SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

COURSE NAME: 19OE201-Blockchain Technology

IV YEAR /VII SEMESTER

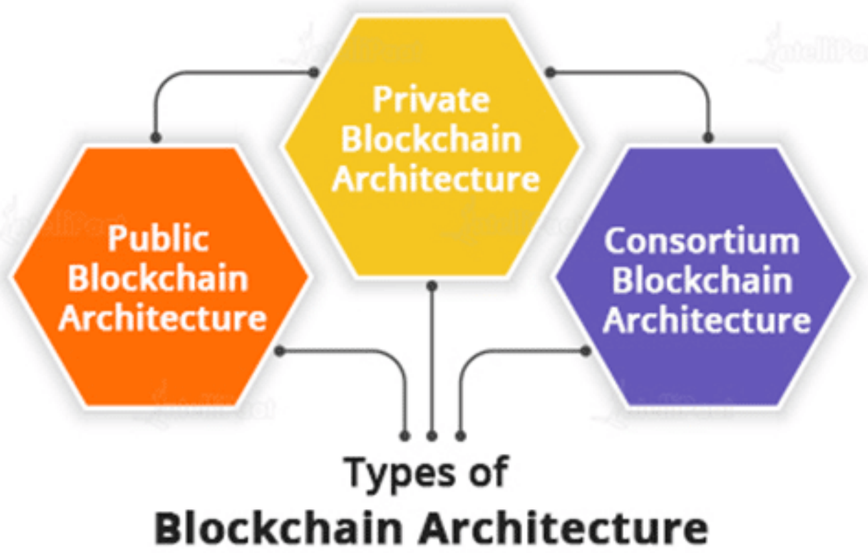
Unit 1- INTRODUCTION TO BLOCKCHAIN

Topic 3: Blockchain Architecture

BLOCKCHAIN ARCHITECTURE

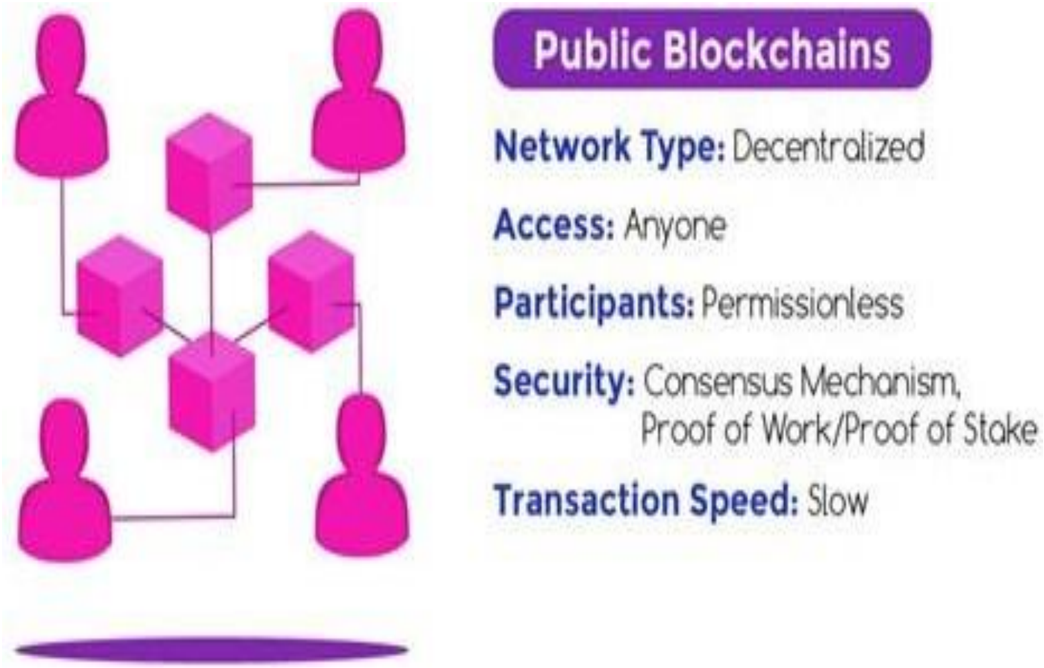
Types of blockchain

1. Public Blockchains
2. Private Blockchains
3. Consortiums Blockchains
4. Hybrid Blockchains



Public Blockchains

- Public blockchains are open, decentralized networks of computers accessible to anyone wanting to request or validate a transaction (check for accuracy).
- Those (miners) who validate transactions receive rewards.
- Public blockchains use proof-of-work or proof-of-stake consensus.
- permission-less distributed ledger system.
- Anyone who has access to the internet can sign in on a blockchain platform to become an authorized node and be a part of the blockchain network.
- Example : Bitcoin and Ethereum (ETH) blockchains.



Public Blockchains

A public blockchain features:

- Write-only, immutable, transparent data storage.
- It brings trust among the whole community of users
- Decentralized, no need for intermediaries.
- Consistent state across all participants.
- Resistant against malicious participants.
- Anyone can join the public blockchain.

Disadvantages

They suffer from a lack of transaction speed.

Private Blockchains

- A Private Blockchain is just like a relational database i.e. fully centralized and owned by a single organization.
- Private blockchains are not open, they have access restrictions.
- People who want to join require permission from the system administrator.
- They are typically governed by one entity, meaning they're centralized.
- For example, Hyperledger is a private, permissioned blockchain.

Private Blockchains

Network Type: Partially Decentralized

Access: Single Organization

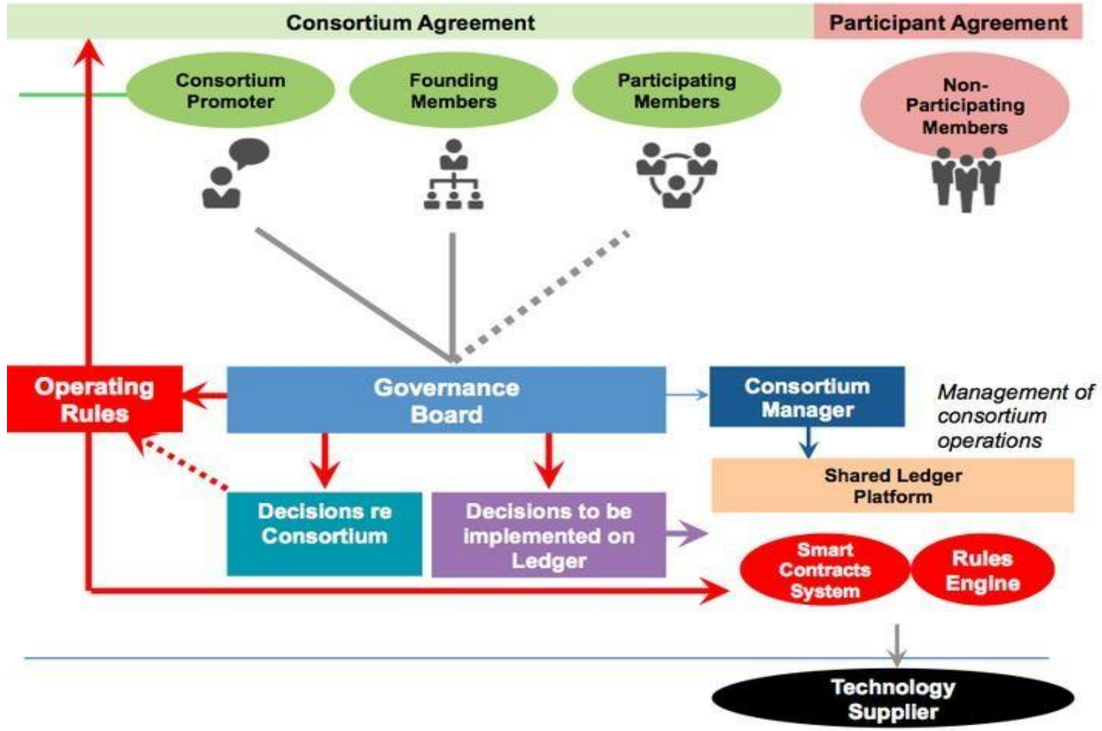
Participants: Permissioned

Security: Pre-approved participants, Voting/Multi-party Consensus

Transaction Speed: Lighter and Faster

Consortiums blockchain

- consensus is reached by a relatively small number of nodes in accordance to the governance scheme.
- Increased scalability - Bitcoin's block transmits only up to 1 Mb* (from 1500 to 2700 transactions) per 10 minutes, when a consortium blockchain can optimize it to 1000 and more transactions per second.
- A consortium platform is more flexible.
- voting-based system, it ensures low latency and superb speed.



Pillars of Blockchain

5 components: Decentralization, encryption, Immutability, Tokenization, Decentralization

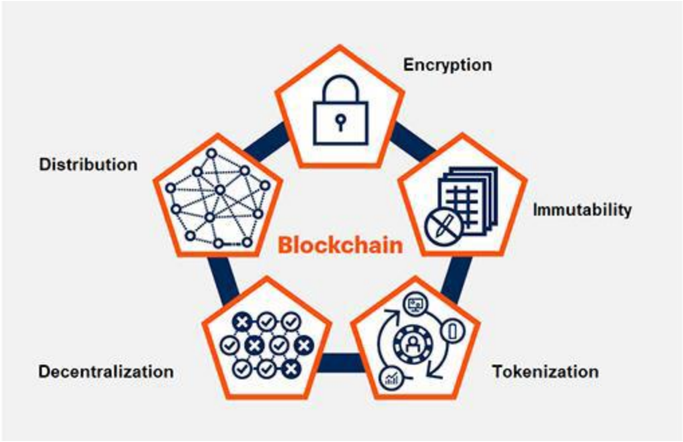
Distribution: Blockchain participants are located physically apart from each other and each node copy of a ledger that updates with new transactions as they occur.

• **Encryption:** Blockchain uses technologies such as public and private keys to record the data in the blocks securely.

• **Immutability:** Completed transactions are cryptographically signed, time-stamped and sequentially added to the ledger.

• **Tokenization:** Transactions and other interactions in a blockchain involve the secure exchange of value.

• **Decentralization:** Both network information and the rules for how the network operates are maintained by nodes due to consensus mechanism.



Assessment 1

1. A blockchain provides

Ans :_____

2. 5 elements of block chain

Ans : _____

References

TEXT BOOKS

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2. Imran Bashir, “Mastering Blockchain: Distributed Ledger Technology, Decentralization and Smart Contracts Explained”, Second Edition, Packt Publishing, 2018.
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3. Arvind Narayanan, “Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction”, Princeton University Press, July 19, 2016.
4. Henning Diedrich, Ethereum: Block chains, Digital Assets, Smart Contracts, Decentralized Autonomous Organizations-2016

Thank You