

Blockchain Based Online Voting System

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Abstract - Elections are the bedrock of a healthy democracy because they allow most people to express their opinions by voting. Voting must be transparent and completely fair. Because it is so crucial to our society, it is necessary to deploy new technologies to address the problem of fraudulent, illegal voting. Therefore, we are able to resolve the situation that previously created by utilizing decentralized and tamper-proof blockchain technology. The report goes into great detail about the potential implementation of the digital voting process made possible by Blockchain technology. The evaluation of an online voting system which has successfully achieved end-to-end verifiable online voting is included in the article.

Key Words: Blockchain, Ethereum, Voter, Vote, Online voting system.

1. INTRODUCTION

Both the voting procedures and the security flaw have evolved over time. The main problems with the current voting system include election manipulation, EVM hacking, polling booth capture, and vote rigging. The difficulties with EVM were examined in this work with the intention of suggesting an online voting model that would address these difficulties. To tackle this issue of such a high-end to end system that provides security and privacy, a high-end to end system that employs a powerful hashing algorithm approach, block production with sealing, data gathering, and result announcement using a flexible blockchain method is required.

This paper develops an online voting mechanism that creates a wallet using the Blockchain of Ethereum and the user's credentials. The voter will be given a private key that has been authenticated and is impenetrable. The voter will be able to cast their vote anonymously by sending ethers from their wallets to the candidate's wallet. Votes may be cast for the voter's designated constituency from any location. The blockchain contributes to preserving voter anonymity whilst being accessible to the general public. Every transaction ever made is captured in the immutable record of the Blockchain.

2. LITERATURE SURVEY

Blockchain Enabled online-voting system, this study suggests that using smart contracts to enable a protected and economical election while maintaining voter anonymity

in a blockchain-enabled online voting system. Furthermore, it enables democratic nations to switch from paper ballots to paperless direct-recording electronic voting machines[1]. Secure digital voting System using Blockchain Technology, the advantages include transparency and the underlying cryptographic principles of blockchain, which is discussed in this study in order to establish a successful e-voting solution. The approach was deployed with Multi-chain, the method was thoroughly examined, and the e-voting technique was used .[2].

This paper suggests a solution that uses pertinent data security techniques with the blockchain technology. In this paper, the idea of block formation and block sealing is presented. The Blockchain is more flexible to the demands of polling processes because to the adoption of a block sealing technology. [3] Systematic Review of Blockchain Technology and Its operations, this study showed how blockchain technology is being used in several diligence, similar as finance and healthcare. This paper investigates how blockchain technology can promote open exploration, including a review of recent advancements and descriptions of wisdom's benefits and problems[4].

3. METHODOLOGY

Blockchain technology is a platform of pupil hubs that preserves public records and information, also known as nodes, in a range of data sources the "chain." The terminology "digital ledger" is commonly used to identify this kind of storage. A blockchain is composed of a set of

blocks, each of which is its cornerstone. The operations that are being written to the system are defined in a block's header and body; the transactions that are being posted to the network are located in the block body. Blockchain is widely disseminated rather than being handled from a single point. Because of this, it would be hard for a vendor or government to dictate their tactics and the process.

Ethereum is the second-largest cryptocurrency by market capitalization, with a big developer community and substantial documentation. Ethereum as an open platform may be used to build and deploy complex legal and financial applications such as Smart contracts. A virtual interpreter is used to interpret these projects. A local in-memory blockchain called Ganache. It will provide us with 10 external accounts with Ethereum addresses on our local

blockchain. Each account comes with 100 fake ether. We have implemented our project used these accounts.

To use the blockchain, you must first connect to it. We must download a unique should browser extension in order to use the Ethereum block chain. This is when metamask enters the picture. Using our own Ethereum accounts, we'll be able to speak with our smart contract and connect to our local Ethereum blockchain.

Votes are selected from the Aadhar database. These voters' information would be registered, allowing them to select their preferred candidate. The voter's mobile number will get an SMS containing the private key. The voter will be given a token to vote with after creating a citizen's account using metamask utilizing their private key. Voting is done by transferring a coin from the electorate's wallet to the selected candidate's wallet, as depicted in fig. 1.

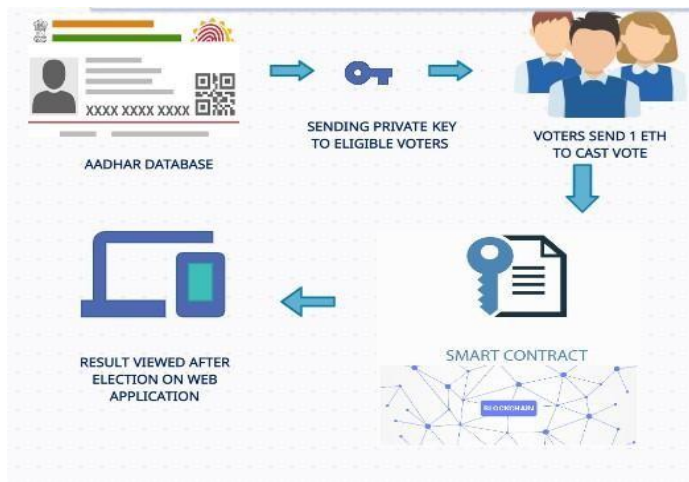


Fig 1: Block Diagram of Voting system

4. RESULT

We should see all of the contract and account data imported after we connect the client-side application to Metamask as in fig 2.



Fig-2: Showing client-side application

Following the creation of the voter's wallet, a candidate must be chosen. After choosing a candidate, the vote option must be chosen, and the vote must be cast successfully. Once you've done that, a Metamask confirmation window should appear, as seen in fig.3.

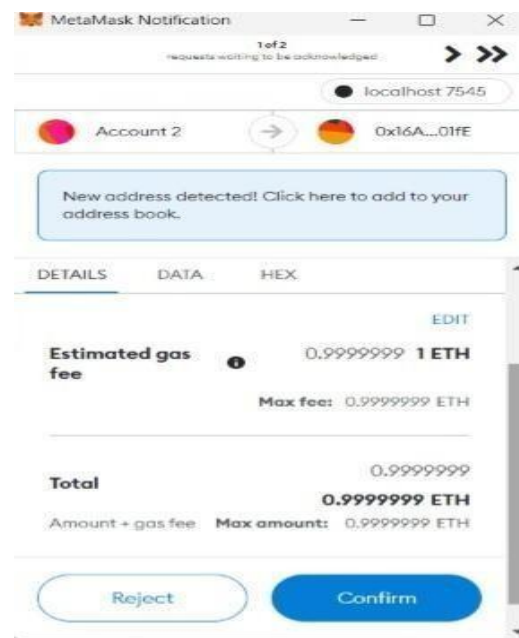


Fig-3: Metamask confirmation pop up

Additionally, it conceals which voter supported which party, which is quite helpful when setting up an online system of voting. To prevent multiple casts, once a vote is taken, the voter will not be able to elect again when the polling option will also no longer be valid, which can be seen in fig. 4.



Fig-4: Result

4. CONCLUSION

As interest in blockchain technology has grown, various efforts have been conducted to examine its potential for use in online voting. This paper outlines one such effort that makes use of the solution transparency and strength of blockchain's cryptographic underpinnings to

offer an efficient online voting. This paper describes one such initiative, which uses the power of blockchain's cryptographic frameworks and transparency can provide an effective online voting solution.

The voting results will be announced immediately following the election, and each voter will be able to see them by refreshing their browser after the voting period has ended. This will drastically minimize the period of time it takes to count votes. The main goal of this project is to create a voting system that is quick, inexpensive, and does not involve any security compromises.

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