Centurion University
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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 : Chains Beyond Ethereum – Platform Comparisons

Objective/Aim:

To understand the major blockchain platforms beyond Ethereum, compare their architecture, features, consensus mechanisms, and real-world applications.

Apparatus/Software Used:

- Laptop/PC
- Web browser
- Internet connection
- Blockchain explorers (e.g., Polkadot Subscan, Solscan, BSCScan)
- Whitepapers / documentation websites

Theory/Concept:

Blockchain ecosystems have expanded far beyond Ethereum. Several next-generation chains offer improvements in **scalability, speed, interoperability, and cost-efficiency**. Each chain is built with different design goals:

1. Binance Smart Chain (BSC)

Concept:
A high-performance blockchain compatible with the Ethereum Virtual Machine (EVM).
Consensus: Proof of Staked Authority (PoSA)
Strengths:

- Very low transaction fees
- Fast confirmations (~3 sec)
- Large DeFi ecosystem
- Fully EVM-compatible

Applications:
DEXs (PancakeSwap), NFT markets, gaming dApps.

2. Polygon (PoS Chain / Sidechain)
Concept:
A Layer-2 scaling solution for Ethereum that runs as a sidechain.
Consensus: Proof of Stake
Strengths:
- Extremely cheap fees
- Interoperable with Ethereum
- Huge adoption in gaming & NFTs

Applications:
Web3 gaming, micro-transactions, high-volume dApps.

3. Solana
Concept:
A high-throughput L1 blockchain optimized for speed.
Consensus: Proof of History + Proof of Stake
Strengths:
- Very fast (up to thousands of TPS)
- Suitable for real-time applications
- Popular for high-frequency trading

Applications:
DeFi, payments, on-chain order books (e.g., Serum).

5. Avalanche
Concept:
A scalable L1 blockchain built on a unique Avalanche Consensus.
Consensus: Avalanche Protocol
Strengths:
- Subnet architecture (custom blockchains)
- Very fast finality (~1 sec)
- Suitable for enterprise chains

Applications:
Custom networks, DeFi, institutional blockchain systems.

Procedure:

1. Open a laptop/PC and ensure internet access.
2. Select blockchain platforms for comparison (BSC, Polygon, Solana, Polkadot, Avalanche).
3. Visit official documentation or explorers to review:
- Consensus mechanism
- Transaction speed
- Fees
- Architecture (L1, L2, sidechain, parachain)
- Use cases
4. Compare each chain with Ethereum based on:
- Scalability
- Security
- Interoperability
- Developer ecosystem
5. Record observations and key differences.
6. Summarize which chain is suitable for different real-world applications.
7. remains constant (256 bits) for all inputs.

Observation

- Different blockchains are optimized for different needs—speed, security, or interoperability.
- EVM-compatible chains (BSC, Polygon, Avalanche C-Chain) offer easier migration from Ethereum.
- Solana provides extremely high throughput but requires specialized development.
- Polkadot enables cross-chain communication not available in many L1 chains.
- Fees and transaction speeds vary widely depending on design.

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: