

Web3 and Blockchain Basics :

Setup Wallet and Explore Dapps

- **MetaMask Installation :-**

Steps :-

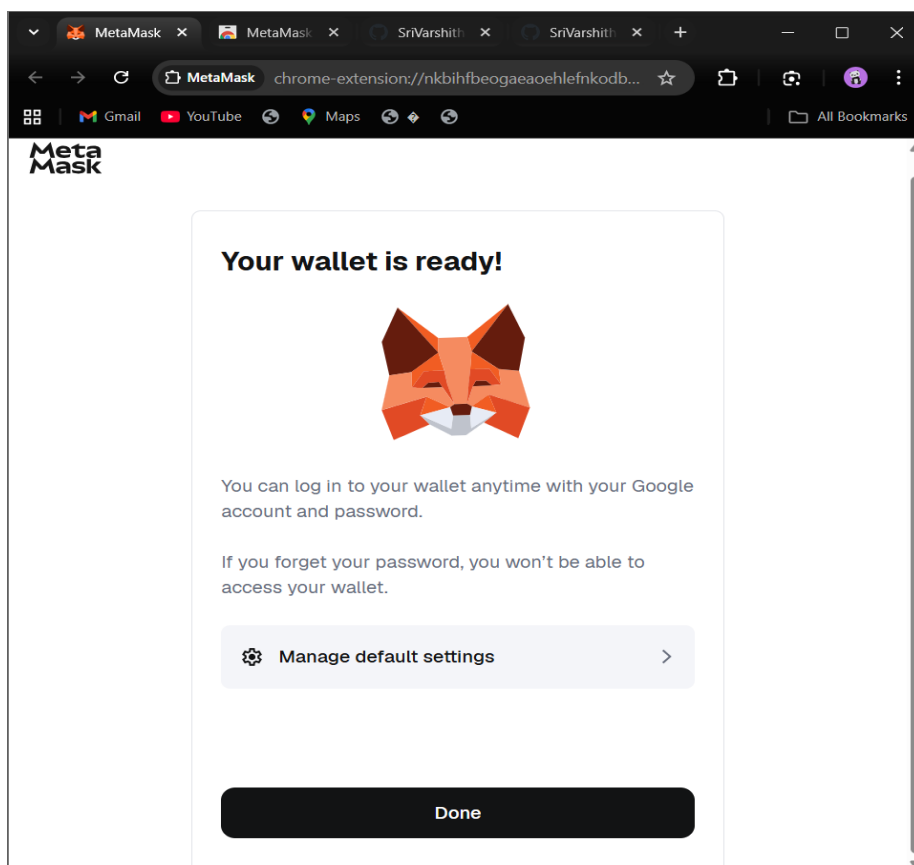
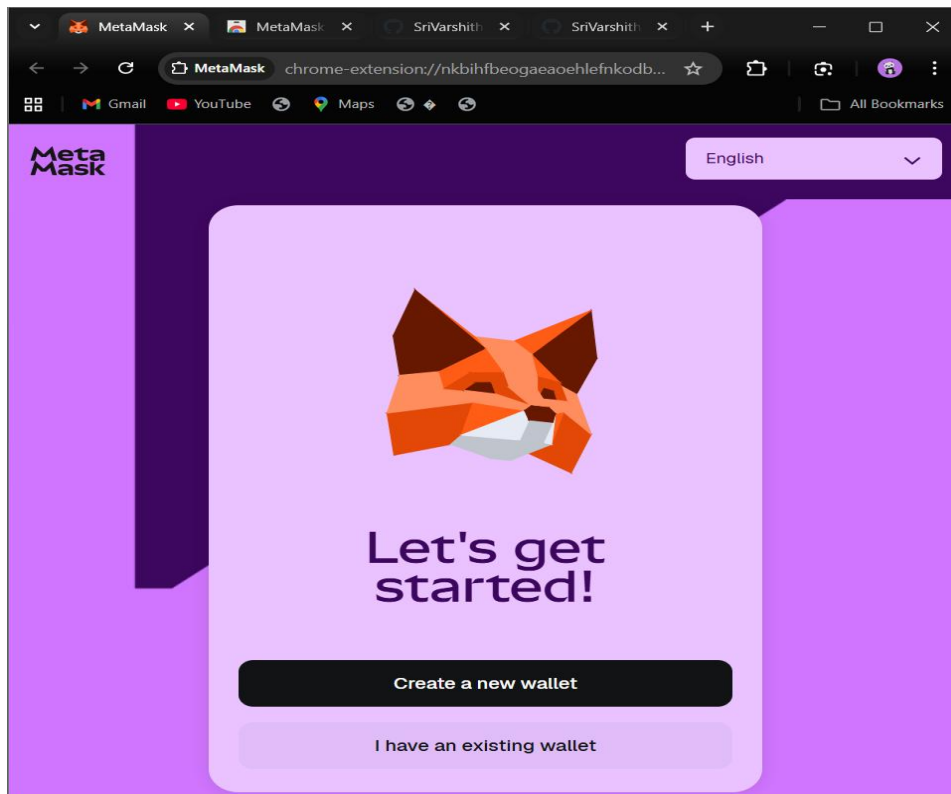
Step 1 :- Open your Web Browser and navigate to the official MetaMask Download page : <https://metamask.io/download/>

Step 2:- Click on the button that corresponds to your browser like Install MetaMask .This will redirect you to your Browser Official extension store.Now Click “Add Extension “ in the pop up window

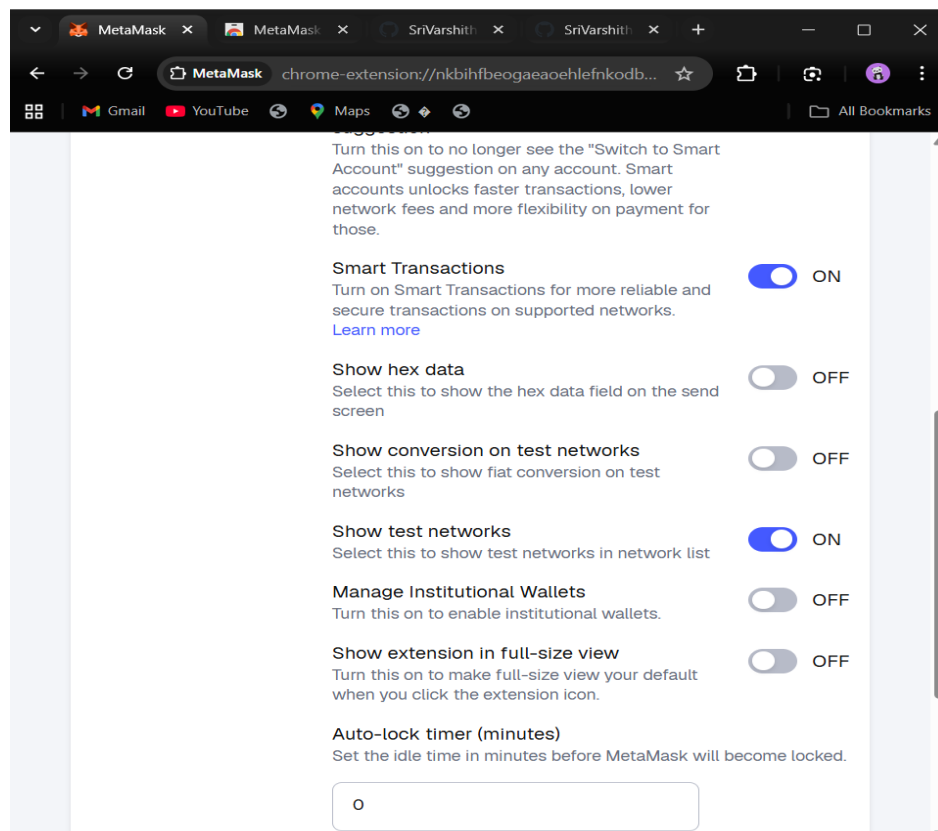
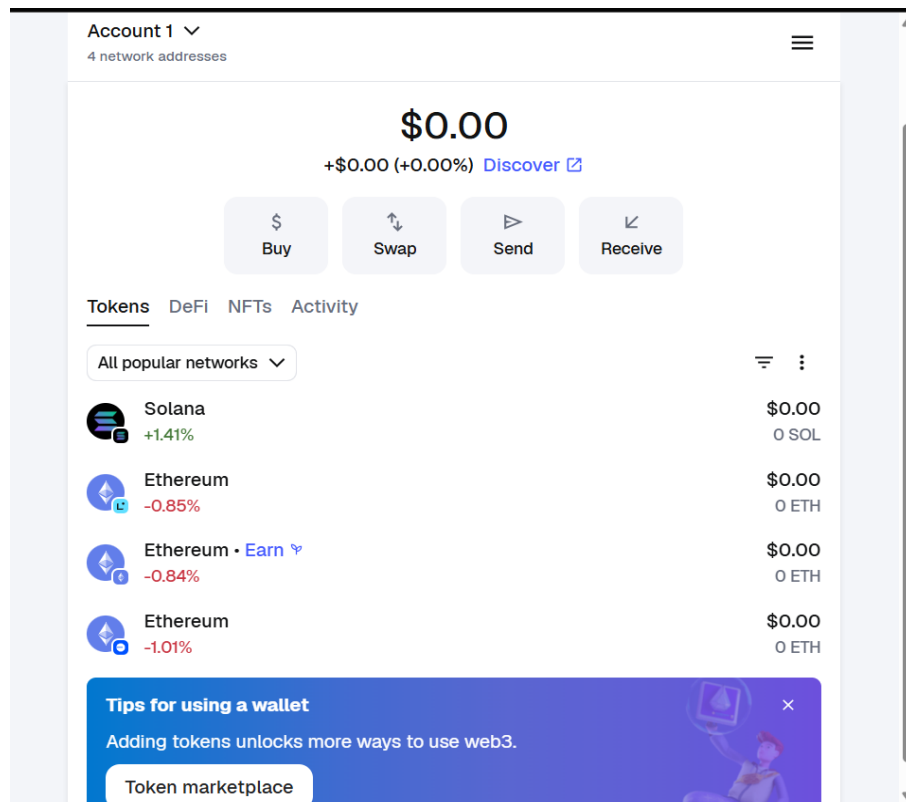
Installation Completed And Now Creating a Wallet

Step 1:- Start Setup on the MetaMask Welcome Page Click “Get Started”.

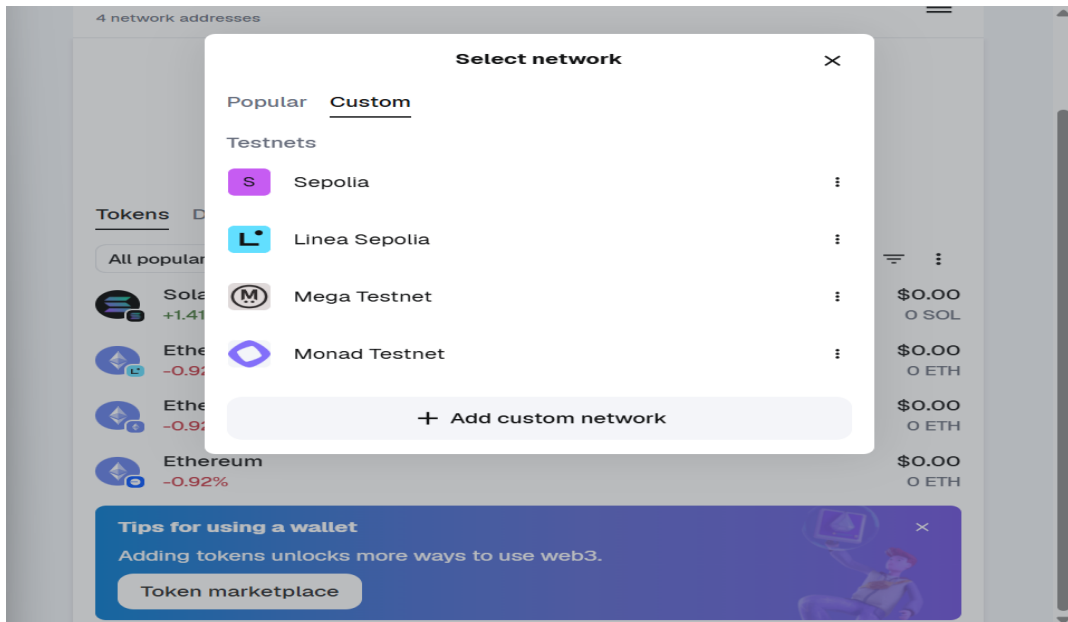
Step 2:- “Choose Creat a Wallet” and Create a Password(Strong Password).Check the box to the Terms of Use,and click Create.



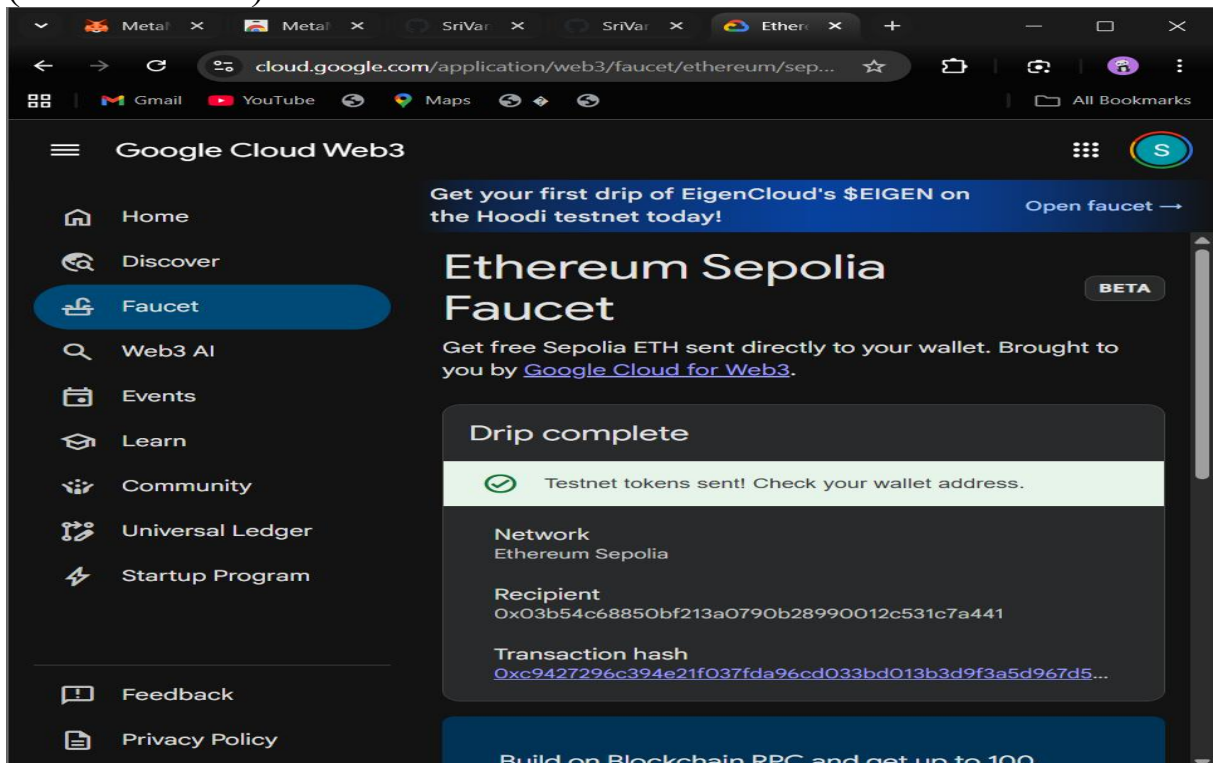
Open the MetaMask :-



- Then click on the Hamburger menu icon the Go to settings and then advanced and turn on the show test Network.
- For Token Select Sepolia initially the \$ it shows 0



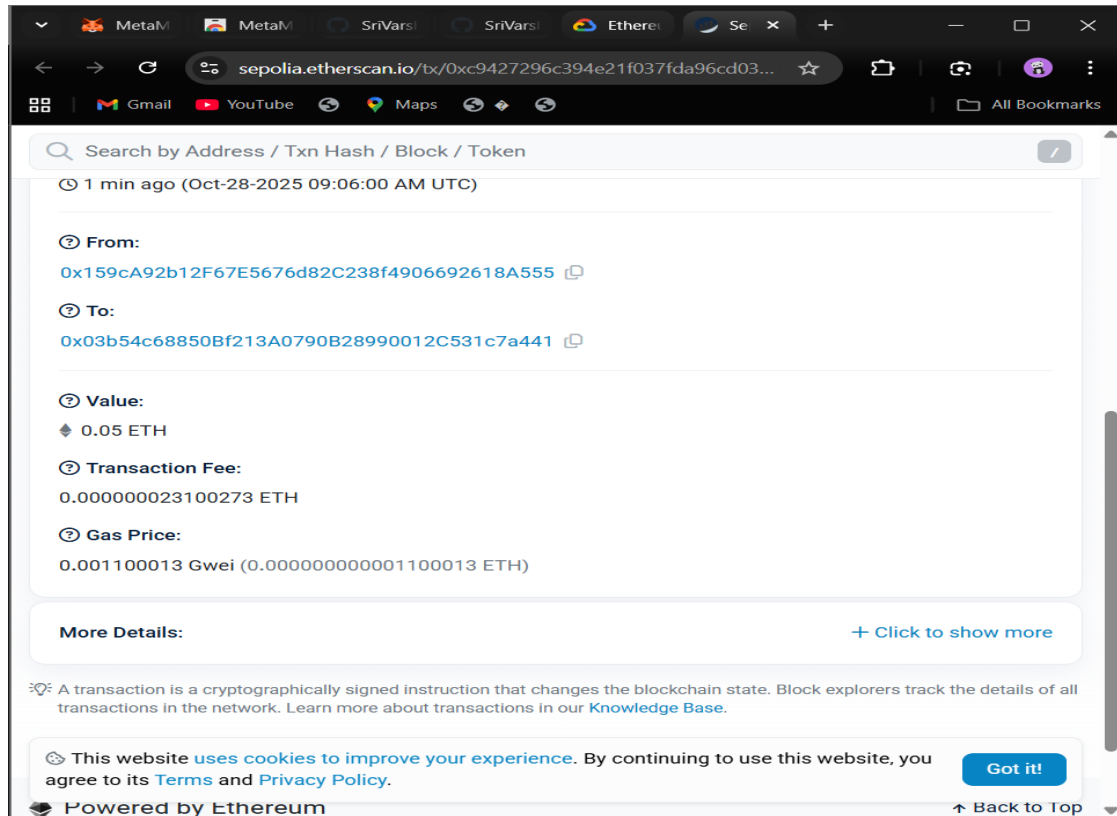
- Now Go to the <https://cloud.google.com/application/web3/faucet/ethereum/sepolia>
- Google cloud Ethereum Sepolia Faucet to get free Sepolia ETH (Testnet token).



- By clicking Transaction Hash we can check the transaction Details. Or Go the EtherScan

<https://sepolia.etherscan.io/tx/0x57d811394907bce5c931d2e6d20285d7f56edcf946318b316ba793cfcde2b7>

- We can also Search by Address/Txn Hash/Block/Token



Search by Address / Txn Hash / Block / Token

1 min ago (Oct-28-2025 09:06:00 AM UTC)

From:
0x159cA92b12F67E5676d82C238f4906692618A555

To:
0x03b54c68850Bf213A0790B28990012C531c7a441

Value:
0.05 ETH

Transaction Fee:
0.000000023100273 ETH

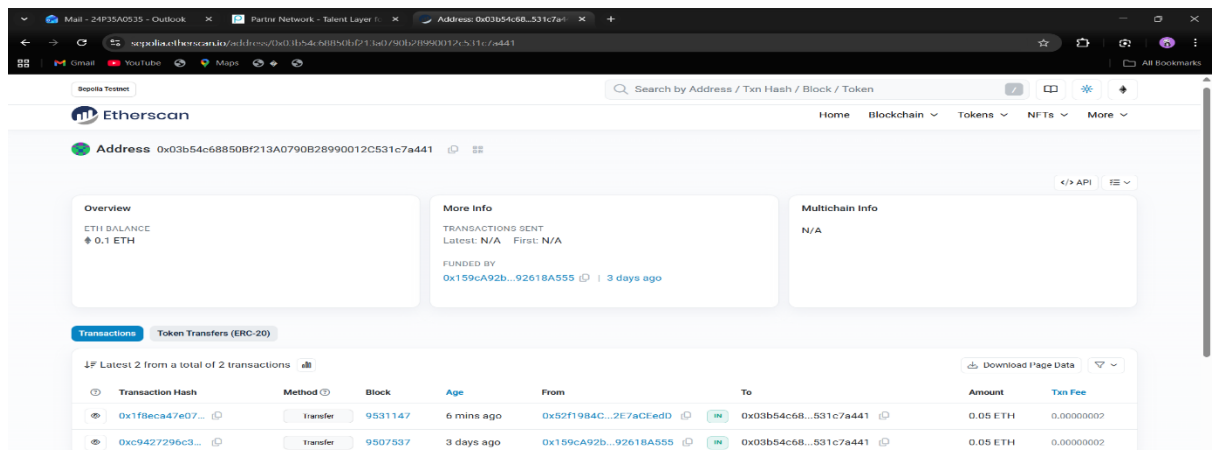
Gas Price:
0.001100013 Gwei (0.000000000001100013 ETH)

More Details: [+ Click to show more](#)

A transaction is a cryptographically signed instruction that changes the blockchain state. Block explorers track the details of all transactions in the network. Learn more about transactions in our [Knowledge Base](#).

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Search by Address / Txn Hash / Block / Token

Etherscan Home Blockchain Tokens NFTs More

Address 0x03b54c68850Bf213A0790B28990012C531c7a441

Overview
ETH BALANCE
0.1 ETH

More Info
TRANSACTIONS SENT
Latest: N/A First: N/A
FUNDED BY
0x159cA92b...92618A555 | 3 days ago

Multichain Info
N/A

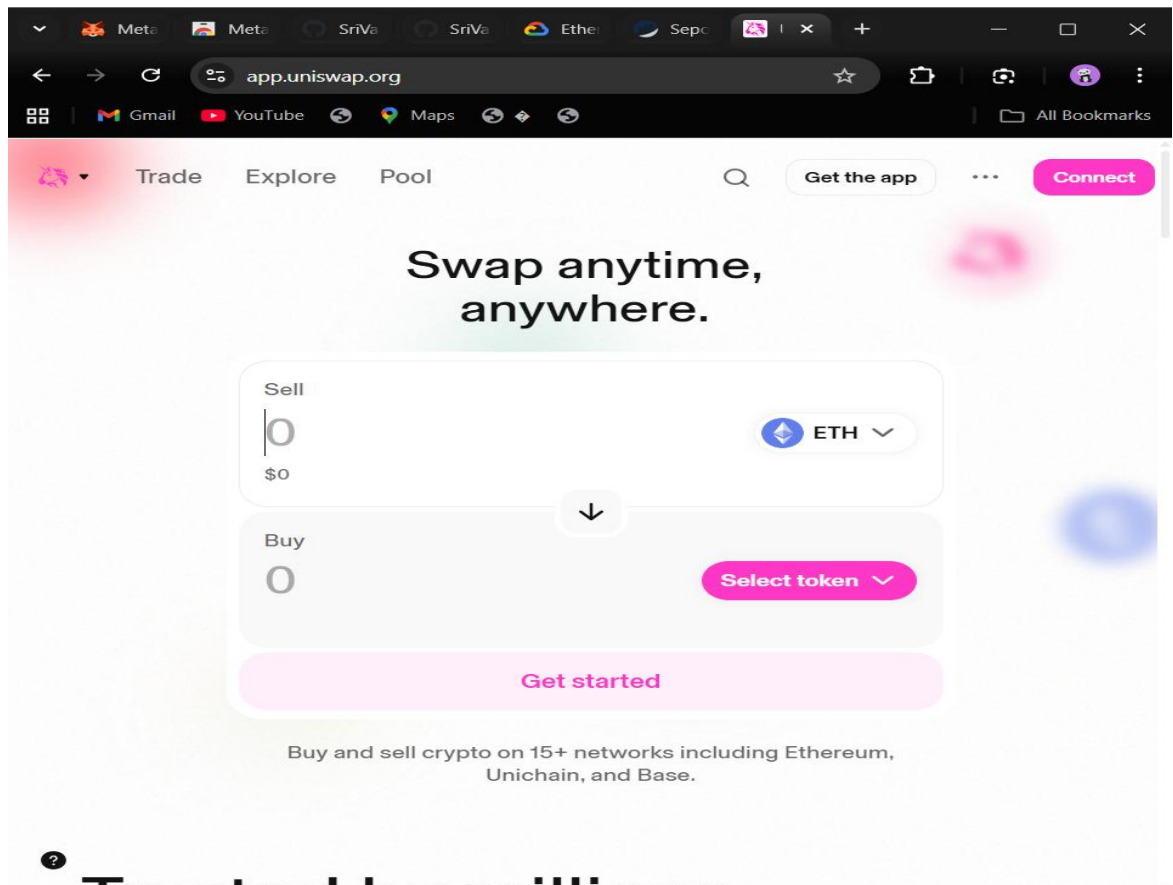
Transactions Token Transfers (ERC-20)

Latest 2 from a total of 2 transactions

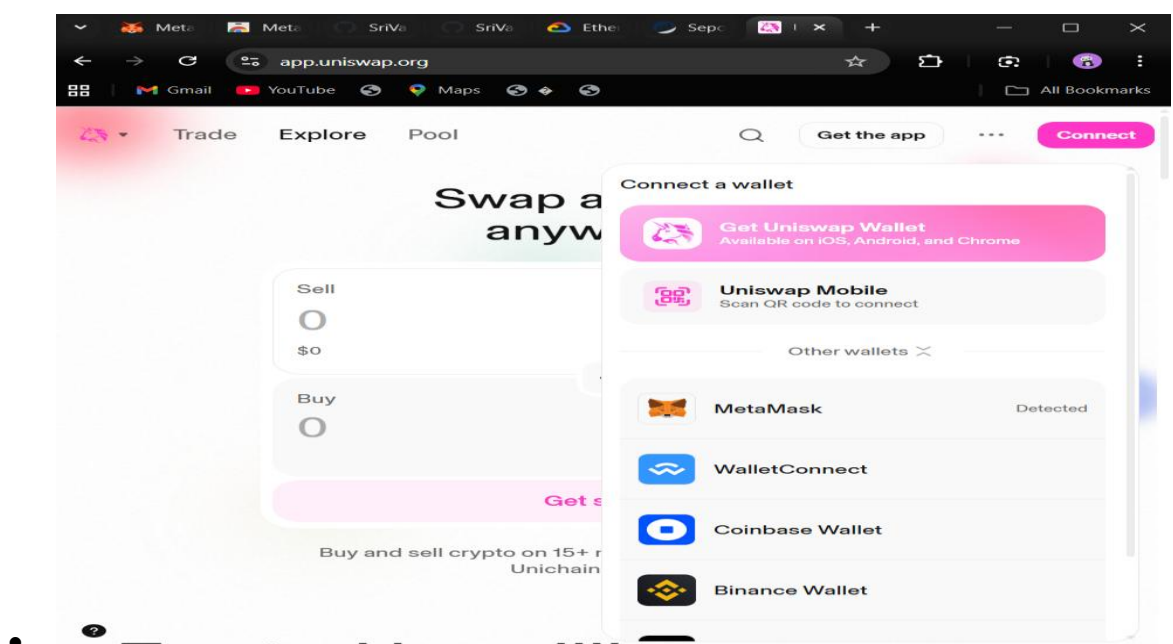
Transaction Hash	Method	Block	Age	From	To	Amount	Txn Fee
0x1f8eca47e07...	transfer	9531147	6 mins ago	0x52f1984C...2E7aCEd0	0x03b54c68...531c7a441	0.05 ETH	0.00000002
0xc9427296c3...	transfer	9507537	3 days ago	0x159cA92b...92618A555	0x03b54c68...531c7a441	0.05 ETH	0.00000002

[Download Page Data](#)

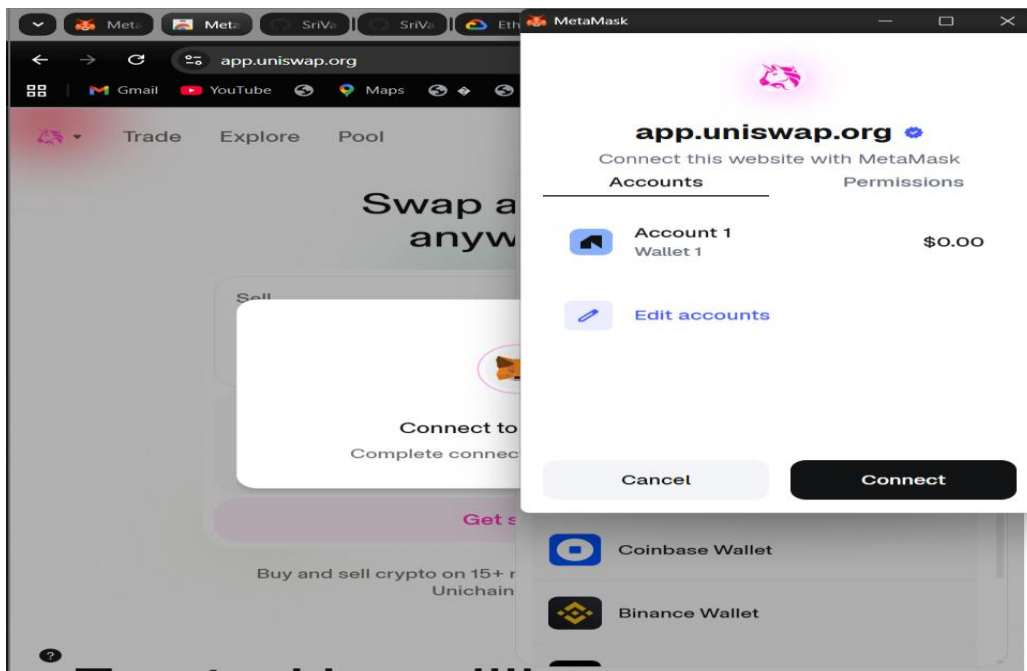
- Now the Transaction is Succeeded now check in MetaMask.
- Open UniSwap :- <https://app.uniswap.org/swap>



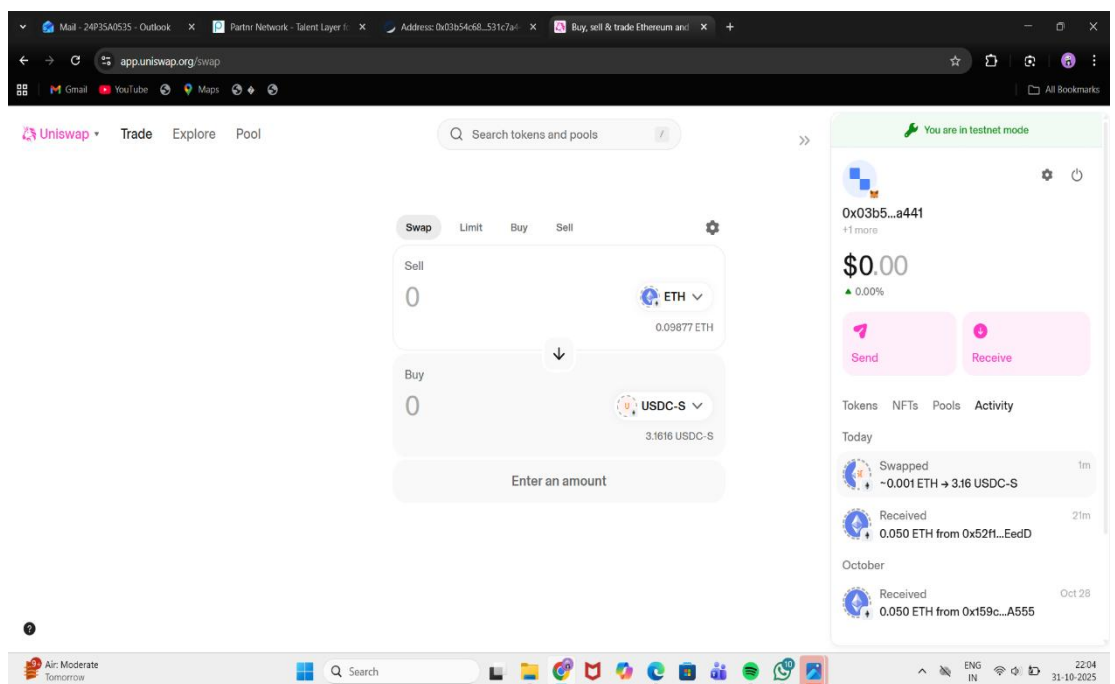
- Click on connect



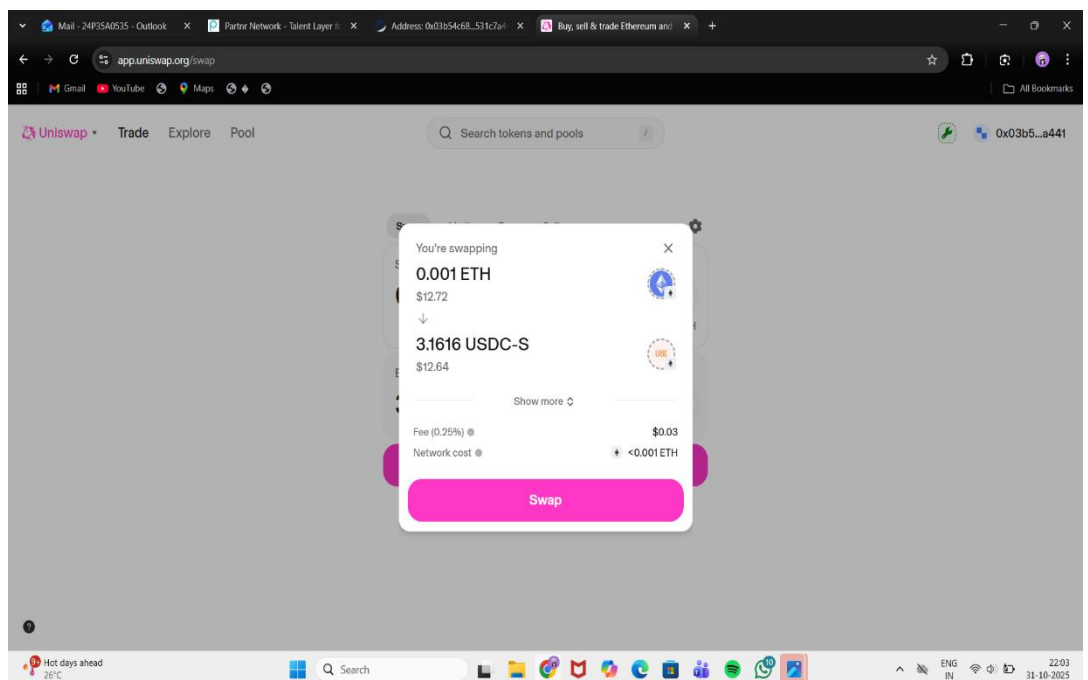
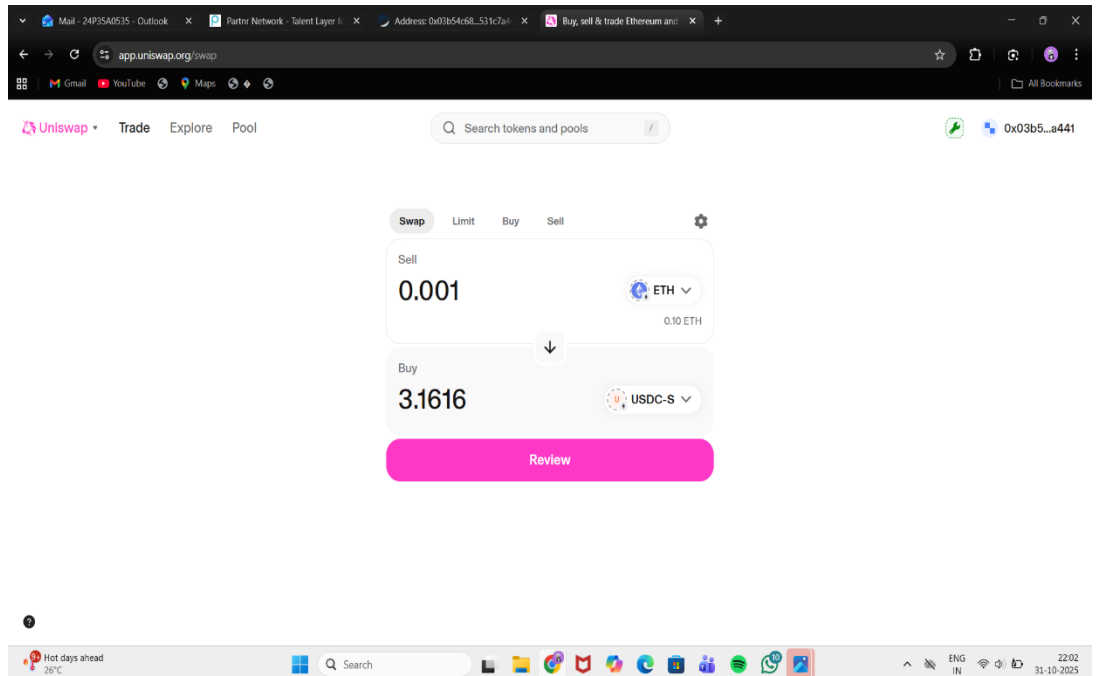
- Select MetaMask and then Click Connect



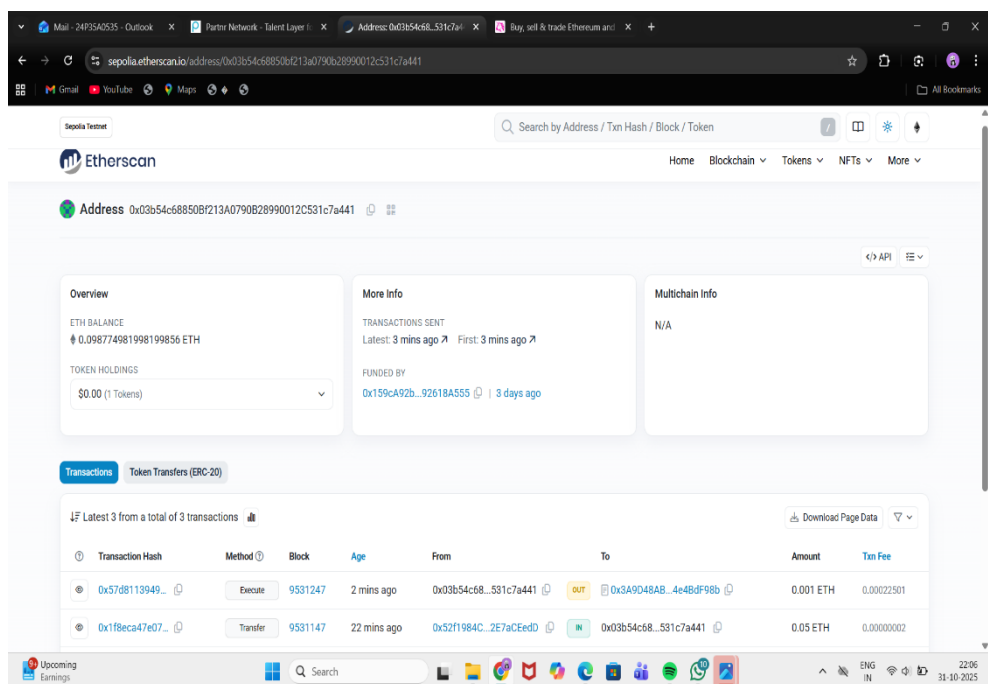
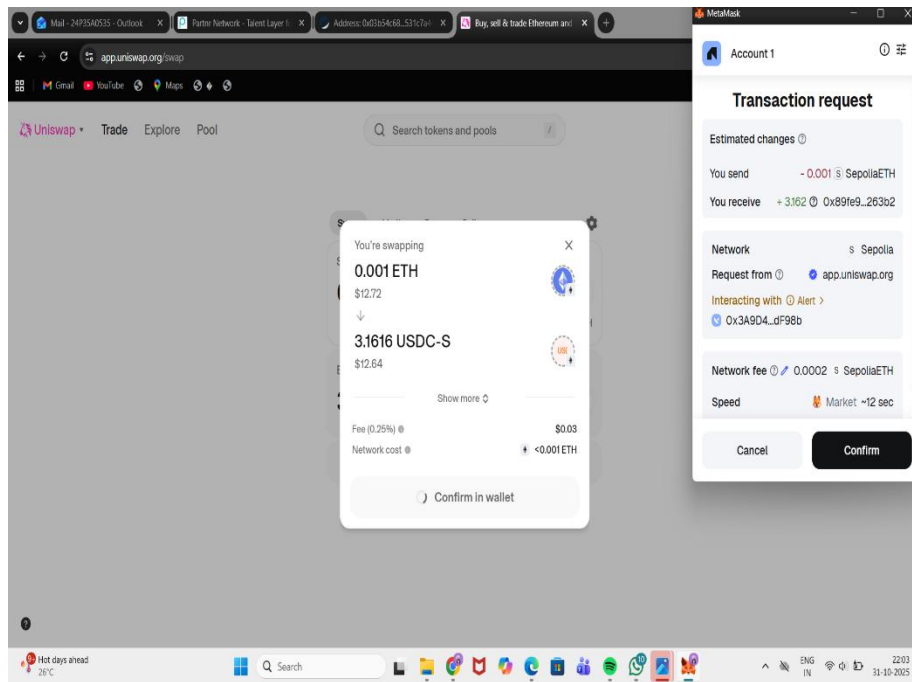
- Now Go to Setting Turn on Testnet mode



- For Selecting New Token Go to buy In that we have Select open click on that and then select USDC-S enter the Amount for Swapping 0.001 and then click on Get Started and then click Review and then Swap



- Now check the Transaction Request



2. Written Reflection (300–500 words)

This section requires a reflective essay demonstrating your conceptual understanding. Ensure the total word count is between 300 and 500 words.

1. Key Blockchain Concepts

- **Concepts to Cover:** Distributed Ledger Technology (DLT), Immutability, Cryptographic Hashing, and Consensus Mechanisms (e.g., Proof-of-Stake).
- **Focus:** Explain how the distributed nature and the use of cryptography create a **trustless, transparent, and tamper-proof** system.

2. Differences Between Centralized and Decentralized Applications

- **Centralized Apps (e.g., banks, Twitter):** Single point of control/failure, company owns the data, prone to censorship.
- **Decentralized Apps (DApps):** Distributed control (no single point of failure), user owns the data via wallet keys, censorship-resistant.
- **Focus:** Contrast the need to **trust an intermediary** in centralized systems with the ability to **trust the code** in decentralized systems.

3. Smart Contracts and Their Role in DApps

- **Smart Contract Definition:** Self-executing code stored on the blockchain that automatically enforces agreements ("if/then" statements) without human intervention.
- **Role in DApps:** Smart contracts serve as the permanent, unchanging **backend logic** for DApps, automating transactions and business rules (e.g., token swaps, NFT minting, fund transfers).
- **Focus:** How smart contracts enable **automation, transparency, and trustlessness** in DApp functionality.

4. Security Considerations When Using Crypto Wallets

- **Crucial Concept: The Secret Recovery Phrase (Seed Phrase):** Emphasize that this is the master key to your funds and that its security is **100% your responsibility**.
- **Risks:** Losing the SRP, sharing the SRP, phishing attacks (connecting to malicious sites), and approving bad transactions.
- **Best Practices:** Store the SRP offline (physical paper), never share it, and always double-check the URL and transaction details before signing.
- **Focus:** The shift from relying on bank security to practicing **self-sovereign security**.

5. Challenges Faced

Practical Example: Describe a real issue encountered during your setup or DApp interaction (e.g., transaction failure, difficulty getting testnet ETH, DApp not connecting).

- **Troubleshooting:** Detail the logical steps you took to resolve the issue (e.g., checking the transaction hash on Etherscan, clearing MetaMask cache, looking for alternative faucets, verifying network settings).
- **Focus:** Demonstrate your ability to use Web3 tools and apply critical thinking to solve problems

3. Technical Summary

1. Which testnet you used (Sepolia/Goerli)

Sepolia

2. Which DApp(s) you interacted with

Uniswap is a Decentralized Exchange (DEX). Its core logic (how it handles swaps, pools liquidity, and sets prices) is defined by Smart Contracts deployed on the Ethereum blockchain. It runs without a central company controlling the trades.

3. Types of transactions performed

ETH Transfer (Faucet Drip): Receiving 0.05 SepoliaETH for gas and testing purposes. 2. DApp Connection/Setup: Connecting MetaMask to the Uniswap interface.4. Any errors encountered and troubleshooting steps taken

- **Error:** Initially, the wallet displayed a **\$0.00** balance after receiving the funds, and the transaction was not immediately visible in the Activity tab.
- **Troubleshooting:** I navigated to **Sepolia Etherscan** using the transaction hash to confirm the transaction status was **Success**. I refreshed MetaMask and waited a minute for the network state to fully sync, at which point the **0.05 SepoliaETH** balance appeared.