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Banking System using Block chain Technology

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ABSTRACT: Increasing digital technology has revolutionized the life of people. The banking system in today's world is open to threats of fraud and cyber-attacks. Since todays banking system is built on centralized databases, it is easy for an attacker to penetrate in any such database which will easily compromise all the information and data of the customers of the bank. This vulnerability of today's banking system can be reduced by re-building the banking systems on top of block chain technology, which will remove the centralized database architecture and decentralize the data over the block chain, thus reducing the threat of database being hacked. Since the transactions over the block chain technology is verified by each and every nodes of the chain, it will make the transactions more and more secure thus making the overall banking system faster and secure.

KEYWORDS:Cyber Security, Block chain, Banking System, Cyber Attack

I. INTRODUCTION

One of the essential issues that the banking segment is confronting today is the expansion in misrepresentation and digital assaults. Presently, the greater part of managing an account frameworks are based on a centralised database, which makes them more defenceless to digital assaults as all data is put away locally in one place. Additionally, numerous banking frameworks are obsolete and are, in this manner, more helpless against new types of digital assaults. By building new managing an account framework over block chain innovation, the possibility for extortion and information burglary can be decreased generously as the disseminated record innovation secures records; it stores, scrambles and checks each and every piece of information in an exchange. Accordingly, should any information rupture or false movement happen, it would be made promptly evident to all gatherings who have consent to get to the exchange information on the record.

II. RELATED WORK

Satoshi NakamotoBitcoin, "A Peer-to-Peer Electronic Cash System"

A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network time stamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

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Christopher D. Clack, "Smart Contract Templates, Foundations, Design Landscape and Research Directions"

In this position paper, we consider some foundational topics regarding smart contracts (such as terminology, automation, enforceability, and semantics) and define a smart contract as an agreement whose execution is both automatable and enforceable. We explore a simple semantic framework for smart contracts, covering both operational and non-operational aspects. We describe templates and agreements for legally- enforceable smart contracts, based on legal documents. Building upon the Ricardian Contract triple, we identify operational parameters in the legal documents and use these to connect legal agreements to standardised code. We also explore the design landscape, including increasing sophistication of parameters, increasing use of common standardised code, and long-term academic research. We conclude by identifying further work and sketching an initial set of requirements for a common language to support Smart Contract Templates.

EppMaaten, "Toward Remote E-Voting: Estonian Case"

This paper gives an overview about the Estonian e-voting system. Paper discusses how the concept of e-voting system is designed to resist some of the main challenges of remote e-voting: secure voters authentication, assurance of privacy of voters, giving the possibility of re-vote, and how an e-voting system can be made comprehensible to build the public trust.

Paul Gibson, "A Review of E-Voting: the Past, Present and Future

Electronic voting systems are those which depend on some electronic technology for their correct functionality. Many of them depend on such technology for the communication of election data. Depending on one or more communication channels in order to run elections poses many technical challenges with respect to verifiability, dependability, security, anonymity and trust. Changing the way in which people vote has many social and political implications. The role of election administrators and (independent) observers is fundamentally different when complex communications technology is involved in the process. Electronic voting has been deployed in many different types of election throughout the world for several decades.

Muhammad Ajmal Azad, "M2M-REP: Reputation of Machines in the Internet of Things"

The Internet of Things (IoT) is the integration of a large number of autonomous heterogeneous devices that report information from the physical environment to the monitoring system for analytics and meaningful decisions. The compromised machines in the IoT network may not only be used for spreading unwanted content such as spam, malware, viruses etc, but can also report incorrect information about the physical world that might have a disastrous consequence. The challenge is to design a collaborative reputation system that calculates trustworthiness of machines in the IoT- based machine-to-machine network without consuming high system resources and breaching the privacy of participants. To address the challenge of privacy preserving reputation system for the decentralized IoT environment, this paper presents a novel M2M-REP (Machine to Machine Reputation) system that computes global reputation of the machine by aggregating the encrypted local feedback provided by machines in a fully decentralized and secure way.

III. EXISTING SYSTEM

The major issue in core banking is the authenticity of the customer. Due to unavoidable hacking of the databases on the internet. To solve this problem of authentication, we are proposing an algorithm based on image processing, i.e. visual cryptography. Visual Cryptography is a special encryption technique to hide information in images in such a way that it can be decrypted by the human visual system. But the encryption technique needs cryptographic computation to divide the image into a number of parts let n. The customer has to present the share during all of his transactions. This share is stacked with the first share to get the original image. Then decoding method is used to take the hidden password on acceptance or rejection of the output and authenticate the customer.

Disadvantages: The existing system is less secure and when more number of user are access the web server the response time will be increased.

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IV. PROPOSE SYSTEM

In the proposed system, the traditional architecture followed by banks which consists of a centralized database will be removed. The data will be largely distributed over the block chain which will make the banking systems decentralized. This will not only make the data ore secure but also will remove the power centralization. The transactions over the block chain will be in form of encrypted tokens which will be verified by each node on the block chain. To make any transaction valid, the nodes of the block chain will have to give the proof of the processing it has done in order to verify the transaction. That proof will be taken in terms of the amount of processing done. The above mentioned transaction system has two benefits. Firstly it will make the transactions faster by removing the intermediate processes employed in the normal transactions and secondly it will become nearly impossible for an individual to hack the system as it will require a huge amount of processing power which no one has.

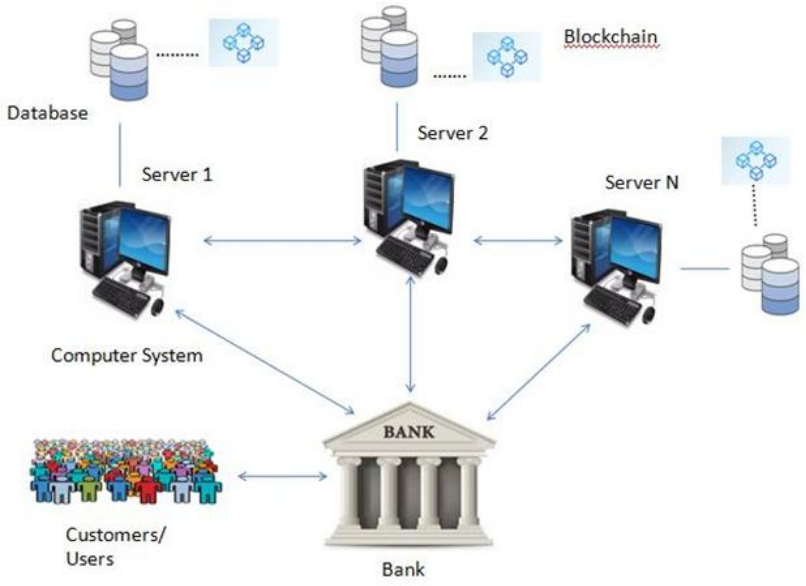

Fig 1: System Architecture

V. ALGORITHM

Input: a set N of users in the network
Input: a blockchain called B, bn is the last block on the blockchain
Input: T, the deadline of transaction
1. While CurrentTime() < T
2. Foreach n ∈ N
3. numOfTransaction←Dotransaction();
4. ForeachnumOfTransaction∈ Transaction
5. transactionmax←compare(numOfTransaction);
6. m←SelectMiner();
7. bn+1 ←GetTrans(α);
8. B' →AddBlock(m, B, bb);
9. Foreach n ∈ N
10. Broadcast(n)

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VI. CONCLUSION

The proposed system designed to provide a secure data and a trustworthy banking system. Block chain itself has been used in the Bitcoin system known as the decentralized Bank system. By adopting block chain in the distribution of databases on banking systems one can reduce the cheating sources of database manipulation.

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