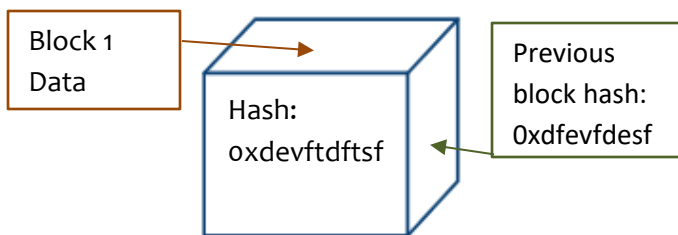


Blockchain

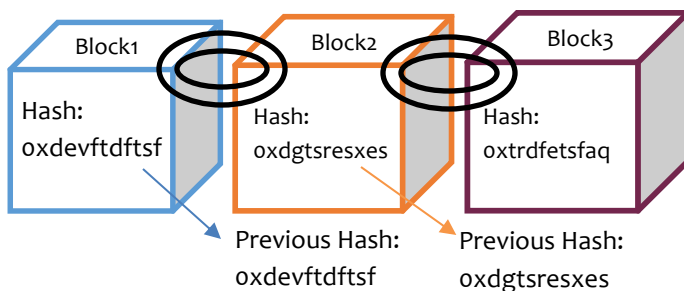
Blockchain Definition: A system which records transactions, made in bitcoin or other cryptocurrencies, as an open ledger across several computers checking information with the use of a peer-to-peer network.

Open. Decentralized. Data Base. Trust. Distribution. Digital Passport.

How does blockchain work?



- Anyone that has access to the internet can create a block, therefore adding or creating information that is part of the chain. When a new block is made it contains the data, a new hash, and the old hash that connects it to the previous block.



- Each block is connected to the one before and after it — creating an irreversible, immutable chain. If the information of a middle block is changed the hash also changes, making other blocks connected to it invalid because the previous hash does not match anymore.

What?

Assists with transactions that have value like property, goods, services, medical files, land titles, citizen input, and many others. Currently used for technology like Bitcoin but has also been used in agriculture to trace the origination of food products.

Why?

Blockchain is a safe process that uses a decentralized ledger that is open to the public to transfer information and make transactions. The technology uses a safe way that does not allow the data to be tampered with. If it is tampered with, the chain is disrupted and becomes incorrect information.

Definitions

Cryptocurrencies: a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank.

Bitcoin: A new digital currency that is made up of mathematical codes and problems which is used to make transactions between individuals that operates separate from central bank.

Hash: a unique digital code, like a finger print, that identifies the information that is encoded in the block. If the information changes even slightly the hash will also change creating a new hash. A hash is a one-way function meaning that you cannot derive the original information from the hash.

Blockchain

Example

When you are traveling you go online and buy a ticket to where you are going - possibly a train, plane, or bus ticket. With the use of blockchain, it can record the information and turn it into a block. That individual ticket then becomes a block and is connected to other tickets the company has sold in an open ledger. These ledgers then record items such as all transactions for a certain airplane route, or the entire plane network, comprised of every ticket ever sold and every journey made. The whole process is made transparent to future customers, as well as the airline company. But with the use of hashes and private users' confidential information is kept private.

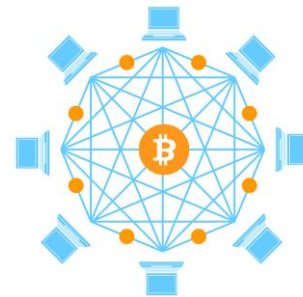
Another impact is in the agriculture industry. For example, the traceability of our food from field to fork has become a topic that consumers are interested in. Blockchain can be implemented to track an individual good like soybeans, cotton, or beef through the production process. As items are purchased or transitioned into a new market it is recorded in an online ledger. When the product is sold in a store, a QR code would tell the story of where the product came from.

Block Building/ Information creation:

1. Cryptographic puzzle must be solved: the internet collects the data, creates a hash and tries to connect it to previous blocks.
2. Proof-of-work: the computer shares the solution with other computers via the internet.
3. Network confirms the proof of work: if puzzle is verified the block is added to the chain; if it is not valid the block is not added to the chain.

Real World Use

- File Storage
- Food Safety- Traceability
- Collecting taxes
- Data Management



Example of a Blockchain transaction history

TxHash	Block	Age	From	To	Value	[Tx Fee]
0x2d055e4585ae2a...	5629306	16 secs ago	0x003e3655090890...	0x2bdc9191de5c1b...	0,004741591554641 Ether	0.000294
0xb4d37c791ff4cde...	5629306	16 secs ago	0x8c3b4faf13e0e4...	0xf14cb3acac7b230...	0,744767225 Ether	0.000294
0x9979410dcb5f4c...	5629306	16 secs ago	0x99bcd75abbac05...	0x2d42ee86390c5b...	0,016294 Ether	0.000294
0x189c4d4aa09be...	5629306	16 secs ago	0x175cd602b2a1e7...	0xd39681bb0586fb...	0,01 Ether	0.000294
0xda0e9bbb11fb77...	5629306	16 secs ago	0x73a065367d111c...	0x01995786f14357...	0 Ether	0.00150007
0x6be498fafad9acb...	5629306	16 secs ago	0xa3eb206871124a...	0x8a91cac422e55e...	0,029594 Ether	0.000294