**What is the importance of blockchain?**

[- Blockchain is a chain of blocks, and each block stores data encoded in a hash with the hash value of the previous block(for linking it to the last block)

- Blockchain is a decentralized system as it includes a percentage of active members in data storage and transaction verification (51% in the case of Bitcoin - a financial asset based on blockchain.)

- The major importance of blockchain is that deleting data from a node won't hamper other nodes and can be recovered using other nodes. The transaction is secured as changing the hash value of only one block is insufficient; the hackers need to update the hash of every other block created after it. Decrypting hash value is impossible, so data is secured too.]

Blockchain, a chain of blocks, operates on a decentralized system where each block contains encoded data linked to the previous block through a hash value. This linking forms a secure and tamper-resistant ledger. In a blockchain network, a percentage of active members are involved in data storage and transaction verification, with 51% being a critical threshold in systems like Bitcoin, a financial asset built upon blockchain technology. One of blockchain's primary advantages lies in its resilience to data deletion at a single node; even if data is lost at one point, it can be recovered from other nodes in the network. The security of transactions is a pivotal aspect, as altering the hash value of a single block is insufficient for malicious actors. To compromise the integrity of the entire chain, hackers would need to update the hash values of all subsequent blocks. Additionally, the encryption of hash values contributes to data security, making it virtually impossible for unauthorized parties to decrypt and manipulate the stored information. Blockchain's significance stems from its decentralized, transparent, and secure nature, offering robust data integrity and transaction protection.

**Explore different types of consensus mechanisms.**

1. Proof of Work (PoW):- Miners solve a problem, and the first one to solve it is rewarded and used by Bitcoin.

2. Proof of Stake (PoS):- Probabilistic approach. You must hold some cryptocurrency for mining. The more crypto you hold, the higher your chance of being rewarded. Ethereum uses PoS.

3. Delegated Proof of Stake (DPoS):- Centralized blockchain concept. Like PoS, but the number of miners (delegates) is fixed, and only those selected miners have the right to create new blocks to improve the system's efficiency.

4. Proof of Burn (PoB):- I feel people are mad. They make their asset (cryptocurrency) unusable for a lifetime just to show some dedication to the system and get access to mine in that system.

5. Proof of Capacity (PoC):- Miners demonstrate their storage capacity to the network. The more storage space a miner has, the higher the chance of mining a new block. More energy-efficient than PoW.