Acropolis Institute of Technology and Research

Blockchain Based Voting System

Abhinav Nagar, Ajay Sonere, Ankit Buade

INTRODUCTION

In this paper, we present a blockchain-based voting app project that aims to provide a secure, transparent, and efficient way for voters to cast their ballots. The web app employs blockchain technology to ensure that each vote is accurately recorded and cannot be tampered with. Furthermore, the app is simple to use and can be accessed from any device with an internet connection. This project, we believe, can contribute to the ongoing discussion about how blockchain technology can be used to improve the electoral process.

The current voting systems in use in various countries around the world have several issues, such as lack of transparency, vulnerability to fraud and manipulation, and inefficiency. To engage voters, a lot of effort is expended, and an entire day is devoted to the voting process. Many countries hold general elections on Saturdays or Sundays to ensure that as many people as possible have the opportunity to vote. In several countries or parts of countries where elections are held on a weekday, election day is declared a public holiday.

However, incorporating digital voting into traditional democratic systems is not as simple as it appears.. Although online identity verification is possible, this method is not safe from hackers. It is vulnerable to a variety of security concerns, such as DDoS attacks, vote alteration and manipulation, malware attacks. However, it has been shown that on a broad scale, this approach is not very dependable. The voting process can be made more safe, transparent, immutable, and dependable by utilizing blockchain and many nations have also started implementing it.

OBJECTIVES

Even in the twenty-first century, most countries still prohibit online voting. Voters must leave their homes in order to vote. As a result, when the pandemic hit, elections were postponed because many people did not want to vote in person and were unable to vote online. This issue can be solved through digital voting, but it is extremely insecure. By providing a secure and transparent voting system, blockchain technology can address these issues.
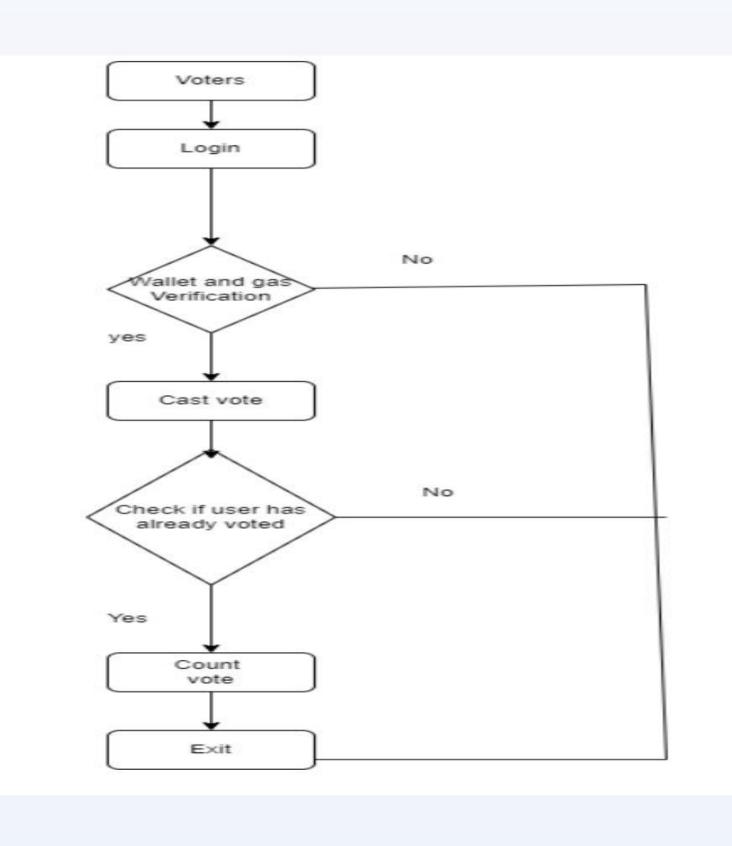
Blockchain technology is a decentralized, secure, and transparent system that has revolutionized many industries. It has the potential to transform the way we vote by providing a secure and transparent system that ensures the voting process's integrity. In this paper, we present a blockchain-based voting app project that aims to provide voters with a secure, transparent, and efficient way to vote. The app implements blockchain technology to ensure that each vote is accurately recorded and cannot be tampered with.

Furthermore, the app is simple to use and can be accessed from any device with an internet connection.

METHODOLOGY

The Ethereum blockchain platform was used to develop the blockchain-based voting app project presented in this paper. Ethereum is a decentralized platform that allows developers to use smart contracts to create decentralized applications (dApps). Smart contracts are self-executing contracts that can automate specific tasks like vote counting and verification.

The smart contracts will be responsible for counting the votes and reporting the results. The contract will be programmed to automatically count the votes and update the results in real-time, providing transparency and eliminating the need for manual counting. The app was developed using the Solidity programming language and the Truffle development framework.

The app allows voters to register and cast their ballots using their mobile devices or computers. Each voter is assigned a unique identifier, which is stored on the blockchain. When a user casts a vote, the vote is recorded on the blockchain and cannot be altered or deleted. The app used the consensus algorithm to verify the votes and ensure that they were recorded accurately.

The app was tested and evaluated using a simulated voting scenario. The results showed that the app was able to record and verify votes accurately and efficiently. The app was also simple to use and available from any device with an internet connection.

The development process of the app was iterative, with frequent testing and feedback from users to improve the app's functionality, user-friendliness, and security. Overall, the methodology used in this project ensured that the app was developed using a rigorous and systematic approach, which resulted in a secure, transparent, and efficient voting system using blockchain technology.
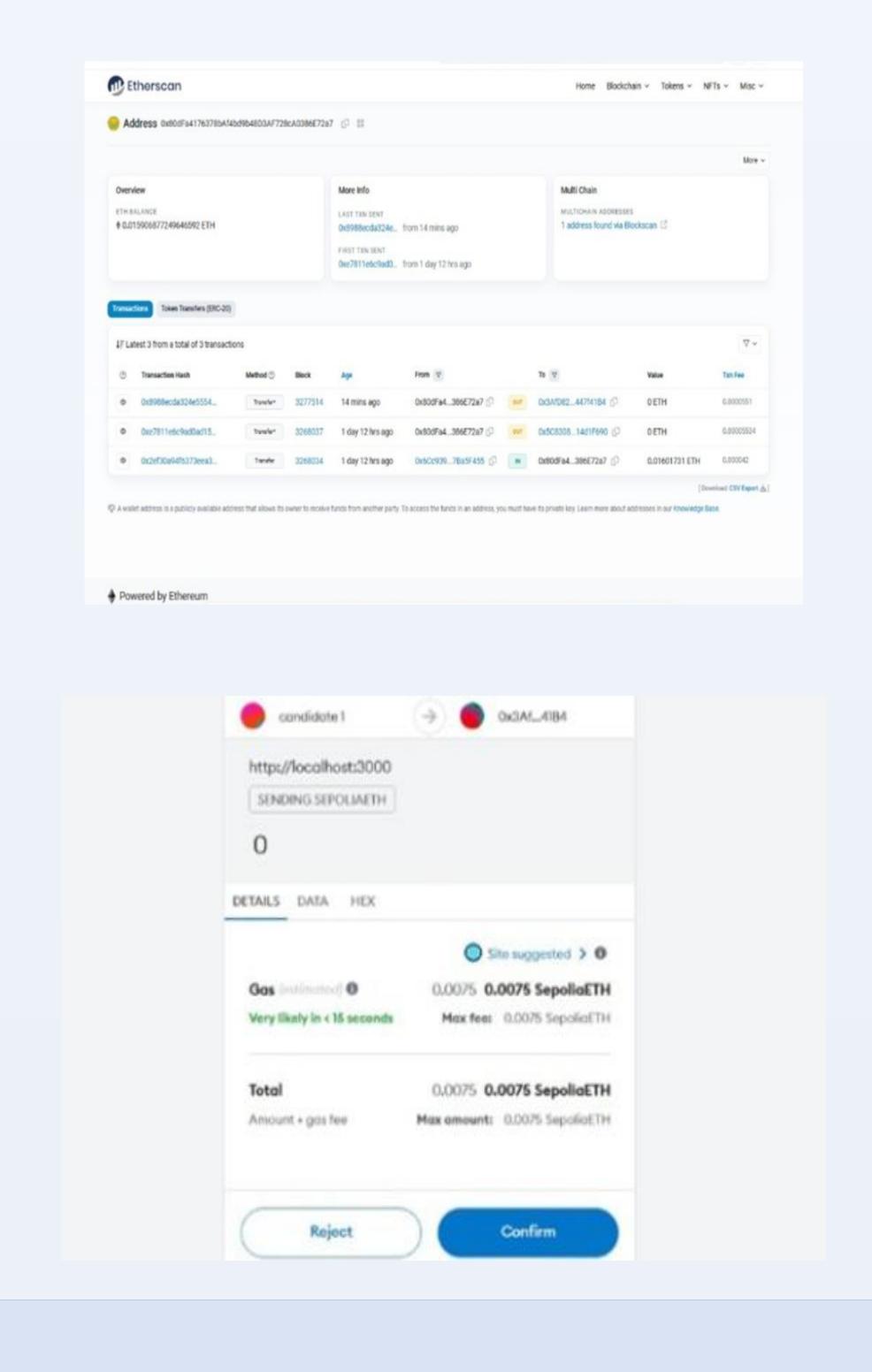
RESULTS

The results of the testing and evaluation process showed that the blockchain-based voting app project was successful in providing a secure, transparent, and efficient way for voters to cast their votesThe use of smart contracts will automate the counting and reporting of votes, providing real-time results and eliminating the need for manual counting. The system will also ensure the anonymity and privacy of voters.

The proposed system will use a decentralized database structure that is stored on the blockchain. The database will store information about voters, candidates, and election results. The use of a decentralized database structure ensures that the data is secure and cannot be tampered with.

This project's database is quite different than traditional databases as it based on blockchain. All the transactions can be tracked on block explorer which maintains records of blockchain. In this project we have deployed our application on Ethereum Blockchain, so all the transactions related to wallet address can be viewed on Etherscan.

Metamask is also used in this project. It acts as a wallet, enabling users to store and manage their cryptocurrencies, and also provides a way fto sign transactions and interact with smart contracts.or users

CONCLUSION

In conclusion, the blockchain-based voting app project presented in this paper has shown that blockchain technology can provide a secure, transparent, and efficient system for recording and verifying votes. The app developed using Ethereum blockchain platform and the Solidity programming language demonstrated the potential of blockchain technology to address the limitations of traditional voting methods and increase trust in the electoral process. The simulated voting scenario conducted in the testing and evaluation process showed that the app was able to record and verify votes accurately and efficiently. The app was also user-friendly and accessible from any device with an internet connection.

However, there are still limitations and challenges to be addressed in using blockchain technology for voting systems. For example, the issue of identity verification and the potential for voter coercion in a remote voting scenario. Further research is needed to address these challenges and explore the potential of blockchain technology in different voting scenarios.

Overall, the blockchain-based voting app project presented in this paper is a step toward the future of secure and transparent voting systems. By using blockchain technology, we can ensure that every vote is recorded accurately and cannot be tampered with, increasing trust in the electoral process and promoting democratic values.

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CONTACT

Abhinav Nagar
Ankit Buade
Ajay Sonere

CS 1 III Year
abhinavnagar20616@acropolis.in