



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 : Chains Beyond Ethereum – Platform Comparisons

Objective/Aim:

To study and compare various blockchain platforms apart from Ethereum by deploying a sample smart contract on each and analyzing differences in performance factors such as transaction cost, confirmation speed, and consensus model.

Apparatus/Software Used:

- Remix IDE
- MetaMask
- Ethereum testnet (Goerli / Sepolia)
- Polygon Mumbai Testnet
- Binance Smart Chain (BSC) Testnet
- Avalanche Fuji Testnet

Theory/Concept:

Theory/Concept:

While **Ethereum** remains the most popular platform for smart contracts, several other blockchains have been developed to overcome its limitations in terms of scalability, cost, and transaction speed.

Each blockchain has a unique **consensus mechanism**, **fee structure**, and **interoperability model**, making it suitable for different decentralized application (DApp) use cases.

Comparison Factors:

1. **Gas Fee Cost:**
The transaction fee required to execute operations on the blockchain.
2. **Confirmation Time:**
The average time taken for a transaction to be confirmed.
3. **Consensus Algorithm:**
The method used by the blockchain network to achieve agreement (e.g., PoS, PoSA, Avalanche).
4. **Scalability & Interoperability:**
The ability of a blockchain to handle large transaction volumes and interact with other networks.

Comparing these parameters helps determine the most efficient platform for smart contract deployment.

Procedure:**? Open Remix IDE**

- Launch **Remix IDE** in a browser and create a sample Solidity contract (e.g., “Storage.sol”).

? Prepare MetaMask Wallet

- Configure MetaMask for multiple networks (Ethereum, Polygon, BSC, Avalanche).
- Add corresponding RPC URLs and chain IDs manually.

? Deploy the Smart Contract

- Deploy the same contract on each network:
 - Ethereum Goerli/Sepolia Testnet
 - Polygon Mumbai Testnet
 - Binance Smart Chain Testnet
 - Avalanche Fuji Testnet

? Record Key Metrics

- Note the gas fees, confirmation times, and consensus types for each network.

? Analyze Performance

- Compare transaction cost, execution speed, and scalability.

? Conclude

- Determine which blockchain provides the best balance of speed, cost, and decentralization for DApp deployment.

Observation Table:

Blockchain	Gas Fee	Confirmation Time	Consensus	Remarks
Ethereum	High	~15 sec	PoS	Most secure, widely adopted
Polygon	Very Low	~2 sec	PoS	Fast, low-cost, Ethereum Layer-2 ecosystem
BSC (Binance Smart Chain)	Low	~3 sec	PoSA	Highly scalable, centralized validators
Avalanche	Medium	~4 sec	Snowman / Avalanche Consensus	High throughput, strong interoperability

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