

# Digital Finance

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## Blockchain

### Lecture 6

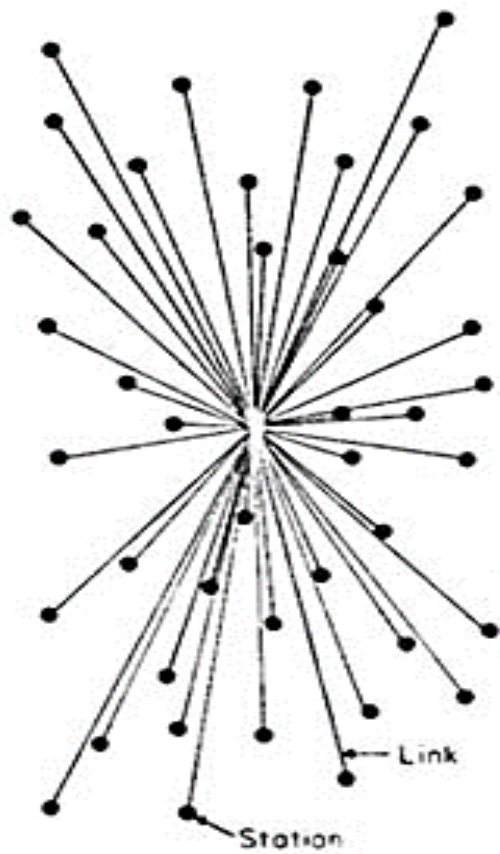
# Preview

- Blockchains and Distributed Ledgers
- Types of Cryptocurrencies (and uses)
- Current Legal Landscape
- Investment Potential and

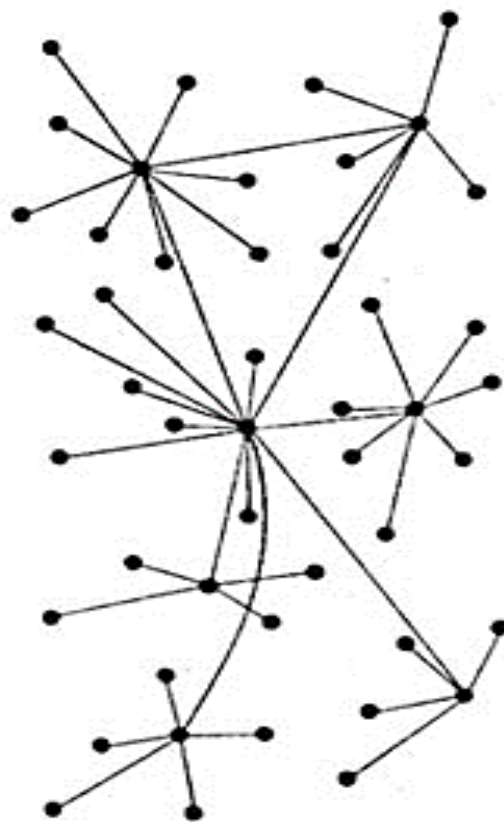
# Blockchains and Distributed Ledgers

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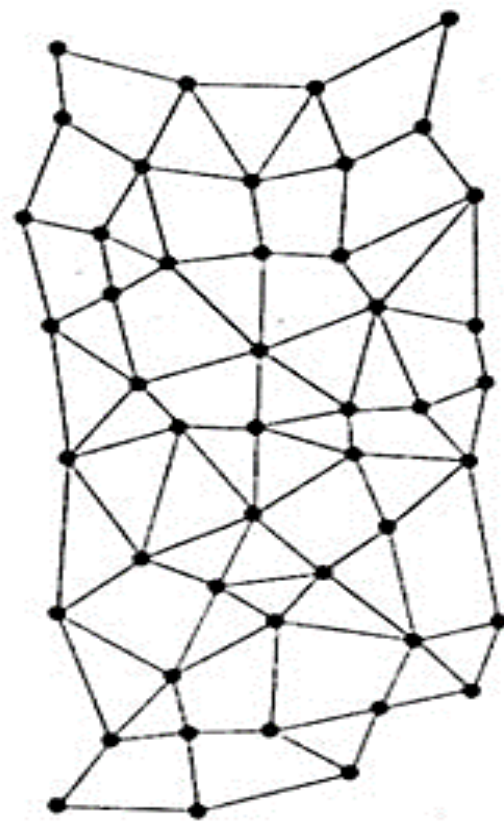
- Blockchains
  - The technology behind cryptocurrencies.
  - Analogous to the TCP/IP Protocol that is the foundation of the internet
- Blockchains are Distributed Ledgers
  - Ledgers are historically centralized and private
  - Blockchains are Decentralized or Distributed



CENTRALIZED  
(A)



DECENTRALIZED  
(B)



DISTRIBUTED  
(C)

# How Blockchains Work: Basics

- Chronological Ledger
  - Transactions often “pseudo-anonymous”
  - Transactions are grouped together in “blocks”
  - Transactions are logged and stamped with information about the time, amount, and participants as if a notary is present at every transaction
- Blockchain is not centralized (does not have one owner), therefore there are strict

# How Blockchains Work: Maintenance

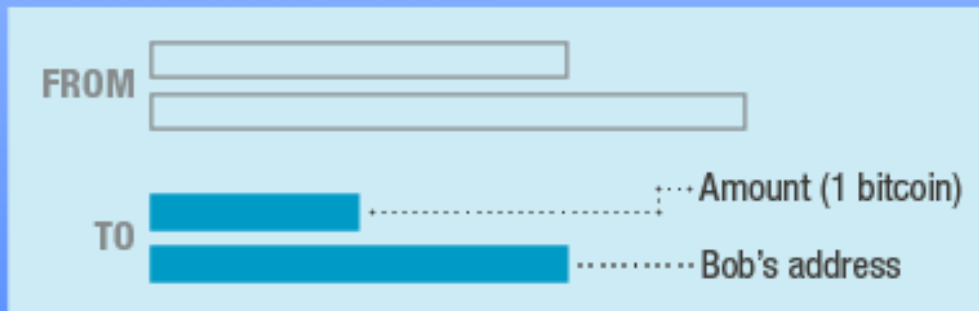
- The individuals who maintain and update the Blockchain are “miners,” and they are paid a reward
- The Miners process transactions by:
  - Solving a complex mathematical problem
  - Sending transactions to other nodes to be verified.

# How Blockchains Work: Hashing

- When all miners agree the problem has been solved correctly, the block is added to the chain and is visible to the entire network
- The unbroken Hash (seal) confirms that the block, and therefore every block before it, is legitimate



### **TRANSACTION RECORD**



# How Blockchains Work: Hashing (cont.)

- Recall: Transactions must be validated by other network miners
- Miners incentivized to add “valid” transactions via a reward; invalid transactions are rejected, and thus, no reward is given

## Why You Can't Cheat at Bitcoin

