Centurion University
Shaping Lives... Empowering Communities...

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 : Blockchain Dev Tools – Setting Up Environment

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

ALGORITHM:

- **Start** by installing the required development tools such as **Node.js**, **npm (Node Package Manager)**, and **Git** on the system.
- **Install Truffle or Hardhat framework** to compile, test, and deploy smart contracts easily.
- **Set up a local blockchain network** using **Ganache** or **Hardhat Network** for testing purposes.
- **Connect the wallet** (e.g., MetaMask) to the local or test Ethereum network.
- **Create a new project folder** and initialize it using Truffle or Hardhat commands.
- **Write and compile a sample smart contract** to ensure the environment is working properly.
- **Deploy the contract** on the local blockchain and verify successful deployment.
- **End** the setup after confirming all tools are correctly configured and interconnected.

* Software used

1. Node.js
2. Visual Studio Code
3. MetaMask
4. Web3.js

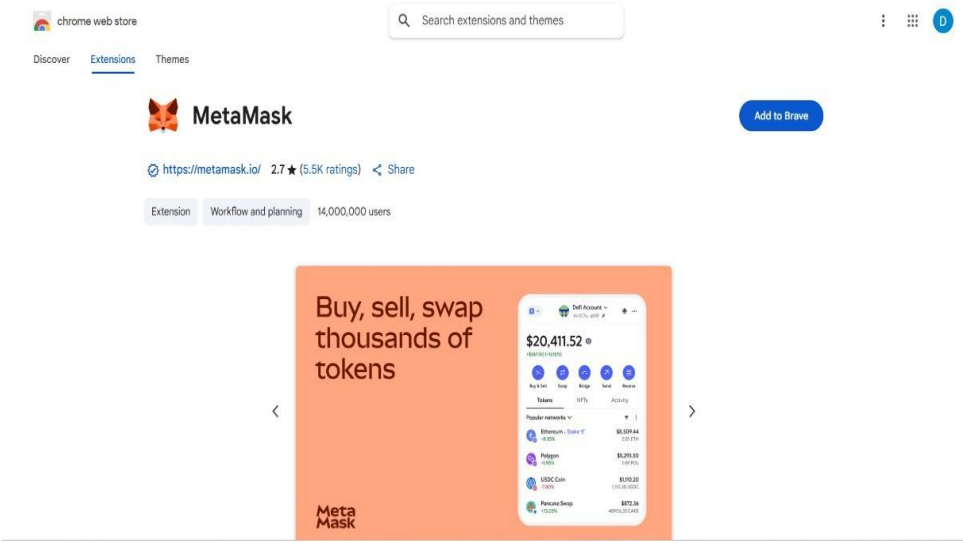
*As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.

*Implementation Phase: Final Output (no error)

1.Successfully set up complete blockchain development environment.

2.Node.js, npm, Git, VS Code and MetaMask, all working correctly.

3.Web3.js able to connect to local blockchain and fetch accounts.



- Next, Truffle Suite and Ganache were installed to simplify the process of compiling and deploying Solidity contracts. Ganache was used to create a local blockchain network that simulates real blockchain behavior without requiring real cryptocurrency. A MetaMask wallet was connected to this local network to interact with deployed contracts.

- A new Truffle project was initialized, and a simple smart contract was written, compiled, and deployed to the local blockchain. The successful execution of transactions confirmed that the development environment was correctly configured. This setup now serves as the foundation for developing and testing advanced blockchain applications in future experiment.

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

* Implementation Phase: Final Output (no error)

* Observations

- The local blockchain network was created and connected to MetaMask without any errors.
- Smart contracts were compiled and deployed correctly on the local test network.
- Transaction execution and gas usage were displayed accurately in the console and Ganache interface.
- The setup confirmed that the blockchain development environment was properly configured and functional for further smart contract development.

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.