BLOCK CHAIN TECHNOLOGY

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Abstract 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 timestamps 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.

Index Terms: - peer-peer, digital signature, proof-of-work, timestamp

I Introduction

Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model. Completely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes.

.2 Literature survey

- A survey of blockchain technology applied to smart cities: Research issues andchallenges
- Junfeng Xie, Helen Tang, Tao Huang, F Richard Yu, Renchao Xie, Jiang Liu, Yunjie Liu
- IEEE Communications Surveys & Tutorials 21 (3), 2794-2830, 2019

In recent years, the rapid urbanization of world's population causes many economic, social, and environmental problems, which affect people's living conditions and quality of life significantly. The concept of “smart city” brings opportunities to solve these urban problems. The objectives of smart cities are to make the best use of public resources, provide high-quality services to the citizens, and improve the people's quality of life. Information and communication technology plays an important role in the implementation of smart cities. Blockchain as an emerging technology has many good features, such as trust-free, transparency, pseudonymity, democracy, automation, decentralization, and security. These features of blockchain are helpful to improve smart city services and promote the development of smart cities. In this paper, we provide a comprehensive survey on the literature involving blockchain technology applied to smart cities. First, the related works and background knowledge are introduced. Then, we review how blockchain technology is applied in the realm of smart cities, from the perspectives of smart citizen, smart healthcare, smart grid, smart transportation, supply chain management, and others. Finally, some challenges and broader perspectives are discussed.

3 Implementation Study

Now a days the transactions are being processed using Cheques, Net Banking and payment Wallets. Payment wallet transactions involves third party of government.

These transactions allows centralized platform means power and rights are not to be equally distributed among all the participants in a system.
Performing transactions through Cheques, Net banking and payment Wallet Entail the receiver effectively authorizing the seller to "Pull" a payment from their account, passing through several financial intermediates in the process.
In this type 1of transaction, it is necessary to provide personal identification information such as your name and address and this type of transactions are stored physically in a wallet.

Disadvantages:

1.These transactions offer less security.
2.There is a need of documentation.
3.Due to the involvement of third party there is a problem of "Double spending".
4.It is not cost effective.
.

3.1proposed methodology

In this project an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party.

Transactions that are computationally impractical to reverse would protect sellers from fraud, and routine escrow mechanisms could easily be implemented to protect buyers.

In this paper, we propose a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions.

The system is secure as long as honest nodes collectively control more CPU power than any cooperating group of attacker nodes

ADVANTAGES :

1.Block chain transactions offers more security.
2.There is no need of documentation.
3.It is cost effective.
4.Unlimited transactions in a limited span of time.
5.No need of involvement of third party..

4 Results and Evolution Metrics

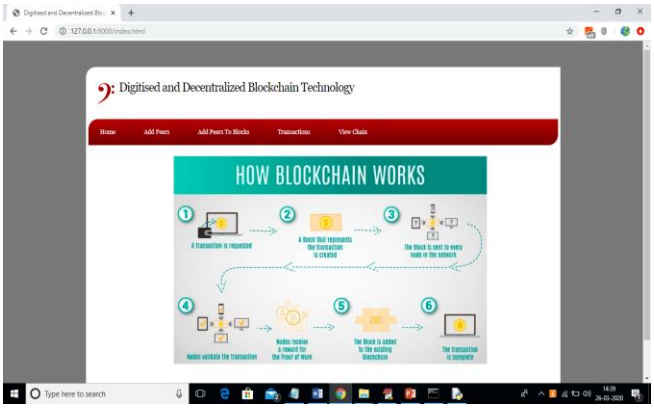

Fig 1:. In above screen click on 'Add Peers' link to add new peer details

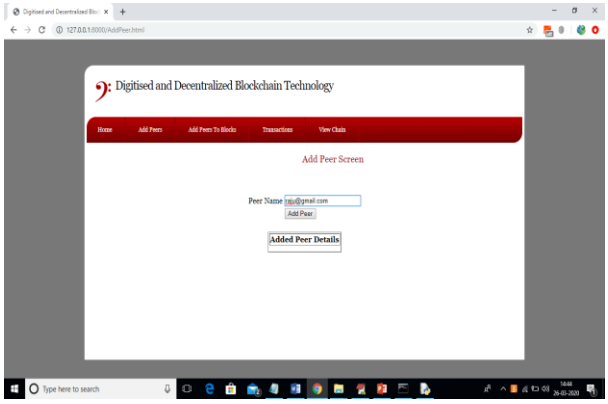

Fig 2: In above screen I am adding new peer as 'raju@gmail.com' and the entry will be available here till it added to block and after adding to block entry will be deleted from peer screen. Now click on 'Add Peer' button to get below screen

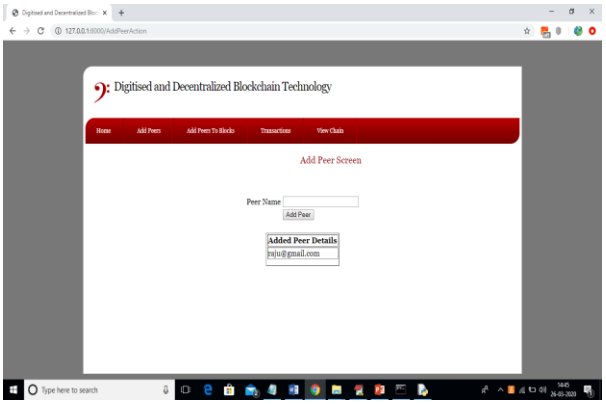

Fig 3:- In above screen we can see newly added peer details showing in above screen table. Now click on 'Add Peers To Blocks' link to add this peer to block chain.

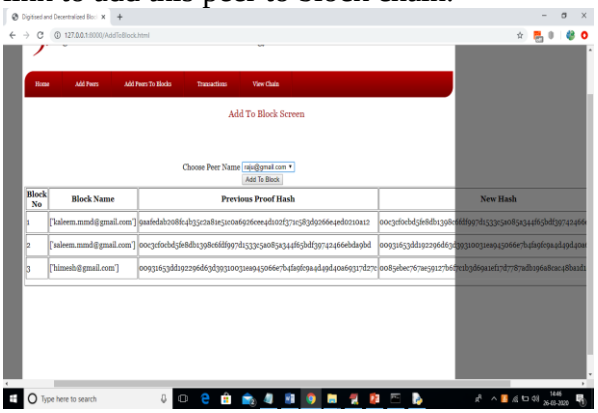

Fig 4 :- In above screen all added peers to block chain will be displayed here with their old and new hash code as proof of work. We can see in above screen New Hash of first row is match with previous hash of second row and goes on till transaction executed successfully with hash validation. Scroll above screen to view created date also.

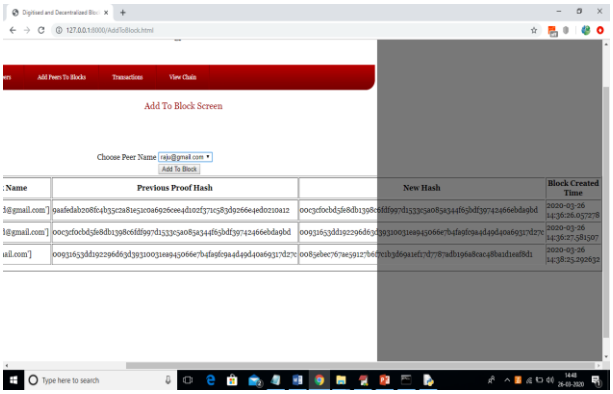

Fig 5:- Now we can select new peer name from drop down box and click on 'Add to Block' button to add new peer to new block

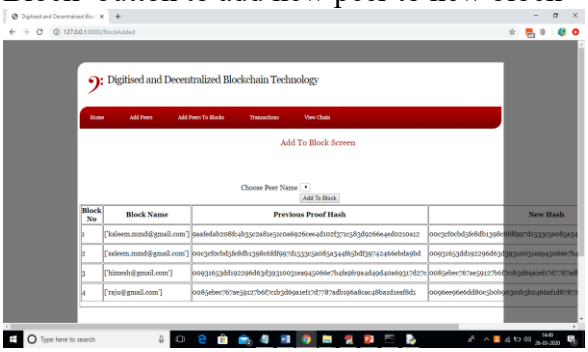

Fig 6:- In above screen new peer also added to block and once it added then that peer will be removed from drop down box. Now click on 'Transactions' link to perform transaction between block chain users.

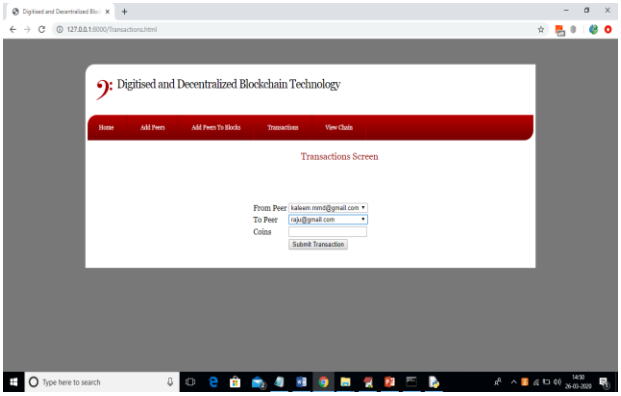

Fig 7:- In above screen from peer and choose desire to peer from drop down box and then enter amount and click on 'Submit Transaction' button to transfer fund

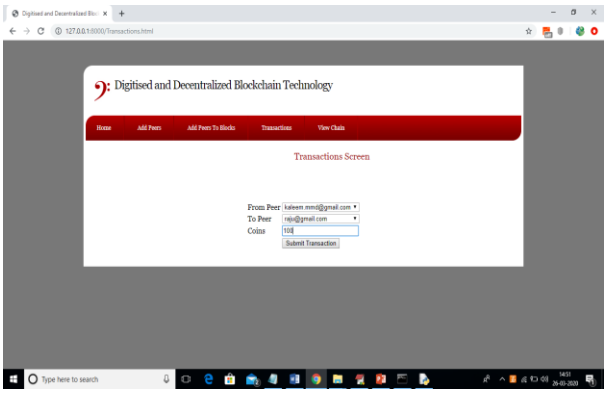

Fig 8:- In above screen I am sending 100 coins and after transaction complete will get below screen

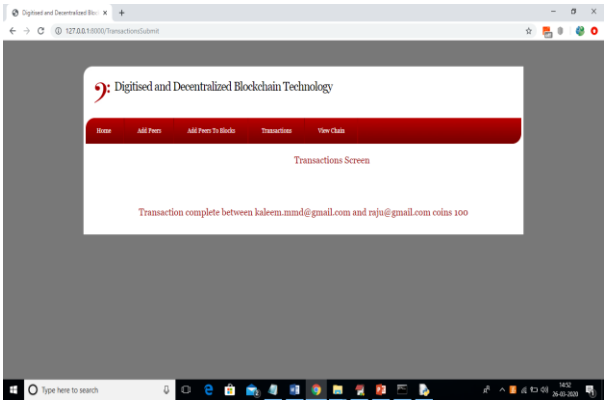

Fig 9:- Now click on 'View Chain' link to view all transactions details

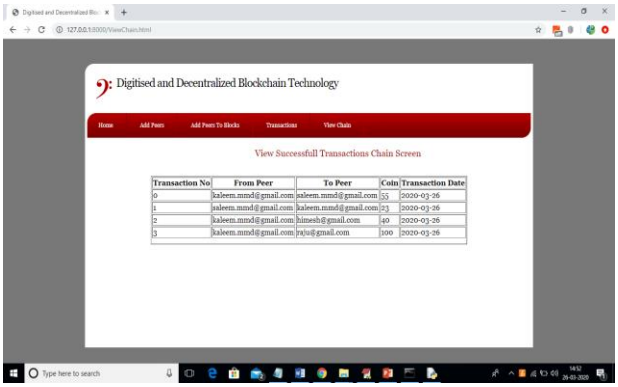

Fig 10:- In above screen from block chain we can retrieve all transaction details. Below block chain code use to validate transactions

5 Conclusion

We have proposed a system for electronic transactions without relying on trust. We started with the usual framework of coins made from digital signatures, which provides strong control of ownership, but is incomplete without a way to prevent double-spending.

To solve this, we proposed a peer-to-peer network using proof-of-work to record a public history of transactions that quickly becomes computationally impractical for an attacker to change if honest nodes control a majority of CPU power.The network is robust in its unstructured simplicity. Nodes work all at once with little coordination.

They do not need to be identified, since messages are not routed to any particular place and only need to be delivered on a best effort basis.

6 References

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