Bitcoin: A New Internet Currency

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What is Bitcoin?

- A **peer-to-peer** internet currency that allows **decentralized** transfers of value between **individuals and businesses**.

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Bitcoin vs. bitcoins

- **Bitcoin** is the system
- **bitcoins** are the units

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Creating a currency from scratch

- Motivation
  - Distrust of financial institutions
  - Transaction costs
- Primary concerns
  - Transaction security
  - Double spends

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Distrust of financial institutions

- Any noncash transaction requires a trusted third-party administrator—commonly a bank or financial service provider.
- The system forces participants to trust financial institutions that are not always trustworthy.

Transaction costs

- Traditional payments are revocable, even on irrevocable services.
- Financial institutions act as an arbitrator between counterparties in disputed claims.
- Arbitration costs are passed on to consumers.

Transaction security

- Two levels of verification
  - Source is legitimate
  - Coins are legitimate
- Public/private key verification ensures the legitimacy

Double spends

- If the money is just digital codes, why not copy and paste to make more money?
  - Timestamps
  - Hashes
  - Block chain

Double spends

- Timestamp
  - Each transaction is packaged and publically recorded in the order it was carried out.
- Hash
  - The time-stamped group of transactions are given a unique algorithmically derived number

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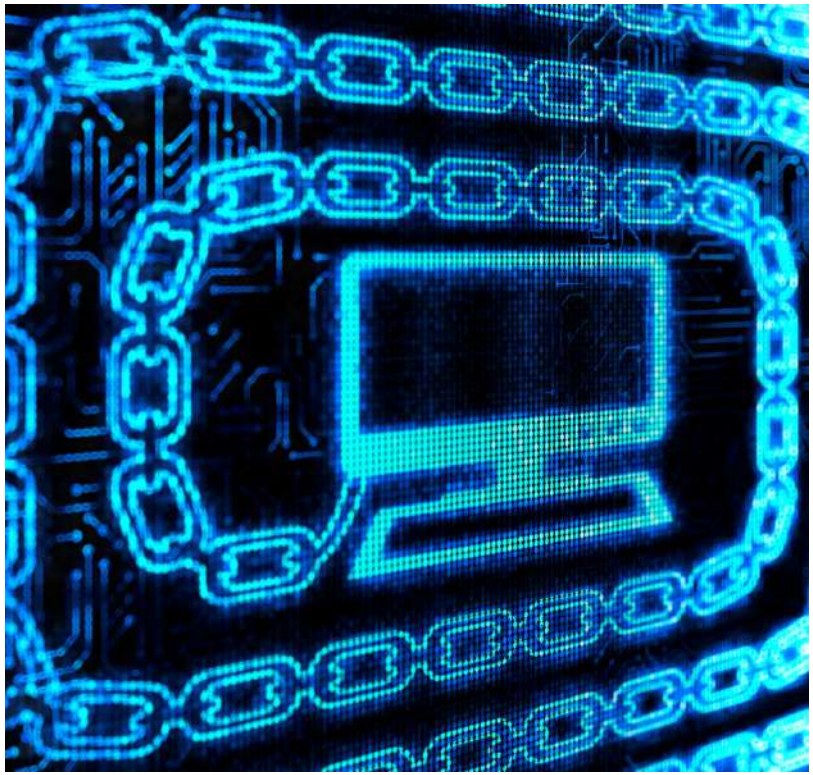
Double spends

- Block chain
  - Transactions are recorded in a community-built record of all transactions that acts as a proof-of-work.
  - Computers connected to the network accept the longest chain as accurate.



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Where do bitcoins come from?

- They’re mined, silly.
- High-powered computers solve complicated math problems.
- Each time a problem is solved, the finder is paid a bounty.

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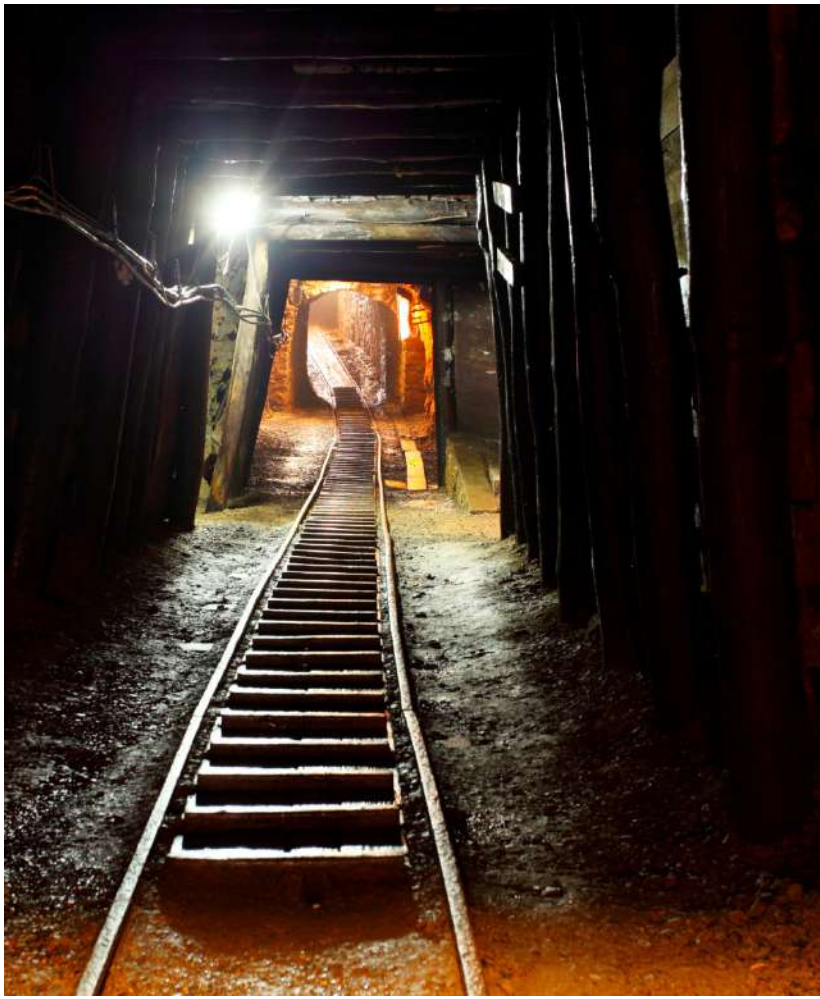
Mining bitcoins

- Miners solve complicated algorithms to find a solution called a hash.
- Finding a hash creates a block that is used to process transactions.
- Each new block is added to the block chain.



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Mining bitcoins

- Until there are 21 million bitcoins, miners are paid for finding a hash in new coin.
- After 21 million, miners will charge transaction fees for creating a new block.
- The amount paid per hash goes down by half about every 4 years.

Owning bitcoins

- Users create accounts called wallets.
- Wallets are secured using passwords and contain the private keys used for transferring bitcoins.

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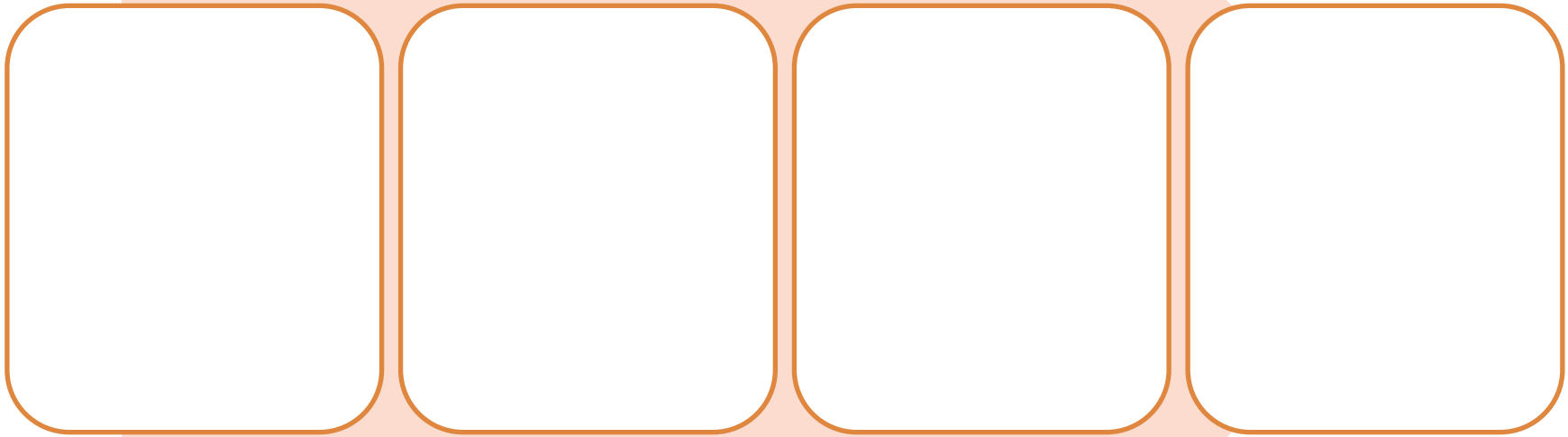
Spending bitcoins



Bitcoin security

- Computers accept the longest block chain, which inhibits hacking.
  - Hackers would have to create a longer chain of fraudulent information faster than the combined effort of all other computers.
- Public/private cryptography means individual bitcoins are secured when not being transacted.

Is it money?

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

Is it money?

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