Centurion University

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 Experiement : Smart Libraries – Libraries and Proxy Contracts

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

- **Define a Library** with reusable logic (e.g., math operations).
- **Deploy the Library** (if external).
- **Create a Proxy Contract** that holds state variables.
- **Implement a Logic Contract** (the actual contract with functions).
- **Proxy Delegates Calls** from users to the logic contract using delegatecall.
- **User Interacts** only with the proxy contract address, ensuring upgradeability.

* Software used

1. MetaMask Wallet
2. Remix IDE.
3. MS Word.
4. Brave for researching.

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

* Implementation Phase: Final Output (no error)

Deploy the **Library** (e.g., SmartLibrary.sol).

Deploy the **Logic Contract** using the library functions.

Deploy the **Proxy Contract** that points to the logic contract's address.

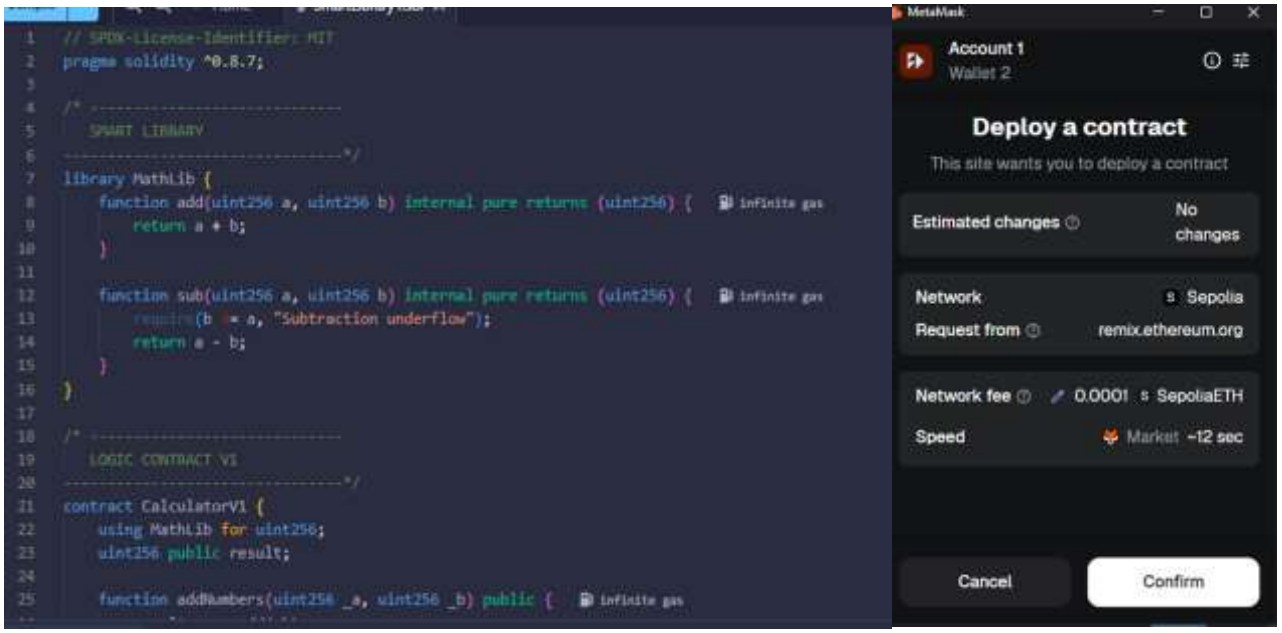
Call a function (e.g., addNumbers(2,3)) from the proxy.

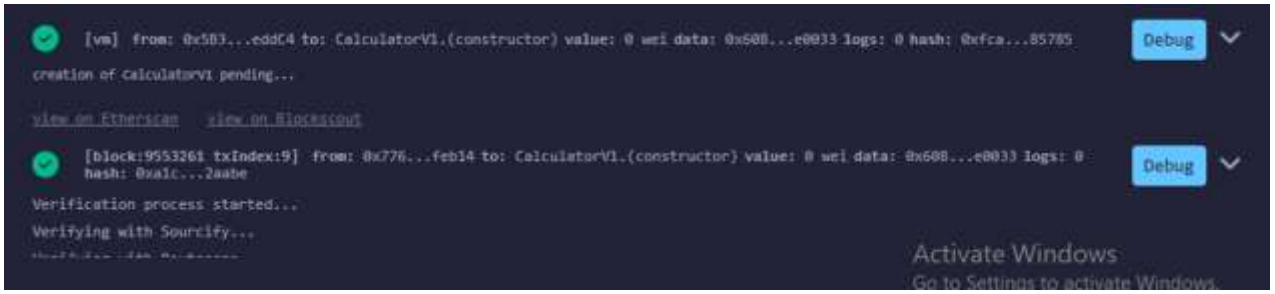
Proxy forwards the call via delegatecall → executes in the logic contract.

Output (e.g., 5) is returned to the user, but the state is stored in the proxy.

If logic needs updating, deploy a new **Logic V2 contract** and update the proxy to point to it.

Users continue using the same proxy address, but new logic executes.





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

* Observations:

- Marketplace requires **approval** before listing NFTs.
- Each NFT listing is tracked by a unique listingId.
- Buyers must pay **exact ETH** price, otherwise transaction fails.
- Smart contract prevents self-purchase by the seller.
- Sellers can cancel or update their NFT listings anytime.

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:

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