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Government Fund's Allocation and Tracking System Using Blockchain Technology

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Abstract: Blockchain is a system of Tran scripting information in a way that makes it difficult or impossible to change, hack, or cheat the system. To make sure the money which is being allocated for the purpose of betterment reaches its source without being malpractice is challenging, particularly from the perspective of a large number of gateway it has to pass through. Blockchain provides one potential mechanism for solving this problem. Blockchain technology allows one to make the process of transactions of funds transparent. It is a public ledger to which everyone has access but control of ledger does not lie with a central authority. One can get transparency, accountability and trust by using blockchain technology to perform digital transactions. A single platform for tracking that will track all the allocated fund need to be developed. The paper survey's the uses of blockchain technology in real-life commercial applications and proposes a method that shall be used to allocate and track public funds using blockchain technology.

Keyword: Blockchain, Authority, Fund Tracking, Blockchain applications, Transparency

I. INTRODUCTION

In today's competitive and fast growing world, Blockchain is the word heard most. But very few are completely aware about the technology. Some of us refer the crypto-currencies like Ethereum, Bitcoin to be the blockchain, some finds that these works on the principle of blockchain and what not. We must first put some light on this topic to make things clear in one's mind.

'Satoshi Nakamoto' has put forwarded the idea of blockchain in his paper's. He is also the presumed pseudonymous person behind the development of bitcoin. Blockchain is also referred to as the Digital ledger, same as the ledger maintained financial institutions for keeping the track of records.

Blockchain technology harnesses the distributed software and provides a shared ledger with a single source of truth for the recorded transactions without depending on a centralized entity for trust. Hence, it helps in trust in the digital world using technology. Any tangible or intangible asset can be represented and tracked on a Blockchain network, which brings transparency, increases processing speed and reduces cost. On top of Blockchain, can be automated through smart contracts. Therefore, benefits of Blockchain technology include transparency, security, and efficiency, which make it in enabling a layer of trust over Internet for various applications.

Each block in a blockchain is linked to one another forming a chain of, that's why the name "Blockchain". Each block has certain information like number of transactions and every time a transaction happens the record gets updated in peer network. This way of storing data in decentralized manner is often referred to as **(DLT)** which stands for **"Distributed Ledger Technology"**. This mechanism ensures that integrity of the data is maintained the network. Today in this era technology and digitization the world is getting digital in every aspect. Technology has completely changed the way the people see a country and has led humanity to evolve like never before. In this paper we will be discussing blockchain and its implementation for the funds tracking and allocation.

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India is among the largest democracies globally with 1.3 Billion populations, a major section of population is economically backward. The Government of India and the State Government's issues different policies and schemes on large scale for the economically lower-class population to benefit from it. At times the Centre and the State Governments issue some policies and schemes which most citizens are unaware of and the benefit of it is not availed by citizens.

There are cases where there are clashes in the State policies and Centre Government policies to overcome gap and to find and track the best scheme for citizens to avail benefit of these Government Schemes, Fund Tracker (State and Central) is be made using blockchain technique.

II. LITERATURE SURVEY

There is no practical implementation on this technology for the development of rural area people, there are many different implementations on smaller parts which can be accustomed into one to create a "Fund tracking system for Scheme". Blockchain was firstly introduced by Satoshi Nakamoto in his Bitcoin paper in 2009, as blockchain provides an advanced decentralised peer-to-peer security for Bitcoin transactions without the need of authorised third parties.

"The Security and Performance of Proof of Work Blockchains" by Arthur Gervais, Ghassan O. Karame, Karl Wüst, Vasileios Glykantzis, Hubert Ritzdorf, and Srdjan Capkun at 2016 ACM SIGSAC Conference on Computer and Communications Security provides some useful information about the security and performance of various parameters such as block size, distribution time etc.

"BLOCKBENCH: A Framework for Analyzing Private Blockchains" by Tien Tuan Anh Dinh, Ji Wang, Gang Chen, Rui Liu, Beng Chin Ooi, and Kian-Lee Tan at 2017 ACM International Conference on Management this paper discusses how Blockchain technology can be used in a private blockchain and how transactions can be filtered through corruption that protects users' privacy.

An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends help us to understand its future applications in IOT and financial systems by Zibin Zheng and Shaoan Xie this paper is that it suggests how Blockchain technology can be implemented in IoT and financial systems.

"Ensuring data integrity using blockchain technology" by I. Zikratov, A. Kuzmin, V. Akimenko, V. Niculichev and L. Yalansky at 20th conference of fruct association it is a detailed research paper primarily focuses on how integrity is maintained in the Blockchain.

"Democratic Centralism: A Hybrid Blockchain Architecture and Its Applications in Energy Internet," by L. Wu, K. Meng, S. Xu, S. Li, M. Ding and Y. Suo at 2017 IEEE International Conference on Energy Internet this paper discusses and analyses the construction of private and public blockchain security based on traditional analysis blockchain structures.

Many blockchain overview and survey publications have mentioned the six confirmations convention to reduce the risk of revocation of transactions on blockchain forks that end up being discarded. A new cryptocurrency was claimed in namely ByzCoin, which optimises transaction commitment and verification while still guaranteeing safety and liveness under Byzantine faults. ByzCoin only needs one block confirmation to approve a transaction, which hugely improves the transaction throughput compared to the original blockchain.

Rosenfeld calculated the possibility of double-spending can be raised within the Bitcoin blockchain based on changing the numbers of confirmations required, and the computation power of attackers. To the best of our knowledge, our work is unique in conducting a comprehensive survey on the impact brought by large-scale network latency to the fundamental and important properties of blockchain, especially targeting block convergence and the feasibility of applying the six confirmations rule.

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III. PROPOSED SYSTEM

The proposed system is used to track the funds allocated to the state government as they travel through the government process at every stage. Here in the system, we are trying to create a single platform which solves all the problems related to tracking and allocation of funds. Here we come up with different logins for all the users and they have their own dedicated action which they can perform.

After this, all the actions performed can be tracked using the graph, and there will be a table generated from which we can track all the allocations performed. The authorised person can create an entity to which the fund needs to be transferred. Therefore, all the tasks done can be monitored as the process is transparent. The system makes use of encryption to secure transactional data by means of hashes to maintain a block of transactions in a chained fashion which is maintained and verified by every node. The system allows for a full-proof, secure, and authentic fund allocation and fund tracking system.

IV. IMPLEMENTATION

Fig 1.Adding project name and new state page

Including many projects, maintenance or repairing work and recording employment the area and many more are included in the role activity of the state as well as central government. A major hurdle that top government faces is the low level corruption that is sometimes impossible to track which deprives the state of progress. Hence we are going to propose a theory based on the blockchain, which includes the tracking of every other transaction done within the city on the basis of small scale industries or large scale companies. This allows to maintain a crystal clear record with on-demand right to transactional data on a need to know basis.

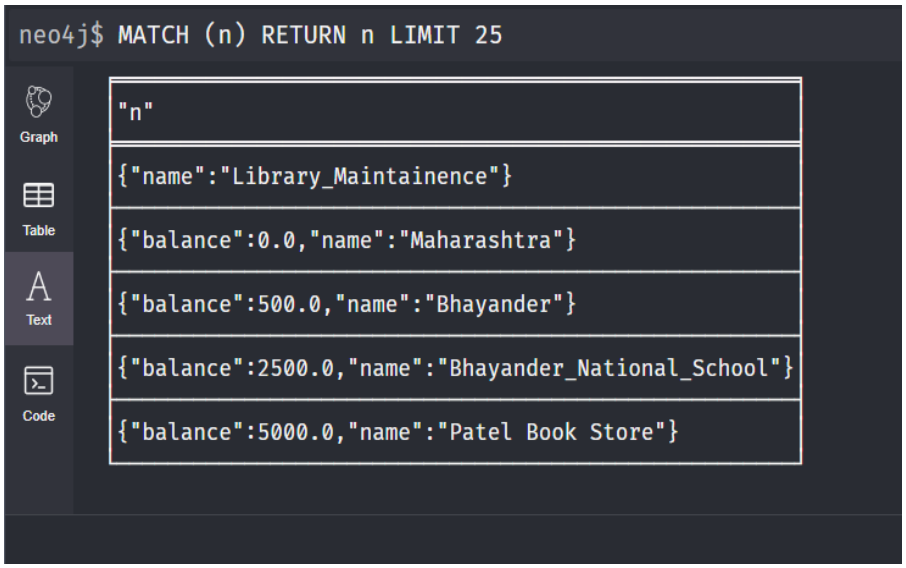

Fig 2. Database show of record in tabular manner

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Graph | Table | Get Graph

n	r	m
{balance:0, name:"Maharashtra"}	{amount:"8000"}	{balance:500, name:"Bhayander"}
{balance:500, name:"Bhayander"}	{amount:"7500"}	{balance:2500, name:"Bhayander_National_School"}
{balance:2500, name:"Bhayander_National_School"}	{amount:"5000"}	{balance:5000, name:"Patel Book Store"}

Fig 3. Website show of record in tabular manner


```
[
  {
    index: 1,
    timestamp: 1648722884154,
    transactions: [],
    nonce: 100,
    hash: '0',
    previousBlockHash: '0'
  },
  {
    index: 2,
    timestamp: 1648723328918,
    transactions: [ [Object] ],
    nonce: 49033,
    hash: '00008c48e7875d3477a03454350d3e3a4e676c2dc208c29b7d5ca908c00c9254',
    previousBlockHash: '0'
  },
  {
    index: 3,
    timestamp: 1648723507533,
    transactions: [ [Object] ],
    nonce: 46814,
    hash: '0000b28daa9d6473b787762761ee64d6e1f3564673fbc27df3bbc937595eb21d',
    previousBlockHash: '00008c48e7875d3477a03454350d3e3a4e676c2dc208c29b7d5ca908c00c9254'
  },
  {
    index: 4,
    timestamp: 1648723647969,
    transactions: [ [Object] ],
    nonce: 76317,
    hash: '000036b41aba106f20ef4e68121a3ac0c002ccf1ae016bd3d1899b1bfc2f32e6',
    previousBlockHash: '0000b28daa9d6473b787762761ee64d6e1f3564673fbc27df3bbc937595eb21d'
  },
  {
    index: 5,
    timestamp: 1648723690113,
    transactions: [ [Object] ],
    nonce: 230009,
    hash: '0000f8a62e7fda1c6e7c4729efac258fcdd8c5464559ad14917cc6475f572511',
    previousBlockHash: '000036b41aba106f20ef4e68121a3ac0c002ccf1ae016bd3d1899b1bfc2f32e6'
  }
]
```


Fig 4. Updatation based on record

Fig 5. Website show of record in graphical manner

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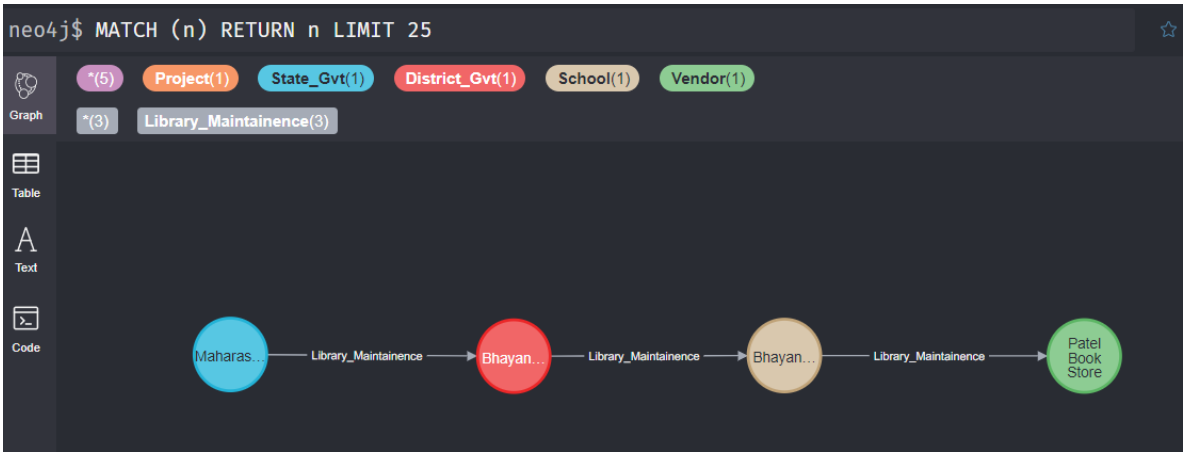

Fig 6. Database show of record in graphical manner

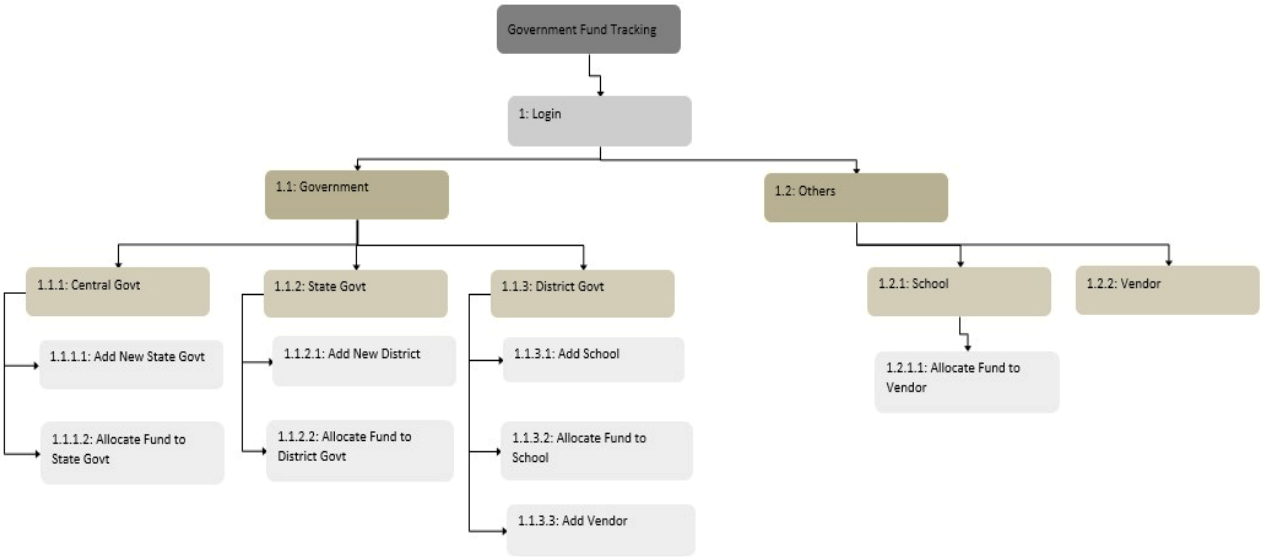

Fig 7. Block diagram of the system

The system makes use of encryption to secure transactional data using hashes to maintain block of transactions in a chain manner which is maintained and verified by every node involved to verify the transaction and save the data in a transparent way. The system allows for full-proof, secure, and authentic fund allocation and fund tracking system to help form an incorruptible government process.

The whole process starts with transaction done by the payer and ends with the transparent database which is publicly provided. Hence the details of the transaction such as payer, cashier, amount of pay, why the transaction is done, all is noted and saved in the database.

Furthermore, a block having the transaction details, is added into network. After the validation process, the block having transactional details with a checksum then added into the blockchain network. The transaction then can be rendered into the network. All the transactions and the transactional details, thus published and will be added into the distributed ledger and will be available for public in order to track the transactions.

V. CONCLUSIONS

Blockchain technology is revolutionary. It will make life simpler and safer by changing the way personal information is stored and how transactions for goods and services are made. By keeping this in mind, we have proposed a solution in blockchain technology that helps us generate a record of all the transactions such that each transaction is saved as a

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connected block. We have used technologies such as hashing, graph DB, platforms, etc. that have helped us develop a systematic approach to track all the records while considering security as a priority.

We have considered that in blockchain technology there are some access and privacy challenges. Though, it allows us to maintain a crystal clear record with on-demand access to the right transactional data on a need-to-know basis.

In the future, it may be possible that we don't need to rely on a third party in transactions. As we know prominent organizations in the world today function as trusted third parties, for instance, SWIFT and the Depository Trust Cleaning Company. Corporate chances flourish for companies that build and apply Blockchain technologies aimed at particular transactions, like the mortgage industry.

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