



## **Tech-bytes Newsletter April 2020**

Department of  
Computer Science  
&  
Computer Applications

### **BLOCKCHAIN TECHNOLOGY**

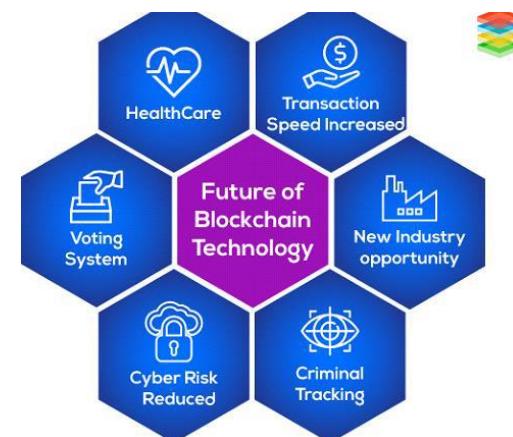
Blockchain technology created the backbone of a new type of internet. A blockchain, originally block chain, is a growing list of records, called blocks that are linked using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data (generally represented as a Merkle tree).

It is a protocol for the secure transfer of unique instances of value (e.g. Money, property) via the network without requiring the third party intermediates.

**Blockchain technology** is defined as a decentralized, distributed ledger that records the provenance of a digital asset.

It is a structure that stores the transactional records, also known as “chain”, and in a network connected through peer-to-peer nodes. This storage is referred to as a “digital ledger”.

BITCOIN is the prominent example of blockchain technology.



### **HISTORY**

- The first work on a cryptographically secured chain of blocks was described in 1991 by Stuart Haber and W. Scott Stornetta.
- In 1992, Bayer, Haber and Stornetta incorporated Merkle trees to the design.
- The first blockchain was conceptualized by a person (or group of people) known as Satoshi Nakamoto in 2008.
- In 2009, Nakamoto improved the design in an important way using a Hashcash-like method to timestamp blocks without requiring them to be signed by a trusted party and introducing a difficulty parameter to stabilize rate with which blocks are added to the chain.
- In August 2014, the bitcoin blockchain file size, containing records of all transactions that have occurred on the network, reached 20 GB (gigabytes).
- In January 2015, the size had grown to almost 30 GB.
- From January 2016 to January 2017, the bitcoin blockchain grew from 50 GB to 100 GB in size.
- The ledger size had exceeded 200 GB by early 2020.

## EMINENT PERSONALITIES



Gavin Andresen  
Former Bitcoin lead developer



Andreas Antonopoulos  
Author of Mastering Bitcoin

## WORD SCRAMBLE

INHGHAS  
ENOCN  
UTEEMHRE  
IMREN  
ODNE  
IBONCTI  
YPTOCCRNECURY  
OKNTE  
EPTYINCORN  
LOBCK

**Answers Page No: 4**

**“Blockchain is the technology tour de force”**

*- Bill Gates, Co-founder Microsoft*

**“The biggest opportunity set we can think of over the next decade”**

*- Bob Greifeld, CEO NASDAQ*

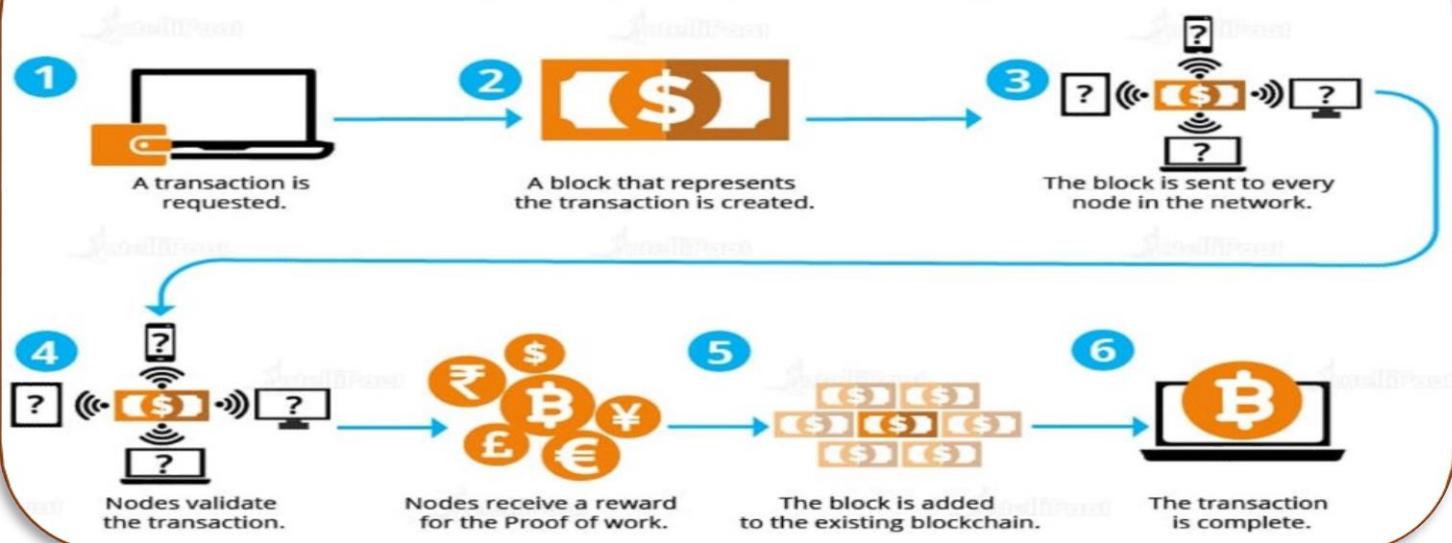
### MERKLE TREE:

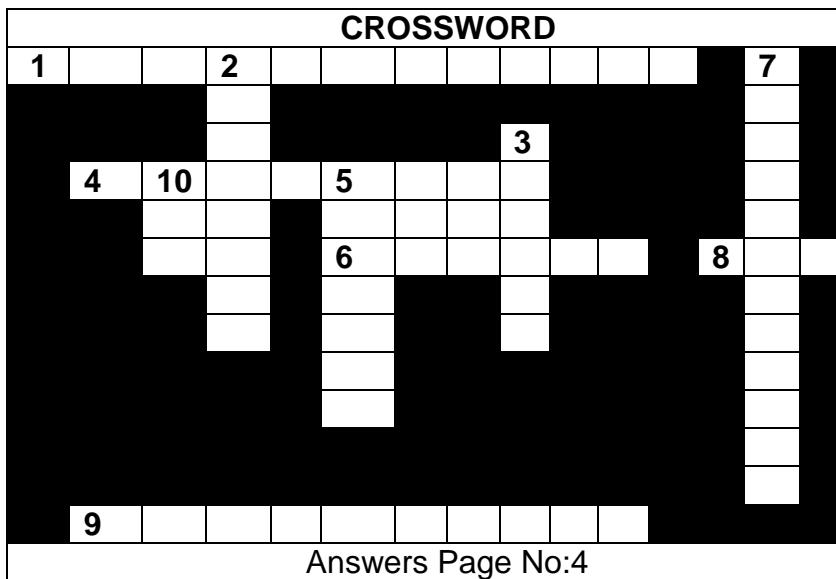
A merkle tree is a structure that allows for efficient and secure verification of content in a large body of data. This structure helps verify the consistency and content of the data. Merkle trees are used by both Bitcoin and Ethereum.

### BITCOIN:

Bitcoin, the decentralized network, allows users to transact directly, peer to peer, without a middle man to manage the exchange of funds.

## How Do Blockchains Work?





**Across:**

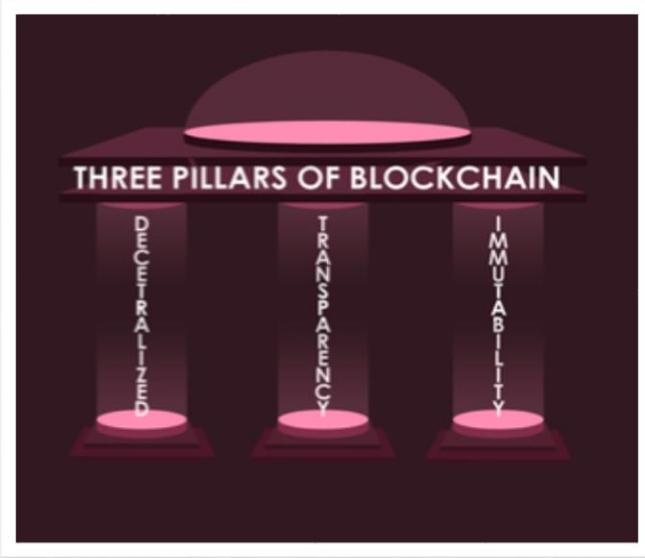
1. How are blockchain linked?
4. Where does bitcoin come from?
6. Which is popularly used for storing bitcoins?
8. What process the ethereum virtual machine?
9. What is the term for when a blockchain splits?

**Down:**

2. Which is important for blockchain?
3. Bitcoin is based on \_\_\_\_\_ blockchain.
5. Which US states introduced the bit license regulation for Cryptocurrency Company?
7. What characteristics makes blockchain tamper-proof?
10. Who opened a blockchain innovation research center in Singapore in July 2016?

**TOP 5 INDUSTRIES THAT USE BLOCKCHAIN TECHNOLOGY**

- **BANKING & FINANCIAL SERVICES**
- **SUPPLY CHAIN MANAGEMENT**
- **ENERGY & UTILITIES**
- **HEALTH CARE**
- **GOVERNMENT**



**MERITS**

- **Security** - Because of its digital signature and encryption, Blockchain is considered a highly secure framework.
- **Transparency** - Banks, as well as consumers, are notified of transactions being completed.
- **No hidden fees** – There is no need to pay intermediaries as the program is decentralized.
- **Ease of use** - With competent integration capabilities, blockchain has the advantage of being easy to use and fast.
- **No Downtime Issue** - In the blockchain, there is no downtime period, hence its service doesn't stop as it is hosted everywhere.

**DEMERITS**

- **Difficulty** – The blockchain isn't as easy as it seems, it can't be easily grasped by non-techie or old-generation citizens. One cannot have a trustworthy relation if they find it difficult to understand the process.
- **Network Size** – Blockchain require an extensive user network. If a blockchain does not possess a robust network with a widely distributed grid of nodes, it becomes more difficult to gain the full benefit.
- **Security Flaws** – The risk of 51% attack applies to blockchain solutions.

WORDS SEARCH														
P	R	J	N	P	A	X	Z	S	B	H	R	S	H	N
R	Q	E	D	O	F	D	M	B	V	A	Z	A	Z	I
W	Q	G	G	R	D	A	D	U	D	H	S	T	J	A
N	X	P	R	D	A	E	Y	R	X	C	B	O	P	H
S	S	K	F	E	E	W	S	N	E	R	Q	S	V	C
G	N	I	N	I	M	L	E	V	Z	S	I	H	F	K
B	I	T	C	O	I	N	L	R	K	N	S	I	G	C
X	U	C	T	P	P	A	D	A	I	E	G	R	B	O
Y	C	N	E	R	R	U	C	O	T	P	Y	R	C	L
H	S	O	L	B	I	Z	C	E	S	I	O	B	F	B
A	Y	G	L	V	G	E	S	A	M	T	G	O	C	W
S	G	X	A	U	T	T	U	N	P	A	R	I	T	M
H	D	N	W	I	N	T	G	Y	Q	K	V	O	D	U
N	U	U	L	E	Y	Y	R	A	S	S	E	T	S	L
K	P	M	T	F	F	C	G	O	G	S	F	S	E	D

Address Assets Bitcoin Blockchain Cryptocurrency Digital Ledger DAPP  
Fork Hash Litecoin Mining Node Reward Satoshi Testnet Wallet

## WORDS SCRAMBLE ANSWERS

*Hashing*

*Nonce*

*Ethereum*

*Miner*

*Node*

*Bitcoin*

*Cryptocurrency*

*Token*

*Encryption*

*Block*

## WHERE MIGHT BLOCKCHAIN USE CRYPTOGRAPHY?

### INITIATION AND BROADCASTING OF TRANSACTION

- *Digital Signatures*
- *Private/Public Keys*

### VALIDATION OF TRANSACTION

- *Proof of Work and certain alternatives*

### CHAINING BLOCKS

- Hash Function

## CROSSWORD ANSWERS

### Across:

1. *Cryptography*
4. *Mining*
6. *Wallet*
8. *Gas*
9. *Side chain*

Down:

2. *Planning*
3. *Public*
5. *New York*
7. *Immutability*
10. *IBM*

## TYPES OF BLOCKCHAIN

### **Public Blockchains:**

A public blockchain has absolutely no access restrictions.

### **Private Blockchains:**

A private blockchain is permissioned blockchain that work based on access controls which restrict the people who can participate in the network.

### **Hybrid Blockchains:**

A hybrid blockchain has a combination of centralized and decentralized features.

### **Sidechains:**

A sidechain is a designation for a blockchain ledger that runs in parallel to a primary blockchain.

*Blockchain technology can help tackle supply chain failures exposed by the COVID-19 pandemic and also boost the economic recovery process, the World Economic Forum (WEF) said recently.*

*Releasing a 'blockchain deployment toolkit' to help organizations improve future pandemic preparedness and accelerate an economic rebound post COVID-19, Geneva-based WEF said it is aimed at helping leaders maximize the benefits and minimize the risks of the technology.*