Blockchain Technology and its Potential in Voting System

Abstract:

The aim of this project is to develop a Blockchain technology based voting system. This abstract explore the conceptualization and advantages of a blockchain-based E-Voting system, highlighting its potential to revolutionize democratic processes worldwide.Blockchain is a peer-to-peer ,decentralized ,distributed system which is more secure,reliable,transparent and immutable to ensure a tamper-proof and verifiable voting mechanism. Through a distributed ledger, each vote cast is recorded in a transparent and immutable manner, thereby eliminating concerns related to fraudulent activities, double-voting, or unauthorized alterations. Furthermore, the decentralized nature of blockchain ensures that the E-Voting system is resilient against single points of failure, enhancing its reliability and robustness.

Existing System:

Blockchain technology, known primarily for its association with cryptocurrencies like Bitcoin, has been explored for its potential applications in various sectors, including voting systems. The immutable and transparent nature of blockchain offers promising solutions to address challenges in traditional voting systems. Blockchain technology ensures security and authentication through cryptographic techniques and decentralized networks in order to prevent from fradulent activities in voting system. Follow My Vote is a blockchain-based E-Voting platform that focuses on transparency and end-to-end verifiability and this platform employs blockchain to ensure the integrity of the voting process. It allows voters to independently verify that their votes were counted and that the overall election results are accurate.

Proposed System:

Blockchain-Based Online E-voting System is offered as a solution to numerous voting-process difficulties. This section introduces a proposed concept for an online e-voting system that makes use of Solidity Smart Contracts to create a decentralized voting application.The proposed e-voting system offers privacy to voters and protects voter transactions by keeping the transactions private and the election transparent and secure. The smart contract verifies the vote and this smart contract makes an interaction with the blockchain via the corresponding peer, which appends the vote into the blockchain. After the voting period ends, voters can verify the validity of their votes using a transaction ID, ensuring their anonymity while confirming that their vote was counted as intended..A voting transaction in proposed system, therefore, reveals no information about the individual voter who casts any particular vote.

Software Requirements:

Blockchain framework- Ethereum, Hyperledger fabric

Smart Contract Development- Solidity, Java

Database Management System -MySQL Workbench 8.0, PostgreSQL to store voter information, transaction details, and audit logs.

Data Encryption: Software libraries for encrypting sensitive data before storing it on the blockchain or in the database.

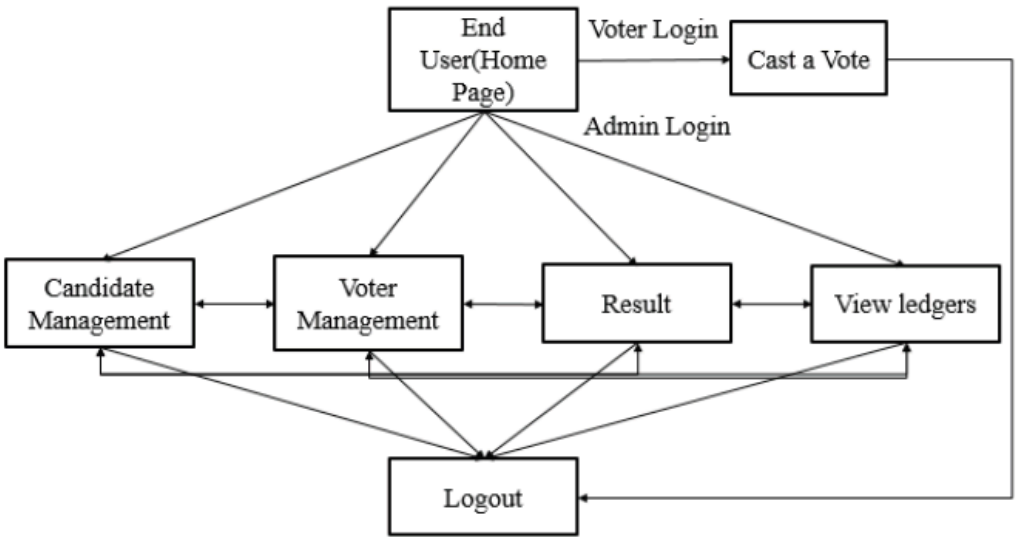
Frontend Framework-HTML,CSS,Javascript,React.j.s.

API Development: RESTful APIs or GraphQL APIs for facilitating communication between front-end applications, blockchain nodes, and database systems.

Network Protocols: Secure communication protocols (e.g., HTTPS, SSL/TLS) to ensure encrypted data transmission over the network.

Regulatory Compliance Software- Tools or platforms for ensuring compliance with electoral laws, regulations, and data protection standards.

System Architecture:



Frontend Template: