Blockchain Based Voting System

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Abstract- *We are developing voting system by taking an advantage of the Blockchain distributed ledger with web interface. The main aim of this project is to build a website to allow the people to cast their vote through online. The main advantage of this project is Time saving, reduction of work load, information availability and it provide a security for the data. This is very simple, safe and secure method to takes minimum of time. We are maintain a centralized database for registered voters, the primary key which is a unique national ID stored in a database. The database and control of this process is entirely in the hands of the system. Generally voting process is done by the users by going to the voting booth. Many NRI and military person cannot come to their place to vote. For this we have implement a Blockchain based voting system by which the voters can vote by online. It is advantage for NRI and army person can vote on online.*

Keywords- Blockchain, Centralized database, Distributed ledger, Hash function, online voting.

I. INTRODUCTION

In every democracy, the security of an election is the national security of India. Election is the process which people can choose their political opinion. They express their opinion by voting to choice their political leader. Replacement of traditional pen and paper method with new method of election through online and having traceability of fraud voting and verifiable.

In this system, people who have a citizenship of India with age above of 18 years and any gender can vote his/her vote without visiting polling center. There is a database which maintain a name of voter and their basic details. First, voter has to register to vote, that can be done only by admin or election commission for security reasons. The admin check the details of voter and validate them. After validation of voters, the voters can cast their vote on Election Day. On the Election Day,the voter have assigned with secret key can log in and cast their vote on online.

Blockchain

A blockchain is a chain of blocks which contain information. Each block records all of the recent transactions, and once record completed goes into the blockchain permanent database. When block gets completed, each time a new block is generated. A blockchain is a consequently growing ledger which is permanent database of all transactions.

- Ledger: It is a constantly growing file.
- Permanent: It means once the transaction goes into blockchain, it change to be a permanent ledger.
- Secure: Blockchain saves an information in a secure way. It uses very advanced cryptography to make sure that the information is locked inside the blockchain.
- Chronological: In Chronological, every transaction done after the previous one.
- Immutable: It build all the transaction onto the blockchain, that ledger cannot be changed.

Distributed ledger

A distributed ledger is a type of database that is shared, replicated, and synchronized among the members of a decentralized network. The distributed ledger records the transactions, such as the exchange of assets or data, among the participants in the network. Participants in the network govern and agree by consensus on the updates to the records in the ledger. No central authority or third-party mediator, such as a financial institution or clearinghouse, is involved. Every record in the distributed ledger has a timestamp and unique cryptographic signature, thus making the ledger an auditable, immutable history of all transactions in the network.

Hashing

A hash function takes an input string like numbers, alphabets, media files etc., with any length and I transforms with into a fixed length. The fixed length can be vary by hash function. The hash is otherwise called as fixed length. This hash function also have some unique properties:

1) It produces a unique output.
2) This is a one-way function.

A hash function is the mainstay of the blockchain technology.

Smart Contract

A smart contract is a set of digital codes that is used to exchange assets including shares, money, or property without the need for any intermediates to function.

The role of smart contract include:

1) Save the encrypted ballots.
2) Verification of valid ballots.
3) Counting the encrypted ballots.
4) Verification of correctness of voting results.
5) Publication of voting results and provide the voters to verify their voting process.

II. LITERATURE SURVEY

An Ethereum-Based E-Voting System

In this paper, we review that the requirements and propose a Votereum, an E-voting system that make use of the blockchain technology. The proposed system is authorized by Ethereum platform, including one server manages the whole system and the other handles all blockchain-related requests. The implementation is also take advantage of Rinkeby testing network for evaluation on the feasibility and discussion on some security concerns, which are mentioned in the conclusion of this paper.

Voting System using Blockchain

Highly advanced guarantee methods are necessary to introduce internet voting system in the entire world. The facet of security and transparency is a threat from worldwide election with the conventional system.

Where Is Current Research On Blockchain Technology?

Blockchain is a localized transaction and data management technology developed first for Bitcoin cryptocurrency. The attentiveness in Blockchain technology has been enlargingsince the idea was coined in 2008. The reason for the attentiveness in Blockchain is its central attributes that provide security, anonymity and data integrity without any mediator organization in control of the transactions, and therefore it creates gripping research areas, especially from the perspective of technical dare and limitations.

III. REGULAR METHODS OF VOTING SYSTEM

Paper based voting

In this type of voting, voter get an empty ballot which means a piece of paper contains some symbols of election party used to secret voting and use a seal to cast their vote and then put the ballot paper in this ballot box. On election result day, ballot paper are counted in hand, it consume more time and labor. Still, this type of voting is most common way to cast vote.

Electronic voting

Electronic voting is means of conducting elections through Electronic voting Machines, otherwise called as EVMs. The EVMs are developed and tested by the state-owned Electronics Corporation of India and Bharat Electronics in 1990s.The voter has cast their vote by clicking button straight of symbols of party.

IV. DRAWBACKS OF EXISTING SYSTEM

The drawbacks are

- Expensive
- Time consuming
- Too much paper work
- Errors during data entry
- Loss of registration forms
- Short time provided to view voter's register
- Number of voters end up being locked out from voting
- Security issues

V. REQUIREMENTS

Software requirements

- Operating System: Windows 10
- Programming Languages : HTML, CSS, Javascript, Bootstrap,Php
- Database: MySql

Hardware requirements

- Processor: 3.5 GHz Intel
- HDD: 1TB
- RAM: 8 GB

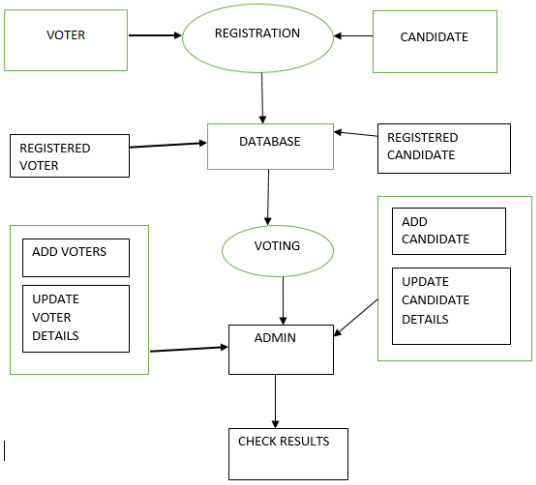
VI. PROBLEM DEFINITION

In the Traditional voting system, the process has more financial causes for both government and citizen. As a effective replacement blockchain does major application work on the process of voting, which is more more secured and very useful for citizens in motherland and even the citizens living in foreign.

VII. PROPOSED VOTING SYSTEM

In the proposed voting system uses the blockchain added with the help of distributed ledger and availability of security and datas.The proposed blockchain voting system secures the privacy of voters to cast the vote.

VIII. BLOCKCHAIN VOTING SYSTEM



IX. MODULES

1. **Login Module**: First, the voter has to register before voting and get secret key to cast his/her vote on the Election Day.
2. **Voter Module**: In voter module, voter has to check their account active to cast their vote to his/her favorite candidate.
3. **Admin Module**: In admin module, admin valid the voter information and candidate list. After election, results can be published by admin on result day.
4. **Voting Module**: This module is main module. Entire voting Process can be done on the election day as the voter cast their vote to their favorite candidate.
5. **Results**: After election, results were published by the admin on result day.

X. RESULTS

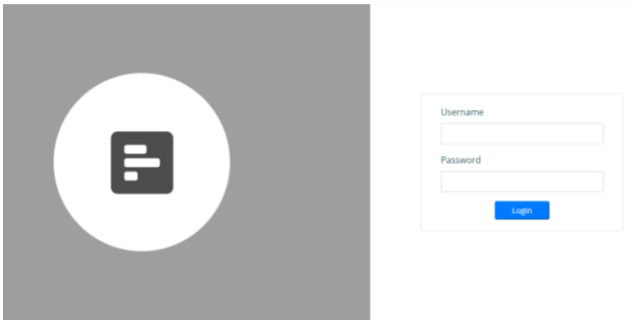


Fig 1.1 login form

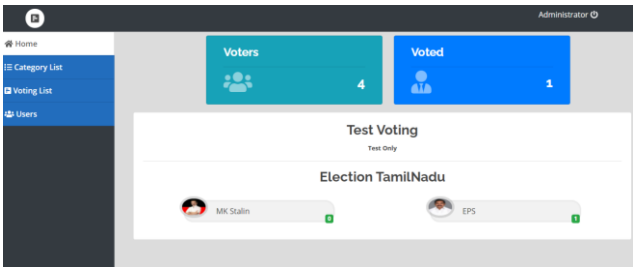


Fig.1.2 Admin dashboard

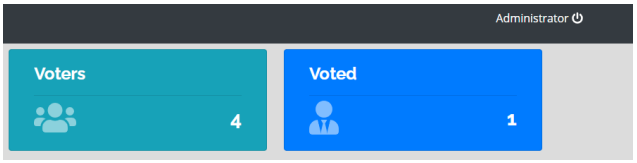


Fig .1.3 Count of voters

Fig. 1.4 Ballot form

XI. CONCLUSION

The proposed system has some benefits over paper based and EVM based voting system such as saving time, increasing efficiency and reduced errors. This type of reduces the cheaper, quick and easy to modern society.

In future build a national voting system in addition of fingerprint and optical scanning authentication to reduce errors.

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