Block Chain Technology

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Abstract—

The Block Chain Technology is a modern technology that allows the database to interact with different networks. This specific technology is in continuous development. The block chain is widely used in many fields such as banking sector, food related management, payment, settlement, authentication and many such. Large number of chain network with a large number of characteristics and different scenarios form a block chain. This paper gives the deep information of block chain-its key aspects, types in which the block chain is divided, terminologies of the chain, how the chain works in fields and the chain's future scope.

I. INTRODUCTION TO BLOCK CHAIN

Blockchain is disruptive technology which can't be hacked and is transparent and secure and which is tamper free. Block chain is technology which uses peer-to peer format which includes nodes and does not agree to operate with centralized database system. Every Transaction are in the form of blocks and once authenticated, and then the blocks are attached to each other, the blocks are uninterrupted and could not be altered, thus the form a blockchain.

These chains are under cryptographic hashing which are totally secure, as once data is created it cannot be altered or changed. The decentralization is one of the strengths of the term block chain. As the typical data such as bank related details and other information are handled by the central government. However, the block chain does not need any centralized data to handle the network. While it ensures fraud free and authorized which protects from the attacks.

II. LITERATURE SURVEY

In the paper "Overview of Block Chain Cross Chain Technology" gives us the information of the new concept which is introduced to overcome the problems faced by the block chain. This paper also refers to the difference between Block chain and Cross Chain Technology. It discusses the technology, challenges and many more concepts related to the topic. It also gives us the solutions for secure data for the chains. This paper highlights the technology of cross chain that gives a deep overcome of addressing like fragmented and limited connectivity.[1]

In "Block Chain Technology in Food Supply Chains "explore the applications related to the food supply chains. It highlights the role of food supply includes the transperancy, security, efficiency and many more things related to Food supply Block Chain. It uses Ethereum based smart contracts which use food tracking, food distribution, ensuring the fraud and food safety. (2)

III. KEY ASPECTS OF BLOCK CHAIN

Here are some key aspects of block chain technology which makes it feature able.

1) *Immutable-* Immutable is term which makes the blockchain permanent and cannot be edited or altered.blockchain technology works with the group of nodes.

2) *Distrubuted-*All the participants connect to the network have a copy of data which is complete tranparent.the public data include all the information about each participants on the network.

3) *Secure-* The overall record in the blockchain are encrypted.After using encryption it adds the layer of security to the entire process.

4)*Consensus*- Each Blockchain has an agreement to help network make easy,quick and makes them unbiased to decide.

IV. IMPORTANT TERMINOLOGIES OF THE BLOCK CHAIN

1). *Node*-Node is member of Blockchain.

2)*Address*-Address is component of Blockchain which includes number and alphabets which helps to identify the entity in the network.it also help send and receive cryptocurrency transaction.

3)*Block*-Block is data Structure in block chain technology which give information of data about data which is block header. The very first block is called as genesis block.

4) *Hash*-perform the task on output data of a blockchain which know as Hash.

5)*Cryptocurrency*-the Encryption Technique used on blockchain Cryptocurrency.

6) *Ledger*-the record of blockchain transaction which digital and passed over the network.

V.   ARCHITECUTURE OF BLOCKCHAIN

In architecture of Blockchain in initiate stage the user start transaction such as sending the cryptocurrency and record the data. After all the transaction data are grouped together and form a block, includes amount, information about user, receiver, sender, identity etc., the created block is connected and broadcasted to computer node. After the connection to node the computer verifies and authenticate using

consensus method. If data is authenticated then it indicates the block of data follow blockchain rules and regulation. This Blockchain like Bitcoin in solve mineral mathematical problem. After the validation the piece of block is added to the chain and make it immutable. The transaction is finalled and then this authenticated block of data connected to the Blockchain permanently.
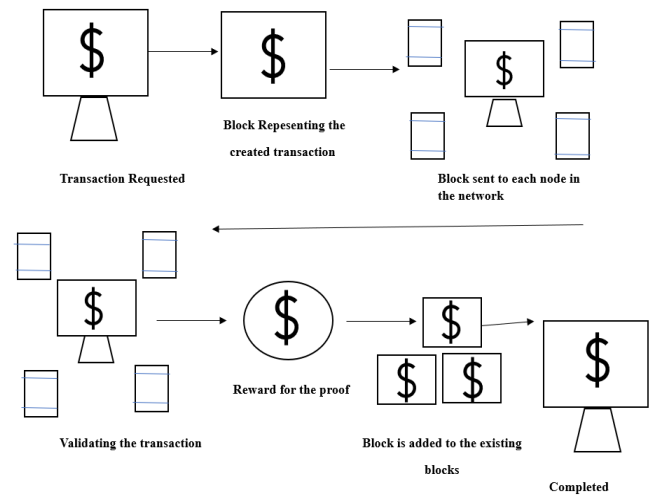

FIG.BLOCKCHAIN ARCHITECTURE

VI.   ADVANTAGES

1)*Decentralization*-The Blockchain is handled without any higher authority which reduces the risk of data manipulation

2)*Security*-The transactions of the chains are in encrypted and stored in multiple nodes which keeps it secure from hacking the data or altering the data.

3)*Transparency*-The transactions are collected and stored publically, allowing all the users to audit them, trusting the users.

4)*Cost Saving*-There are no third-party verification such as brokers, so it reduces the transaction costs.

5)*Cross Border Transactions*-International payments are faster than traditional banking system, the international payments are easier in the blockchain.

6)*Energy and Sustainability Application*- They are used for tracking the carbon credits, trading of renewable energy.

VII. APPLICATIONS

1) *Supply Chain Management*-It Ensured the traceability and transperency of the blocks.

2) *HealthCare-It securely stores the records of the patient and their medical data.*

3) *Real Estate*-It provides the smart contracts for the legal and property related documents.

4) *Finance and Banking*-Provides faster,cheaper and handfree banking transactions.

5) *Voting Systems*-Invulnerable digital elections.

6) *Digital Identiy Management*-Prevents the blocks or the transaction from theft or any kind of fraud.

7) *Intellectual Property and Copyrights*-It gives the project for different types of artist such as actors,etc.It also protects the content creators and their contents.

VIII. CONCLUSION

The Blockchain technology is distributed technology the data or information divide into blocks and every block are connected to previous block and Blockchain is secure and transparent technology it maintains digital record or information without using centralized database system or middleman. If once data is created it cannot be altered or deleted. we found blockchain is future technology which evolve in each and every application.

IX. REFERENCES

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