



# Blockchain as Decentralized Recordkeeping For Cryptocurrency? For Everything?

DECEMBER 2, 2021

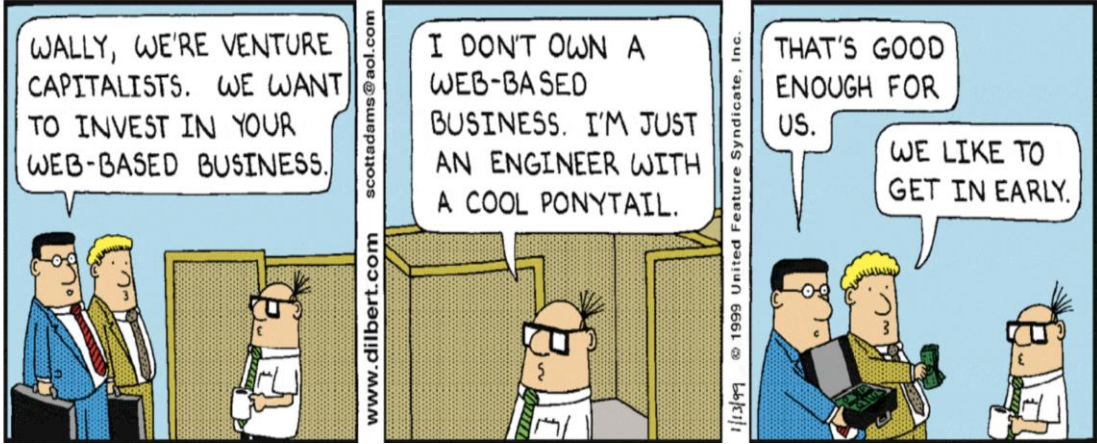
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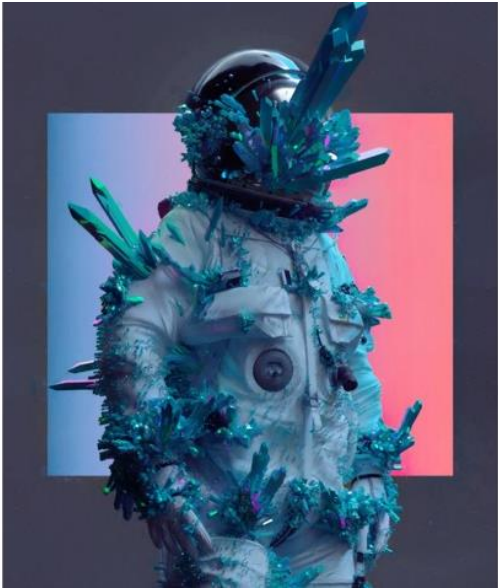
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Wednesday January 13, 1999

★★★★★






A detail from Beeple's "Everydays — The First 5000 Days," a collage of digital images that was "minted" as a "nonfungible token," or NFT, and sold for \$69.3 million. Christie's Images Ltd.

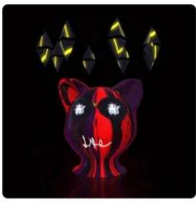


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2 ETH 1 of 5  
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**My Black Dragon CryptoKi...**  
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**Rendered Randall**  
Not for sale 1 of 1  
Highest bid 0.08 WETH

We use  . [Learn more](#) ×

## Plan...

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:: What is Blockchain?

:: Example: Bitcoin as Money

:: Corporate Blockchain

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## What is Blockchain?

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## What is Blockchain?

- Record-Keeping  
Ordered list of “transactions”
- Ledger  
Decentralized  
“diaries” vs “transcript”
- Competitive  
Incentives for “miners” are important

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DATE	WITHDRAWAL	DEPOSIT	INTEREST	BALANCE	TELLER
1 SEP-7-51		**222.66		**222.66	A
2 OCT-8-51		**23.00		**245.66	A
3 OCT13-51	**10.00			**235.66	A
4 OCT24-51	**35.66			**200.00	A
5 NOV23-51	**25.00			**175.00	A
6 DEC10-51	**25.00			**150.00	A
7 JAN-7-52		**65.00		**215.00	A
8 JAN31-52	**40.00			**175.00	A
9 MAR-1-52	**25.00			**150.00	A
10 MAR15-52	**25.00			**125.00	A
11 MAR25-52	**25.00			**100.00	A
12 MAY-3-52	**25.00			**75.00	A
13 MAY31-52	**74.00			***1.00	A
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Article **Ledger** Talk

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From Wikipedia, the free encyclopedia

*For other uses, see **Ledger** (disambiguation).*

A **ledger**<sup>[1]</sup> is the principal book or computer file for recording and totaling economic transactions measured in terms of a monetary unit of account by account type, with debits and credits in separate columns and a beginning monetary balance and ending monetary balance for each account.

**Contents** [hide]

- Overview
- Types on the basis of purpose
- Types on the basis of format
  - 3.1 Physical ledger
  - 3.2 Digital ledger
- Etymology
- See also
- Notes
- References
- Further reading

**Overview** [edit]


The ledger is a permanent summary of all amounts entered in supporting journals which list individual transactions by date. Every transaction flows from a journal to one or more ledgers. A company's financial statements are generated from summary totals in the ledgers.<sup>[2]</sup>

Ledgers include:

- Sales ledger, records accounts receivable. This ledger consists of the financial transactions made by customers to the company.

Part of a series on

**Accounting**



Historical cost · Constant purchasing power · Managerial Accounting · Tax

Major types

Key concepts

Selected accounts

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## Ledger: Revision history

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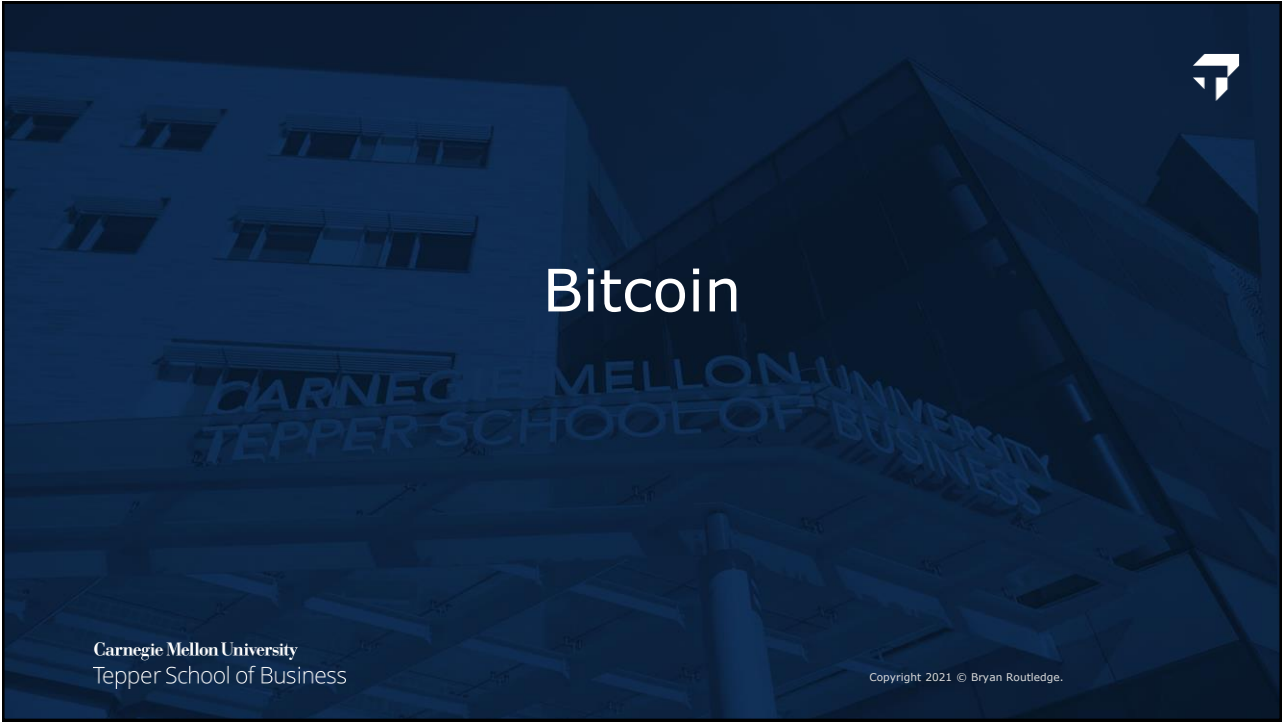


# Ledger Properties

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- Authenticity
- Privacy
- Permanence
- Consensus

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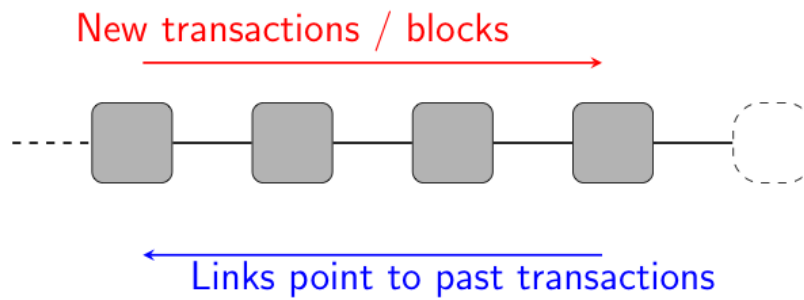
## Is Bitcoin Money?

- Store of value
- Medium of exchange
- Unit of account

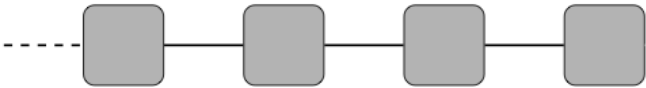
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## Blockchain



Blockchain



Blockchain



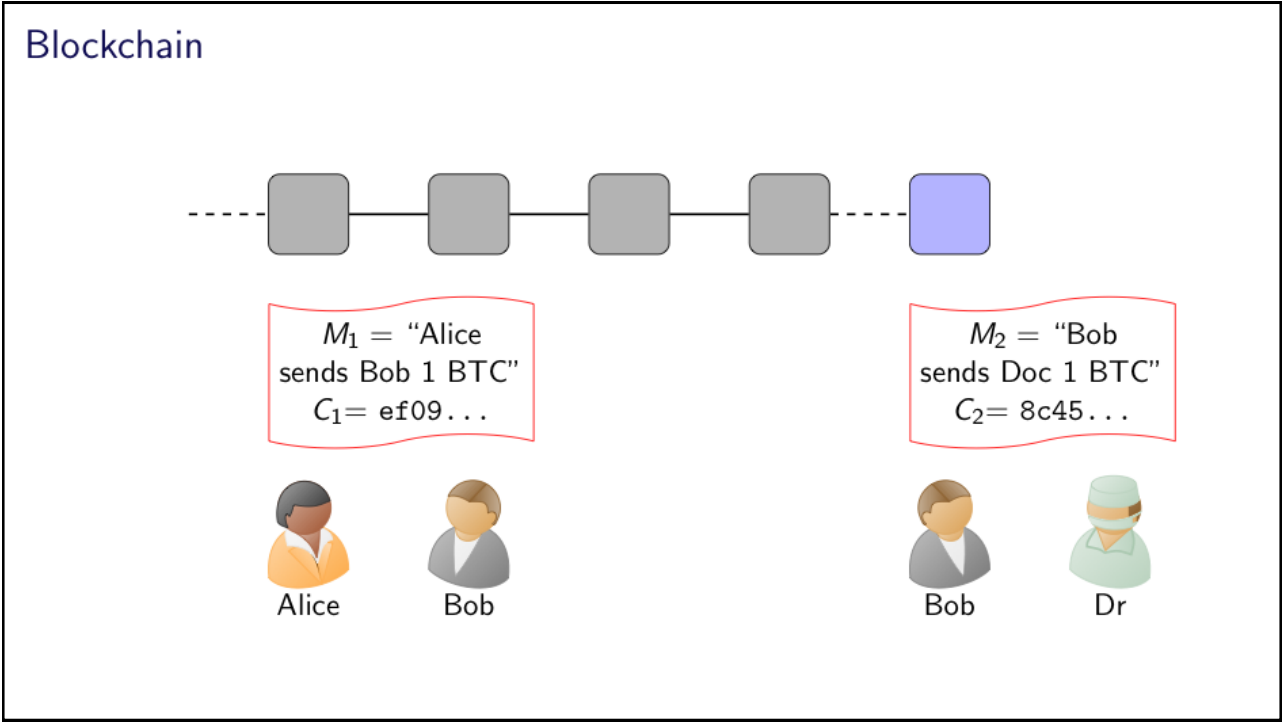
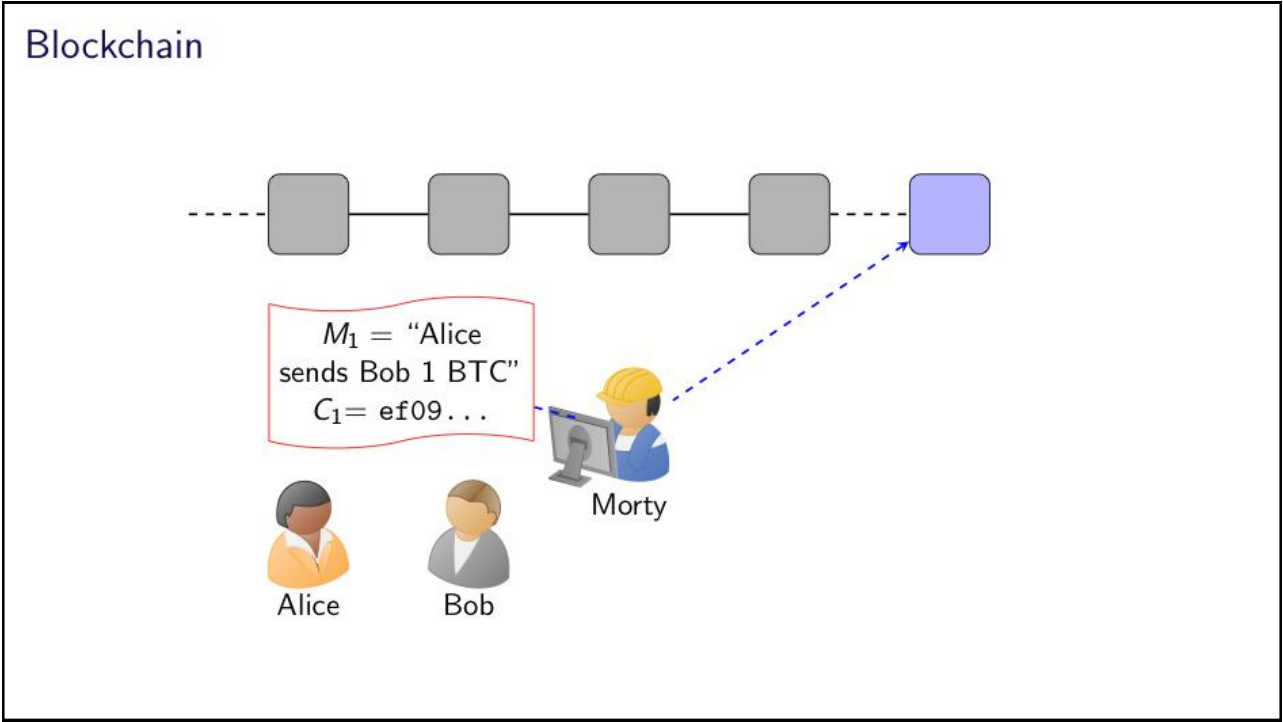
$M_1 = \text{"Alice sends Bob 1 BTC"}$   
 $C_1 = \text{ef09...}$

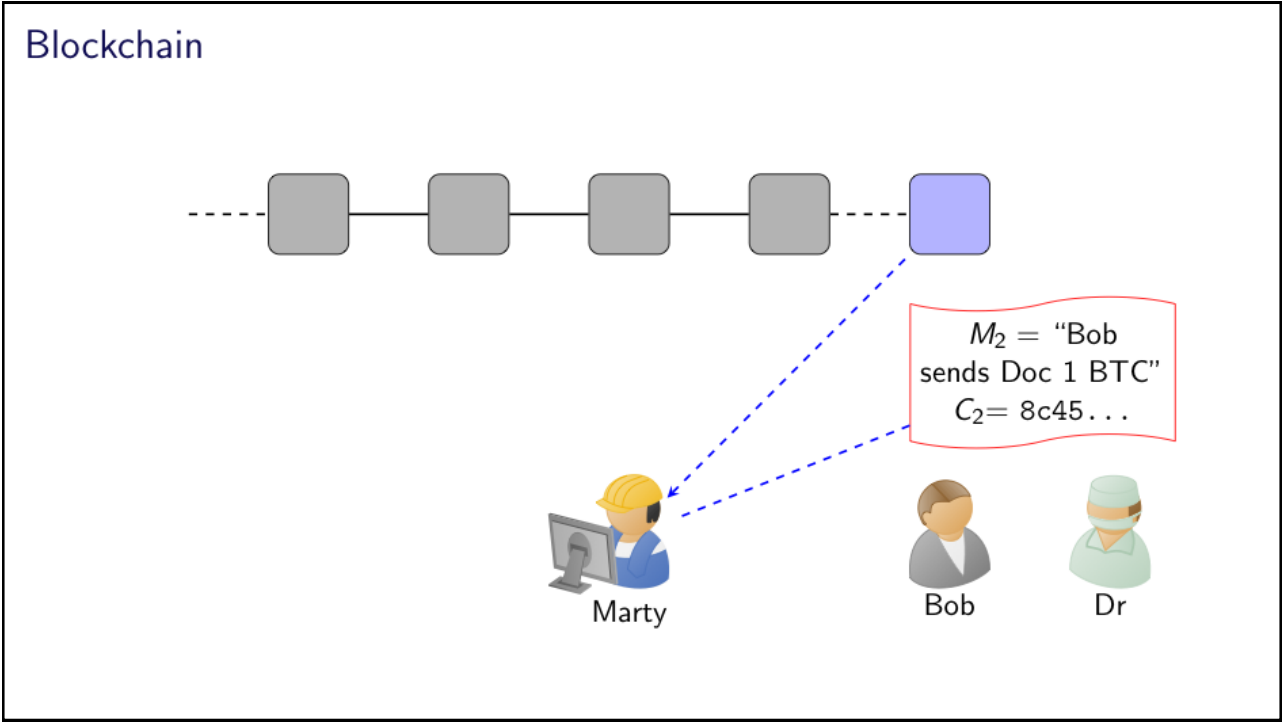
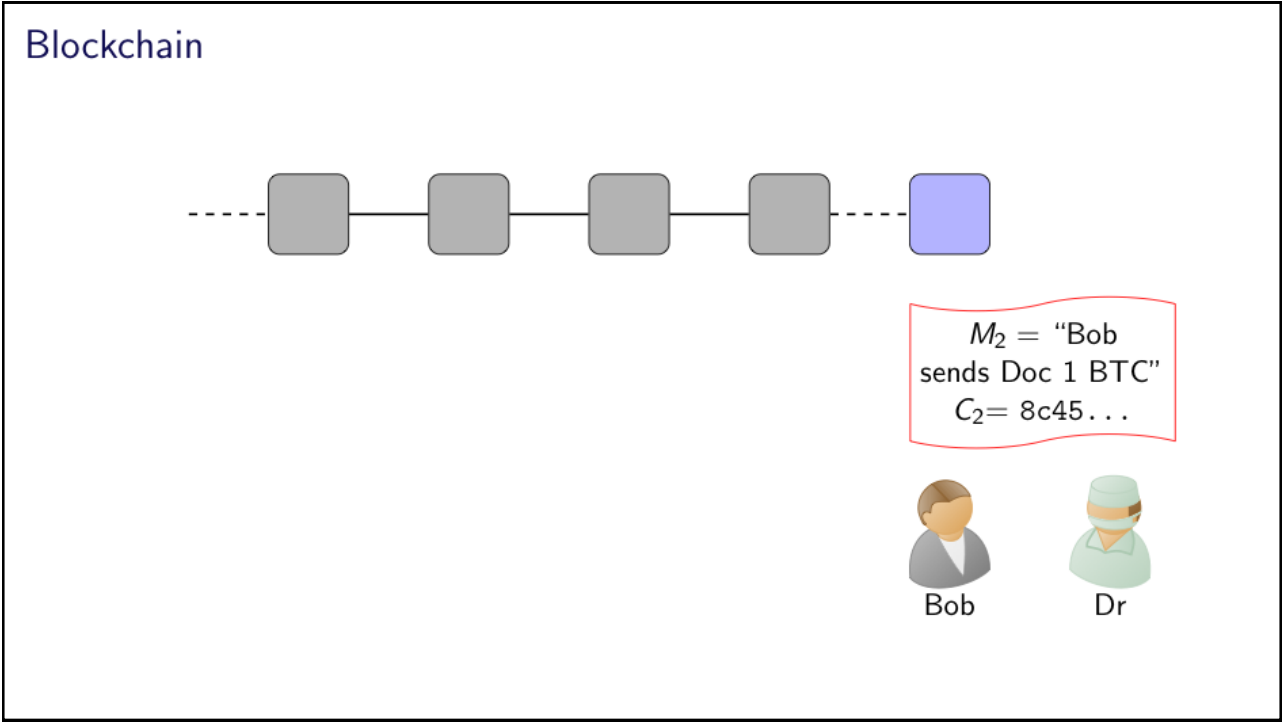


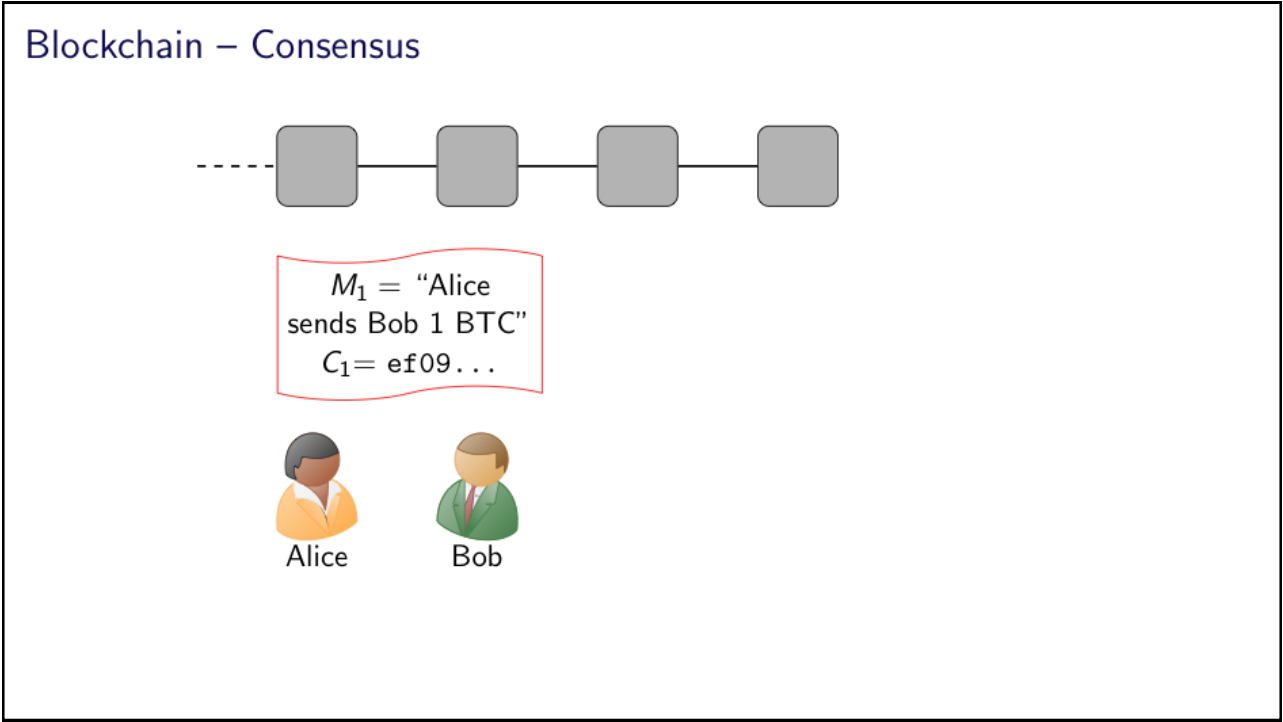
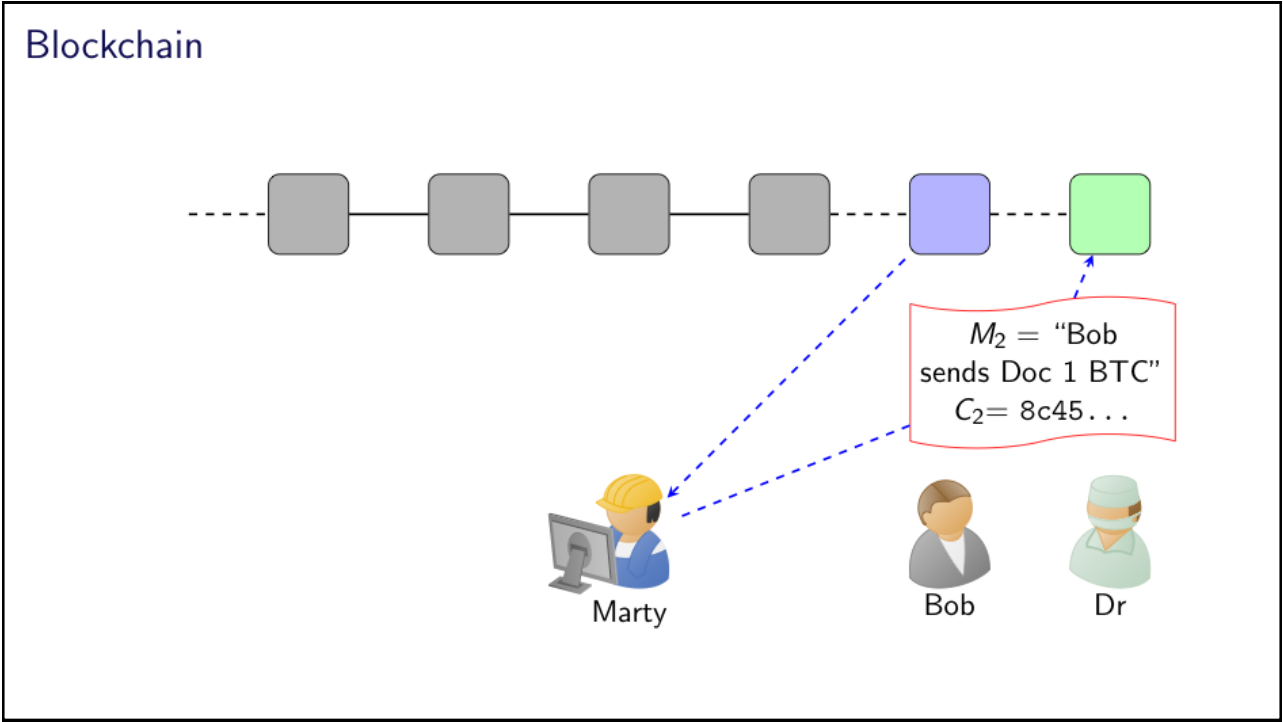
Alice



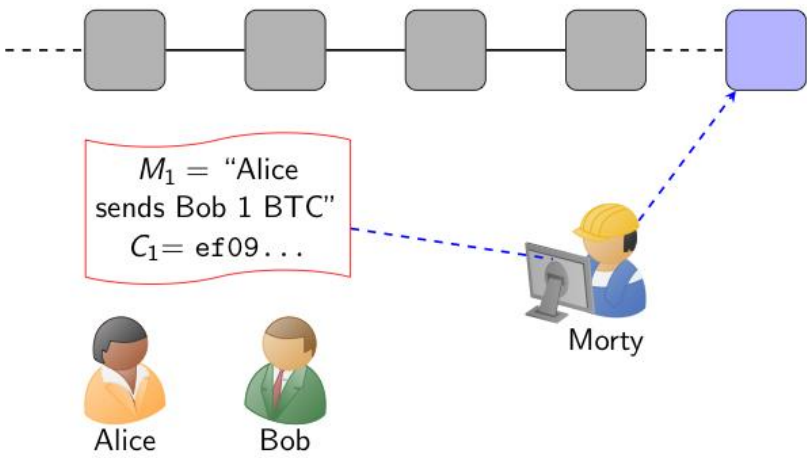
Bob



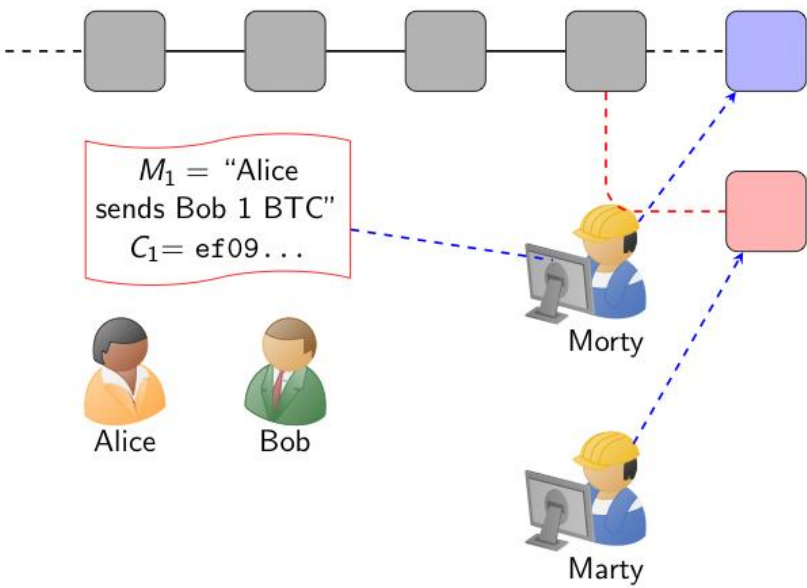




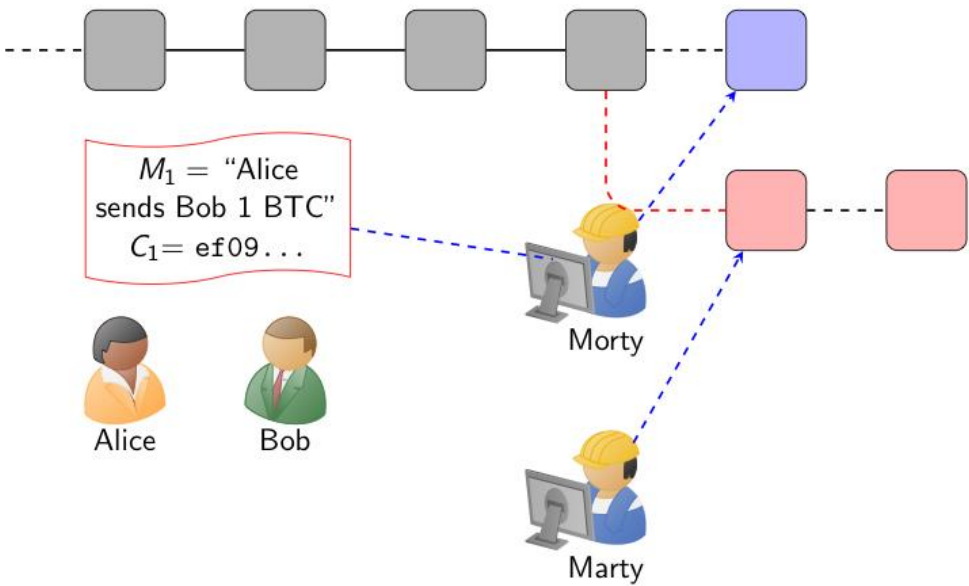
Blockchain – Consensus



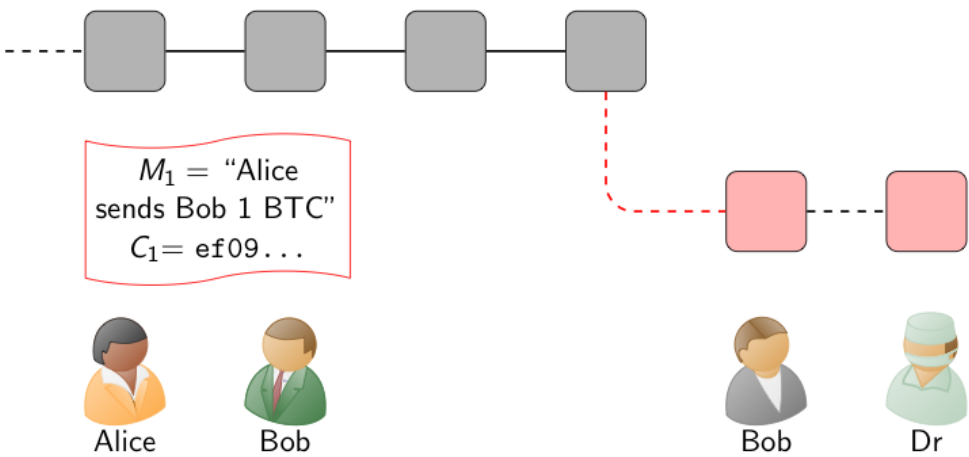
Blockchain – Consensus



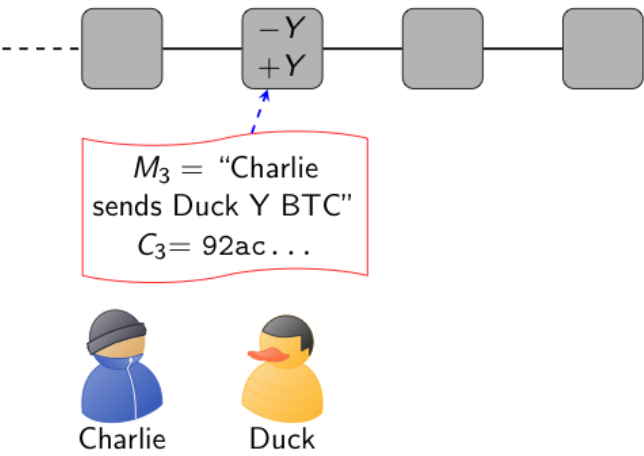
Blockchain – Consensus



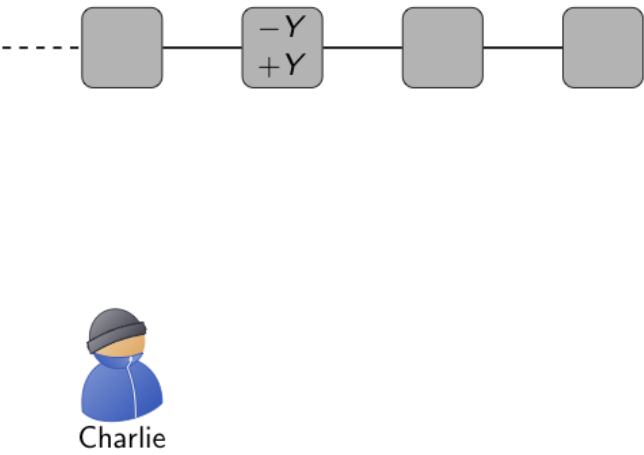
Blockchain – Consensus



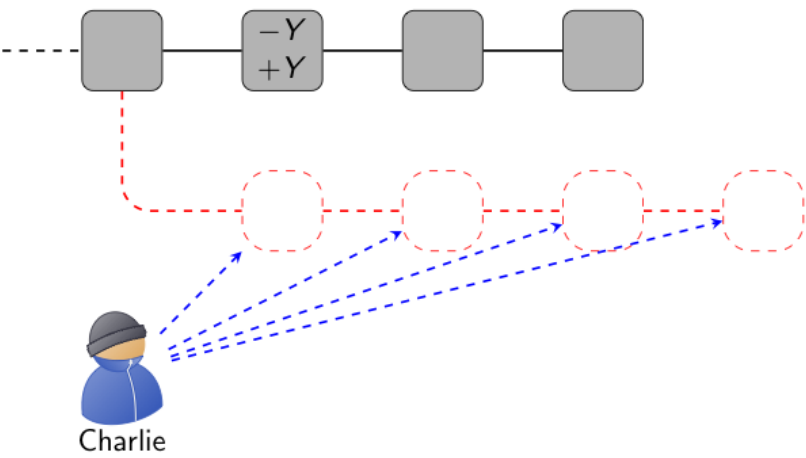
Blockchain – Permanence



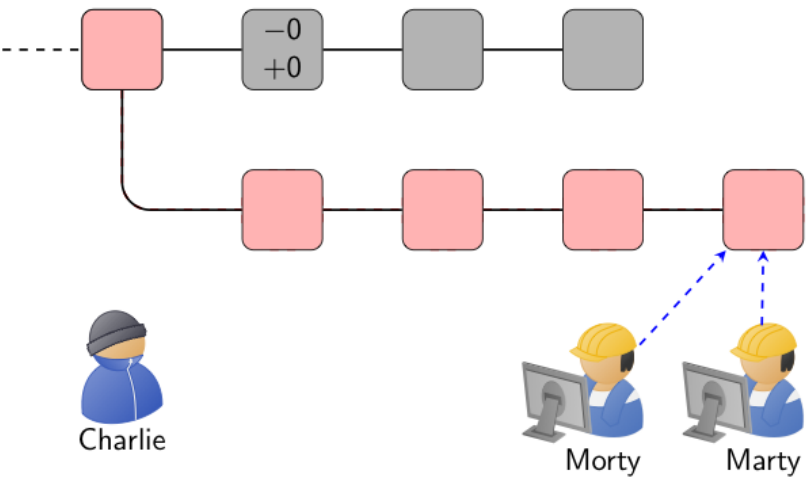
Blockchain – Permanence



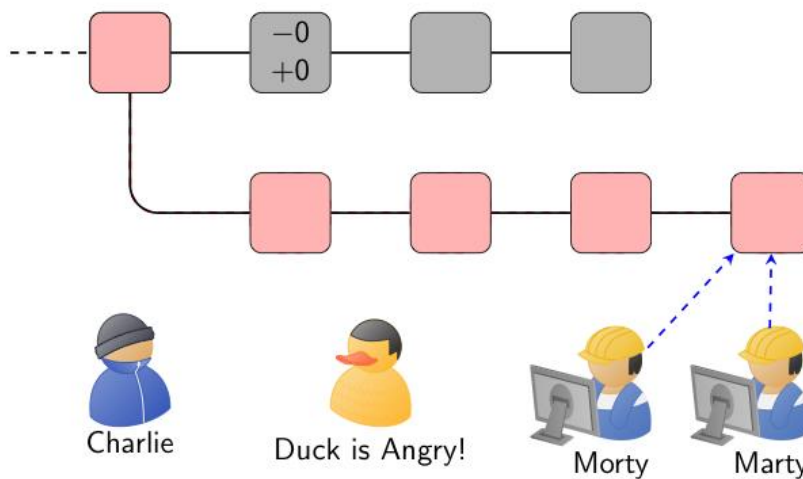
Blockchain – Permanence



Blockchain – Permanence



## Blockchain – Permanence



## Blockchain – Protocol and Incentives

- The blockchain "protocol" proscribes how miners update the ledger
- Incentives for miners need to align for
  - Consensus
  - Permanence
- Key Property
  - Miners are paid with "on-chain"

# Blockchain – Protocol and Incentives

- The blockchain “protocol” proscribes how miners update the ledger
- Bitcoin Protocol


“Longest Chain”

“Proof of Work”

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Source: Coinbase/FRED. Daily, Bitcoin (CBTC): 2014-12-01 -- 2021-11-17 (N=2544)



## Blockchain for all things?

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- What are the advantages (costs) of:
- Recordkeeping
- Decentralized
- Competitive

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## Advantages

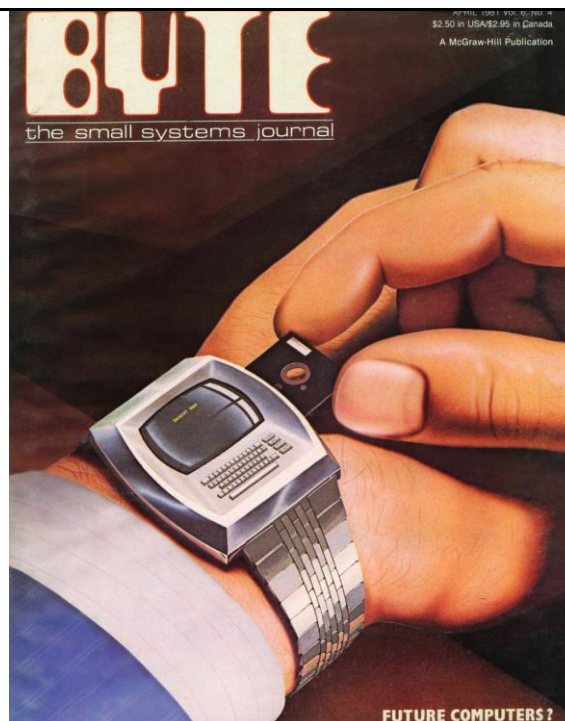
- Data and database that is not owned by one entity

i.e. not your competitor or supplier

- "Smart Contracts"

Transactions that execute with "commitment" that does not need a court

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## Wrapping up...

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- Record-Keeping  
Ordered list of “transactions”  
Ledger
- Decentralized  
“diaries” vs “transcript”
- Competitive  
Incentives for “miners” are important

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# TEPPER

Kellie McCaffrey

*Senior Director, Executive Education*

Tepper School of Business, Carnegie Mellon University

[kelliem@andrew.cmu.edu](mailto:kelliem@andrew.cmu.edu)