

Blockchain  
Technology

## 1)- Blockchain:-

Blockchain is a decentralized digital ledger that records transactions across many computers in a way that registered transactions cannot be altered retroactively.

## 2)- Key points of blockchain Technology

- (i) Decentralised:- Unlike other centralised database blockchain is maintained by distributed network of nodes (computers) that makes less single type of failures.
- (ii) immutability:- Once the data is recorded in blockchain and added, it is difficult to alter the data this immutable activity is achieved by cryptographic hashing and consensus mechanism.
- (iii) Transparency:- Transaction on public block chain are transparent and can be viewed by anyone which enhances trust and accountability.
- (iv) Security:- Blockchain uses cryptographic technique to secure the data and prevent unauthorised access or data tampering.
- (v) consensus mechanism:- Block chain network uses various consensus mechanism like  $Pos \rightarrow Proof \ of \ work$   
 $Pos \rightarrow Proof \ of \ stake$   
 $Pos \rightarrow Proof \ of \ work$

to agree validity on Transaction.

(vi) Smart contracts:- Some blockchain technology like Ethereum which are self executing and support smart contracts.

(vii) applications:- BT is used in many applications like supply chain management, healthcare, finance, digital identity verification.

3)- Who uses a blockchain:-

BT can be integrated in multiple areas, primary used of blockchain is a distributed ledges for cryptocurrency.

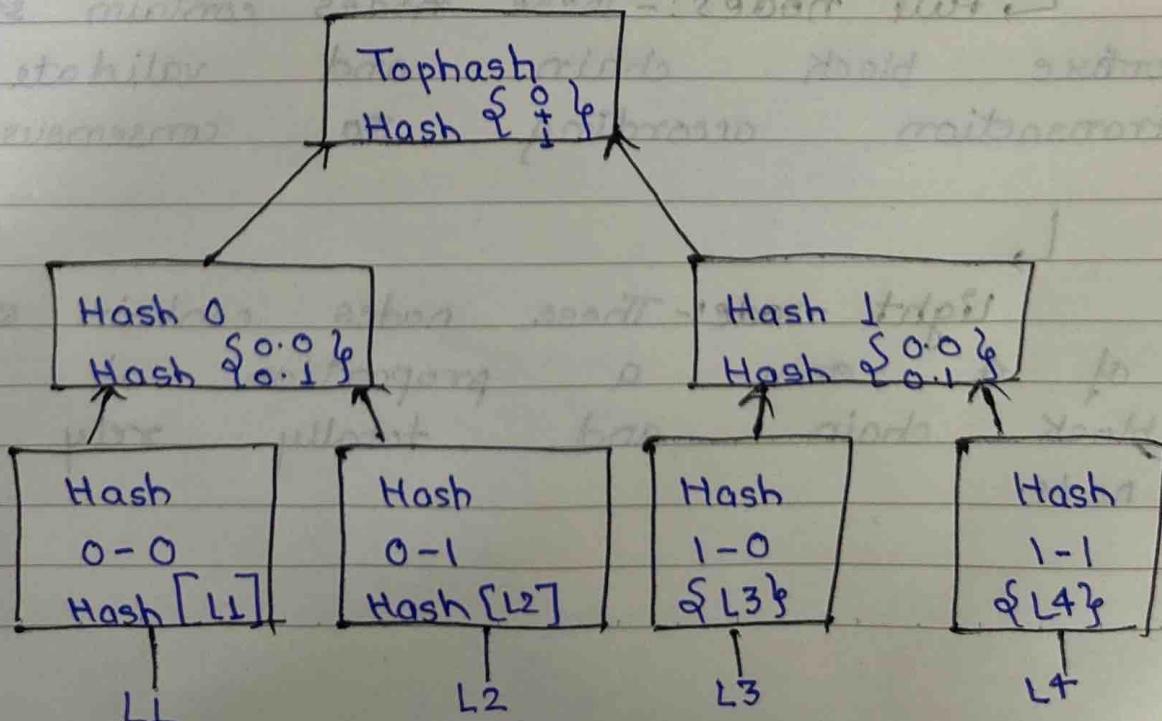
It uses a great promise across a wide range of business applications like banking, finance, healthcare, insurance, media and entertainment.

4)- Need of a blockchain:-

- Time Reduction
- Security
- collaboration
- Reliability
- decentralized
- unchangable Transactions

## 5)- History of BT:-

- BT was described in 1991, a research scientist stuart Haber and w.scott stornetta.
- They wanted to introduce a practical solution for time stamping digital documents, so that they backdated or tampered.
- They developed a system using the concept of cryptography, secure chain of blocks to store time stamped document.
- In 1992, merkle Trees used to create a secure chain of blocks. It stores the data in the format of series, each record one  $H_0$  before it.
- The newest record in chain contains the history of entire chain.



Imp (x)

## Q1- components of blockchain:-

Several key components to secure a data and decentralized system are:-

### (i) primary component:-

#### (a) Block:-

↳ data - Each block contain a list of transaction or data or entries.

↳ hash - It is a unique identifier generated from blocks. Data using a cryptographic hash function.

↳ previous block hash:- Each node contain the hash of previous blocks linked together to form a chain.

#### (ii) nodes:-

↳ full nodes:- These nodes contain storing of entire block chain and validate the transaction according to consensus rule.

↳ light nodes:- These nodes contain storing of a only a proportion of the block chain and totally rely on full node.