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Secure Voting System using Blockchain Method

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***Abstract*: Technology has positive impacts on various aspects of our social life. Creating a globally connected system allows comfort of access to a variety of resources and services. In addition, technology like Internet has been thriving ground for innovation and creativity. One such creation is Blockchain. The Blockchain technology provided many existing and emerging technologies ultimate Frisbee. With its enduring properties and decentralized architecture, it is taking spotlight in many services. Like healthcare industry, supply chain services and government sectors. One such future application of the Blockchain is E Voting. We aim of such application would be to provide a decentralized architecture to run and support a voting scheme that is fair, open and independently verifiable. The protocol has been designed to deliver fundamental e-voting properties as well as offer the outstanding peer-to-peer characteristics of blockchain, which will make sure that voting is open, fair and unable to get tempered.**

***Keywords*: Blockchain, cryptocurrency, e-voting, decentralized.**

1. Introduction

Elections have been the usual mechanism by which modern representative democracy has operated for centuries. Democracy is a system of voters to elect representatives by voting. The efficacy of such a procedure is determined mainly by the level of faith that people have in the election process. From time to time, research is performed and conducted in order to solve the problem of fraud in the voting process. One such disruptive innovation is blockchain. Blockchain is a system in which a record of transactions made in bitcoin or another cryptocurrency is maintained across several computers that are linked in a peer-to-peer network. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. Blockchain technology offers a decentralized node for online voting or electronic voting. Recently distributed ledger technologies such as blockchain were used to produce electronic voting systems mainly because of their end-to-end verification advantages. Blockchain is an attractive choice to conventional electronic voting systems with features such as decentralization, non-repudiation, and security protection. It is used to hold both members as well as the public voters. Voting is a new stage of blockchain technology, in this researchers are trying to leverage benefits like transparency, secrecy which are essentials for voting application. In this system, we will use the unique identifications as data sets like Aadhar Card. As soon as the voter gets verify his/her data will be displayed on the screen if and only if he/she is eligible to cast a vote. Once the voter had cast his/her vote to the desired party, a light/symbol will blink or highlight indicating that the voter had successfully cast his/her vote to the desired party.

2. Problem Definition

Not very long before, the EVM system has been replaced by the normal pen and paper voting method. But EVM hardware is also unsafe and misuse can be made by malicious software. To overcome these disadvantages of the voting process the idea of secure voting using blockchain is introduced. This system is easy to use, does not require much power and resources. Also, provide automatic counting of votes. It is highly secure cost-effective and requires a one-time investment.

3. Proposed Method

Propose system is internet voting system. We provide an online platform for voting i.e. a website. Propose system three parts as Voter, Election

Administrator and Election Process:

a) Voter: Voter is the main part of system which participate in election process.
He registers himself in system by giving his personal information.

b) Election Administrator: To manage all the data coming from voter during registration and election process, election administrator has worked. Also it generate public and private keys for voters. It is nothing but python packages.

c) *Election Process:* In this process voter select the candidate to vote and give his vote for selected candidate.

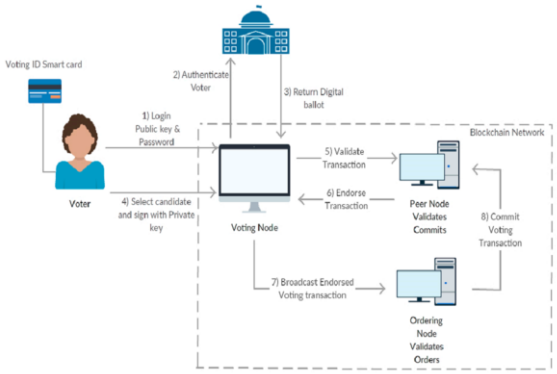

Fig. 1. System architecture

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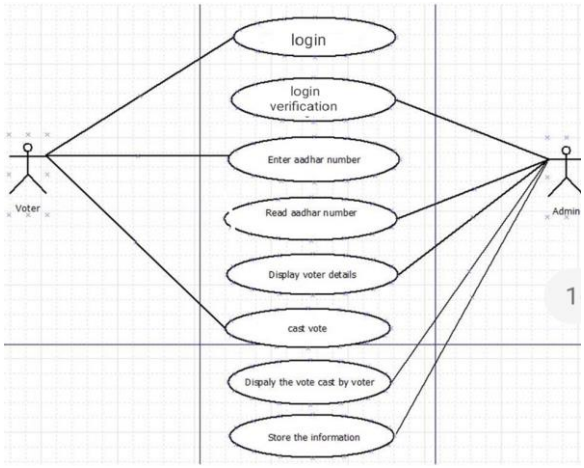

Fig. 2. Use case diagram

4. Discussions

Advantages and Disadvantages:

Advantages:

- Decentralized blockchain systems provides safe data storage since any changes to the data is not possible. i.e. data immutability.
- Tracing a transaction is easy.

Disadvantages:

- Even if it can be guaranteed that the data is stored safely and securely in a blockchain, a blockchain-based voting system also need to assure that the data being fed into the system is correct.
- It could be possible to enter fake data into a blockchain especially when the data describes actions outside the online universe, like voting.

Limitations:

- Online
- Mobile or mobile web portal

Future Scope:

- DAO implementation
- UI enhancement
- Different methods to improve validation of user

5. Conclusion

Electronic voting has been used in varying forms since years with fundamental benefits over paper based systems such as increased efficiency and reduced errors. With the extraordinary growth in the use of blockchain technologies, a number of initiatives have been made to explore the feasibility of using blockchain to aid an effective solution to e-voting. This project will project one such effort which leverages benefits of blockchain such as cryptographic foundations and transparency to achieve an effective solution to e-voting. Also, due to the encryption mechanism, it is impossible for any person to gain access to all the votes without first taking control of the entire service network.

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