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: Cross the Chain – Bridge or Interoperability Demo

*Coding Phase: Pseudo Code / Flow Chart / Algorithm

1. Start the experiment in Remix IDE.
2. Create two contracts:
   - ➢ LockContract → simulates the source blockchain where tokens are locked.
   - ➢ ReleaseContract → simulates the destination where tokens are released.
3. Compile both contracts using Solidity compiler version 0.8.x.
4. Connect MetaMask to Ethereum Sepolia Testnet and ensure test ETH balance.
5. In Remix, select Injected Provider – MetaMask as the environment.
6. Deploy both contracts on Sepolia network.
7. Lock tokens by sending Ether using lockTokens() from an account (User A).
8. Observe the event log "TokensLocked" emitted from the contract.
9. Call the releaseTokens() function in the second contract (ReleaseContract) using data from the first contract (sender, amount).
10. Check balances on both contracts to verify lock and release.
11. Record observations and transaction results.
12. End the simulation.

* Software used:

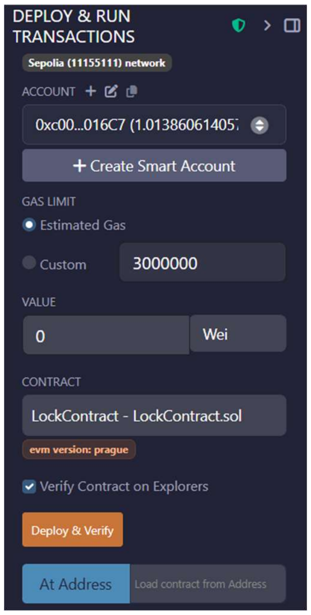
- ➢ Remix IDE – For writing and deploying smart contracts.
- ➢ MetaMask Wallet – To manage accounts and connect to the blockchain.
- ➢ Ethereum Sepolia Testnet – Used as the simulation environment.
- ➢ Solidity Compiler v0.8.x – For contract compilation.
- ➢ Injected Provider – MetaMask – For contract deployment via Remix.

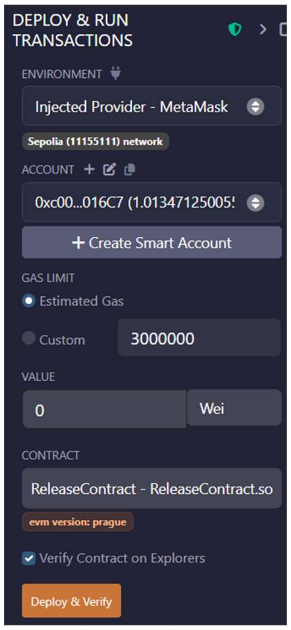
***As applicable according to the experiment.**
Two sheets per experiment (10-20) to be used.*

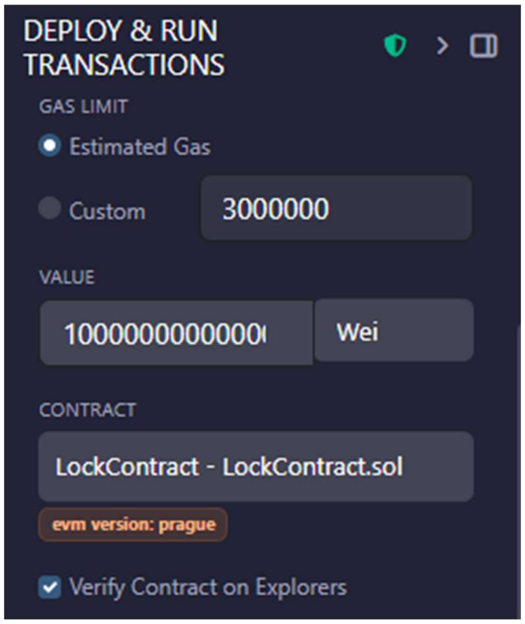
* Testing Phase: Compilation of Code (error detection)

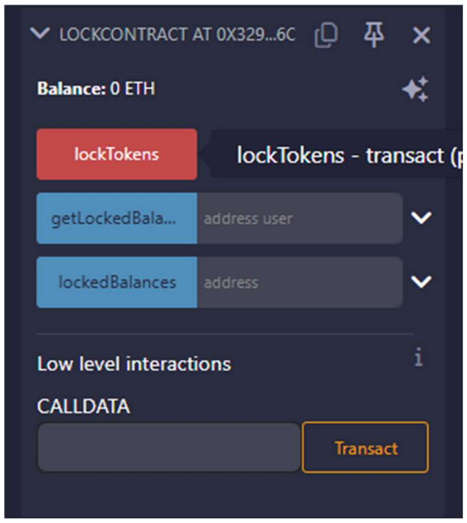
NO ERROR

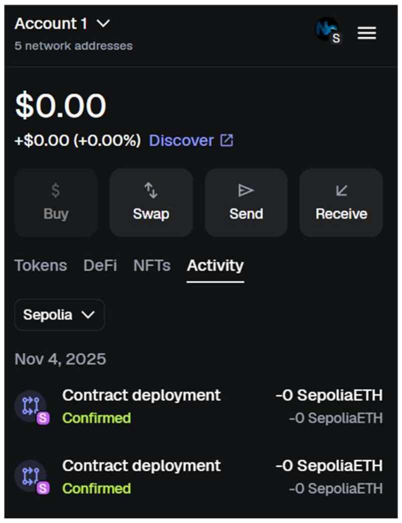
* Implementation Phase: Final Output (no error)

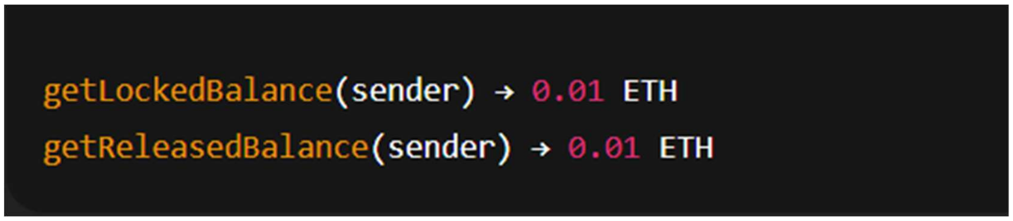

DEPLOY & RUN TRANSACTIONS
Sepolia (11155111) network
ACCOUNT
0xc00...016C7 (1.01386061405
+ Create Smart Account
GAS LIMIT
Estimated Gas
Custom 3000000
VALUE
0 Wei
CONTRACT
LockContract - LockContract.sol
evm version: prague
Verify Contract on Explorers
Deploy & Verify
At Address Load contract from Address


DEPLOY & RUN TRANSACTIONS
ENVIRONMENT
Injected Provider - MetaMask
Sepolia (11155111) network
ACCOUNT
0xc00...016C7 (1.01347125005
+ Create Smart Account
GAS LIMIT
Estimated Gas
Custom 3000000
VALUE
0 Wei
CONTRACT
ReleaseContract - ReleaseContract.so
evm version: prague
Verify Contract on Explorers
Deploy & Verify


DEPLOY & RUN TRANSACTIONS
GAS LIMIT
Estimated Gas
Custom 3000000
VALUE
1000000000000 Wei
CONTRACT
LockContract - LockContract.sol
evm version: prague
Verify Contract on Explorers


LOCKCONTRACT AT 0X329...6C
Balance: 0 ETH
lockTokens lockTokens - transact (p
getLockedBala... address user
lockedBalances address
Low level interactions
CALLDATA
Transact


Account 1
5 network addresses
$0.00
+$0.00 (+0.00%) Discover
Buy Swap Send Receive
Tokens DeFi NFTs Activity
Sepolia
Nov 4, 2025
Contract deployment -0 SepoliaETH
Confirmed -0 SepoliaETH
Contract deployment -0 SepoliaETH
Confirmed -0 SepoliaETH


```
getLockedBalance(sender) → 0.01 ETH
getReleasedBalance(sender) → 0.01 ETH
```

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

* Observation :

The experiment demonstrates:

- Asset locking and event emission on one chain.
- Authorized release on another chain.
- Matching balances for locked and released assets.

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 :

Signature of the Faculty : ***Regn. No. :***

Page No…………….

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