Department of Computer Science & Engineering
Independent University, Bangladesh

PROJECT REPORT

CSE 490
Special Topics in CSE
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1. Project Title:

Voting App

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4. Abstract:

A blockchain voting app is a decentralized application that makes use of blockchain technology to ensure secure, transparent, and immutable voting processes. The app allows users to cast their votes in a tamper-proof and auditable manner using smart contracts, ensuring that the voting results are accurate and trustworthy. The app can also offer features like voter verification, anonymity, and real-time vote counting, making voting more convenient and efficient. A voting app can boost trust in the democratic process and promote fair elections by leveraging the security and transparency of blockchain.

5. Introduction:

A voting app can use blockchain to create a tamper-proof and auditable record of each vote, making it impossible for anyone to change or manipulate the voting results. The app can use smart contracts to automate the voting process, ensuring that the election rules. The purpose of this report is to provide an overview of the voting app shown in the video "Building a Voting App with Ethereum Blockchain." The voting app is built on the Ethereum blockchain and is intended to provide a secure and transparent voting platform.

6. Features:

The voting app uses the Ethereum blockchain to allow users to create and participate in elections. To automate the voting process, the app makes use of smart contracts, which are self-executing code on the blockchain. The smart contracts allow the app to record and store each vote on the blockchain, making voting results transparent and tamper-proof. The app also has an easy-to-use interface that allows voters to easily cast their ballots.

7. Security:

The Ethereum blockchain is used by the app to offer a high level of security. A global network of nodes called nodes maintains the decentralized blockchain. No single entity can tamper with the voting results thanks to the decentralized nature of the blockchain. Additionally, the app automates the voting process using smart contracts, reducing the chance of human error.

8. Transparency:

Transparency is provided by the app by making the voting process visible and auditable to everyone on the network. Each vote is recorded on the blockchain, which is a public, immutable ledger that anyone can access. This ensures that the voting results are accurate and tamper-resistant, fostering trust in the democratic process.

9. User-friendliness:

The voting app is created with a straightforward interface that makes it simple for users to create and take part in elections. The app is accessible to a wide range of users because it is made to function on a variety of devices, including smartphones, tablets, and computers.

10. Potential Benefits:

By offering a safe, open, and effective platform for voting, a blockchain-based voting app has the potential to enhance the electoral process. It ensures the integrity of the election by removing the possibility of fraudulent actions like double voting or vote tampering. Greater accessibility is also made possible by the app because it allows users to vote from anywhere in the world. Furthermore, by making the voting process more accessible and convenient, blockchain-based voting may boost voter turnout.

11. Advantages:

Voting systems powered by blockchain may boost public confidence in democracy by enhancing accountability and transparency. Using a public ledger makes the voting process transparent and auditable, enhancing public confidence in the outcome of the election. As people are more likely to participate in an election they trust, this can increase voter turnout and participation.

Voting systems built on the blockchain have the potential to be more accessible. As long as a person has access to the internet, they can vote from anywhere in the world. People who are physically unable to visit polling places because of physical limitations or geographical restrictions may find this to be especially helpful.

Traditional voting systems may result in disputes and legal challenges, which blockchain-based voting systems may reduce. The blockchain's transparency and immutability ensure that there is a clear record of the voting process, making it easier to resolve any disputes that may arise.

12. Challenges:

The blockchain-based voting app appears to be a promising solution for improving the voting process, there are a number of issues that must be addressed. One significant challenge is ensuring voter identification accuracy. While blockchain technology can ensure the voting process's integrity, it cannot guarantee that voters are who they say they are. As a result, a dependable and secure method of voter identification is required. Furthermore, blockchain-based voting systems are vulnerable to malicious attacks such as Denial of Service (DDoS). As a result, robust security measures are required to protect the voting app from such attacks.

Some people are opposed to the use of blockchain-based voting systems, particularly in traditional political systems. Some fear that the use of blockchain technology will result in a lack of transparency and accountability in the voting process. Others argue that the anonymity provided by blockchain-based voting systems may lead to voter fraud because cases of voter fraud would be difficult to identify and investigate.

13.Future Outlook:

The application of blockchain technology to voting is still in its infancy. However, it has the potential to completely transform voting, offering a platform that is safer, more open, and more effective. We can anticipate more sophisticated and advanced blockchain-based voting systems that can address the issues and challenges related to the technology as it continues to develop. As more people become aware of the potential advantages and as the technology becomes more available and user-friendly, there is a good chance that blockchain-based voting systems will become more widely used.

14.Conclusion:

In conclusion, the Ethereum smart contract-based blockchain voting app offers a promising improvement to the voting procedure. Greater security, transparency, and accessibility are made possible by the app's use of smart contracts and the Ethereum blockchain, potentially enhancing the legitimacy of the democratic process. Even though there are still some obstacles to be overcome, the app offers a framework for creating a voting system that is more reliable and effective. We can anticipate more sophisticated and advanced blockchain-based voting systems that can address the issues and challenges related to the technology as it continues to develop.