

# Assignment 1 Report

**Name:** Sumera Malik

**Roll No:** 21i-1579

## Part 1 – Blockchain Implementation (Go + React)

For Question 1, I implemented a simple blockchain in Go, which supports:

- Adding transactions
- Mining blocks using Proof-of-Work
- Searching transactions by keyword

I also created a React frontend to interact with the blockchain.

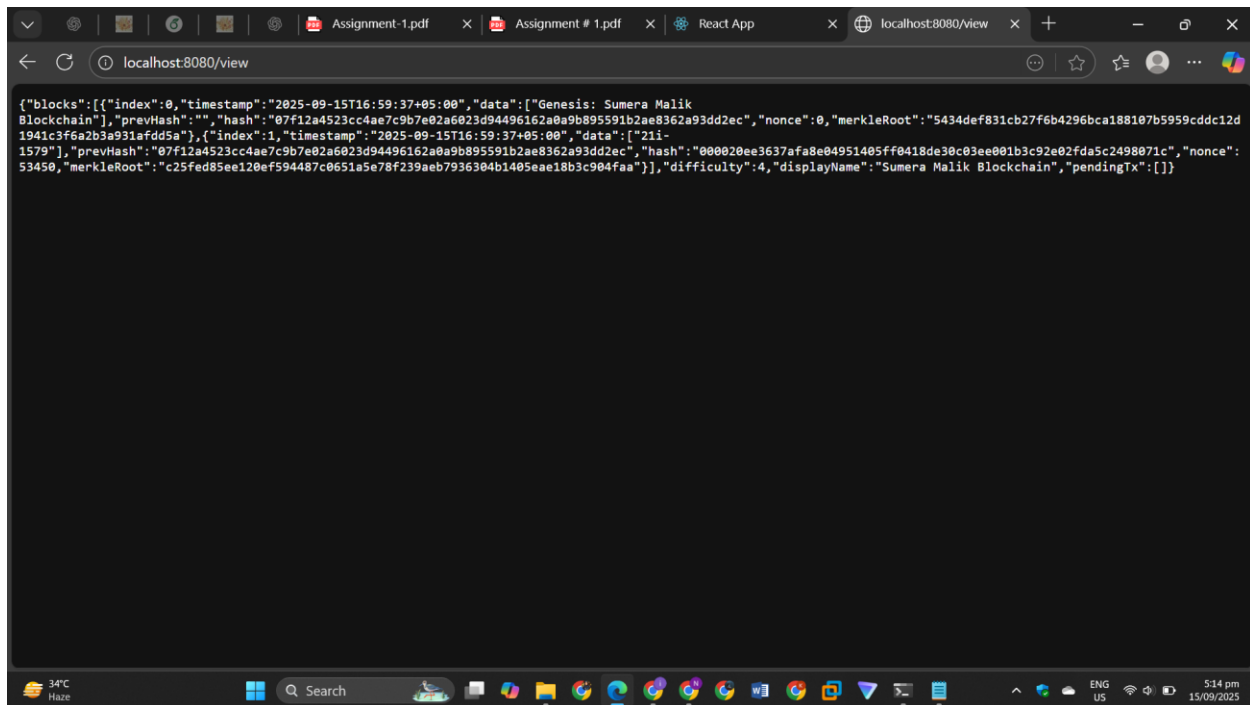
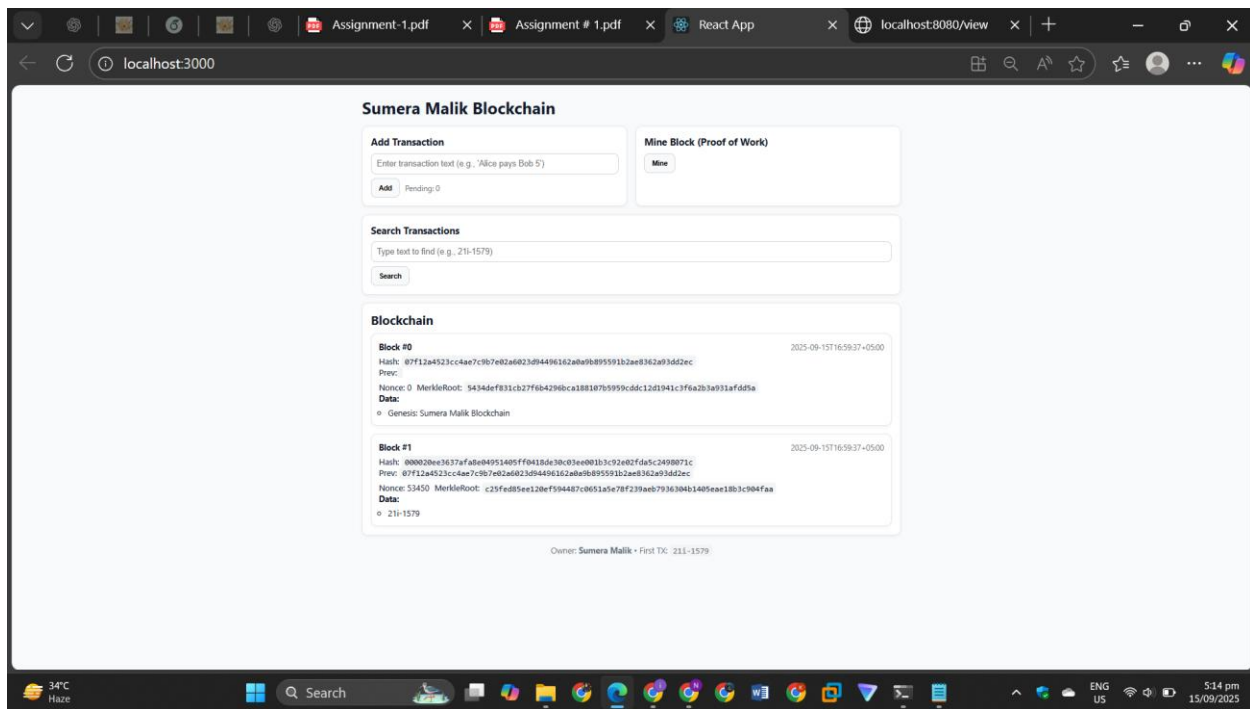
The blockchain initializes with a genesis block that includes my name and roll number (21i-1579).

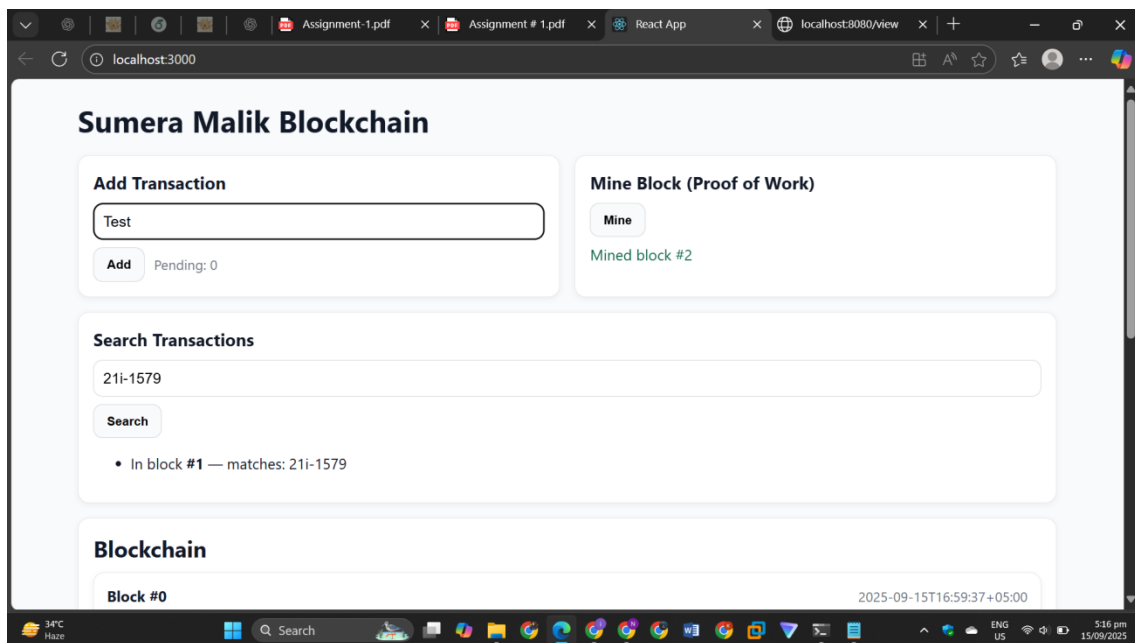
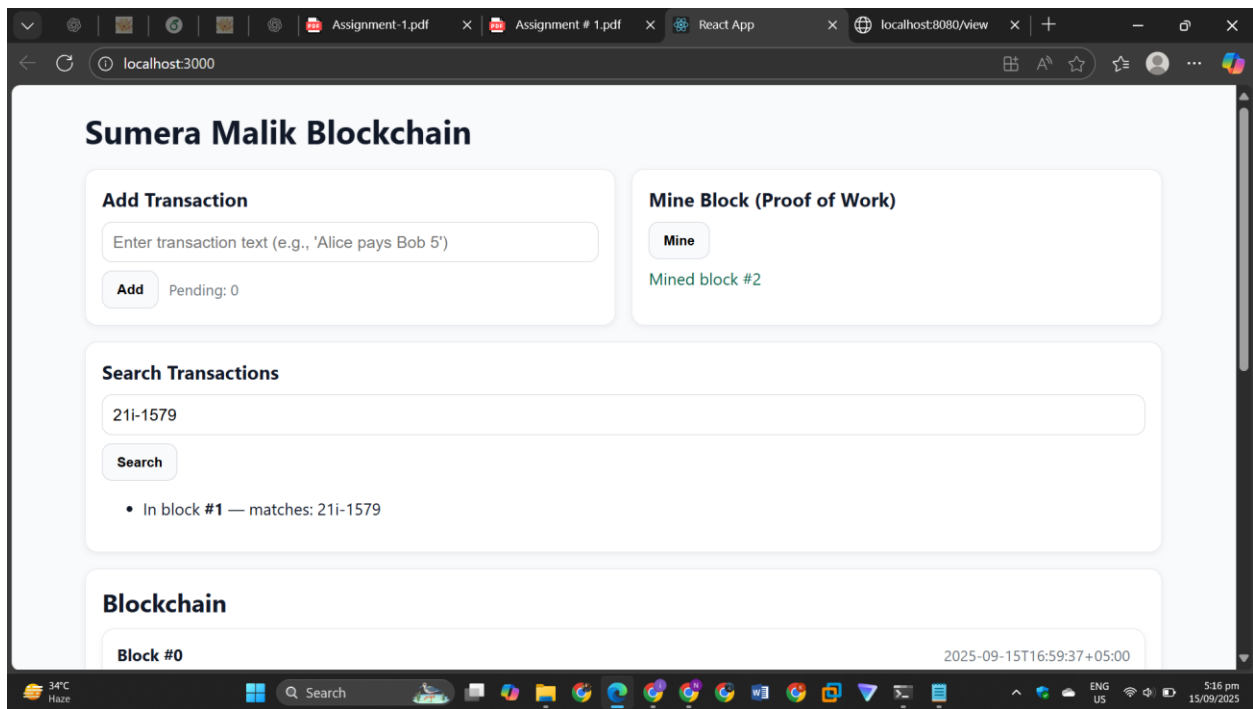
### Key Features:

- Genesis block with "Sumera Malik" and roll number 21i-1579
- REST API endpoints: /view, /tx, /mine, /search
- React UI to add transactions, mine blocks, and search data
- Automatic UI refresh after transactions or mining

### Screenshots:

- React frontend running at <http://localhost:3000> showing the blockchain dashboard
- Search box, Add Transaction form, and Mine Block button working
- Blockchain displaying blocks with hashes, nonce, and stored data





Assignment-1.pdfAssignment # 1.pdfReact Applocalhost:8080/view

localhost:3000

Prev:

Nonce: 0MerkleRoot: 5434def831cb27f6b4296bca188107b5959cddc12d1941c3f6a2b3a931afdd5a

Data:

Genesis: Sumera Malik Blockchain

Block #1

2025-09-15T16:59:37+05:00

Hash: 000020ee3637afa8e04951405ff0418de30c03ee001b3c92e02fda5c2498071c

Prev: 07f12a4523cc4ae7c9b7e02a6023d94496162a0a9b895591b2ae8362a93dd2ec

Nonce: 53450MerkleRoot: c25fed85ee120ef594487c0651a5e78f239aeb7936304b1405eae18b3c904faa

Data:

21i-1579

Block #2

2025-09-15T17:16:11+05:00

Hash: 0000c29ad84152ffb3ffb0af6152bfac03ede0482def533cb8acea6f37c2c75

Prev: 000020ee3637afa8e04951405ff0418de30c03ee001b3c92e02fda5c2498071c

Nonce: 32402MerkleRoot: c48e7a31b7bb44e5e89716a5cddf2601191f2105ecdc5adb1567b565aaa36436

Data:

Block test transaction

Owner: Sumera Malik • First TX: 21i-1579

34°C Haze

Search

ENG US

5:16 pm 15/09/2025

Assignment-1.pdfAssignment # 1.pdfReact Applocalhost:8080/view

localhost:3000

# Sumera Malik Blockchain

Add Transaction

AddPending: 0

Mine Block (Proof of Work)

Mine

Mined block #2

Search Transactions

Search

In block #1 — matches: 21i-1579

Blockchain

Block #0

2025-09-15T16:59:37+05:00

34°C Haze

Search

ENG US

5:16 pm 15/09/2025

## Part 2 – MetaMask Setup & Test Transaction (Sepolia Testnet)

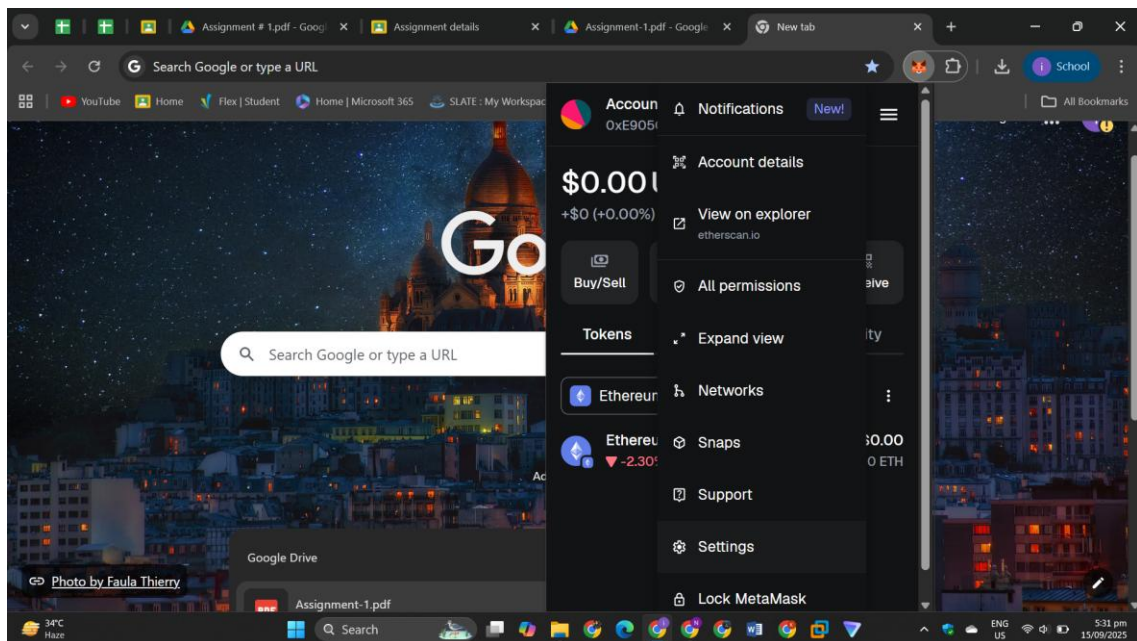
For Question 2, I performed a test transaction on the Sepolia Ethereum Testnet using MetaMask.

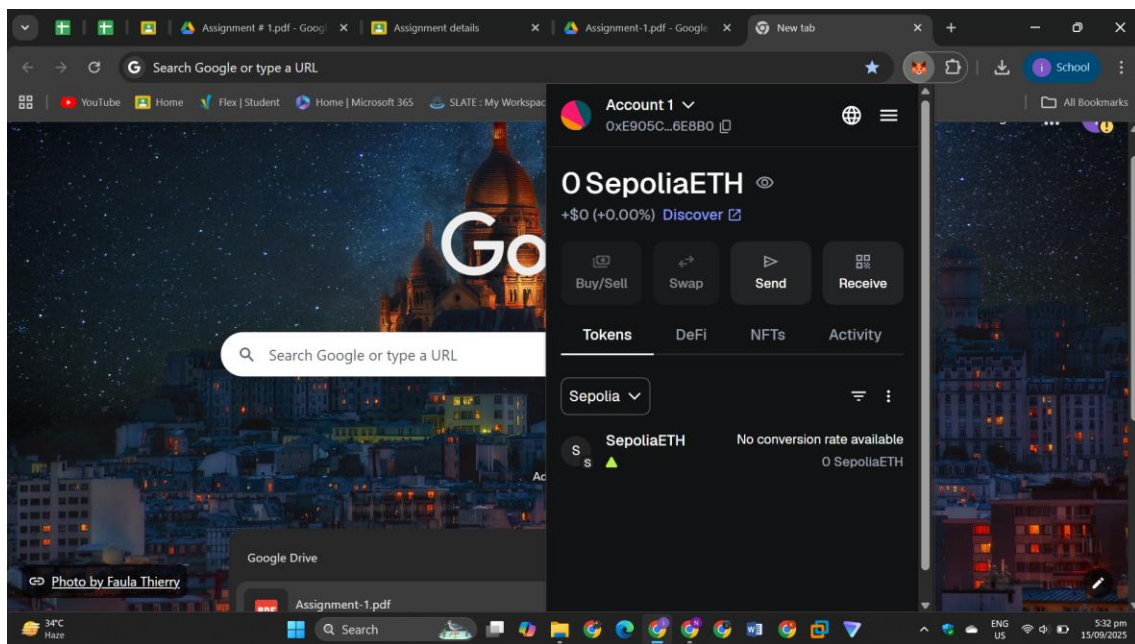
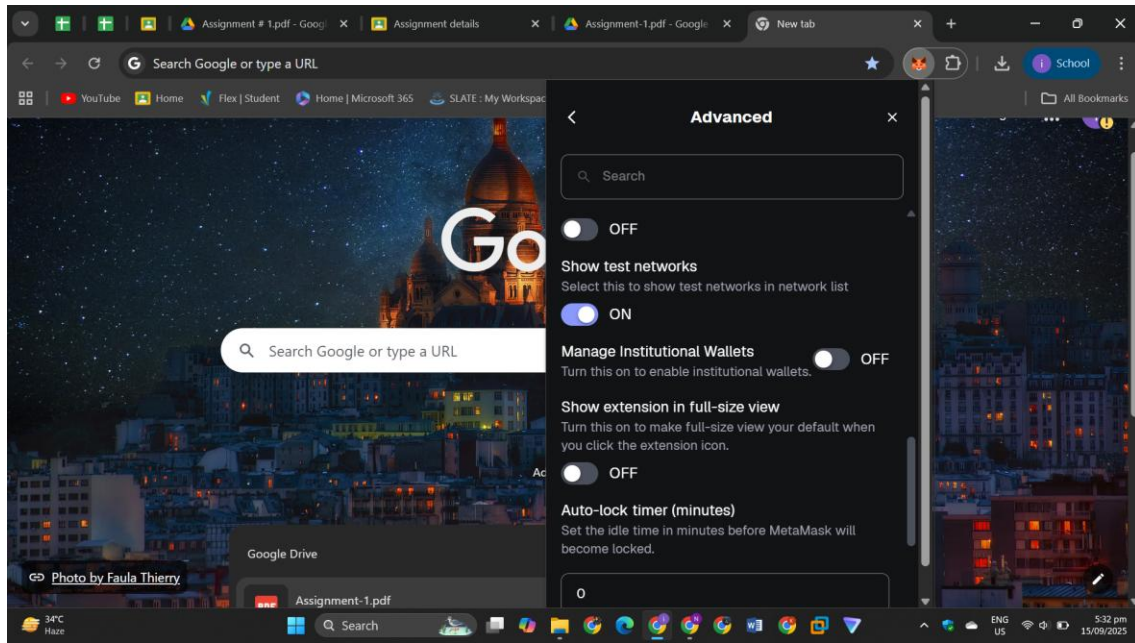
### Steps Followed:

1. Installed MetaMask extension and created Account 1
2. Enabled Sepolia test network in MetaMask
3. Received free ETH from a Sepolia PoW faucet
4. Created Account 2 and copied its address
5. Sent 0.01579 SepoliaETH from Account 1 → Account 2
6. Verified the transaction status as Confirmed on Sepolia Etherscan
7. Confirmed the balance increase in Account 2


### Transaction Proof

- Faucet confirmation showing 0.052 SepoliaETH received
- MetaMask screenshot before sending
- Send transaction screen showing 0.01579 ETH amount
- Transaction confirmation screen
- MetaMask Activity tab showing Confirmed status
- Account 2 showing the received 0.01579 SepoliaETH





PoWFaucet Hoodi Holesky Sepolia Ephemery Devconnect 2025



Target Address:  
0xE905C1b5B4115Ca40e65C79d12A1F4C527D6E8B0

Your Mining Reward: 0.006 SepETH

Current Hashrate: 202.2 H/s

Number of Workers: 12 / 12

Minimum Claim Reward: 0.05 SepETH

Maximum Claim Reward: 2.5 SepETH

Remaining Session Time: 11h 56min

Total Shares: 3

Avg. Reward per Hour: 0.113 SepETH/h

Reward Boost: + 0%

Boost

v2.4.0

Heavy rain Tomorrow

Search

ENG US

5:38 pm 15/09/2025

PoWFaucet Hoodi Holesky Sepolia Ephemery Devconnect 2025

## Sepolia PoW Faucet

The faucet is currently experiencing unusually high mining activity (>561 kH/s). For higher rewards, I recommend visiting again when the activity is lower.

### Claim Rewards

Wallet: 0xE905C1b5B4115Ca40e65C79d12A1F4C527D6E8B0

Amount: 0.052 SepETH

Timeout: 2025-09-16 17:35 (23h 43min)

Claim Rewards

v2.4.0

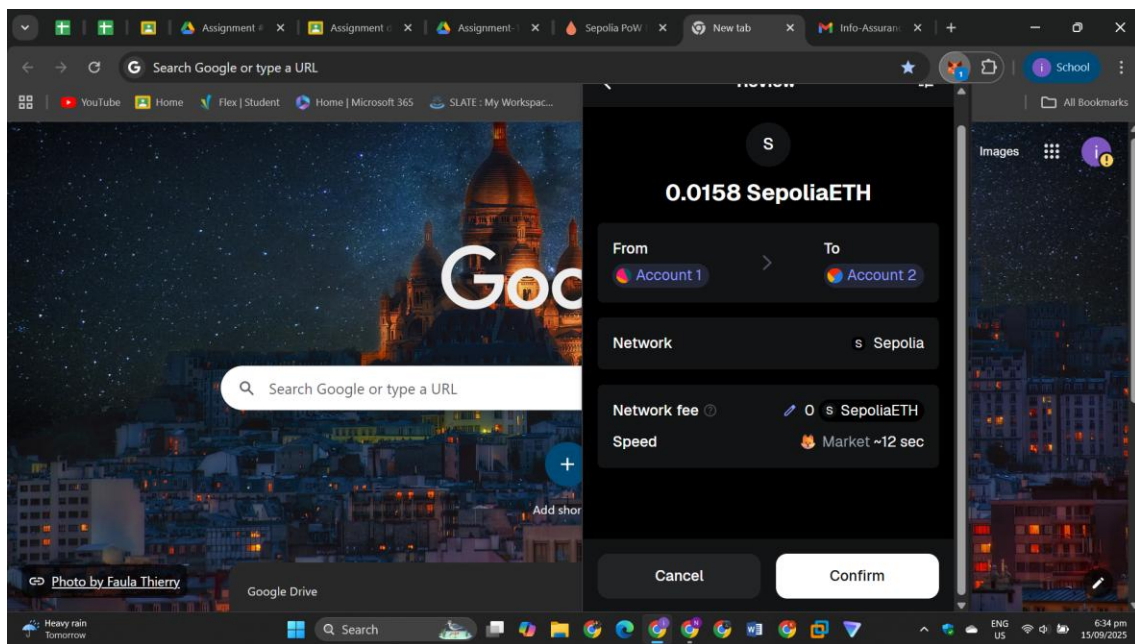
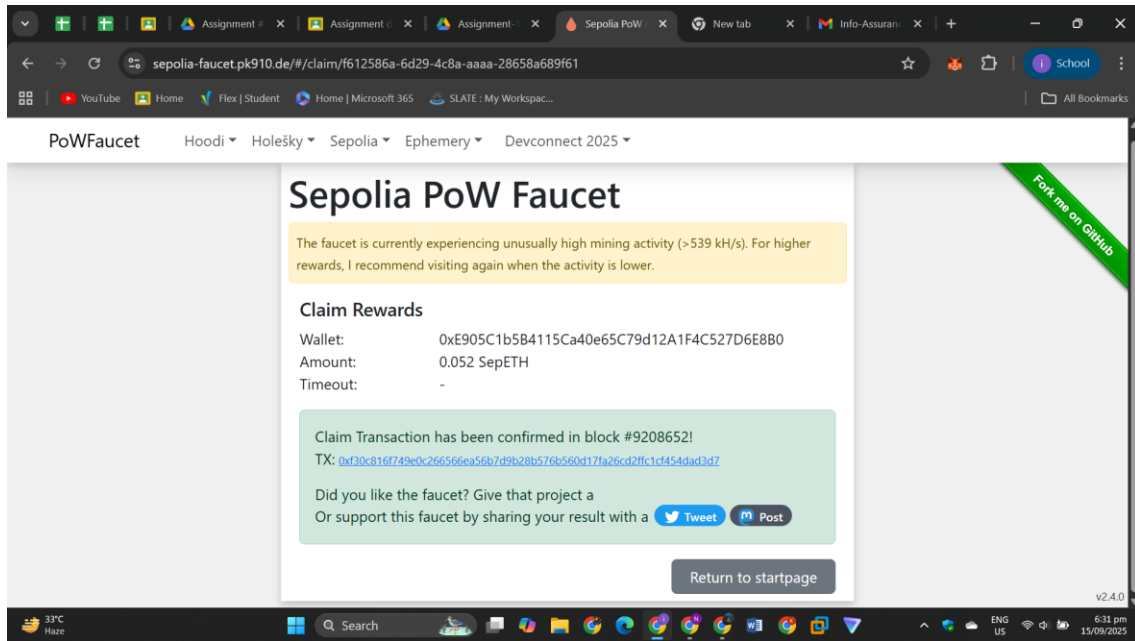
34°C Haze

Search

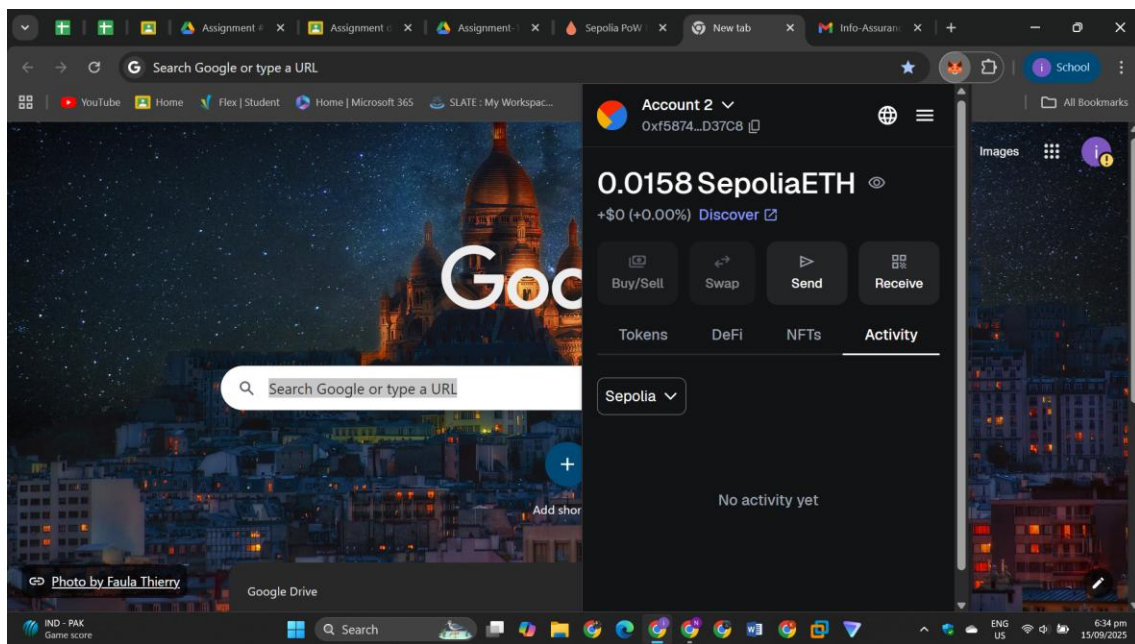
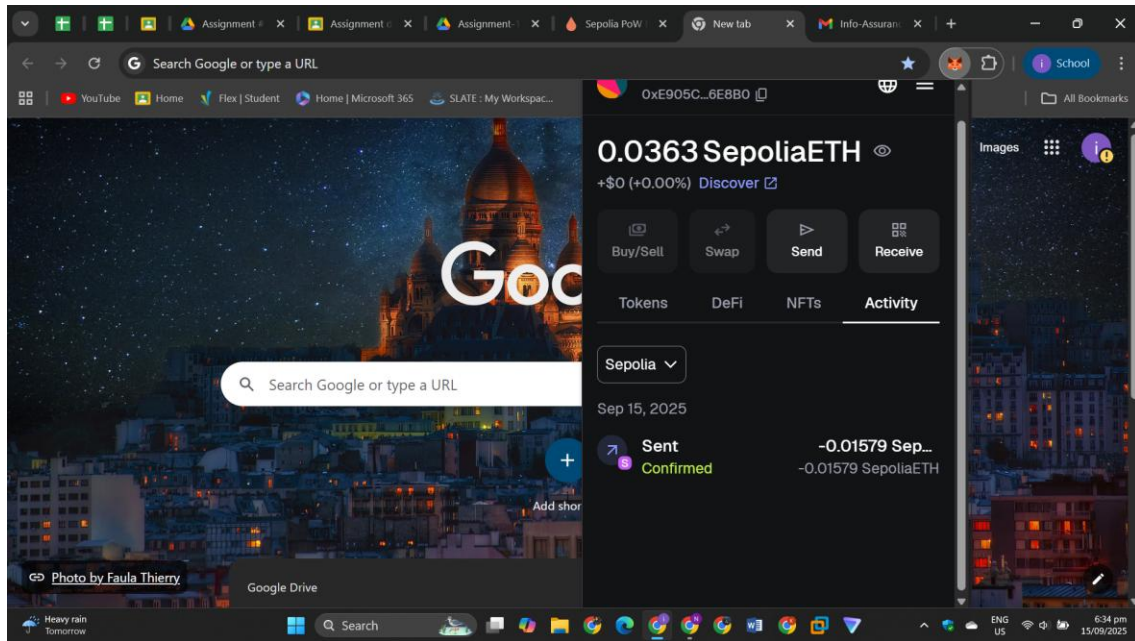
ENG US

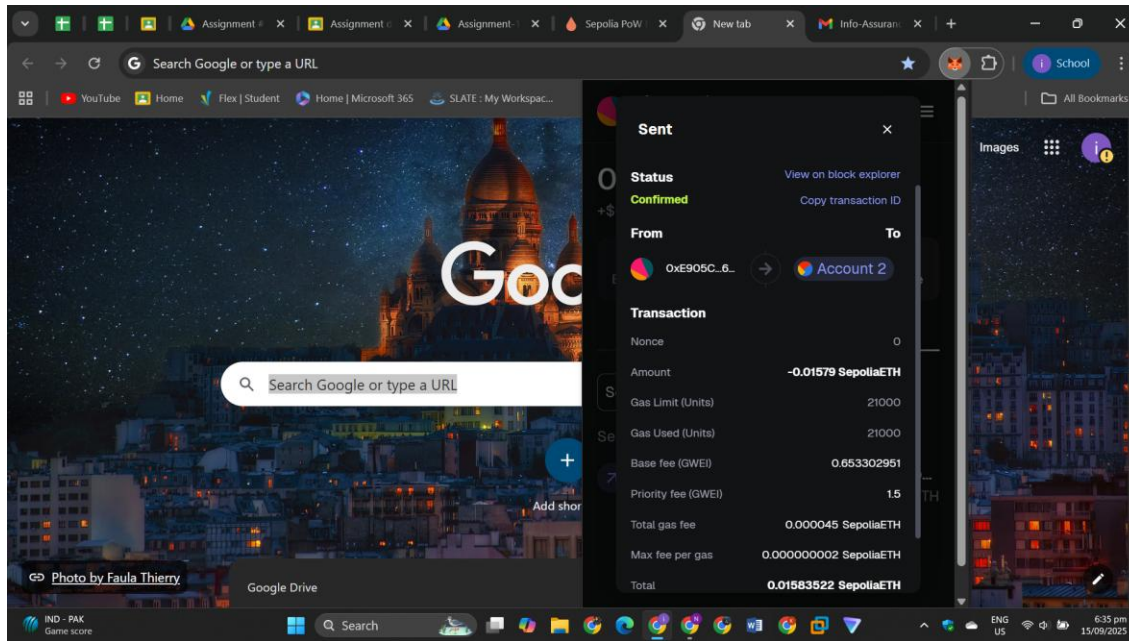
5:52 pm 15/09/2025











## Conclusion

Both parts of the assignment were successfully completed.

- The blockchain application runs locally with a working React UI.
- The Sepolia test transaction successfully transferred 0.01579 SepoliaETH from Account 1 to Account 2 and was verified on Etherscan.