

A digital illustration of a blockchain network. It features a dark blue background with vertical columns of binary code (0s and 1s) in a lighter blue. A network of nodes and blocks is depicted with glowing lines. Nodes are labeled 'NODE 01' through 'NODE 05' and 'NODE 03'. Blocks are labeled 'BLOCK 01' and 'BLOCK 02'. A large, pixelated Bitcoin symbol (B with two vertical lines) is positioned in the center. The text 'Deep Dive on' is in yellow, 'BLOCKCHAIN' is in blue, and 'Journey' is in yellow.

Deep Dive on BLOCKCHAIN Journey

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Welcome to the Journey of Deep Dive on BlockChain

- BlockChain understanding baseline and reviewing the basics
- Why BlockChain?
- Cryptography and its association with BlockChain
- Where is BlockChain being used today?
- What is on a BlockChain?
 - Distributed Ledger
 - What is a Block?
 - Nonce
 - Genesis Block
 - Provenance
 - Consensus (Proof of Work/Proof of Stake)
- Types of BlockChain
- When not to use BlockChain
- The future of BlockChain
- DEMO: Learning BlockChain by Building one

Why are we here?



- Why do I want to learn Blockchain?
- Do I Want to make Blockchain my career?
- What do I want by the time I leave this place?
- How deep I want to go for programming Blockchain?

Blockchain recommended resources

1. Blockchain Business Overview - TedTalk by Dan Tapscott on Blockchain.

https://www.ted.com/talks/dan_tapscott_how_the_blockchain_is_changing_money_and_businessBlockchain

2. Blockchain Technology Foundation by Anders Brownworth , one of the most popular foundational understanding

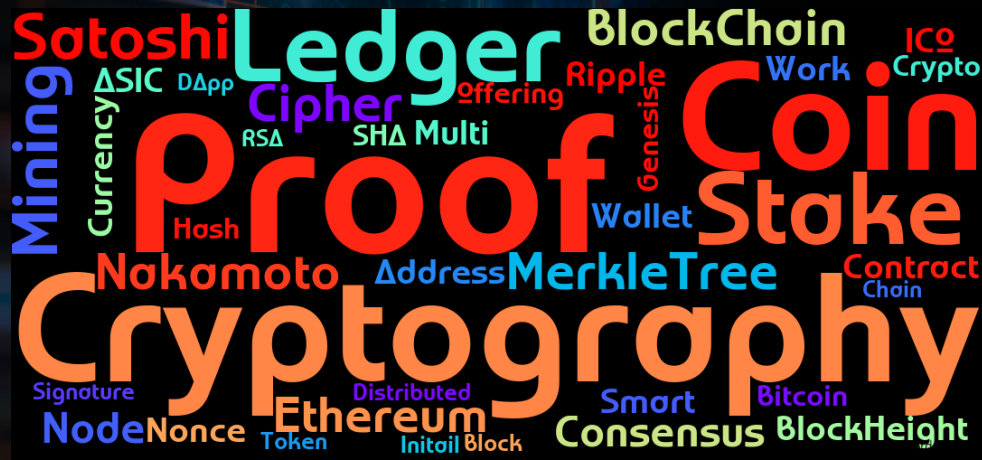
https://www.youtube.com/watch?v=_160oMzblY8

3. This is a very lucid explanation that helps cover the basics from a user perspective and understand the high-level technology for Blockchain.

Build Basic Blockchain from Groundup using Python -

<https://hackernoon.com/learn-blockchains-by-building-one-117428612f46>

Lets see if you have heard or used these before?



#Hashing

#Public Key Encryption

Variable size input



Hashing function
 $f(x)$



fixed size output

Wordc.net

Why? BLOCKCHAIN

- Let us ask ourselves where the journey has started in 2009 with Bitcoin
- Address Trust
- Be Open
- Provide Integrity in transactions



REDUCES COST
by eliminating manual processes (ex. reconciliation between multiple isolated ledgers, administrative processes, etc.)



INCREASED SPEED
of transactions and settlements through immediate distribution



INCREASED SECURITY
through use of cryptography



REDUCED FRAUD
by time-stamping entries and sharing a common, immutable ledger across the network



REDUCED RISK
of single points of failure & attack through distributed network nodes

Bitcoin Block time – ~ 8 to 20 min

<https://bitinfocharts.com/comparison/bitcoin-confirmationtime.html#6m>

Ethereum Block time - ~15 seconds

<https://etherscan.io/chart/blocktime>

Concepts to understand on a BLOCKCHAIN

Block: # 1

Nonce: 11316

Data:

Prev: 00000000000000000000000000000000

Hash: 000015783b764259d382017d91a36d206d0

Mine

Block: # 2

Nonce: 35230

Data:

Prev: 000015783b764259d382017d91a36d206d0

Hash: 000012fa9b916eb9078f8d98a7864e697ae83

Mine

Block: # 4

Nonce: 116068

Tx:

\$ 12.19	From: Rick	->	Ilsa
\$ 17.96	From: Capta	->	Strass
\$ 276.1	From: Victor	->	Ilsa
\$ 97.11	From: Rick	->	Sam
\$ 119.€	From: Capta	->	Jan Br

Prev: 0000a9dd50de891b2de8601c6d933c586152

Hash: 0000aa5cceed53f9078325617d14f0c28903

Mine

Block: # 5

Nonce: 147675

Tx:

\$ 14.12	From: Denis	->	Edmu
\$ 2,76€	From: Lord	->	John I
\$ 413.7	From: Kathe	->	Miss

Prev: 0000aa5cceed53f9078325617d14f0c28903

Hash: 00002855f5cdee83cecd78c5c16d712aa5b1

Mine

Block: # 4

Nonce: 116068

Tx:

\$ 62.1€	From: Rick	->	Ilsa
\$ 867.€	From: Capta	->	Strass
\$ 276.1	From: Victor	->	Ilsa
\$ 7.13	From: Rick	->	Sam
\$ 119.€	From: Capta	->	Jan Br

Prev: 0000a9dd50de891b2de8601c6d933c586152

Hash: f89526817d4cf7a43a526a2b6e6c2ec7cdc86f

Mine

Block: # 5

Nonce: 147675

Tx:

\$ 14.12	From: Denis	->	Edmu
\$ 2,76€	From: Lord	->	John I
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Prev: f89526817d4cf7a43a526a2b6e6c2ec7cdc86f

Hash: a7fc03ebf82ecaf46731c6698a039a4a361604

Mine

- ☐ Distributed
- ☐ Genesis Block
- ☐ Signing + Hashing + Encryption
- ☐ Provenance
- ☐ Consensus (Proof of Work, Proof of Stake)

Different types of BLOCKCHAIN?

- ❑ Who has the ability to run the node?
- ❑ Level of importance on anonymity, immutability, efficiency, and transparency

❑ Public

- ❑ anyone can be a user or run a node
- ❑ value anonymity, immutability, and transparency over efficiency
- ❑ Identity is safe
- ❑ Eg: Crypto currencies like Bitcoin

❑ Permissioned

- ❑ who can be a user to run a node is permissioned by an authority
- ❑ value immutability and efficiency over anonymity and transparency
- ❑ Eg: Industry bodies like Banks to settle international transactions

❑ Private

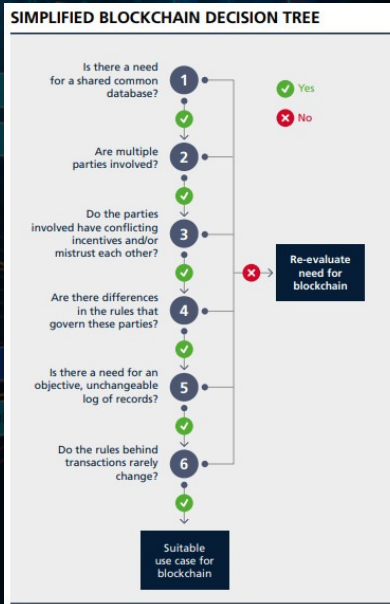
- ❑ operated by one entity
- ❑ value efficiency over anonymity, immutability and transparency
- ❑ Eg: Limited usecases , can be used with in an Organization



BLOCKCHAIN Use cases

- ❑ Australian Securities Exchange
 - ❑ Near real time settlement of equity transactions
- ❑ Overstock.com
 - ❑ Transparency, Efficiency, Accessibility
- ❑ Smart Properties – Land Records Management
 - ❑ Bridge gaps between physical and digital
 - ❑ Zero down time, fault tolerant
- ❑ Digital Democracy – Voting
 - ❑ Trustless voting

When? **NOT** to use **BLOCKCHAIN**



<https://www.forbes.com/sites/groupthink/2017/11/28/to-blockchain-or-not-to-blockchain-its-a-valid-question/>



BLOCKCHAIN Frameworks & Resources

- ☐ Bitcoin Core
- ☐ Ethereum
 - ☐ ICOs
 - ☐ Smart Contracts
- ☐ Hyperledger
- ☐ and many others... like R3, CORDA etc

- ☐ Bitcoin White Paper
- ☐ Ethereum Platform
- ☐ Hyperledger White Paper
- ☐ Building your own Blockchain using Python

Journey of Deep Dive on Blockchain

Month	Goal
Month#1(April '18)	Exploring the basics Learn about Blockchain by building one
Month#2(May '18)	The Ethereum Blockchain Deploying your HelloWorld Contract Ethereum & Solidity Basics
Month#3(June '18)	Advanced Smart Contracts Building a Decentralized App
Month#4(July '18)	End to End testing of a Blockchain Application



BLOCKCHAIN

Thank you

Nagarro, CoderPlex & BlockChain4All community

Questions?