



School:Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment: Frontend Connect – Web3.js Integration

***Coding Phase: Pseudo Code / Flow Chart / Algorithm**

- Open Remix IDE and write the SimpleStorage.sol smart contract.
- Compile the smart contract using the Solidity compiler in Remix.
- Copy the generated ABI (Application Binary Interface) after successful compilation.
- Deploy the contract to the Sepolia Testnet using MetaMask.
- Copy the deployed contract address from Remix.
- Create a React frontend project using create-react-app.
- Add the contract address and network information to a .env file in the React project.
- Install web3.js to enable blockchain interaction
- Connect the frontend with the smart contract using the ABI and contract address.
- Design the UI in App.js, using web3.js to store and retrieve data from the blockchain.

*** Software used:**

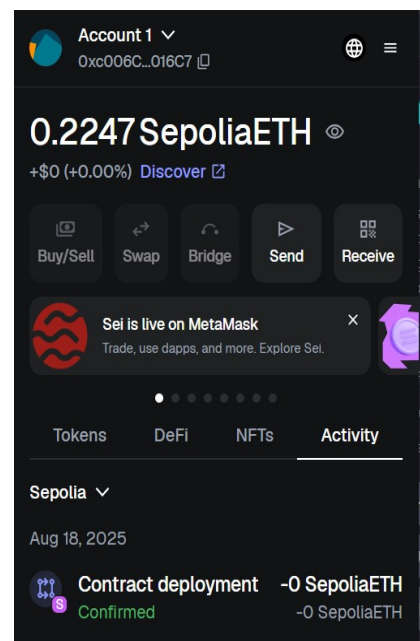
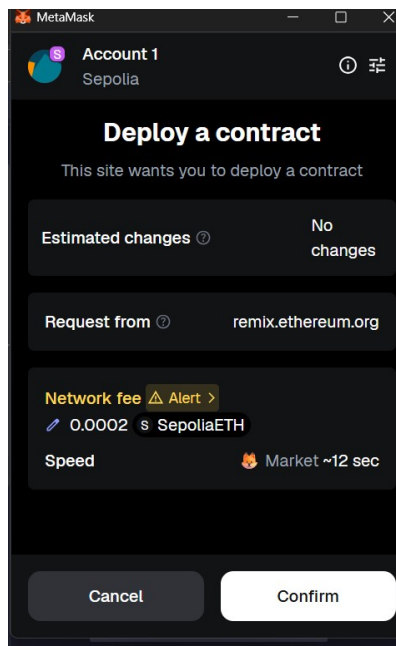
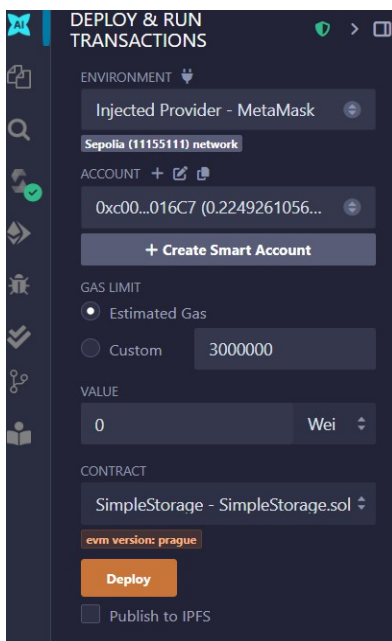
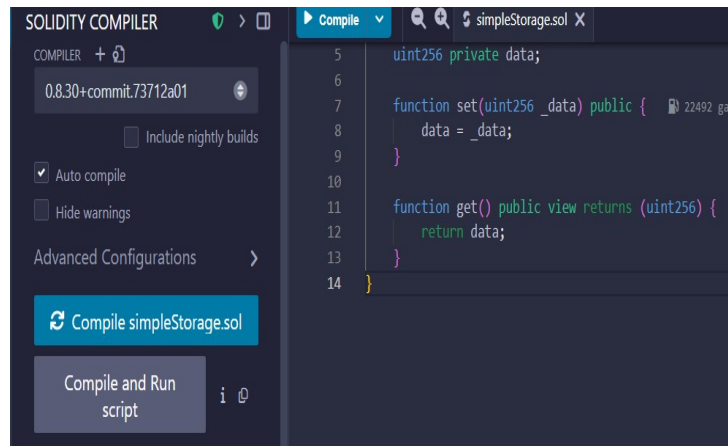
- Laptop
- Visual Studio Code (code editor)
- MetaMask Wallet (browser extension)
- Remix IDE (web-based smart contract IDE)
- Node.js
- React (via create-react-app)
- Web3.js (Ethereum JavaScript library)
- dotenv (for environment variables)

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*** As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.**

* Testing Phase: Compilation of Code (error detection)

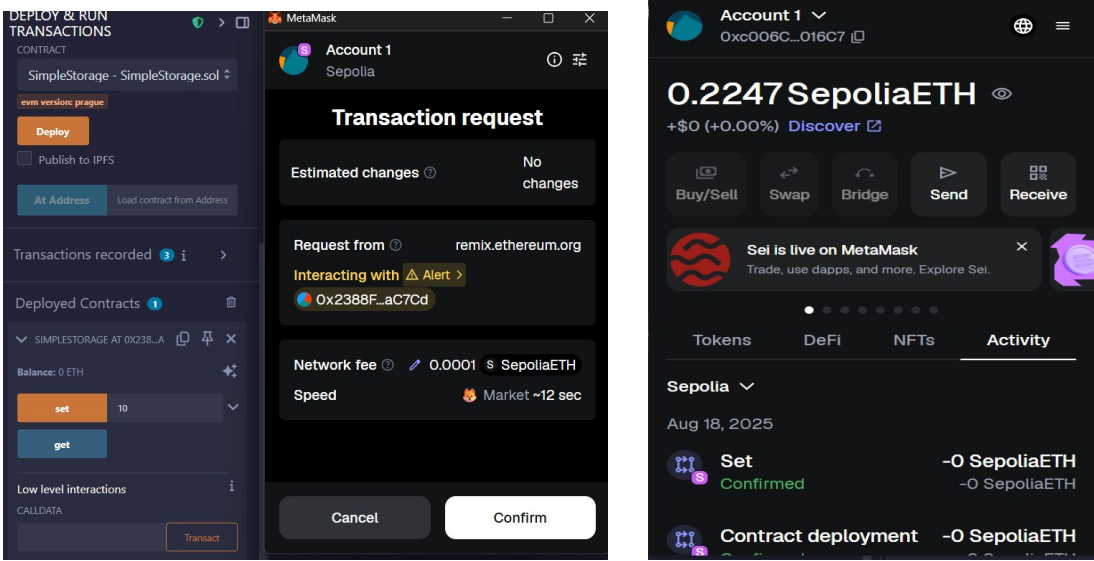
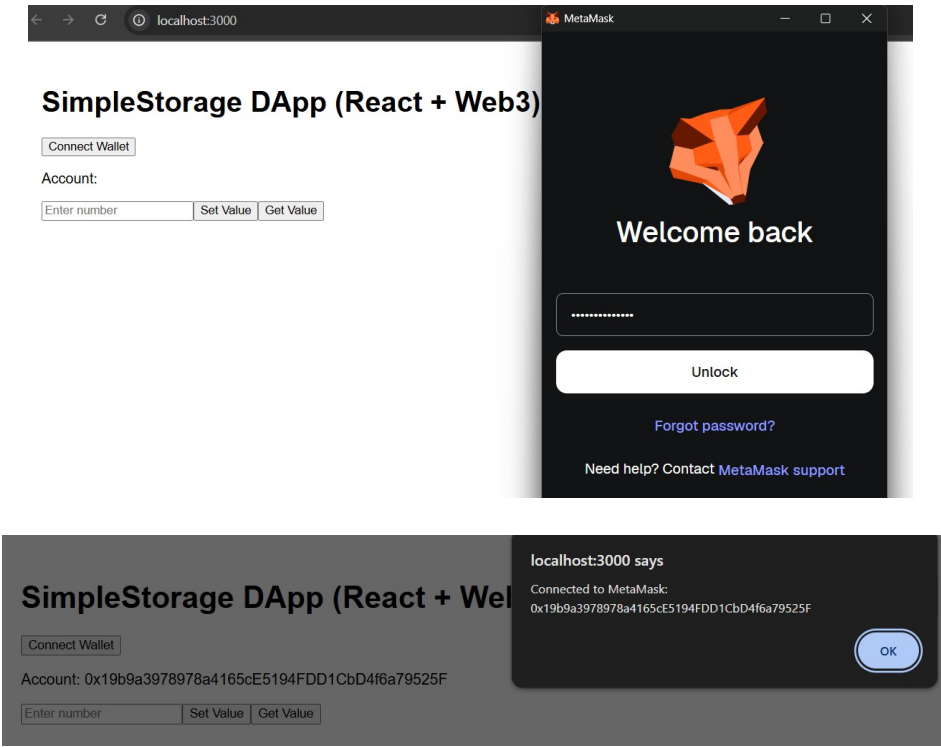
- First we have to go Remix IDE and create a .sol file named as simpleStorage.sol and write our smart contract.
- Then we need to compile our smart contract and copy the generated ABI
- After successful compilation deploy the smart contract and choose the environment to Injected Provider - MetaMask
- After deployment under Deployed Contracts section copy the contract address for future use.
- Then using web3.js library we create frontend and interact with our wallet.



* Implementation Phase: Final Output (no error)

- Now we have to create a folder named as “frontend” and open the terminal and move to the current frontend directory.
- Inside frontend we have to create a ‘.env’ file where we will store our contract address.
- In the frontend/src/ folder we have to create a ABI.json file to store our contract ABI.
- Now in the App.js file we have to write our frontend code and wallet connection function.
- In the terminal install the required packages from node package manager.
- Then run the terminal with the command ‘npm start’.
- Then we can interact with the UI such as connecting to wallet and set and get functions.

* Implementation Phase: Final Output (no error)



SimpleStorage DApp (React + Web3)

Connect Wallet

Account: 0x19b9a3978978a4165cE5194FDD1CbD4f6a79525F

10

Set Value

Get Value

Stored Value: 10

ASSESSMENT

| Rubrics | Full Mark | Marks Obtained | Remarks |
|-------------------------------------------------------------|-----------|----------------|---------|
| Concept | 10 | | |
| Planning and Execution/Practical Simulation/ Programming | 10 | | |
| Result and Interpretation | 10 | | |
| Record of Applied and Action Learning | 10 | | |
| Viva | 10 | | |
| Total | 50 | | |

Signature of the Student :

Name :

Regn. No. :

Signature of the Faculty :

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Two sheets per experiment (10-20) to be used***