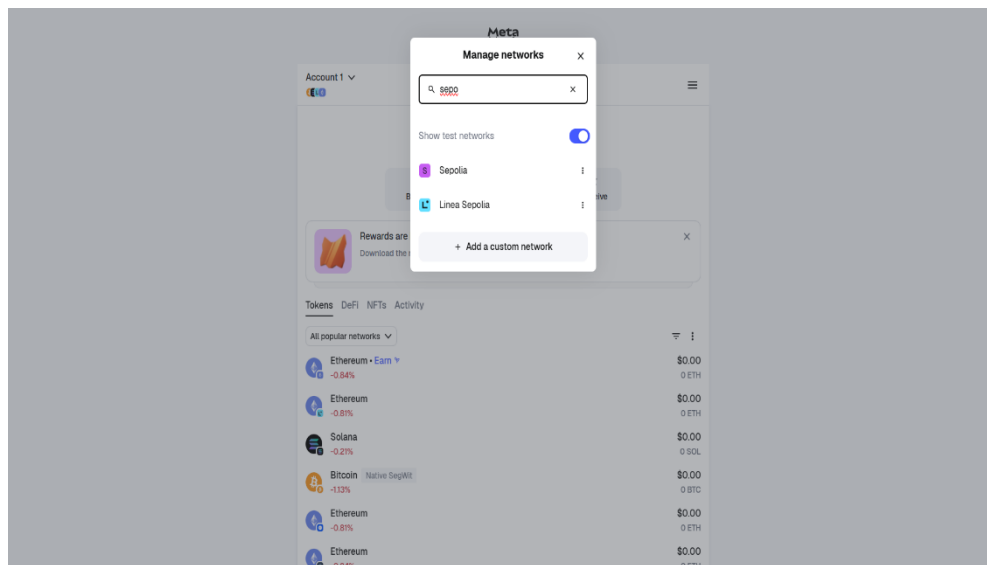
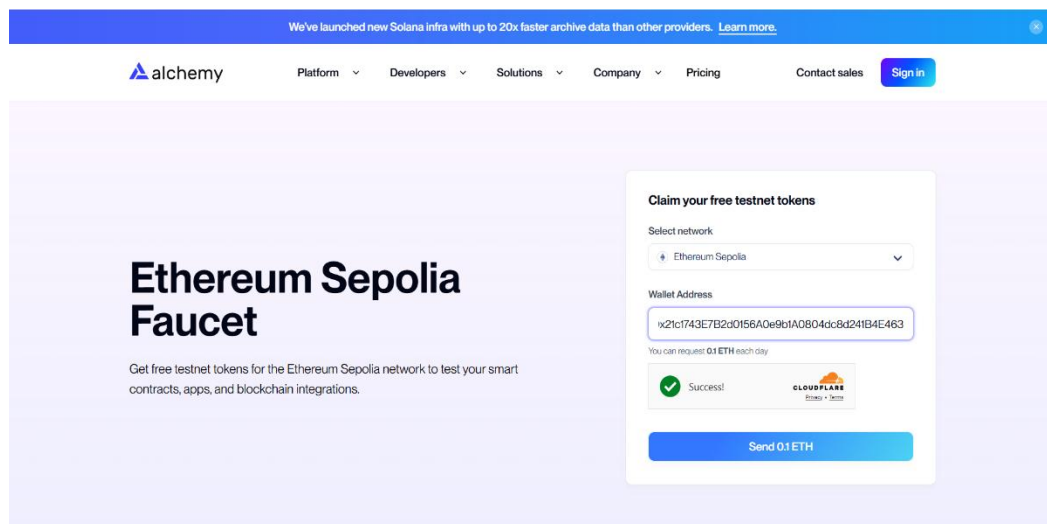
4.Select Sepolia Testnet in Account 1
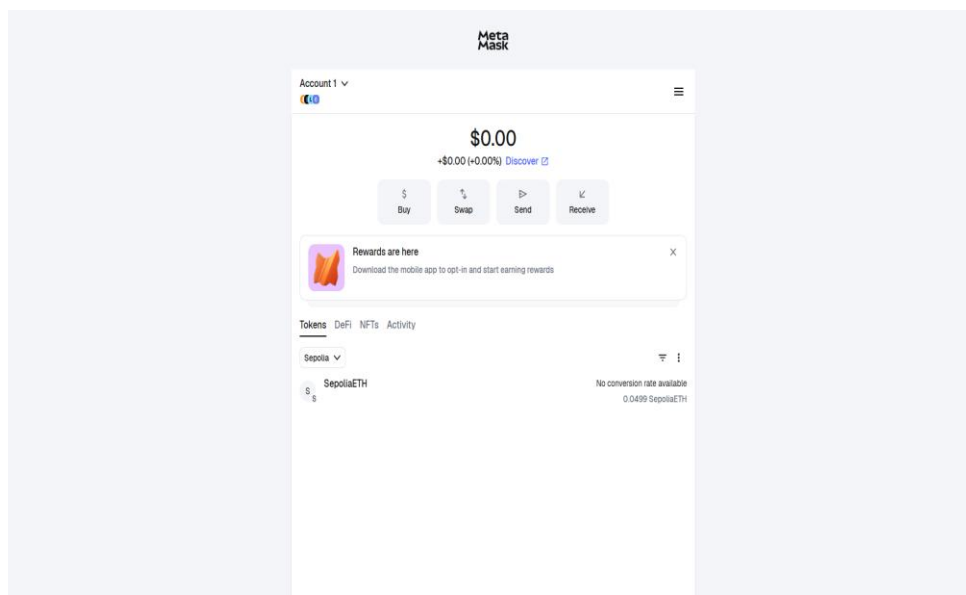
5. Requesting Sepolia Test ETH

To perform transactions, I needed some Sepolia test ETH, which is obtained from a **faucet** (a free distribution service).

Steps:

1. Copied my wallet address from MetaMask.
2. Opened a Sepolia Faucet
3. Pasted the wallet address and requested ETH.

4. After some confirmations, **test ETH appeared** in my wallet balance.
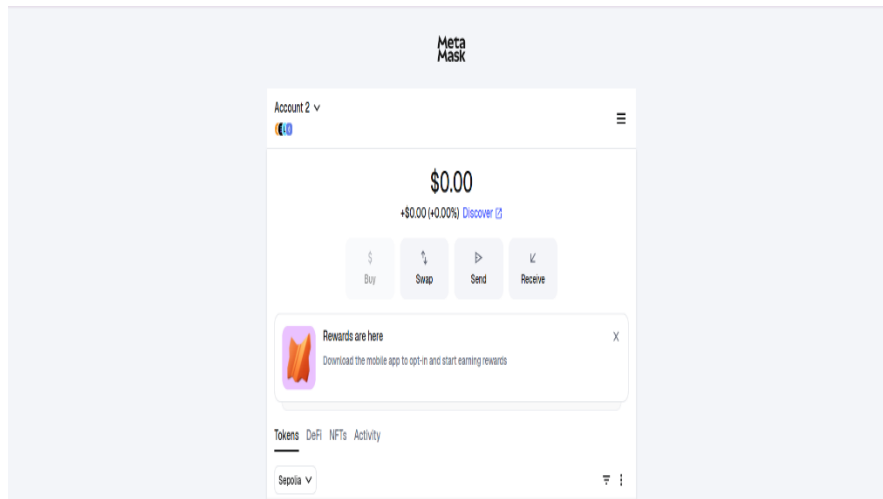
6. Sending ETH Transaction

To demonstrate transaction usage, I sent **0.0001 ETH** to another wallet address.

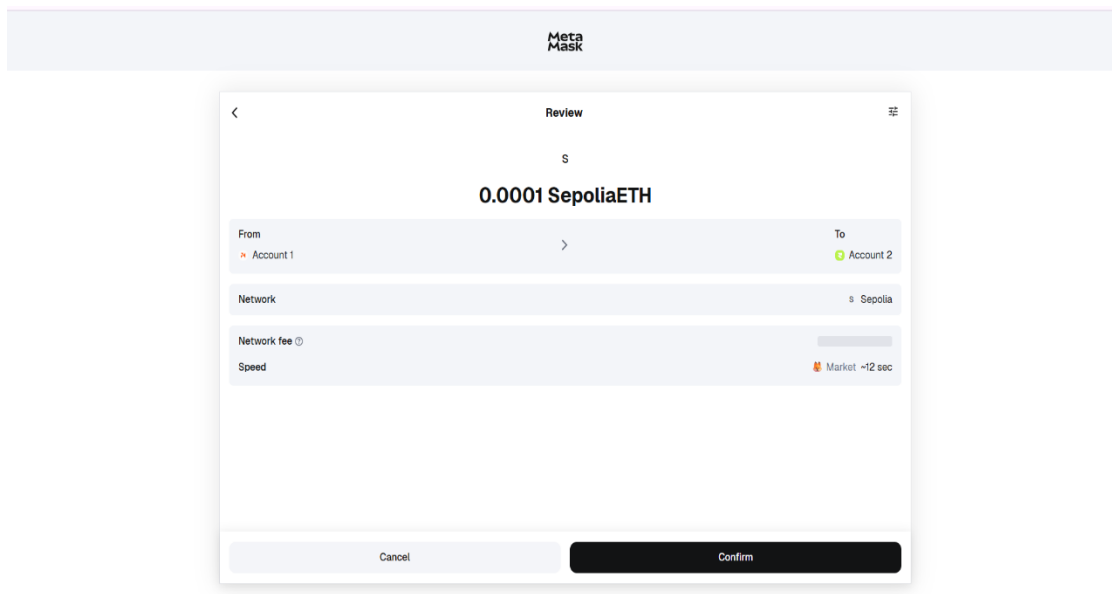**Sender Wallet:** 0x21c1743E7B2d0156A0e9b1A0804dc8d241B4E463

Recipient Wallet: 0x9E7F1F519ec9332bab90764094417FB25c9ac483

Steps Performed:

1. Create Account 2 And Copy its wallet address.

2. Click **Send** in MetaMask Account 1.
3. Entered the recipient wallet address.
4. Entered amount: **0.0001 ETH**

5. Confirmed transaction (gas fee auto-calculated).
6. If the transaction fails due to insufficient gas fee, you must add more Sepolia ETH. Keeping at least 0.0001-0.0002 Sepolia ETH ensures smooth transactions.
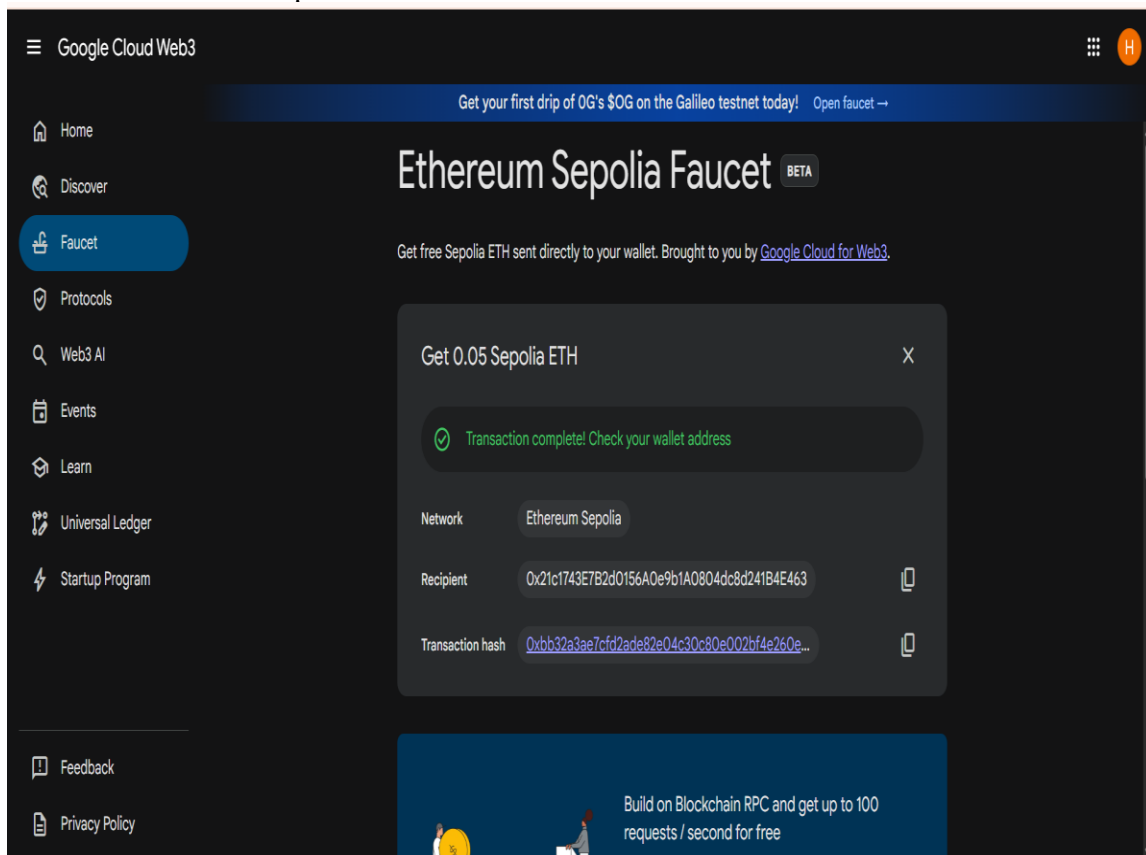
7. The Transaction executed successfully and appeared as **Confirmed** in the Activity tab.
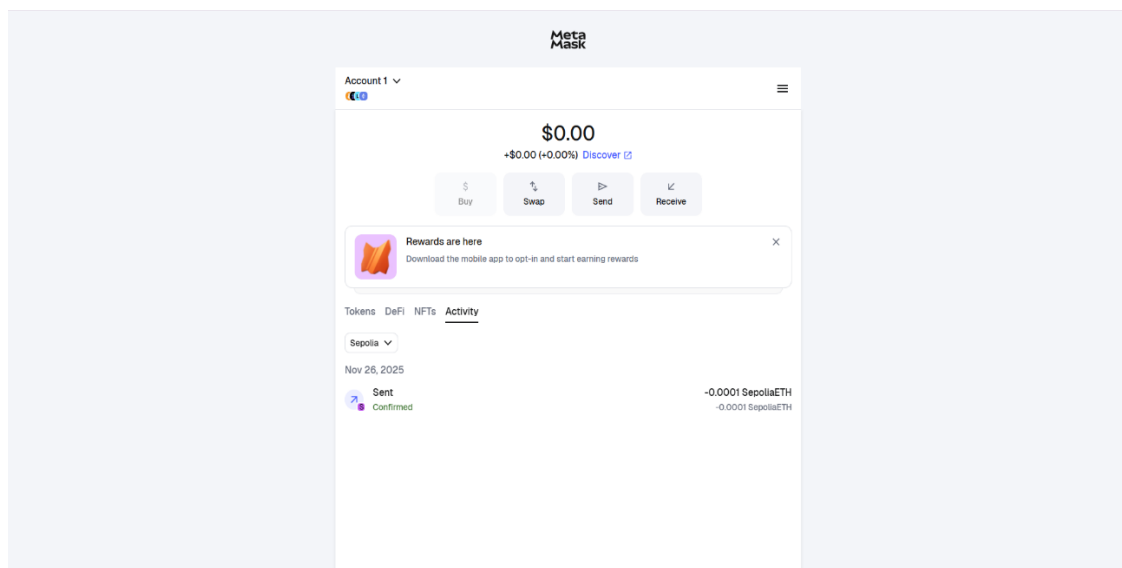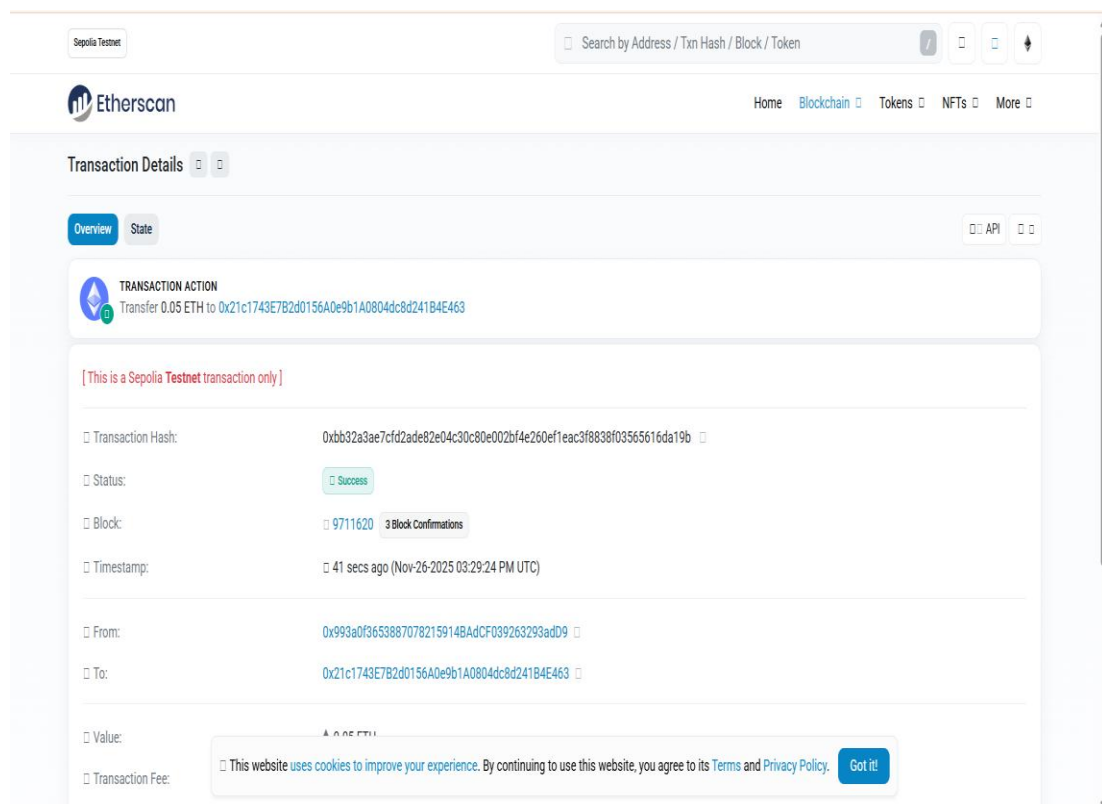
8. Switched to **Account 2** and confirmed that the **received amount was added to the balance**.
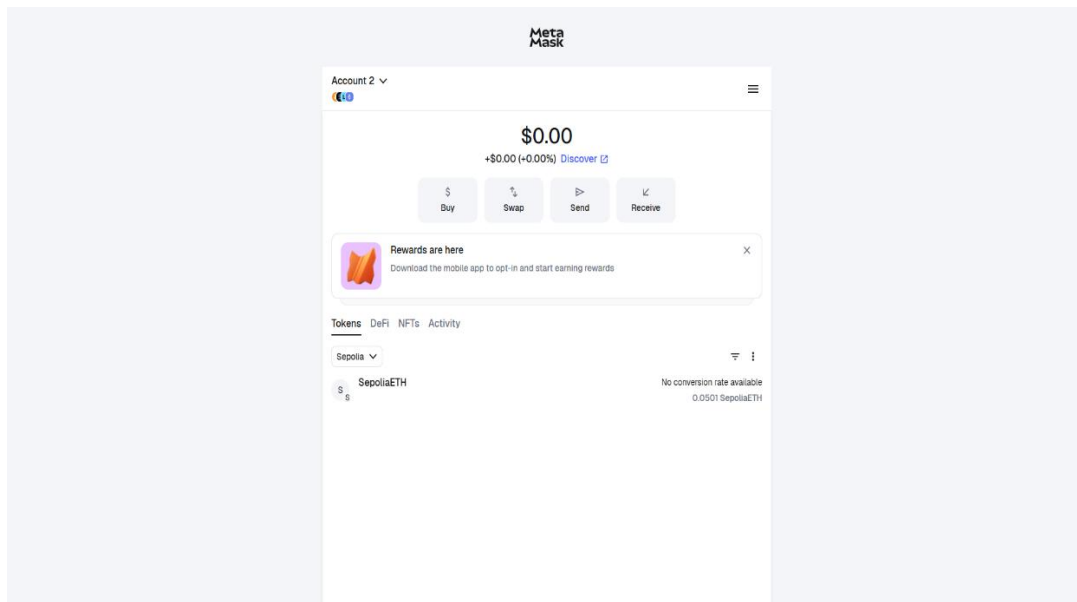
7. Verifying on Etherscan

After sending the transaction, I opened the transaction details in **Etherscan**, a blockchain explorer.

8. Connected Wallet to Uniswap DApp

I also connected my MetaMask wallet to **Uniswap**, which is a Decentralized Application (DApp). This was done just to check that my wallet can connect and interact with a DApp
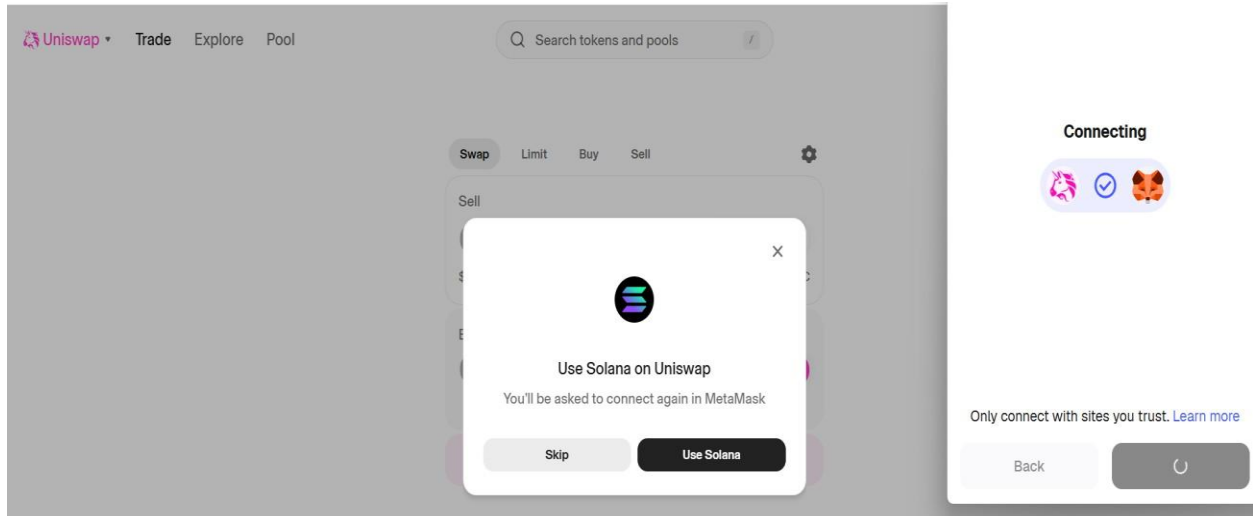
This confirmed that my MetaMask wallet can communicate with decentralized applications, enabling Web3 interactions.

9. Technical Understanding

1. Testnet Used: Sepolia Testnet

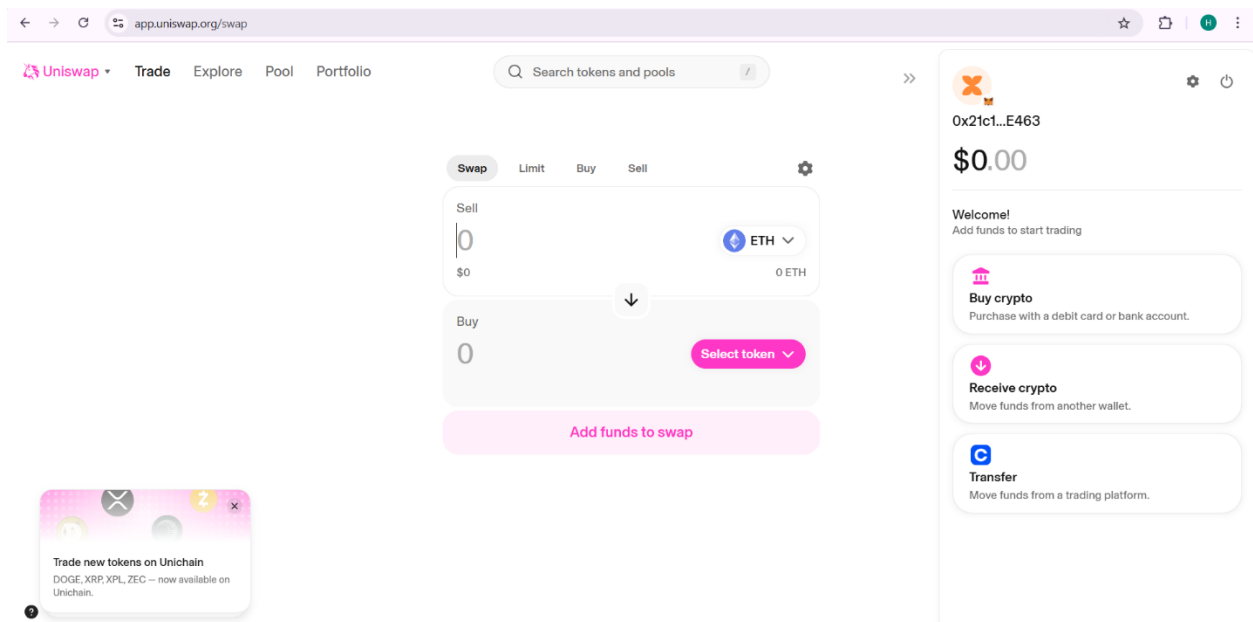**2. DApp(s) Interacted With:**

- **MetaMask Wallet Interface** (used for sending and confirming the transaction)
- **Uniswap (Connected Only)** – I connected my MetaMask wallet to the Uniswap interface but **did not perform a swap or trade**.

3. Type of Transaction Performed:

- **Internal Wallet Transfer:** Sent **0.0001 SepoliaETH** from **Account 1 → Account 2** within MetaMask.
  The transaction was successful and is visible in the **Activity** tab of MetaMask.

4. Errors Encountered & Troubleshooting:

- Initially, I faced a **"Funds required / Insufficient balance to complete transaction"** message because my wallet balance was **0 Sepolia ETH**, so gas fees could not be paid.
- The Sepolia faucet did not provide ETH immediately.
- After receiving test ETH later, I retried and the transaction was successfully completed.

10. Key Learnings

From this activity, I learned:
- How to install and use a Web3 wallet (MetaMask).
- The difference between **Mainnet** (real money) and **Testnet** (free testing).
- How to send and receive cryptocurrency.
- How blockchain transactions are publicly viewable.
- How to check transaction status on **Etherscan**.
- I also learned how to identify and troubleshoot issues related to insufficient gas fees, network connection problems, and faucet delays.
- Understanding how blockchain confirmations work helped me realize why transactions sometimes take longer depending on network activity.
- Through this activity, I gained hands-on experience with decentralized applications and understood how wallets communicate securely with DApps.
- Overall, I developed a practical understanding of Web3 workflows, from wallet setup to executing transactions and interacting with DApps.

11. Conclusion

This activity gave me valuable real-world experience with blockchain tools and helped me understand how Web3 applications function behind the scenes. By performing all the steps independently—such as creating multiple accounts, transferring test ETH, verifying transactions, and connecting to a DApp—I built a clearer picture of how decentralized systems operate. I also learned how important concepts like gas fees, transaction hashes, and network selection are in blockchain usage. These practical skills form a strong foundation for learning advanced topics like smart contract development, DeFi protocols, and NFT platforms. Overall, this hands-on experiment strengthened my confidence and understanding of the Web3 ecosystem.