BANKING SYSTEM USING BLOCKCHAIN ETHEREUM SMART CONTRACT

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ABSTRACT

A new disruptive force of digital technology is changing the business models and increasingly becoming a crucial factor around the world. Blockchain technology is generating significant interest across a wide range of industries in India. As the field of applications for Blockchain grows, industry leaders are customizing and tailoring the technology to fit multiple use cases. The Blockchain technology is responsible for developing a next step in the decentralized approach for creating applications. This paper aims at explaining the architecture of Blockchain Technology as well as how it works. Besides various features of the Blockchain, the benefits derived from it are also dis- cussed. The use cases and Blockchain fit assessment has also been performed for few banking transactions. In the last section we also have a look at the security aspects of the Blockchain.

Keywords: BlockChain, Ethereum, Solidity language, Decentralized application, Smart-contract.

1. INTRODUCTION

Nowadays many banks are based on a central server means the centralized application using Database management system, where every branch of a bank is connected to each other and all users's account are connected to one DBMS server. If the any server made any changes to the data of any branch then other branches get affected. But Blockchain is secure system .It removes the third-party organization participation in the controlling of the transaction. So we use Ethereum. It is based on technology of Blockchain. It benefits over other crypto-currency based system. And every ethereum is runs of "Smart-Contract". Ethereum create Decentralized application. It's an automated , proper algorithm can make the system reliable and secure the every step of system which is maintained and executed by the algorithm inside the smart contract, that's why there is no possibility of making the changes of data.

The records of transactions made in Bitcoin or other crypto-currency are stored in blocks and maintained across all the computers that are linked in a peer-to-peer network. A Blockchain is the "current" part of a Blockchain which records some or all of the recent transactions, and once completed, goes into the Blockchain as a permanent database. Each time a new block is generated based on the completion of each block. Blocks are linked together in a linear fashion where each block contains a hash value of the previous block. In comparison with the traditional banking systems, Blockchain keeps all the transaction histories. Chronological Bitcoin transactions are entered in a Blockchain which is similar to the regular transaction in the bank. Mean- while, blocks are similar to individual bank statements. Blockchain keeps records of every Ethereum based transaction ever executed. Thus, it provides a relationship on past transactions that happened and also, generates values belonged to a particular address

2. LITERATURE SURVEY

[1] International Journal of Computer Applications (0975 – 8887) Volume 177 – No. 38, February 2020 "The Implementation of Blockchain in Banking System using Ethereum."
Our current banking system is based on a central server where every branch is connected to each other. If the server made any changes to the data of a branch then other branches get affected. In this system, Corruption can be easily occurred because of unauthorized access which is totally insecure in transaction systems. But, Blockchain is a secure system where the transactional history regarding

crypto-currency cannot be modified or destructed. Since 2008, Blockchain has gained immense interest due to exclusion of third- party organization participation in monitoring of the transactions. Ethereum is a protocol which is based on Blockchain technology and has several benefits over other crypto-currency based system and is best suited for creating a secure lending system. Every Ethereum based system runs on 'Smart- Contracts' which are lines of code and makes the system automated.   As the system gets automated, proper algorithms can make the system reliable and secure as each and every step of the system is maintained and executed by the algorithm inside the Smart Contracts. Blockchain systems work with peer-to-peer networks and also uses a consensus algorithm that's why there is no possibility of data modification.H.

[2] "Applications of Blockchain Technology in Banking Finance Technical Report" • February 2018 by ShailakJani, Parul University DOI: 10.13140/RG.2.2.35237.96489
Blockchain, mostly known as the backbone technology behind Bitcoin, is one of the emerging technologies currently in the market attracting lot of attentions from enterprises, start-ups and media. Blockchain has the potential totransform multiple industries and make processes more democratic, secure, transparent, and efficient. With high volumes of data getting generated every day owing to digitization of records, it becomes important for every organization to effectively manage the security threats and achieve significant cost efficiencies.

[3]"Blockchain application and outlook in the banking industry" by Ye Guo* and Chen Liang Guo and Liang Financial Innovation (2016) 2:24 DOI 10.1186/s40854-016-0034-9
Blockchain technology is a core, underlying technology with promising application prospects in the banking industry. On one hand, the banking industry in China is facing the impact of interest rate liberalization and profit decline caused by the narrowing interest-rate spread. On the other hand, it is also affected by economic transformation, Internet development, and financial innovations. Hence, the banking industry requires urgent transformation and is seeking new growth avenues. As such, blockchains could revolutionize the underlying technology of the payment clearing and credit information systems in banks, thus upgrading and transforming them. Blockchain applications also promote the formation of "multi-center, weakly intermediated" scenarios, which will enhance the efficiency of the banking industry. How- ever, despite the permission-less and self-governing nature of blockchains, the regulation and actual implementation of a decentralized system are problems that remain to be resolved. Therefore, we propose the urgent establishment of a "regulatory sandbox" and the development of industry standards.

3. PROBLEM DEFINATION

To provide a security for the persons banking personal trans- action like deposit and withdraw using blockchainethereum smart contract.

4. OBJECTIVES

- To provide a security for Bank.
- To give the user at most perfect security about the his personal transaction (Deposit and Withdraw)

5. PROPOSED SYSTEM

In this system we are proposing a banking system using the ethereumblockchain technique. Suppose someone did his transaction, if he withdraw some money then it need to confirm his transaction using metamask. Then after confirmation his trans- action will be successful. After its one transaction it will create one hash code using SHA256 algorithm. After some time if he did another transaction then it also creates another one hash code and it connects to its previous hash code and so on .That's a concept of Blockchain. At every transaction all hash code connect to each other.
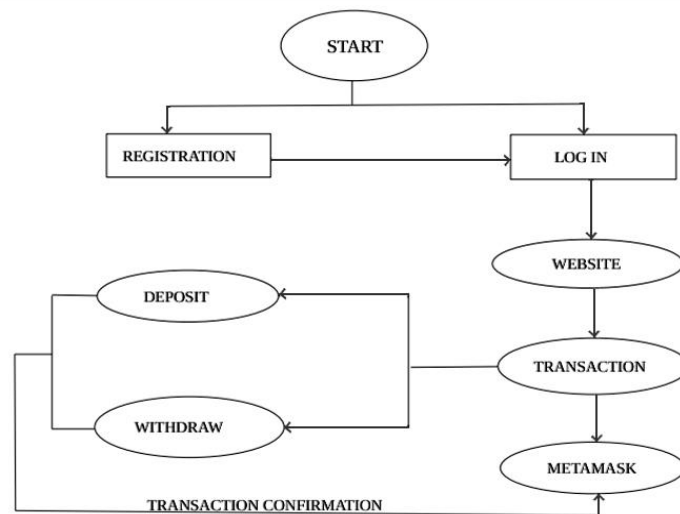
Figure: Proposed system

METHODOLOGIES:

In this system we are proposing a banking system using the ethereumblockchain technique. Suppose someone did his transaction, if he withdraw some money then it need to confirm his transaction using metamask. Then after confirmation his transaction will be successful. After its one transaction it will create one hash code using SHA256 algorithm. After some time if he did another transaction then it also creates another one hash code and it connects to its previous hash code and so on. That's a concept of Blockchain. At every transaction all hash code connect to each other.

1) Data Collection (Registration and Login):-

The information collected by user. User put his information like username, password, e-mail, address etc.

2) Data Store into Database:-

All the user information store into database.

3) Data Preprocessing:-

Get the new address key for his future all transaction which is that key is already stored in database and after completion registration that key will automatically allocate to that user.

System Flow:

The system flow of this banking system is shown by figure. First user log in to website and complete his transaction (Deposit and Withdraw) and it confirmed by Metamask which has a Rinkbey test network and it generate a transaction block. After another transaction it create another block and connect to its previous block.
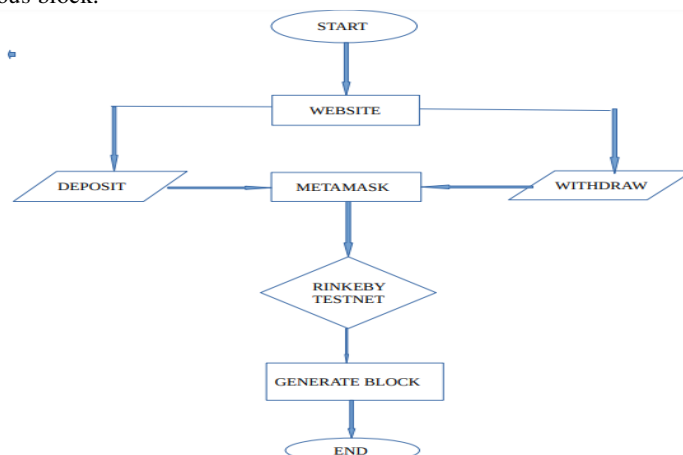

Figure: System Flow

6.   RESULT

Figure: login page

A Login page is the main web page of a website. In our system the given image shown as the login page of our system. In this page the system provides 2 options to user username and password. The user go to the second page means main home page of the website for its transaction page after click in" Transaction" Button. If user don't have any login info then he can click on Register option

Figure: registration form

The new user first register to our system. In Registration form the user fill the basic details. This details are stored in database. In registration form system take the mobile number of user cause the generated password send the users registered mobile number. In this registration form the system take the color code rating from 0 to 9 and take Username and one permanent password. This information taken by system.
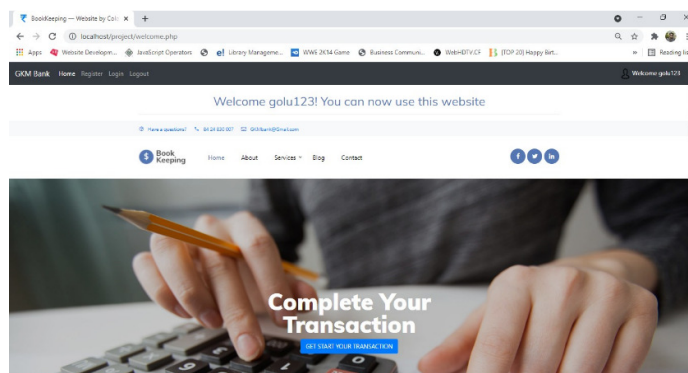

Figure: home page

A home page is the main web page of a website. In our system the given image shown as the home page of our system. In this page the system provides 2 options to user. The user go to the second page for its transaction page after click in" Transaction" Button.
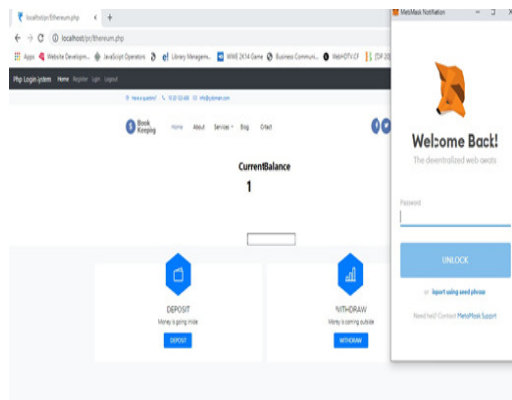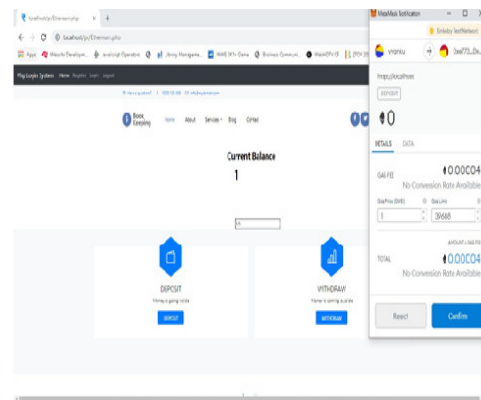

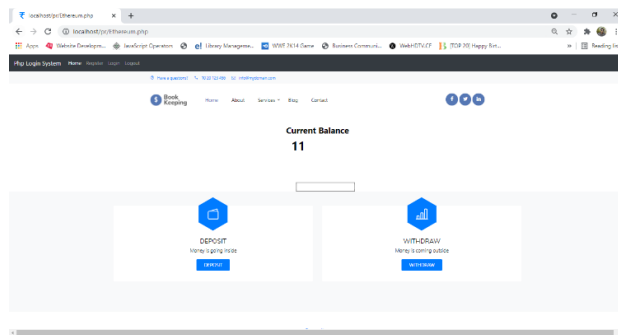*Figure: remix website 1*   *Figure: remix website 2*

Figure: remix website 3

1. This is the main remix website. This webpage is used for user transaction Withdraw and deposit. Metamask will automatically pop-up. Metamask has unique password just put it.
2. Any value in the textbox. Which you want to withdraw and deposit and click on the buttons. Then metamask will pop up for the confirmation of transaction. Just click on Confirm button.
3. After sometime you will get one notification from the metamask. Just refresh that page then you will see balance will be updated.
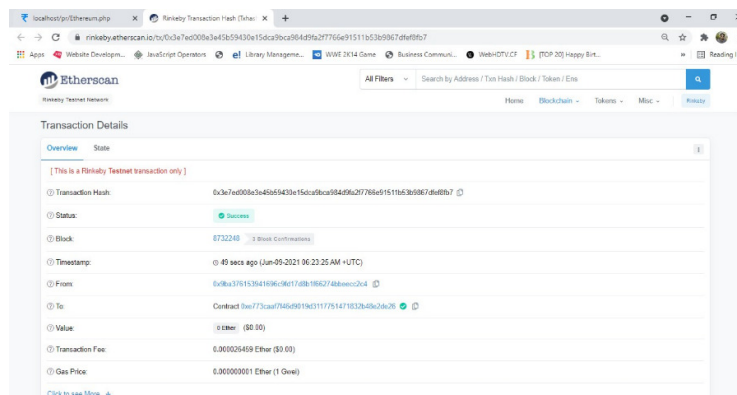

Figure: etherscan page

After refresh the page just go the the Notification of the metamask there is one etherscan website it will show you complete details of your transaction.

7. CONCLUSION

Although the potential of Blockchain is widely claimed to be at part with early commercial Internet, banking firms needs to understand the key features of the technology and how it can solve the current business issues as on one hand.

8. FUTURE SCOPE

In future we can extend this project with Android and IOS application.

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