Bitcoin: A Peer-to-Peer Electronic Cash System

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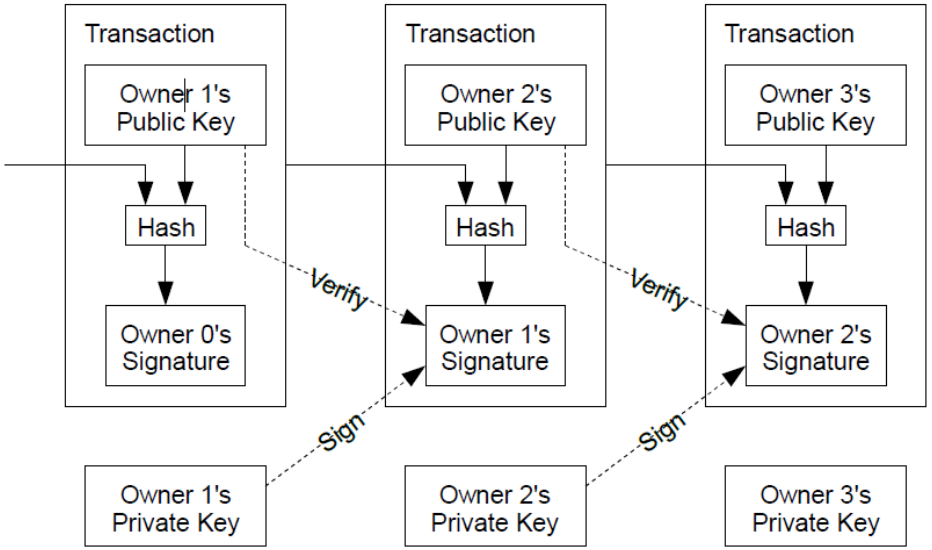
Introduction

- Bitcoin uses peer-to-peer technology to operate with no central authority or banks
- Managing transactions and the issuing of bitcoins is carried out collectively by the network.
- Bitcoin is open-source. Its design is public, nobody owns or controls Bitcoin and everyone can take part.

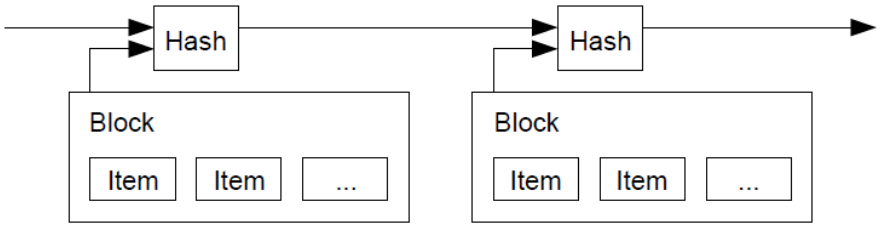
Transactions

- Public key- verify the ownership of signature.
- Private key- Use to sign the coin for owner verification.



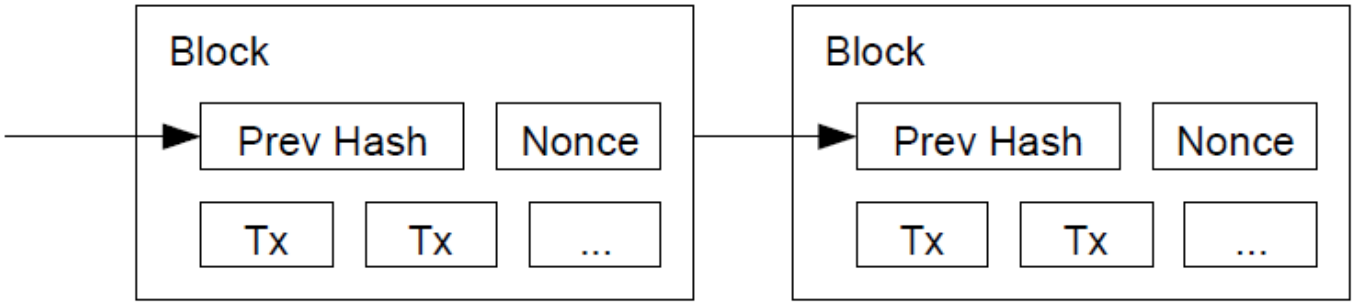
Timestamp Server

- Peer to peer let everybody know a coin history
- Prevent give use same coin twice, and all transition has to be public
- Example: User give some one coin then let everyone know at what time you give coin



How Do we Get bitcoins

- Use SHA 256 hash general a hash give 32 bits number, which we call mining
- Verify the node to node.



Calculations

p = probability an honest node finds the next block
q = probability the attacker finds the next block
q_z = probability the attacker will ever catch up from z blocks behind

$$q_z = \begin{cases} 1 & \text{if } p \leq q \\ (q/p)^z & \text{if } p > q \end{cases}$$

Conclusion

- Bitcoin is a framework of coins made from digital signature, which provides strong control of ownership, and prevent a from double spending.