CSE 3550/5000: Blockchain Technology

Lecture 1
Overview

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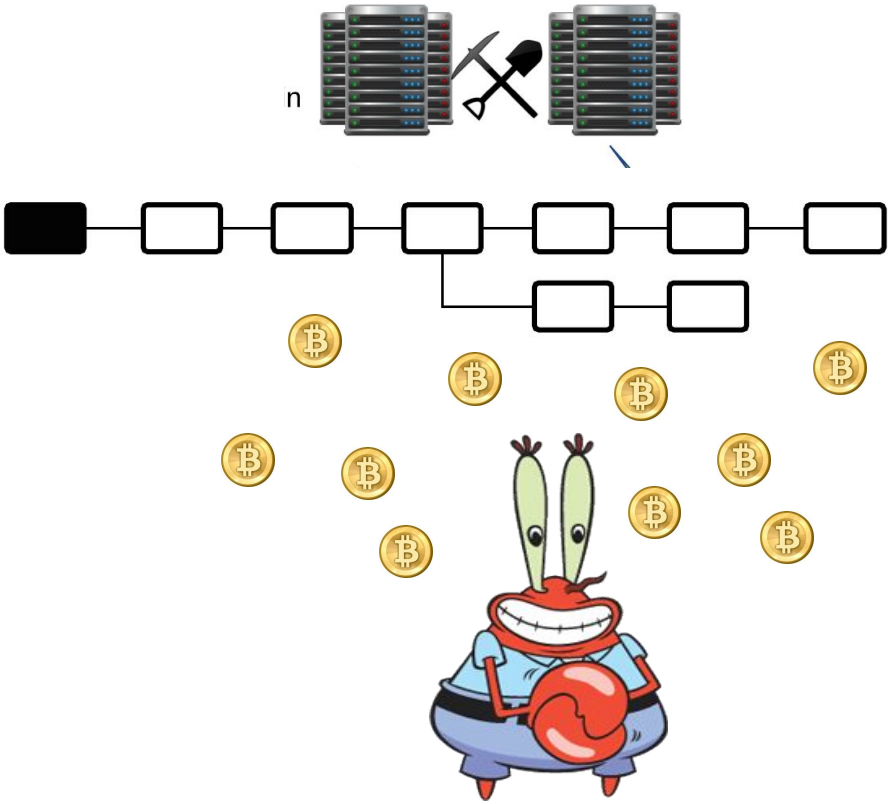
Outline

- Motivation.
- Brief history.
- Useful resources.

Once Upon A Time

Centralized Currency

Decentralized Currency



History

- A whitepaper posted online in 2008: “Bitcoin: A Peer-to-Peer Electronic Cash System,” by Satoshi Nakamoto.
- Described a distributed cryptocurrency system not regulated by any government.
- The system went live on January 2009.
- Now “Satoshi Nakamoto” is only associated with certain public keys on Bitcoin blockchain.
  - They were active on forums/emails/etc. until 2010.
- Currently there are hundreds of cryptocurrencies (https://coinmarketcap.com/).

Cryptocurrencies

- The use of cryptographic primitives and distributed consensus protocols to secure virtual money creation and flow between various parties.
- “A type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community” - European Central Bank.

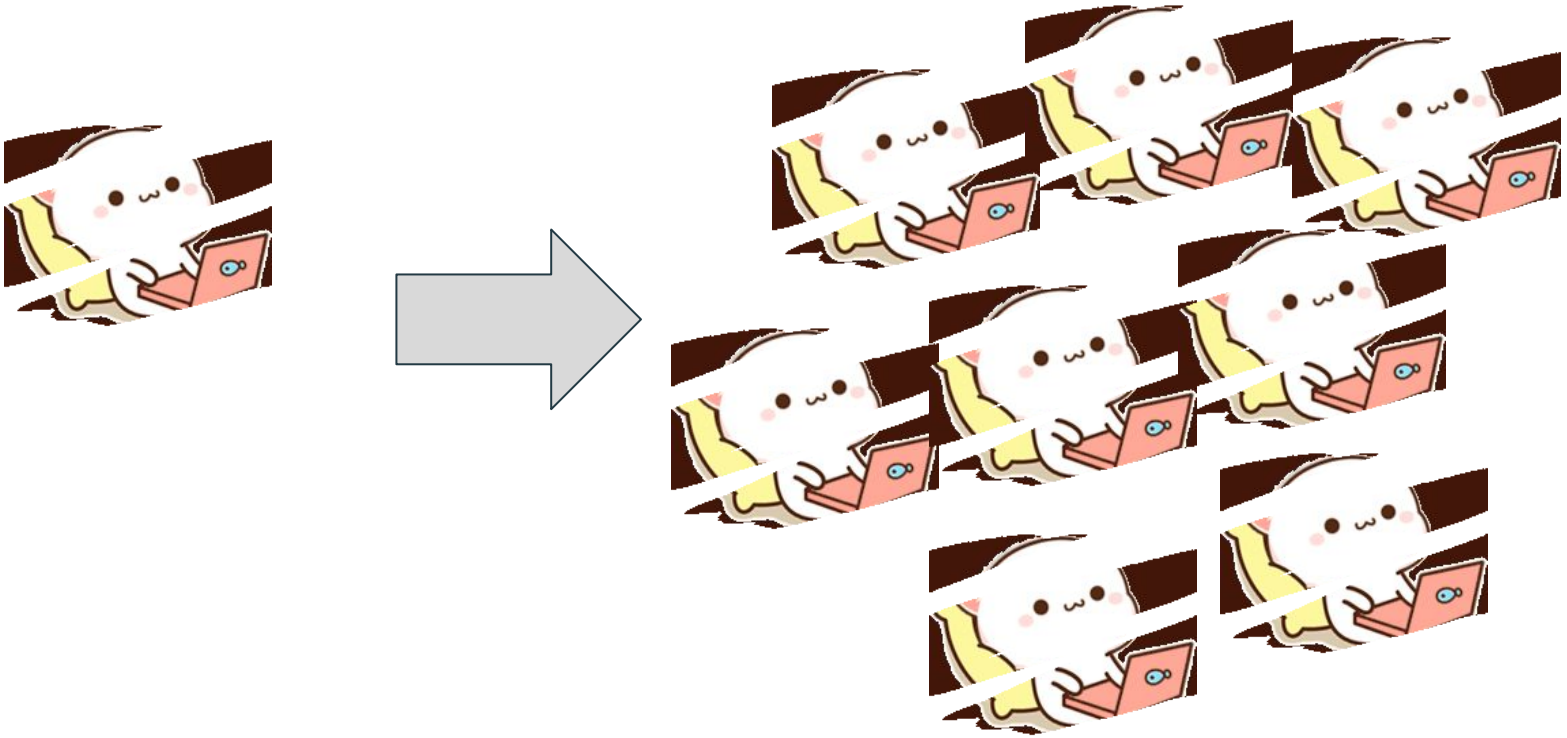
Blockchain

- An append only ledger.
  - Simply an immutable record of all transactions and actions performed in the system so far.
  - Each page of this ledger is called a block.
  - These pages are glued together by using a hash chain.
  - Adding a new page on the ledger is done through a process called mining.

Utility of Blockchains

- Initially, the goal was to build a decentralized virtual currency medium.
- Interest has shifted towards providing a decentralized service on top of this medium.
- Lately blockchains on their own (without involving any currency) are used in several applications.
  - Mainly to support transparency and public verifiability.
  - Examples include healthcare, business management, and supply chains.

Build a Global Virtual Computer



General-purpose functionality of a computer, but with the “decentralization” and “openness” of the Internet