

Blockchain: How Blockchain Technology Functions?



The term Blockchain came into light in 2008 by Satoshi Nakamoto. However it gets its frame when bitcoin became popular and needed a secure system to record transactions. The original idea was to improve the quality of ledger system and data maintenance. It is the technology which passes the data from one network to another with the original information from its source. In blockchain other blocks are identical replica of source block where any change in source block will applied to all the blocks. This data sharing creates network blocks and the process of passing data from network to network becomes a chain of digitally recorded blocks and that's how it gets its name Blockchain. These blocks are in the form of merkle tree or hash tree where every block is connected with its source block and all information is passing through the top hash.

Structure of Blockchain

The concept of blockchain started with the word cryptography. Cryptography is making codes to secure the connection to get breach or read by third party which is not allowed to get into the server. Blockchain is fundamentally secured system to prevent data get alter, change or distributed to unauthorized party. Cryptography makes it sure that without the crypto key data can't be change from the source or any of its connected blocks. The owner of the server has two crypto keys one of them is private and another one is public. Public key is used by all the connected servers to check and identify the integrity of given information and private key is used by only owner of the source block. However these crypto keys are not enough to make changes in data it takes majority of connections to validate the changes after that it would be possible to alter information.

Functions of the Blockchain

In present time, every sector which is working in area of data collection and sharing has concern with its security. Data could be loss or alter which puts information of the data into wrong hands and it could be misused for any purpose. Blockchain is a perfect answer to these problems which creates multiple connections globally so the information is secured from getting lost or breach. These are the main reason why Blockchain is widely getting accepted-

- **Transparency-** Blockchain is secured by cryptography which higher it's standard on transparency on data and information. Transparency is most demanding approach in every sector where service, product and consumer, provider and producer relationship is obtained. Blockchain contains the information of source from where activity gets started when and who is in charge and all. For consumer's point of view its satisfaction to track all details and know what are they having. The major industries which are adding Blockchain in their business are Healthcare, Supply chain and Financial Institutions where data is the key asset for further development.
- **Integrity-** Data security is the priority of every company, tempering altering and distribution of data without permission is illegal. It makes deterred some major companies and forcing them to look for the other options for data security. Blockchain with its decentralization option creates transparent look of data, where users can look for the information and track the changes. There are now blockchain cloud data service providers with long term data storage and security. To ensure the companies these providers use non reversible signature on data so it's become more authentic and trustable.
- **Cost Efficient-** Companies are investing loads of money on record security and maintenance which is very costly and time consuming. With the help of Blockchain records would be more secure and easy to search whenever needed. Decentralization also creates transparency between companies, firms and business partners so there are no obligations and everyone can lookout for records information individually.
- **Time Efficient-** Most of the financial institution and companies are still moving with old and manual paper process where records are contain in registers which is not secured for long term. It is also difficult to find information in this paper based records. Blockchain make records digital and easy to use for long term.

Serving Areas

Currently blockchain is mostly used for financial systems. Due to its origin is connected with bitcoin its first serving area considered as banking and financial sector. However if we see deeply the major operations handled by blockchain is maintain records and secure their integrity and confidentiality. So there are many industries which would get improve with blockchain-

- **Transport and supply chain-** Highly optimized transport system has connected every part of the world to other one. In this situation it is difficult to understand which product is exported from where and who is the owner, developer and organizer of whole operation. This type of large shipment and transportation industries are also facing problems related to payments. Blockchain is a highly integrated cryptographic

system where all the data and process can be stored and accessible whenever needed.

- **Healthcare industry**– A patient's medical history describes the previous procedures and treatment taken by him. With the help of blockchain it becomes easy to track all the records of pre medical history and start new treatment according to it.
- **Insurance sector**- Corning in the insurance sector is more common these days, not only consumers and fraud individual sometimes insurance companies also use consumer's weak points as an advantage. Blockchain will help to stop these problems by maintaining records from the starting of an agreement to get it to end.
- **Online marketing**- Consumers are willing to get what they want, this perception leads to generate high demands in business. To fulfill these demands Omnichannel distributor and suppliers face conflicts among them related to payment delays, Delay in product delivery and non-satisfactory supply of product. To avoid these situation blockchain records can be used as an end to end description of the product and its origin, supplier, and payment method as well.

Scope of the Blockchain

Blockchain is the leading invention of this century in finance, record management and for secure crypto money transactions. Sometimes blockchain and bitcoin is considered as one which is wrong. Bitcoin is as a component used in blockchain, as an application blockchain has a wide functioning area which would develop more with time and research.

Every Industry is considering blockchain useful and trying to add its features in the system according to their requirements. Blockchain is still in its prior face to find its scope in business world. Some industries are using it with its basic functions. Government bodies are also finding blockchain as an improvement in their digitalization projects. In some countries like USA authorities are looking forward to add blockchain as a new voting system which can bring more transparency in Presidential election.

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