Online voting system using blockchain

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ABSTRACT

Blockchain as a secure, trusted and decentralized architecture, is used to create secure schemes, which can serve economics and society with trusted parties. Normally the concept of the voting system is spread wide all over the world. In different generations, different methods of voting system are followed. At the initial stage, the voting system was done by using the paper. Then the second level of development is that the voting is done through the Electronic Voting Machine (EVM). But there were some issues regarding the results. There were some safety issues regarding voting results. In order to increase the security, we introduced the concept of blockchain in the voting system. This provides secure results and if any changes are done they can be identified easily. We will introduce a new concept called nonce. The nonce value is calculated by using the SHA256 algorithm.

Keywords— Blockchain, EVM, SHA256 algorithm

1. INTRODUCTION

Blockchain, a peer-to-peer decentralized ledger, has considered as a key technology that can promote the development of society greatly. Based on the cryptographic algorithm, the blockchain has solved the trust and security issues in the protocol. Currently, blockchain technology has been widely used in smart contracts, secure trading, Internet of things, storage, identity authentication, e-commerce and other fields. Especially, blockchain is used to create efficient economics and societies, such as decentralized sharing economy, enterprise management, and knowledge automation.

An online voting system is one of the essential services in the intelligent economy. Bit coin, first crypto-currency based on the blockchain. But in this online voting system, we didn't use the concept of bit coin. The concept of the nonce is used in this online voting system. The nonce is used to find the difficulty of the hash value. The nonce is calculated using the SHA256 algorithm. Then in this, we will find the difficulty value. The difficulty is the calculation of the zeros. Once the zeros value is

set at the beginning, the difficulty value is calculated based on the fixed zero value. Till the zero counts arise the process is repeated. The difficulty value is also calculated using the SHA256 algorithm.

In this system, a separate block is created for each and every user. In that block, there will be data, current hashing and previous hash value. The data is the name of the candidate for whom does the user vote for. The current hash value is the value of the candidate and that is calculated using the SHA256 algorithm.

The previous hash value is the hash value of the previously voted data of the candidate. So likewise the hash value of the current user will be linked to the next user block. So if any changes are made in the block (changing the candidate) so that the hash value of the current data will be changed. The hash value that is linked in the next block will also be changed. This how the value that is changed in any block is found easily.

2. EXISTING SYSTEM

The voting system that is used in recent times is done using Electronic voting machine (EVM). But there are many problems that are occurring using that machine. There may be variations done so that the total count of the votes for the candidate is to be changed. A number of digital voting systems are currently in use in countries around the world. It is a method for the classification of both linear and nonlinear data. Estonia has had electronic voting since 2005 and in 2007 was the first country in the world to allow online voting. The bases of this system are the national ID card that all Estonian citizens are given. These cards contain encrypted files that identify the owner and allows the owner to carry out a number of online and electronic activities including online banking services, digitally signing documents, access their information on government databases.

3. PROPOSED SYSTEM

Application for block chain technology is voting. By casting votes as transactions, we can create a blockchain which keeps track of the tallies of the votes. Everyone can agree on the final

count because they can count the votes themselves, and because of the block chain audit trail, they can verify that no votes were changed or removed, and no illegitimate votes were added. Structure of the block chain is given below.

Fig. 1: Structure

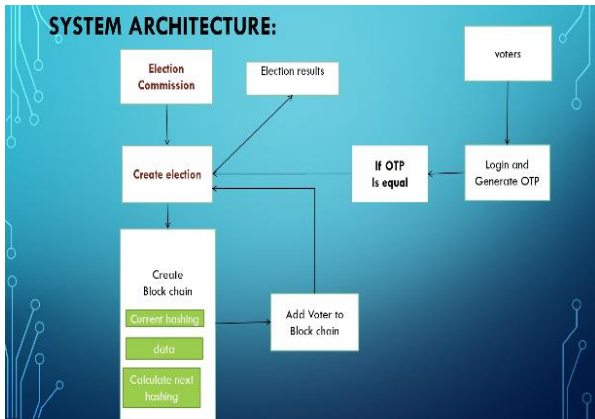The system architecture of the voting system is given below.

Fig. 2: System architecture

From the above structure, the voters will login and register their details later all the voter will get receive the OTP to their mail. By typing the OTP the voter can further login and enter their vote to their particular area candidate. Then, at last, the voter can go to the result page and see the vote count of all the candidates. Since we receive the vote count immediately we can get to know the results of each candidate at an instant.

The first case is the voting timing will also be recorded in the block created for each user. So that when the data gets changed the timing will also be changed, by seeing that we can identify that the data value is changed.

Second case is the nonce value that is calculated in the block using the SHA256 algorithm is also recorded. Later on, if any changes are done in the data, the nonce value will also be changed. By seeing that also the changed data will be identified easily.

4. IMPLEMENTATION
We are using four modules in the implementation process. The modules are represented as follows:

4.1 Create a block chain
Design of the blocks for the block chain contains certain information like the timestamp is to store the certain date of the block. Then the block contains the hash value of the previous block. Then the voter's vote is stored in the block. Finally the hash of the current block to ensure the integrity of its content.
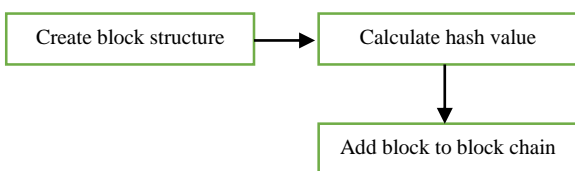

Fig. 3: Creating blockchain

4.2 Create election system
Online Election System would have Candidate registration, Admin Login which will be handled by the candidate. Admin creates an election and mention the candidates. Also, admin verifies User id.
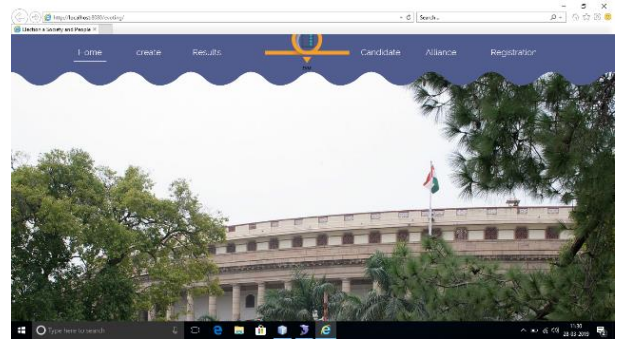

Fig. 4: Interface of election system portal

4.3 Voters login and give a vote
The voter has to enter his correct user name and password. Then the voters choose the candidate in the election system. After entering the vote the voter has to submit his results. Then only the vote counts will be calculated accordingly. Finally, the voter will receive a mail containing the name of the candidate to whom the voter has voted.
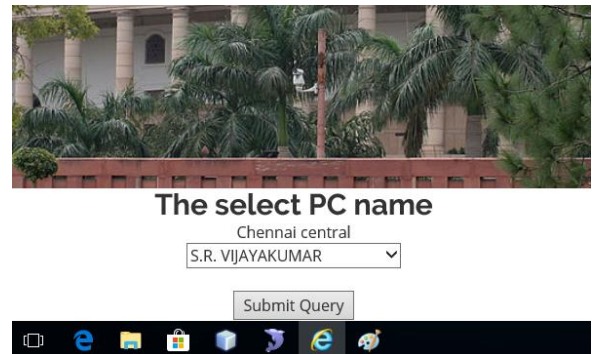

Fig. 5: Voters login page

4.4 Checking results
We create a blockchain which keeps track of the tallies of the votes. Election admin will be able to see the overall results regarding the number of votes voted to each candidate.

Fig. 6: Results

5. CONCLUSION
Hence from the developed online Election System provides us with the enhanced security. The online election system has increased efficiency and speed. And also the online election system has improved traceability.

6. REFERENCES

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