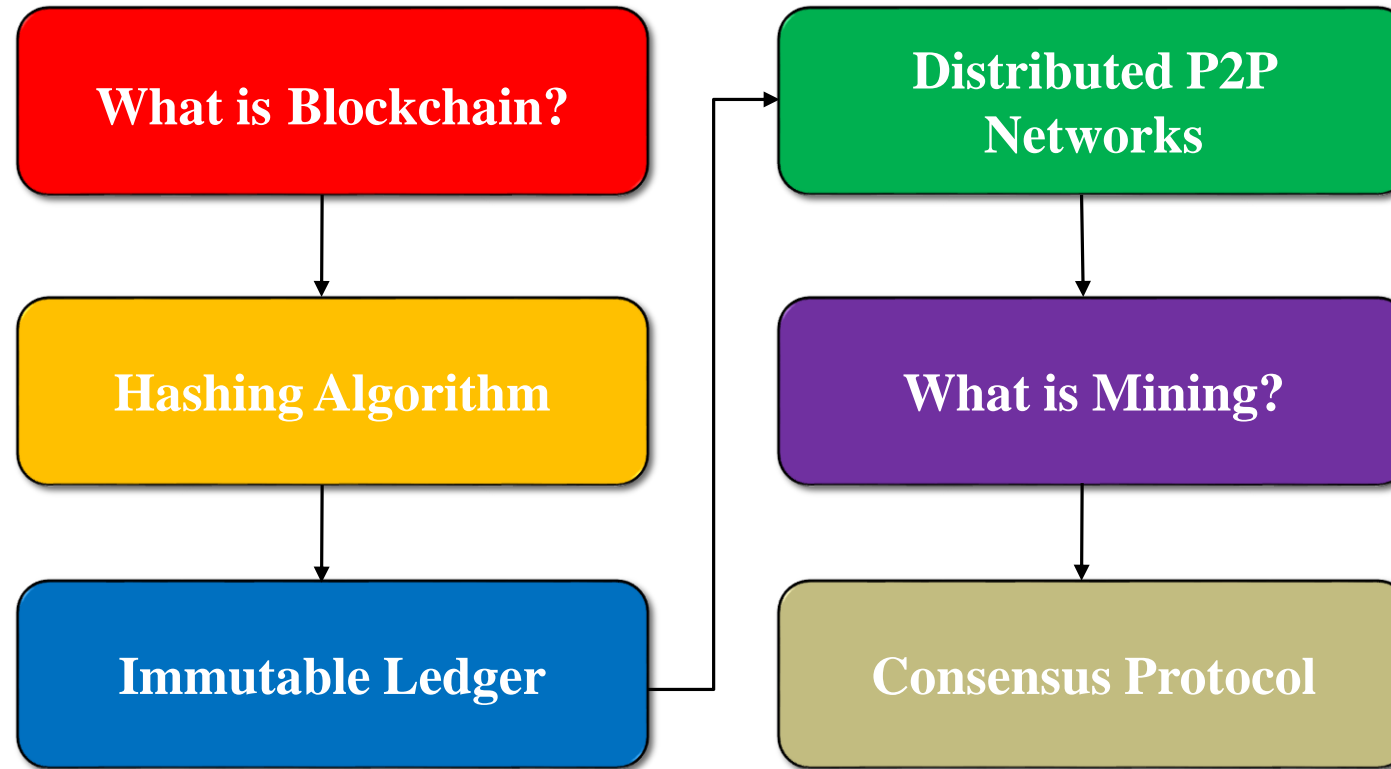




Blockchain

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Peshawar.

Contents – Module A



Why should I study Blockchain?



Why should I study Blockchain?



Why should I study Blockchain?



This whole blockchain deal has the potential it does only because it is applicable across national borders [and] income groups. The permutations and possibilities are staggeringly great



BILL CLINTON

Former U.S. President

Why should I study Blockchain?

“The Old question “Is it in the database?” will be replaced by “Is it on the Blockchain”

By William Mougayar

**Toronto-based investor, researcher, and
best-selling author of The Business Blockchain.**

Why should I study Blockchain?

- Because Blockchain is a disruptive technology.

What is a disruptive technology?

- A technology, which changes the traditional approach.
- The new approach is enhanced than the existing approach.



Why should I study Blockchain?

Internet: Changes the communication Technology

- **Email**
 - Extremely fast when compared to traditional post.
 - Can be sent 24 hours a day, 365 days a year.
 - Can be sent and received from any computer, anywhere in the world
 - Cheap



Why should I study Blockchain?

Internet: Changes the communication Technology

- **Social Media**
 - Extremely fast when compared to traditional.
 - Everyone feels like they have a voice.
 - Being a wide reach low-cost medium.
 - Advertising makes reaching, targeting, and focusing on your target audience easier.



Why should I study Blockchain?

Internet:

Changes the communication system

Blockchain:

Changes the trust ecosystem

Providing enhanced security

Thus, data can be stored securely

Why should I study Blockchain?

Provenance: To verify the origin of something

- How it can be traced back through their entire journey, from farm to cup.
- Check how much was paid for it at every step of the chain.
- Can also see where their coffee ended up, and for what price

It can be possible via Blockchain



Why should I study Blockchain?

- How to check credibility of NGO?
 - NGO is trustworthy and believable
 - How donors know their donation is reached to deserving people.



When was Blockchain first proposed?

- First outlined in 1991 by **Stuart Haber** and **W. Scott Stornetta** [1].
- To implement a system, where document timestamps could not be tampered with.
- Two decades later, with the launch of Bitcoin in January 2009, had its first real-world application by **Satoshi Nakamoto**

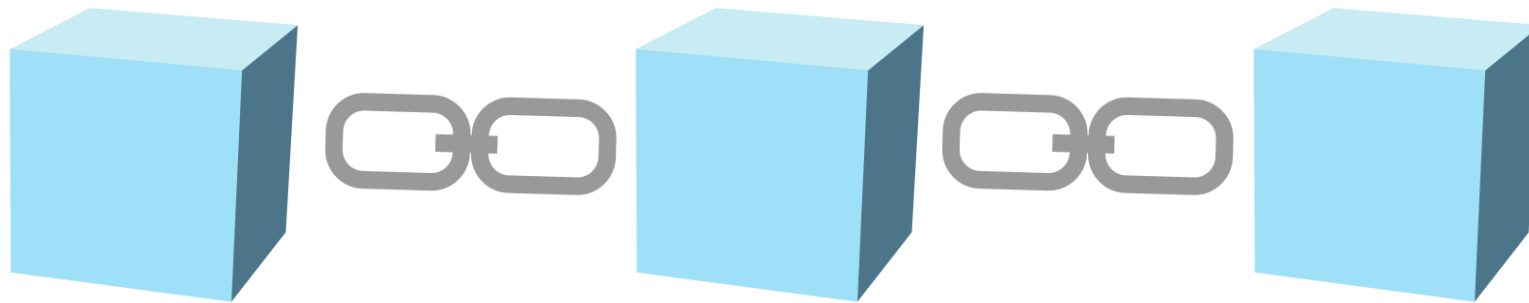
[1] https://link.springer.com/chapter/10.1007/3-540-38424-3_32



What is Blockchain?

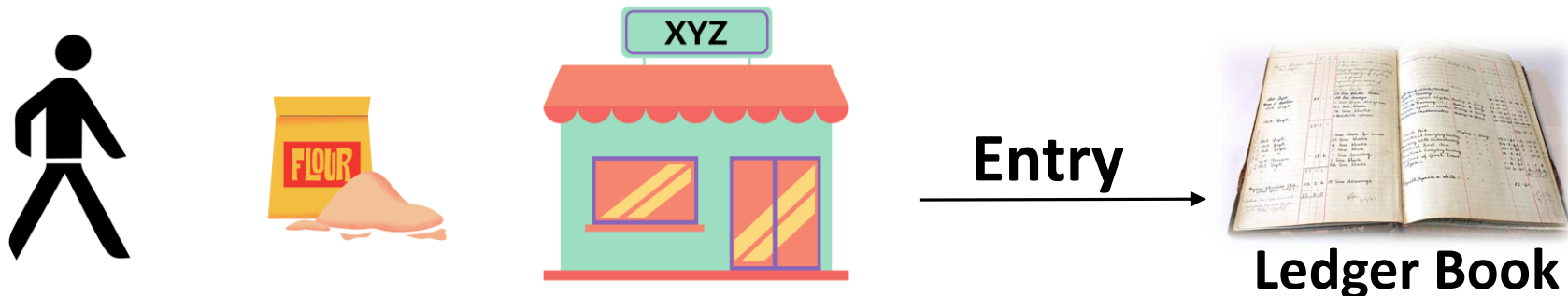
What is Blockchain?

Blockchain is a **distributed** immutable ledger which is completely **transparent**.



What is Blockchain?

- Consider you buy some flour from a shop on credit of rupees 1000
- The Shopkeeper enters credit amount 1000 in the ledger
- Later he changes the original record from 1000 to 1200 (**Record Tempered**)
- At the time payment you notice the amount had been altered
- **How to prove the record has been altered ?**



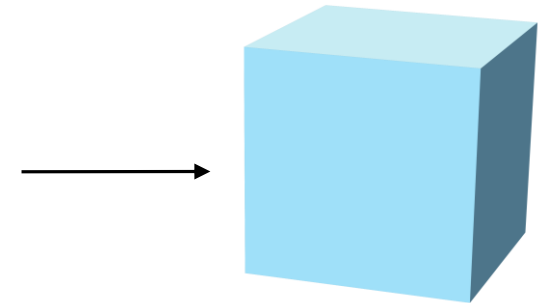
What is Blockchain?

- Blockchain works exactly like a **Ledger Book**
- Block in the Blockchain works as an entry in the ledger
- Block in the Blockchain is **immutable**.
- The data available to everyone at any time, so that all transactions are **transparent**

- **How Blockchain is Distributed?** Let's see

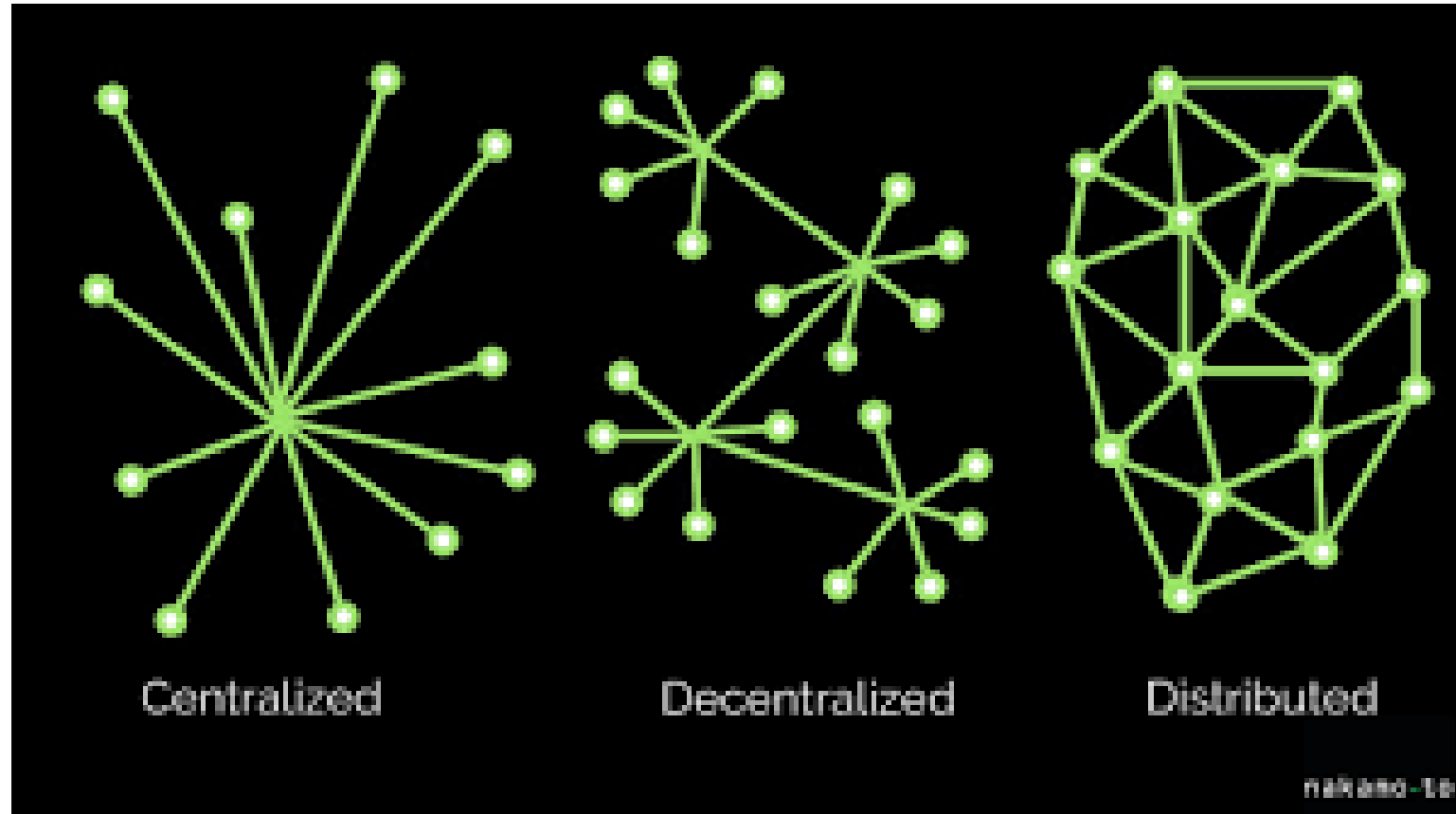


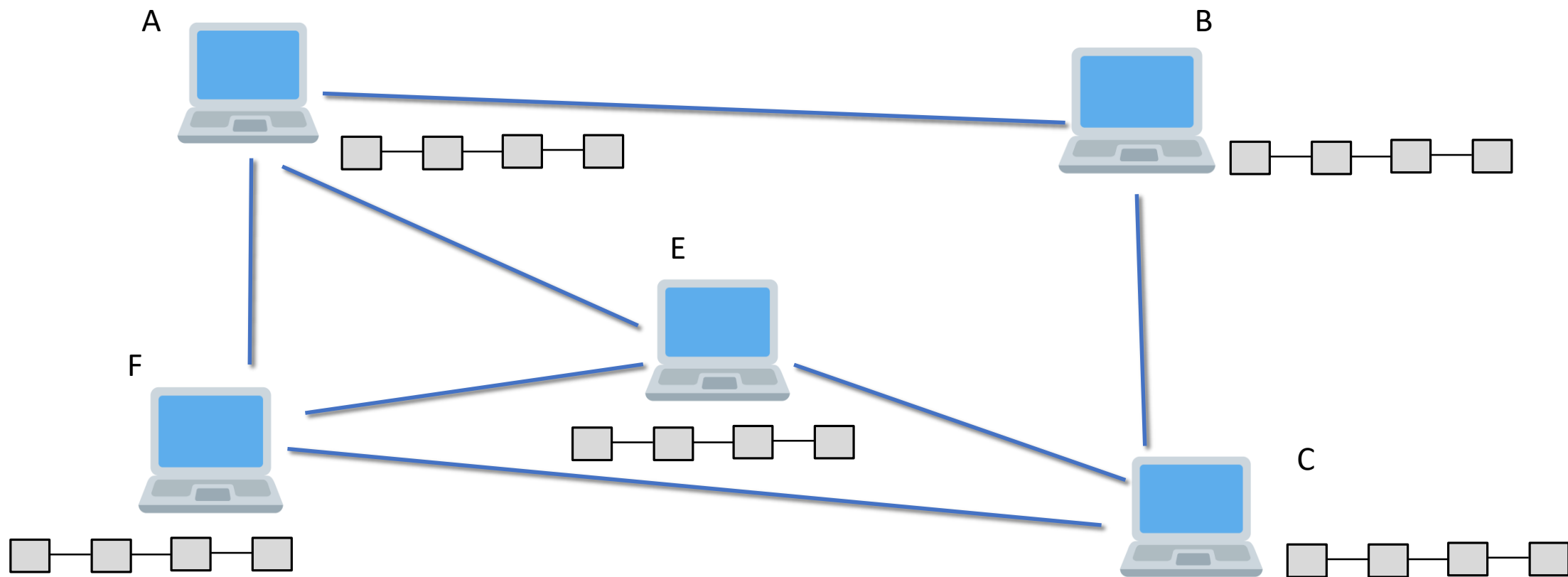
Ledger Book

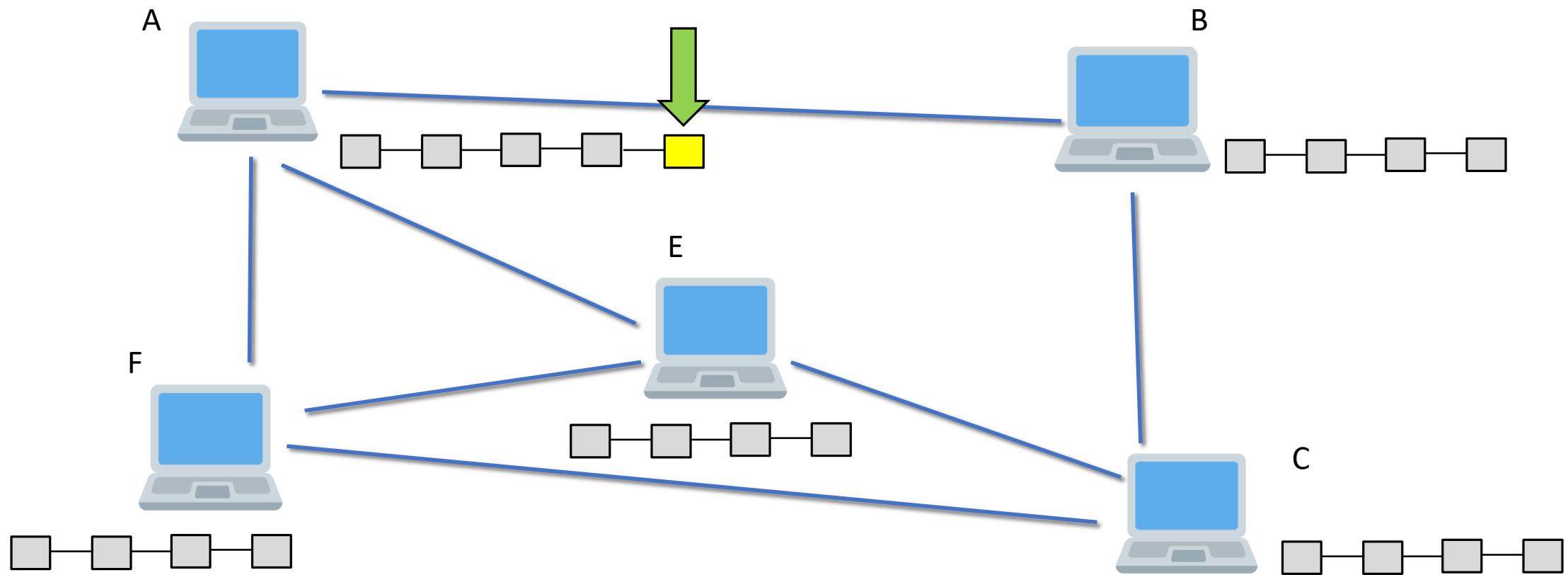


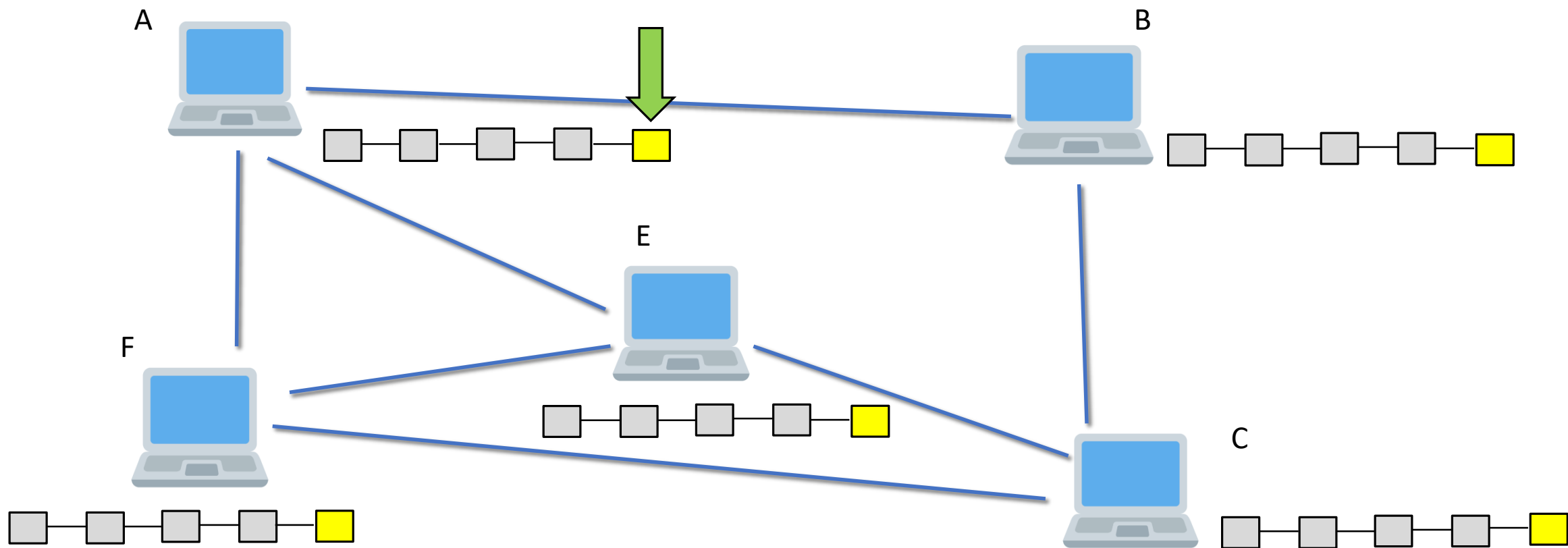
Block

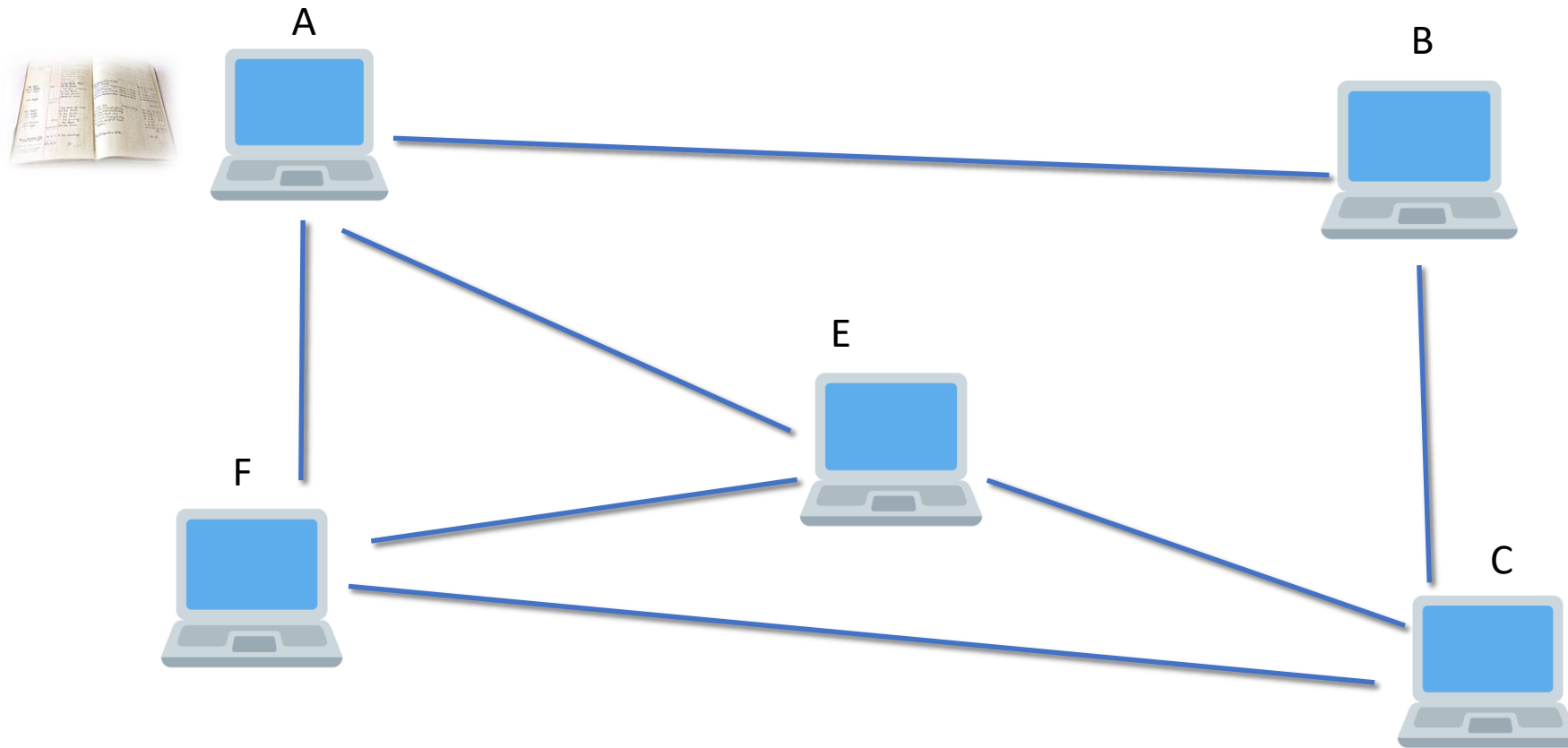
Centralized vs. Decentralized vs. Distributed

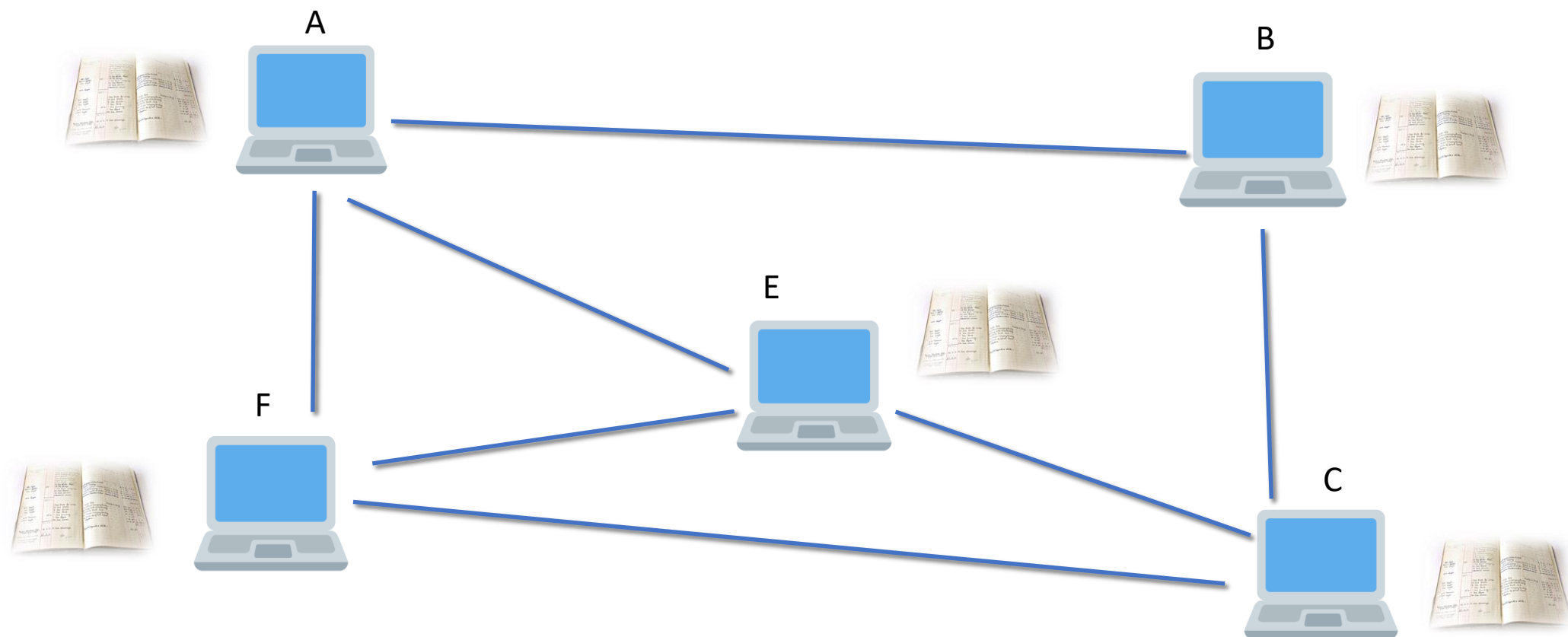




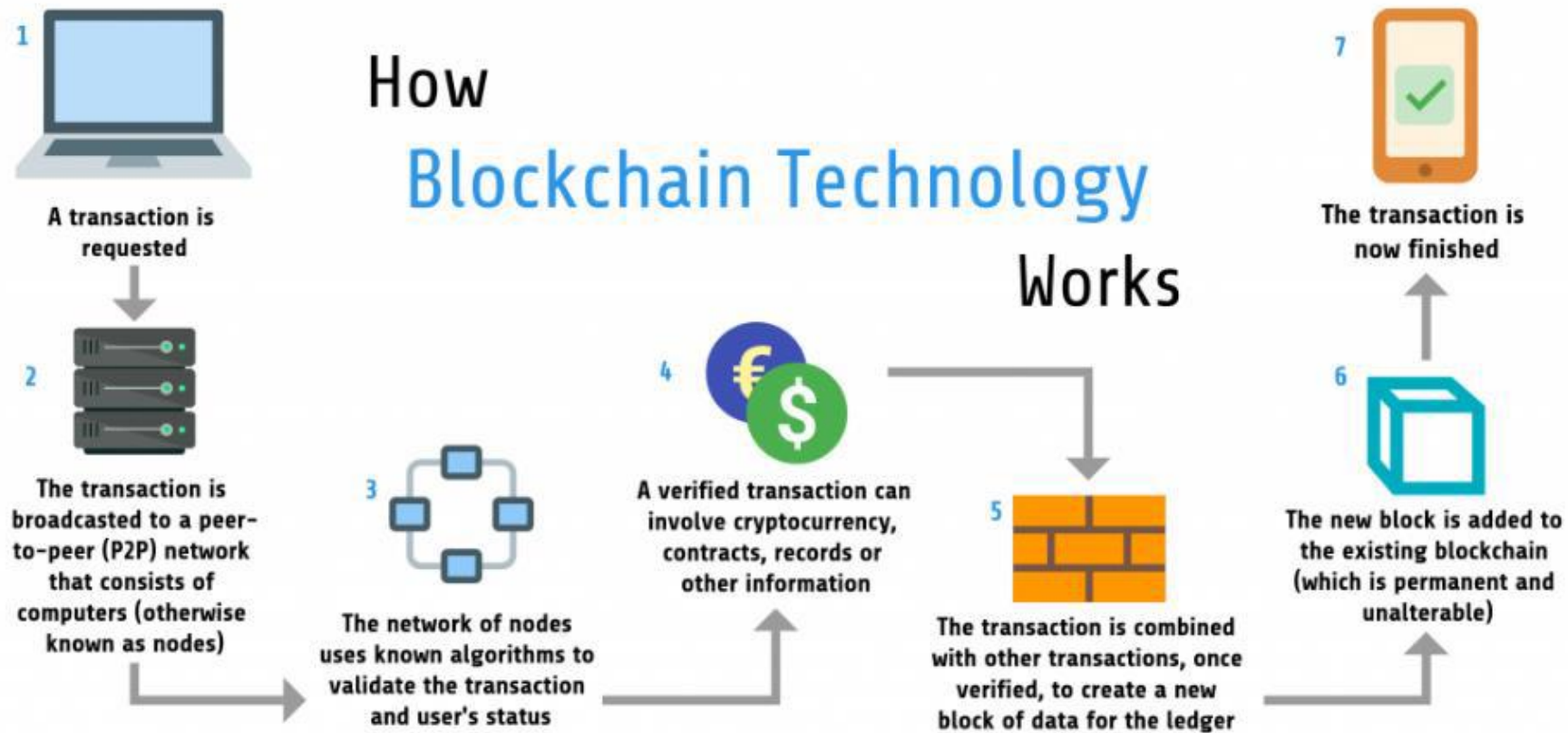








How Blockchain Works



Applications of Blockchain

Applications of Blockchain

Product Tracking



Healthcare System



Smart Contracts



International Wire Transfer

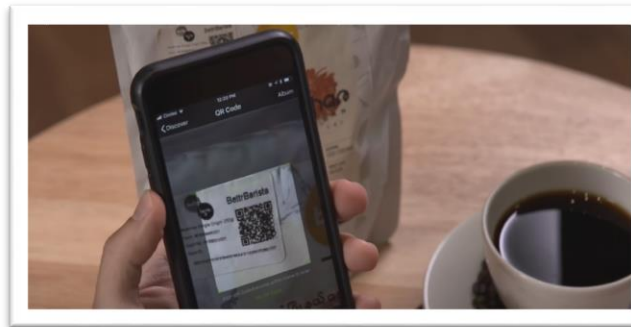


Product Tracking

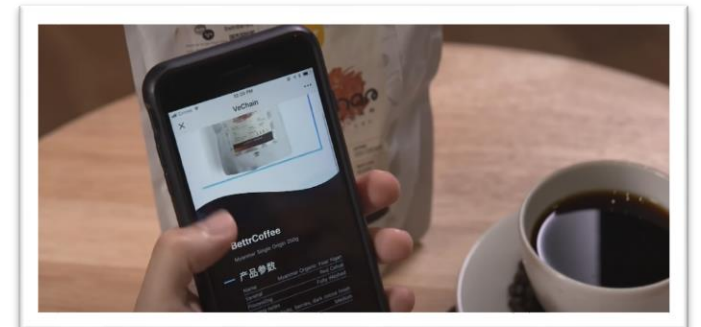
- In Denmark a supermarket implemented a blockchain
- You can read the bar code and check the origin of the product.



Coffee



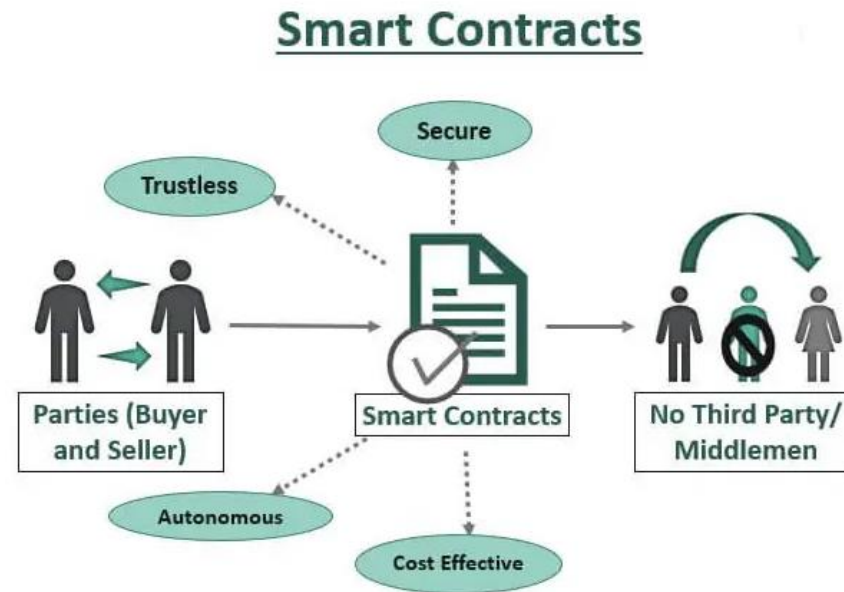
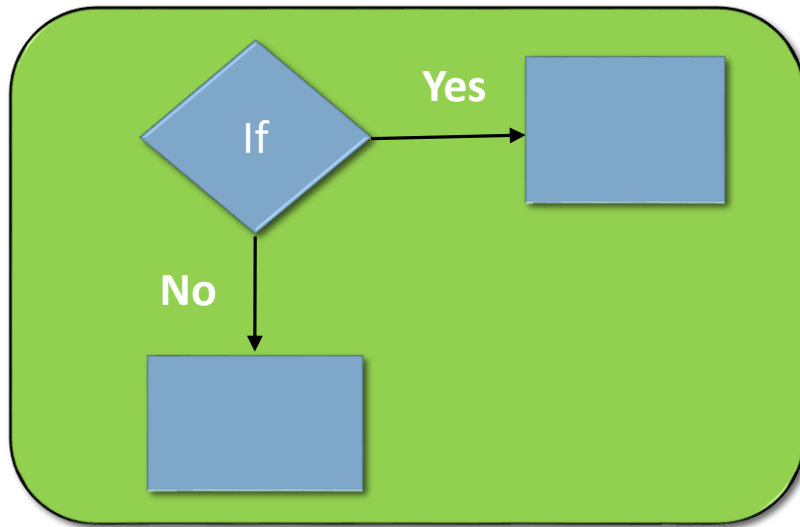
Scan Barcode



Check Information

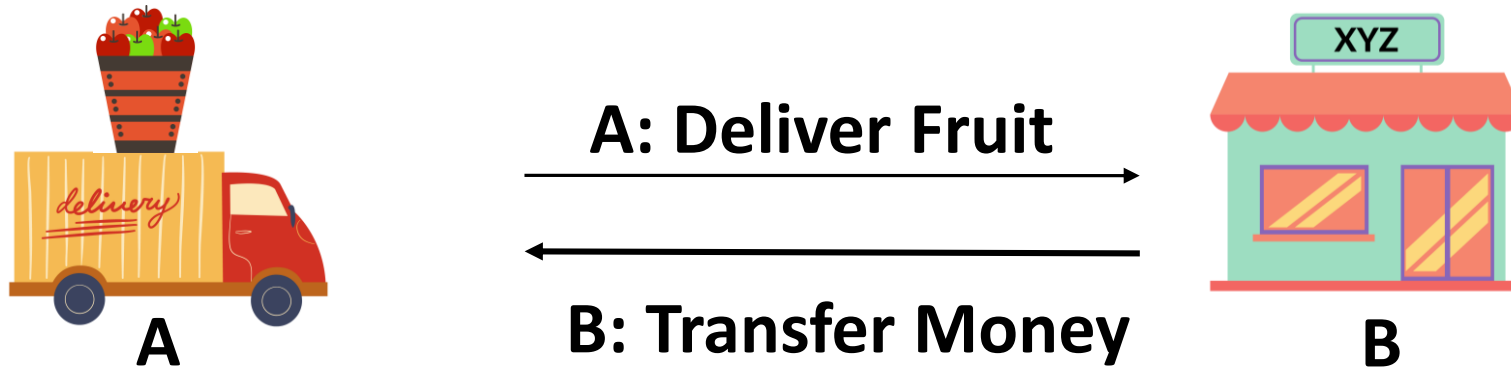
Smart Contract

- A smart contract is a program that runs on a blockchain network



Smart Contract

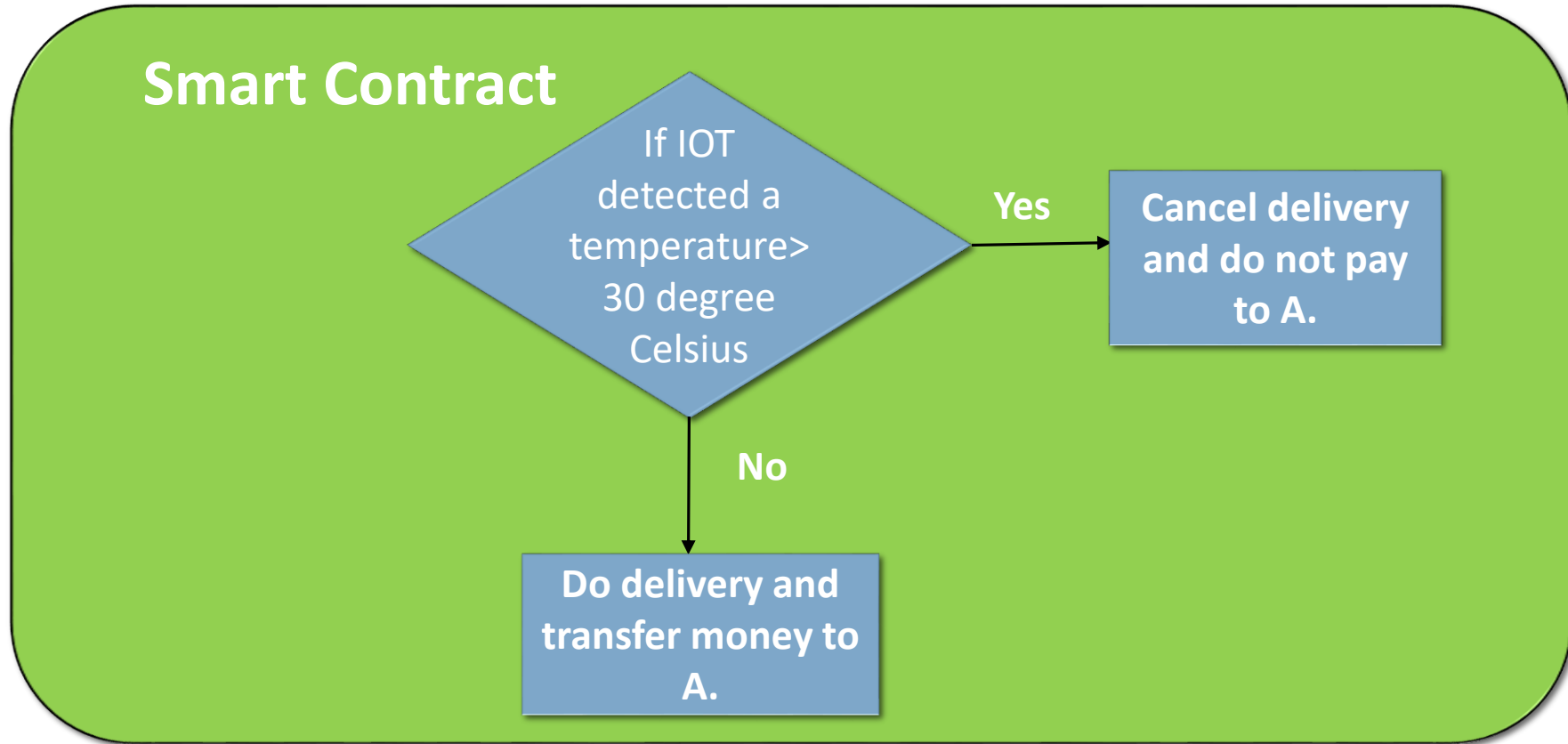
- Supplier A deliver food to Shop B
- A has to maintain a proper temperature to deliver fresh food
- B has to transfer the money on successful delivery of food
- How to ensure proper transaction, especially, if A and B do not trust each other
- Otherwise either A or B will be at a loss



Smart Contract

- So if the Smart contract is implemented then if A delivers things according to the contract
- The amount will be transferred from B's account and B will not be able stop it.
- The smart contract will be automatically implemented due to blockchain property.

Smart Contract



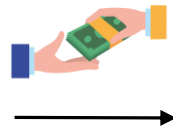
Note- Assuming optimum temperature < 30 degree Celsius.

International Wire Transfer

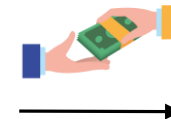
- International wire transfer from one country to another
- Sender bank cannot transfer money directly to another bank
- But they send it through a corresponding bank
 - **Disadvantages:**
 - Slow processor
 - More fee as many banks are involved.
- Many banks in the USA have started working on Blockchain.



Sender Bank



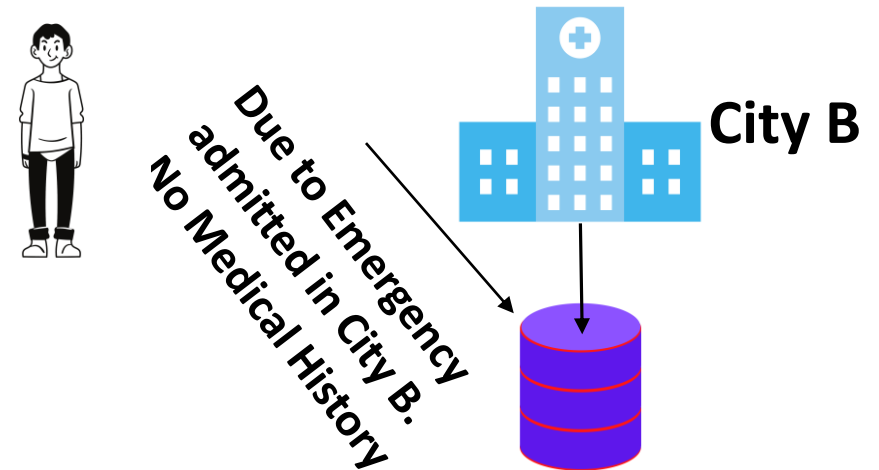
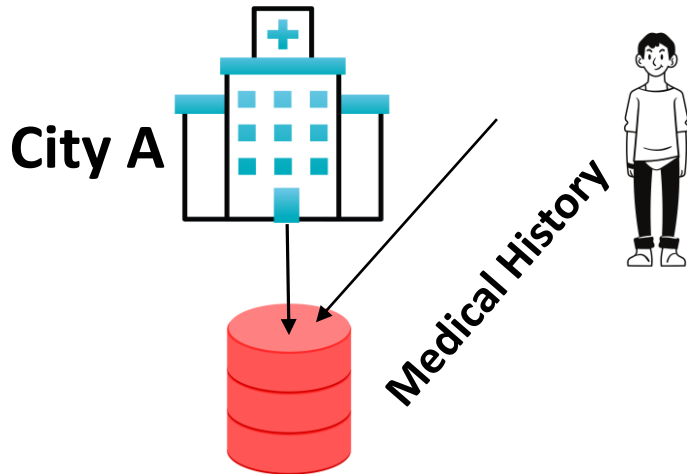
Correspondent Bank



Receiver Bank

Healthcare System

- Patient has medical history on City A.
- Due to emergency patient goes to City B.
- So he should do all his test again.
- Time consuming and costly.



Healthcare System

Solution

- To maintain all records on Blockchain Network.

Homework Time

Search applications of Blockchain.

