Blockchain And Its Applications

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Abstract—Blockchain innovation was initially presented as the innovation behind the Bitcoin decentralized virtual currency, yet there is the desire that its qualities of precise and irreversible information move in a decentralized P2P system could make different applications conceivable. Blockchain an apparently unassuming information structure, and a suite of related conventions, have as of late taken the universes of Finance and Technology by tempest through its earth shattering application in the present day crypto-currency Bitcoin, and all the more so due to the problematic advancements it guarantees.

Keywords—blockchain, bitcoin, security, public ledger.

I. INTRODUCTION

A blockchain is basically a distributed database of records or public ledger of all exchanges or advanced occasions that have been executed and shared among taking an interest parties. Every transaction in public ledger is confirmed by agreement of a lion's share of the members in the framework. Also, once entered, information can never be eradicated. The blockchain contains a certain and unquestionable record of each and every exchange at any point made. Bitcoin, the decentralized peer to peer computerized cash, is the most mainstream illustration that utilizes blockchain innovation. The computerized cash bitcoin itself is profoundly questionable however the basic blockchain innovation has worked immaculately and discovered extensive variety of applications in both budgetary and nonfinancial world.

The principle theory is that the blockchain sets up an arrangement of making a distributed record in the digital online world. This permits partaking entities to know for sure that a computerized occasion occurred by making an evident record in an public ledger. It opens the entryway for building up a vote based open and versatile computerized economy from an incorporated one. There are colossal open doors in this problematic innovation and upset in this space has quite recently started [7].

Current advanced economy depends on the dependence on a trusted party. Our everything on the web exchanges depend on putting stock in somebody to reveal to us reality—it can be a bank telling your amount is sent to the receiver; it can be a social media like WhatsApp telling your message is delivered; or it can be certification authority telling certain digital certificate is genuine. The truth of the matter is that we carry on with our life problematically in the advanced world by depending on a third party for the security and protection of our computerized resources. The reality remains that these outsider sources can be hacked, controlled or traded off.

This is the place the blockchain innovation comes helpful. It can possibly reform the computerized world by empowering a distributed judgment where every last online exchange, previous and current, including computerized resources can be checked whenever later on. It does this without trading off the security of the advanced resources and parties included. The conveyed accord and namelessness are two essential qualities of blockchain innovation.
II. RELATED WORK

Janusz J. Sikorski a, Joy Haughton a, Markus Kraft present an example where blockchain is employed to facilitate machine-to-machine (M2M) interactions and establish a M2M electricity market in the context of the chemical industry[1].

Nonhlanhla Ntuli, Adnan Abu-Mahfouz proposes a simple secure architecture for smart water management system using a blockchain innovation [2].

Seyoung Huh, Sangrae Cho, Soohyung Kim presents a way of managing IoT devices using blockchain platform. They have used Ethereum as their blockchain platform and they manage keys using RSA public key cryptosystem [3].

Hitoshi Okada, Shigeichiro Yamasaki, Vanessa Bracamonte proposes a classification based on two dimensions external to the system: (1) existence of an authority (without an authority and under an authority) and (2) incentive to participate in the blockchain (market-based and non-market-based) [4].

David Ferbrache tells that passwords have become one of the weakest links in our security chain, compounded by our inability to memorise the long and complex passcodes demanded by our security systems and proposes a way to tackle with it using blockchain [8].

III. APPLICATIONS

Blockchain is not all related to bitcoin, one can treat blockchain as a platform and develop an application based on this adept innovation. Few are discussed below.

The applications of blockchain are for the crypto currencies like bitcoin where public ledger is maintained and having no central authority to control. Secure against malicious attacks.

Current cloud storage administrations are concentrated — hence clients must place confide in a solitary storage supplier. Storage provider controls the majority of user’s online resources. Then again with the Blockchain, this can wind up plainly decentralized. Anybody on the web can store your information at a pre-concurred cost. Hashing and having the data in different places are the keys to securing it.

Blockchain advances make tracking and managing computerized identity both secure and proficient, bringing about consistent sign-on and lessened misrepresentation. Be it managing an account, human services, national security, citizenship documentation or web based retailing, character verification and approval is a procedure complicatedly woven into trade and culture around the world.

Smart contracts are lawfully restricting programmable digitized contracts entered on the blockchain. What engineers do is to actualize lawful contracts as factors and explanations that can release of funds utilizing the blockchain arrange as an 'outsider agent', instead of confiding in a solitary centaral authority.

Utilizing the blockchain, a voter could watch that her or his vote was effectively transmitted while staying mysterious to rest of the world.

Industry can also opt for blockchain technology for security, decision making or asset management, here they can go with the privately shared ledger, where only selected people will have access to share database or ledger.
A person can also store his or her secure data on blockchain. It will be in hashed format so no need to worry.

Blockchain also has its application in the medical field where all medical records and files of person or patient will be on blockchain where if he met with an accident then just with the help of his identity all his previous records can be seen and right treatment will be given or diagnosis can be done.

Security architecture for smart water management systems to ensure secure booting, secure communications and secure firmware updates can also be developed by taking the advantage of blockchain technology[2].

IoT devices can also be managed using Ethereum, blockchain computing platform. Ethereum with approximately 12 second block period lets developers write smart contract [3]. It can also be used in banking and finance for cost savings, efficiency and transparency [5]. Blockchain can also be used for authentication with biometrics as passwords are not foolproof [8].

**IV. CONCLUSION**

Though blockchain came into existence for bitcoin. Because of the its caliber, it have huge scope in majority of the fields like medical, banks, voting where security, trust, confidentiality are on stake. Industry, individual or group of individuals can use it where security is important as blockchain do not have central control, distributed database and is secure against the malicious attacks.

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