



Blockchain

- a. **What is Blockchain?**
- b. **Its uses in Finance and Government in countries.**
- c. **Blockchain and Audit.**

Group III

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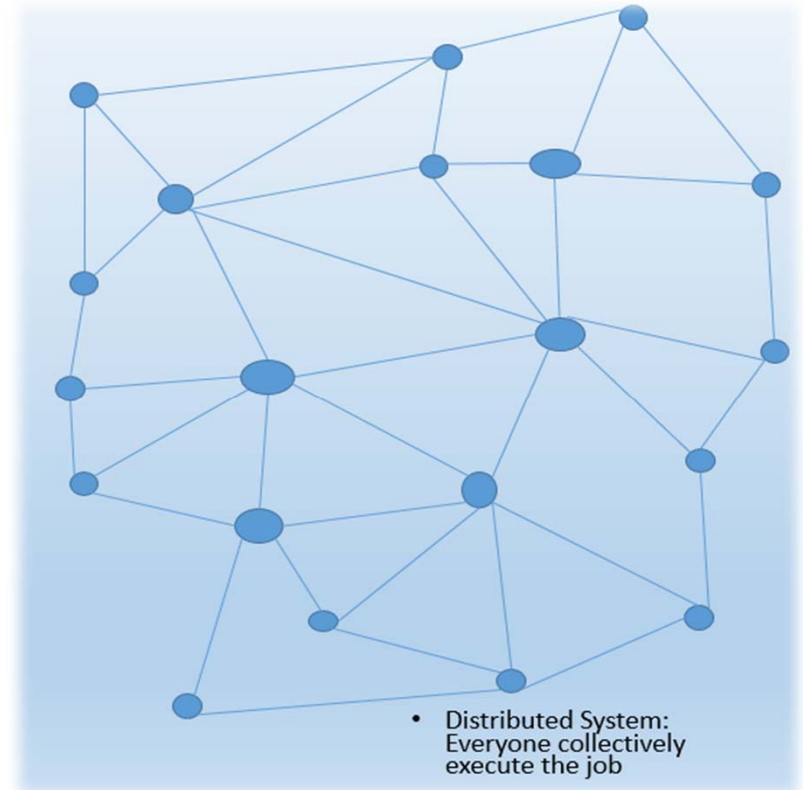
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Blockchain Introduction

- **Distributed** database.
- No central point of failure.
- Node-have copy of the global data sheet.
- Public ledger.
- Transaction is verified first then recorded.
- Info-**Permanent & Tamper proof.**
- Cryptographically Secure chain of Block:Use of Hash



Technical view of Block Chain

1. Use of Cryptographic Hash Function to connect Blocks.

2. Hash Function:- **mathematical algorithm** use to map data of arbitrary size to data of **fixed size**.

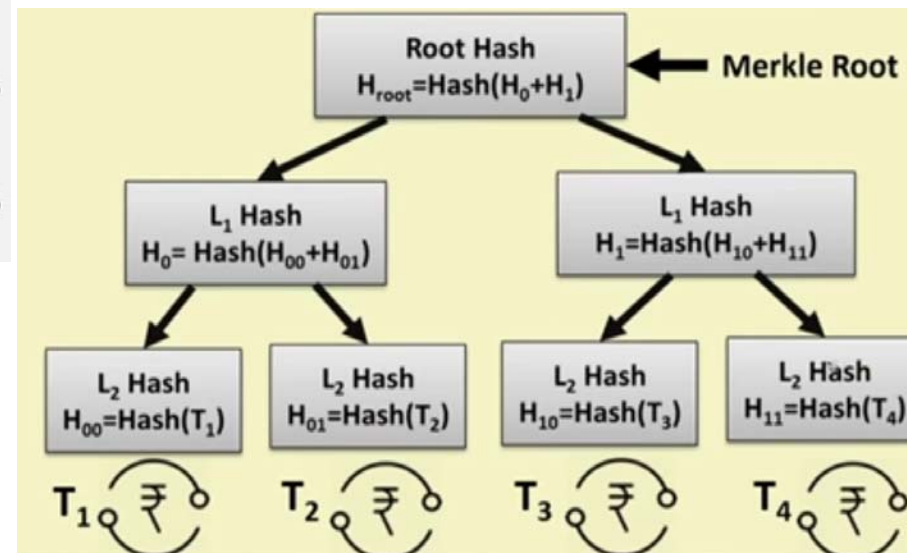
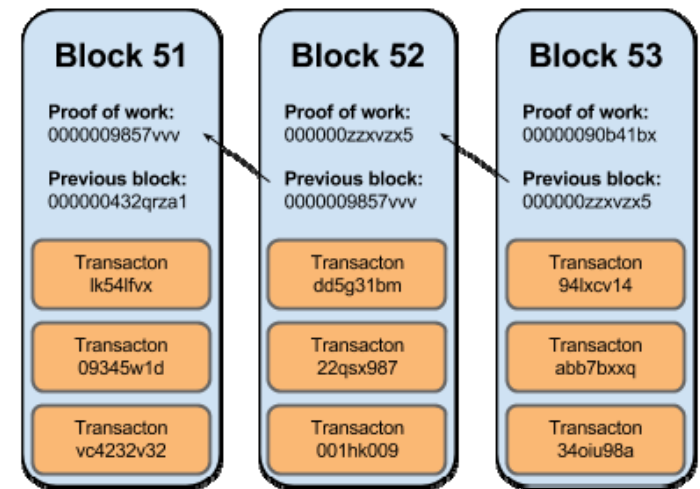
3. Input \rightarrow Hashfunction \rightarrow Digest(Output)

Example :

```

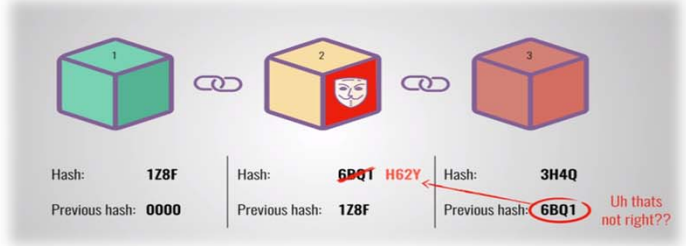
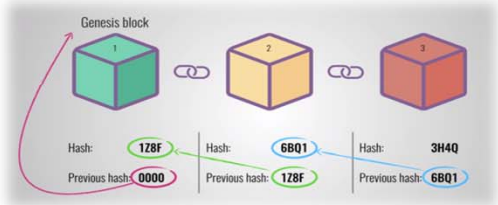
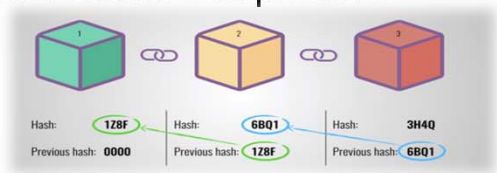
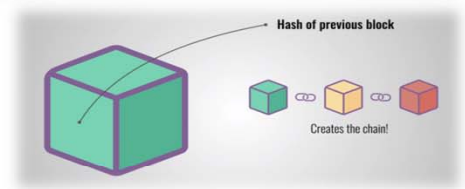
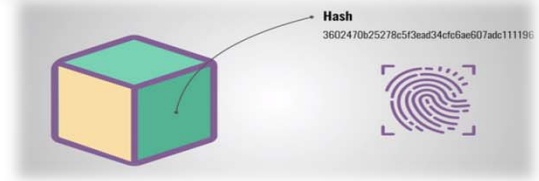
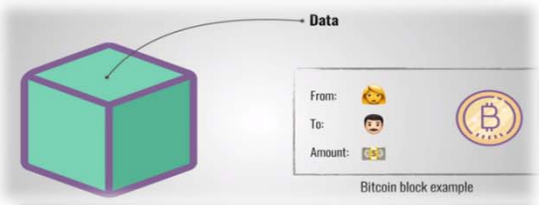
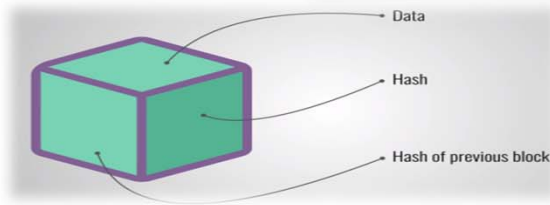
SHA 256("hello") =
1c8aff950685c2ed4bc3174f3472287b5
6d9517b9c948127319a09a7a36deac8
SHA 256("hello1") =
57c65f1718e8297f4048beff2419e1346
56b7a856872b27ad77846e395f13ffe
    
```

4. Merkle tree:- Binary Hash Tree :-Store the root Hash of all the transaction in a Block.



Blockchain concepts

- ❑ Blockchain = a distributed ledger of blocks.
- ❑ Any block consists
 - Data
 - Hash function
 - Hash function of previous block
- ❑ Hash function of any block must coincide with previous block.
- ❑ Genesis block.
- ❑ Change in any data of any block will disturb the whole function.
- ❑ Working basically depends upon proof of work.
- ❑ Every node is able to independently verify whether any given transaction is valid or not.



How block chain works

➤ Based on peer to peer network.

➤ Based on three basic principles..

1.Decentralisation

2.Transparency

3.Immutability

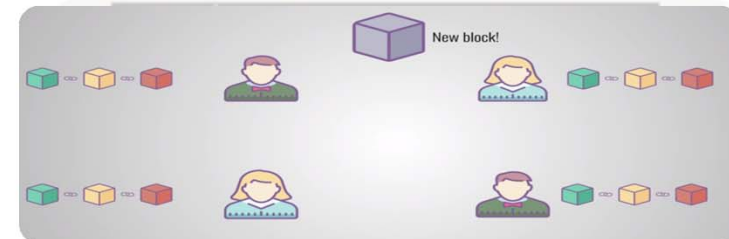
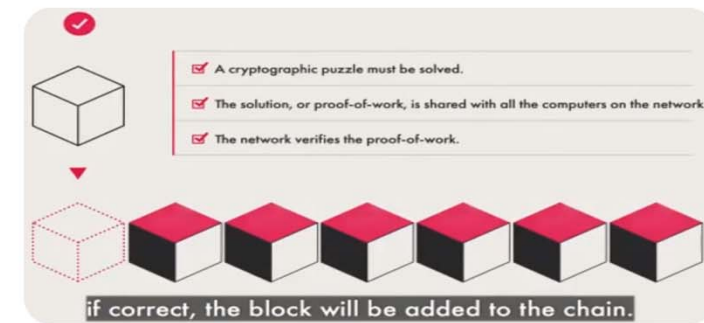
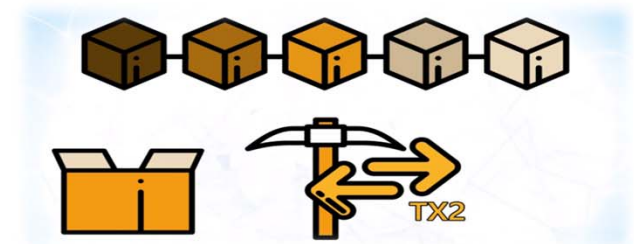
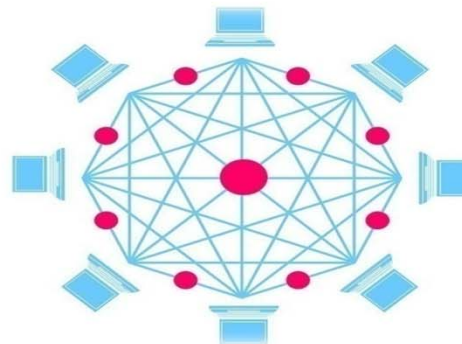
• Every computer in the network agrees unanimously and verify on every single transaction.

➤ Several transactions are grouped together to form a new block that is added to the previous block chain.

➤ **Data miners** :- to verify legitimacy of each transaction.

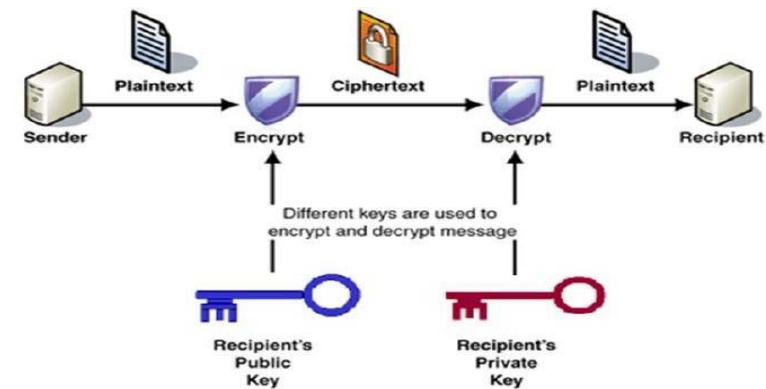
➤ For creation of a block a **cryptography technique** is used.

➤ Identity of block depends upon **proof of work** verified by network.



Concept of Bitcoin

- A virtual currency based on blockchain technology.
- Developed by Satoshi Nakamoto in 2009.
- Can be used immensely in money laundering, black marketing, hawala, stealing of taxes ,overutilization of electricity, maintenance and repair and e-waste
- Indian government has accepted blockchain technology but banned using of virtual currency in any form.
- A currency not backed by any collateral security or government instrument.
- Value of bitcoin depends upon demand and supply.
- Stored in bitcoin wallets: having public address and private key but is not traceable
- validity/acceptance is guaranteed by proof of work done by computer network through **cryptography** method.



International Trade Finance Using ICICI Platform

- What is International Trade?
- Shortcomings of Traditional/Current International Trade

1. Isolated Environment
2. Manual handling of documents
3. Time and Monetary Cost



S. No	Action	Status
1.	Importer issues PO to Exporter	Order Placed
2.	Importer deposits money to Importer's bank, gets transferred to exporter's bank and finally to Exporter	Money received by Exporter
3.	Order dispatched by exporter to Exporter's port authorities	Order on way to Exporter port authorities
4.	Clearance from Exporter's port Authorities	Order dispatched to Importer Port Authorities
5.	Importer's port gives clearance	Order can be collected

BLOCKCHAIN TECHNOLOGY

Uses & Possibilities

- ❖ Distribution of land records,
- ❖ Delivery of subsidy,
- ❖ Cloud storage,
- ❖ Digital identification,
- ❖ Universities use it as educational information
- ❖ Supply chain tracking: High Value Goods, Antibiotics
- ❖ Safe, cost effective and fast bank transactions.
- ❖ Blockchain in finance sector:-Solving Double Spending

e-Estonia(Blockchain Secured digital society)

1997	2000	2001	2002	2005	2007	2008	2008	2014
e-Gov	e-Tax	X-Road	Digital ID	I-voting	Public Safety	Blockchain	e-health	e-residency

- The Estonian Government started testing blockchain technology in 2008, as a response to 2007 cyber attacks and with an aim to mitigate possible **insider threats**.
- Estonia uses blockchain technology to enforce the integrity of government data and systems.
- The ability to verify the integrity of government data independently of its home database, in real time, enables data interoperability between systems and across boundaries,
- The technology chosen for Estonian systems is Guardtime's KSI® blockchain stack.

Which Estonian state agencies are utilising blockchain technology today?

- Ministry of Economic Affairs and Communications
- Ministry of Justice
- Ministry of Finance
- Ministry of the Interior
- Ministry of Social Affairs

Selected State Registries backed by the Blockchain technology:

- Healthcare Registry
- Property Registry
- Business Registry
- Succession Registry
- Digital Court System
- Surveillance / Tracking Information System
- State Gazette (official laws and regulations)
- Official State Announcements

How Audit Might Evolve with Blockchain

- ❖ **Saves time and efforts:-** Auditors can get continuous and real-time access to information
- ❖ **Effective auditing:-** Blockchain technology makes it possible to check every single transaction

Impact of blockchain on existing auditing process

Future of Audit with Blockchain

New roles for auditors in Blockchain ecosystem:

- ❖ **Checking smart contracts:-** Auditors need to ascertain that the contracts are used with proper business logic
- ❖ **Testing blockchain system:-** Auditors may be required to test the application in terms of stability and execution

Audit firms planning to reskill themselves for the world of blockchain technology:

- ❖ **EY's blockchain analyzer tool**
- ❖ **PwC's blockchain validation software**

<https://www.youtube.com/watch?v=ulcSfDdyQGc>



Blockchain technology will increase the responsibility of auditors



Thank you!!