BlockChain and Cryptocurrency

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Block header

The head of the block is divided into six components:

1. the version number of the software
2. the hash of the previous block
3. the root hash of the Merkle tree
4. the time in seconds since 1970–01–01T00: 00 UTC
5. the goal of the current difficulty
6. the nonce

The version number of the software

The software version number does not matter in most cases. However, a miner with a particular version number can signal which protocol decisions he supports.

The hash of the previous block

The hash of the previous block is, so to speak, the chain of blockchains. Because the hash of the previous block is contained in the hash of the new block, the blocks of the blockchain all build on each other. Without this component, there would be no connection and chronology between each block.

The root hash of the Merkle tree

All transactions contained in a block can be aggregated in a hash. This is the root hash of the Merkle tree.

The Nonce

The nonce is the variable incremented by the proof of work. In this way, the miner guesses a valid hash, a hash that is smaller than the target.
The six components form the block header. The block header plays a fundamental role in Bitcoin because it connects all blocks together. You can imagine it like the cockpit of a truck. Here are the important papers with which the truck comes through the controls of the network.

What is Blockchain

- A system in which a record of transactions made in bitcoin or another cryptocurrency are maintained across several computers that are linked in a peer-to-peer network.
- Blocks store information about who is participating in transactions. A block for your splurge purchase from Amazon would record your name along with Amazon.com, Inc. Instead of using your actual name, your purchase is recorded without any identifying information using a unique “digital signature,” sort of like a username.

How Blockchain works?

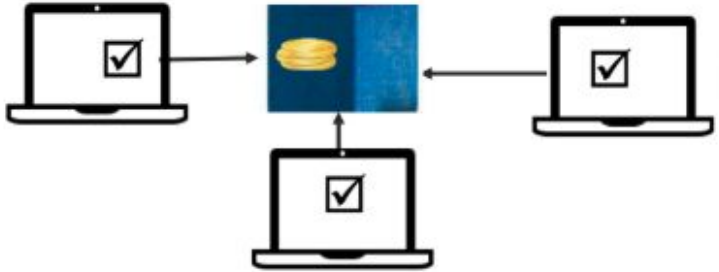
A wants to send money to B

A

The transaction is represented as block

The block is broadcast to every node in the network

Sufficient miners approve the transaction



The transaction is added to Blockchain

B receives the money

B

Types of Blockchain

- Public Blockchain
- Private Blockchain
- Consortium Blockchain

Public Blockchain

A public blockchain is a non-restrictive, permission-less distributed ledger system. Anyone who has access to the internet can sign in on a blockchain platform to become an authorized node and be a part of the blockchain network. A node or user which is a part of the public blockchain is authorized to *access current and past records, verify transactions or do proof-of-work for an incoming block, and do mining*.

Private Blockchain

A private blockchain is a restrictive or permission blockchain operative only in a closed network. Private blockchains are usually used within an organization or enterprises where only selected members are participants of a blockchain network. The level of security, authorizations, permissions, accessibility is in the hands of the controlling organization.

Consortium Blockchain

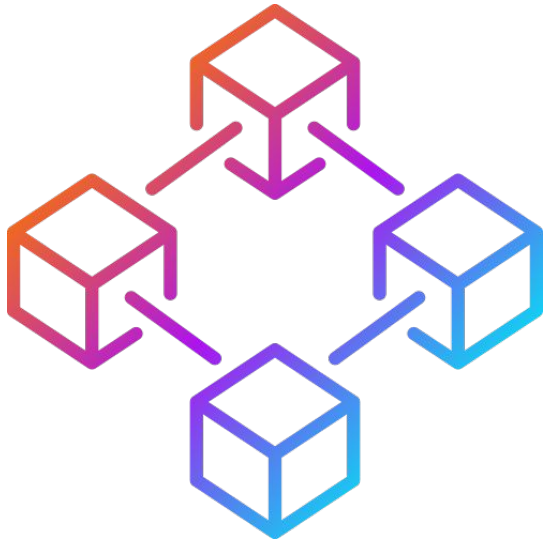
A consortium blockchain is a semi-decentralized type where more than one organization manages a blockchain network. This is contrary to what we saw in a private blockchain, which is managed by only a single organization. More than one organization can act as a node in this type of blockchain and exchange information or do mining. Consortium blockchains are typically used by *banks*, *government organizations*, etc.

Why do we need Blockchain

- No Third Party Required
- Transactions are fast.
- BlockChain is Virtually Impossible to hack
- Have the ability to perform real time transactions
- Saves Time

Why do we need Blockchain

- No Centralized Authority.
- Saves Money



Application of Blockchain in 2020

- Companies are using blockchain to reshape marketing functions. IBM launched blockchain-as-a-service (BaaS) to help brands like Walmart track food production.
- In the Travel industry, consulting firm Accenture PLC (ACN) in conjunction with the World Economic Forum has developed the Known Traveler Digital Identity System.

Application of Blockchain in 2020

- In the financial-services sector, blockchain technology has disrupted the industry with many applications, like automated risk assessment and technology-guided portfolio management. JPMorgan has introduced the JPM Coin, a digital token based on blockchain technology, for transfer of payments between institutional accounts.

Future Application of Blockchain

- Smart Appliances
- Supply Chain Sensors
- Blockchain Government
- Public value/ community
- Blockchain Identity
- Passports
- Birth, wedding, and death certificates
- Personal Identification

Decentralized IoT

The IoT technology is based on a network of interconnected objects that gather and transmit information seamlessly from one end to the other. This means there is a centralized point of control that regulates the flow of information throughout the network. However, a centralized point of control is not only inefficient but also risky, as there is only a single point of failure, meaning any malfunction in the central server will lead to the failure of the entire network. A decentralized network enabled by blockchain will eliminate or minimize any security or functional risks.

Secure elections

There have been very few major elections in recent history that have been free of controversy. Claims regarding vote manipulation, external influence, and fake voter identities have become a part of almost every election. Such issues are caused due to a lack of transparency and limited access to information for the public. Using blockchain as the underlying platform in democratic voting processes will eliminate any chance of foul play, by providing a transparent, decentralized platform where information is updated in real-time. This also prevents the need for conducting elections in numerous phases across multiple days. Instead, polling can be conducted throughout different regions in a single window, in a single day.

Transparent betting

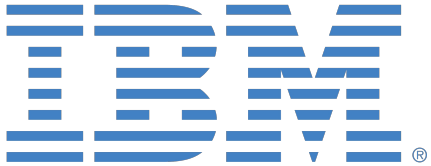
Although betting is illegal in many places, it is still allowed and well-received in certain geographies and fields, such as in football in the UK. Betting can transcend the field of sports and can be used for rewarding accurate predictions regarding more significant, real-world events like future market trends, weather predictions, and political outcomes. Betting can be used in the field of market research and consultation, where analysts can subject their predictions to betting and can get rewarded when their predictions come true, through smart contracts. This will improve the quality and reliability of predictions and forecasts, which will benefit everyone involved, from the people performing the predictions to the people using the predictions to make real-life decisions.

Future of the World with Blockchain

Future of the World with Blockchain

According to Forbes, with time the trust factor in the capabilities of blockchain is expected to rise. The real impact of a distributed ledger is still under speculation, but given the spurt of applications already crowding the markets, it is only a matter of time before blockchain penetrates every industry sector. This universality of blockchain can be compared to “all things digital,” which Gartner predicted in 2017, and within two years that prediction turned into a formidable reality.

Companies Investing In Blockchain



Conclusion

Blockchain is the Technology that has unlimited potential if we let it grow it could be a major leap in technology for a more secure, efficient and a interconnected world.

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