A Project (Stage - I) Report
on

SECURE DIGITAL VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY

Submitted in partial fulfillment of the requirements
for the award of degree of

BACHELOR OF TECHNOLOGY
in
Information Technology

by

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(NAAC 'A' Grade & NBA Accredited- ECE, EEE, CSE & IT)
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CERTIFICATE

This is to certify that the Project report on **"SECURE DIGITAL VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY"** is a bonafide work carried out by **K. Supriya (20WH1A1225), K. Anvitha (20WH1A1228), S. Ashwitha (20WH1A1235)** and **E. Mamatha (21WH5A1206)** in the partial fulfillment for the award of B.Tech degree in **Information Technology , BVRIT HYDERABAD College of Engineering for Women, Bachupally, Hyderabad** affiliated to Jawaharlal Nehru Technological University, Hyderabad, under my guidance and supervision. The results embodied in the project work have not been submitted to any other university or institute for the award of any degree or diploma.

Internal Guide	**Head of the Department**
Ms. M. Sudha Rani	**Dr. Aruna Rao S L**
Assistant Professor	**Professor & HoD**
Department of IT	**Department of IT**

External Examiner

DECLARATION

We hereby declare that the work presented in this project entitled **"SECURE DIGITAL VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY"** submitted towards completion of in IV year II sem of B.Tech IT at "BVRIT HYDERABAD College of Engineering for Women", Hyderabad is an authentic record of our original work carried out under the esteemed guidance of **Ms. M. Sudha Rani, Assistant Professor**, Department of Information Technology.

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ABSTRACT

Voting is a very important event organized in all countries by secret ballot as well as Electronic Voting Machines. Such processes have many drawbacks such as vote disruption, low turnout, time-consuming counting, hacking of electronic voting machines, and so on. To overcome this problem we will use blockchain technology which provides anonymity for voters. A blockchain is a distributed, digitized and consensus-based secure information storage mechanism. Blockchain technology moves in the direction of persistent revolution and change. A voting system that uses blockchain technology provides a secure and transparent environment for decisions, where voters can vote only once and vote will not be interrupted. Due to this online procedure percentage of voting will also increase. A distributed online electronic voting system implementation using the blockchain as a service is an innovative blockchain-based online e-voting system that tackles some of the limitations in the current systems and assesses some of the well-known blockchain frameworks in order to build such a system. In order to guarantee the validity and reliability of the voting process, smart contracts are used to control the voting process and a face detection system and cryptographic techniques are integrated to guarantee the confidentiality and privacy of voter data.A blockchain based online voting system is a promising approach to enable secure and transparent voting.

Keywords: Blockchain, Ethereum, Solidity, Ganache, MetaMask, FireBase, Face API

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Chapter 1

Introduction

In response to recent concerns over identity theft, false votes, and corruption in India's voting system, we propose the development of a blockchain-based electronic voting system. This system aims to enhance trust by leveraging the immutable and transparent nature of blockchain, ensuring the security of each vote through cryptographic measures[1]. By employing a decentralized architecture, the proposed system minimizes the risk of tampering, offering voters confidence in the integrity of their ballots. Real-time updates and transparent vote counts further strengthen the system against third-party interference, providing features such as voter authentication, ballot security, transparency, and protection against false or duplicate ballots. This holistic approach results in a distributed system that eliminates the possibility of tampered ballots, offering a more secure and trustworthy voting experience for the largest democracy in the world.

1.1 Motivation

The motivation of this project stems from the pressing need to address the critical challenges and vulnerabilities in India's current voting system. With the advent of electronic voting machines (EVMs), there have been persistent concerns related to identity theft, false votes, and corruption, eroding public trust in the democratic process. The sheer size of India's population, combined with the logistical complexities of traditional voting methods, calls for a more efficient, secure, and transparent solution. The proposed blockchain-based electronic voting system is motivated by the desire to instill confidence in the electoral process by leveraging the inherent security features of blockchain technology[2]. By enhancing the integrity of the voting system through cryptographic measures and decentralization, the project aims to create a trustworthy and tamper-resistant platform that not only addresses current issues but also streamlines the voting process, reduces

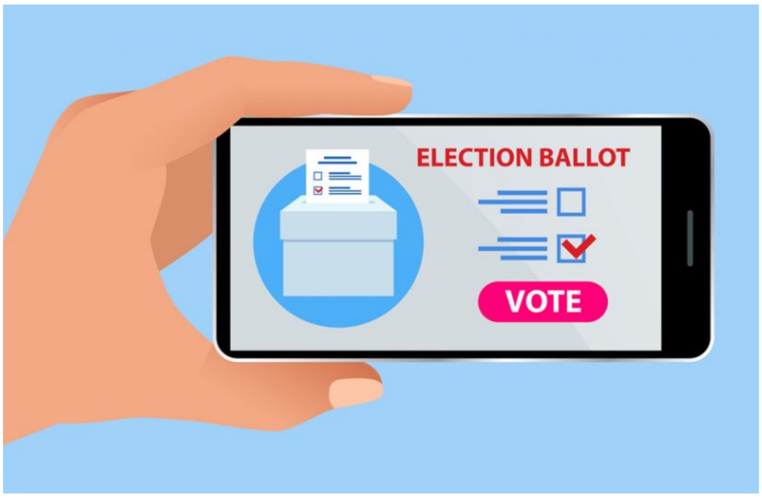


Figure 1.1: Voting Image

infrastructural costs, and minimizes security expenses. Ultimately, the motivation is rooted in the aspiration to strengthen the democratic foundation of India by providing its citizens with a reliable and transparent voting system they can trust.

1.2 Objective

A blockchain-based digital voting system aims to modernize elections with heightened security, transparency, and efficiency. Its core objectives include ensuring a tamper-resistant environment through blockchain's immutability, providing transparency via an accessible ledger for public scrutiny, and prioritizing voter privacy through cryptographic techniques. Decentralization minimizes vulnerabilities, enhancing security[3]. The system promotes accessibility with remote voting options, ensuring inclusivity. Real-time processing ensures swift and accurate results, while transparent blockchain records facilitate post-election audits for result accuracy. Ultimately, the system's design fosters trust by addressing fraud concerns, complying with regulations, and fortifying cybersecurity against potential threats.

1.3 Problem Statement

The existing voting system in India, primarily reliant on electronic voting machines (EVMs), faces significant challenges, including identity theft, potential for false votes, and concerns about corruption. Recent claims against the current system have raised doubts about its reliability and integrity. Moreover, the logistical complexities, long travel times to polling places, infrastructural costs, and security expenses associated with traditional voting methods present substantial hurdles. The aim of this project is to address these issues by developing a blockchain-based electronic voting system that ensures the security, transparency, and trustworthiness of the electoral process.[4] The need for a more efficient and secure voting process, and the desire to reduce the time and costs associated with traditional voting methods.

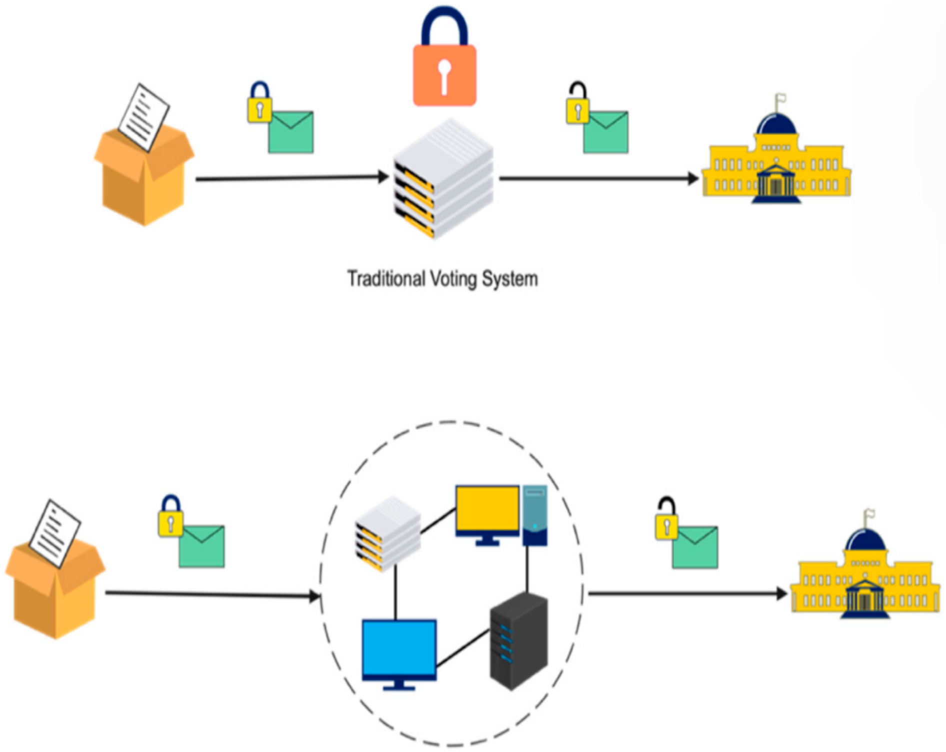


Figure 1.2: Blockchain Voting

Chapter 2

Literature Survey

This research paper under consideration investigates the development and deployment of an online voting system leveraging blockchain technology.[5] The paper thoroughly explores the system's architecture, elucidating the role of smart contracts in orchestrating the voting process. Additionally, it highlights the integration of a face detection system and cryptographic techniques aimed at safeguarding voter data confidentiality and privacy.The focus is on the creation and implementation of an online voting system utilizing blockchain technology. The architecture of the system is thoroughly examined, with a specific emphasis on the use of smart contracts to manage the voting process. Furthermore, the paper discusses the incorporation of a face detection system and cryptographic techniques, which play a crucial role in ensuring the security and privacy of voter data. The integration of these components aims to enhance the overall integrity and confidentiality of the voting process. The comprehensive exploration of these aspects contributes to the paper's goal of establishing a secure and transparent online voting system.

This study suggests an innovative blockchain-based online e-voting system that tackles some of the limitations in the current systems and assesses some of the well-known blockchain frameworks in order to build such a system through the description of a case study, [6] specifically the process of an election time and the blockchain-based application system, which improves security and lowers the cost of hosting a national election and votes will be counted and the results will be reported immediately. The project suggests an online voting mechanism that makes use of the Ethereum Blockchain. It involves building a user wallet based on the Ethereum Blockchain, which will provide voters with a verified and highly secure personal ID. To ensure anonymity, voters can choose to cast their ballots by transferring tokens from their wallet to the candidate's wallet, thus maintaining the confidentiality of their choices.Any geographic location may vote for the voter's designated constituency. The anonymity of voters is further protected through blockchain, which is nevertheless accessible to the whole public. The suggested voting mechanism is cost-effective and aims to utilize a tamper-proof blockchain to ensure that any modifications made to the voting process, stay unaltered and safe, regardless of voter intent or interference from other parties

This paper underscores the profound impact of blockchain technology on the contemporary professional landscape, characterizing it as a pivotal discovery with far-reaching implications. [7]Positioned as a distributed, digitized, and consensus-based secure information storage mechanism, blockchain is depicted as a force propelling persistent revolution and change. The surge in blockchain technology over recent years has prompted a meticulous examination by scholars and specialists seeking innovative applications across diverse domains.Amid this technological upswing, the paper focuses on the burgeoning opportunities brought about by blockchain, particularly in the realm of e-voting applications. It conducts a systematic review of emerging blockchain-based e-voting systems, delving into the details of open research matters within this rapidly evolving field.A key aspect highlighted is the necessity for frameworks to undergo enhancements to address existing reservations and challenges, especially concerning their application in voting systems.[8] The conclusion drawn is that, despite the promise of blockchain in e-voting, further refinements are imperative to ensure the effective integration of these systems, emphasizing the dynamic nature of research and development in this domain.

This paper addresses the formidable challenge of constructing a secure voting system with a focus on fairness and privacy, this implementation paper explores the application of blockchain as a service.[9] The primary aim is to assess the feasibility of employing a decentralized architecture for the implementation of distributed electronic voting systems. The objective is clear: to establish a voting scheme that is not only open, fair, and independently verifiable but also inherently secure.The proposed solution hinges on implementing a protocol designed to achieve fundamental e-voting properties, coupled with a significant degree of decentralization. A noteworthy feature is the system's flexibility, allowing voters to change or update their votes. Through experimentation, the results affirm the benefits of this proposed solution for both existing and future voting systems.In essence, the paper contributes to the ongoing discourse on the evolution of secure and fair voting systems by demonstrating the practical application of blockchain in the service of decentralized electronic voting. The positive experimental results underscore the potential effectiveness of this approach, signaling promise for the improvement of contemporary and upcoming voting processes.

This paper distinguishes identical twins using their face images in biometrics. The goal of this study is to construct a biometric system that is able to give the correct matching decision for the recognition of identical twins.[10] It proposed a method that uses feature-level fusion, score-level fusion, and decision-level fusion with principal component analysis, histogram of oriented gradients, and local binary patterns feature extractors. In the experiments, face images of identical twins from ND-TWINS-2009-2010 database were used. The results show that the proposed method is better than the state-of-the-art methods for distinguishing identical twins. Variations in illumination, expression, gender, and age of identical twins' faces were also considered in this study. The experimental results of all variation cases demonstrated that the most effective method to distinguish identical twins is the proposed method compared to the other approaches implemented in this study. The lowest equal error rates of identical twins recognition that are achieved using the proposed method are 2.07% for natural expression, 0.0% for smiling expression, and 2.2% for controlled illumination compared to 4.5, 4.2, and 4.7% equal error rates of the best state-of-the-art algorithm under the same conditions. Additionally, the proposed method is compared with the other methods for non-twins using the same database and standard FERET subsets. The results achieved by the proposed method for non-twins identification are also better than all the other methods under expression, illumination, and aging variations.

Chapter 3

System Design

3.1 The Proposed System

The proposed secure digital voting system using blockchain technology is designed to revolutionize the traditional electoral process, prioritizing security, transparency, and efficiency. Employing a robust cryptographic voter registration process, each eligible voter is assigned a unique identifier within a permissioned blockchain network. Smart contracts, embedded with the rules and logic of the voting process, facilitate secure ballot creation and counting.

The blockchain's transparency and immutability features ensure an unalterable record of votes, enhancing traceability and public scrutiny. Advanced cryptography techniques guarantee voter anonymity while maintaining eligibility verification. Decentralization, achieved through a distributed network of nodes and a consensus mechanism, minimizes vulnerabilities and strengthens security.

To fortify the sanctity of the voting process, advanced cryptography techniques are harnessed to safeguard voter anonymity while upholding eligibility verification. This delicate balance ensures that individual votes remain confidential and untampered, providing a dual layer of security crucial for the integrity of the electoral system. In tandem with these cryptographic measures, the system achieves decentralization through a distributed network of nodes and a consensus mechanism. This strategic decentralization not only minimizes vulnerabilities but also strengthens the overall security of the system, rendering it resilient against potential attacks.

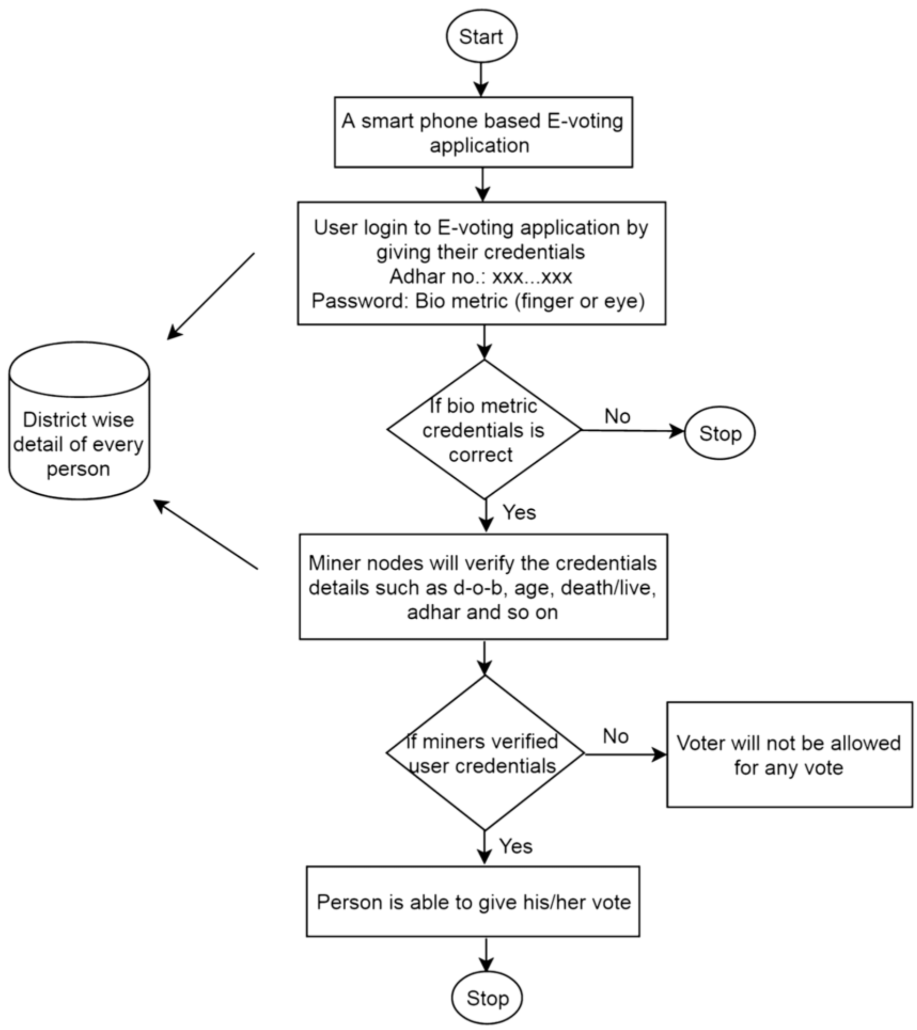


Figure 3.1: Voting Architecture

The system provides a user-friendly interface for voters, promoting inclusivity, and enables remote voting options to enhance accessibility. Real-time processing ensures swift and accurate election results, and transparent blockchain records facilitate efficient post-election audits. Regular testing, security audits, and compliance with legal regulations are integral components, emphasizing the system's commitment to addressing concerns related to fraud and manipulation. Through education initiatives and collaboration with experts, the proposed system aims to instill trust in the electoral process and pave the way for a secure and democratic digital voting paradigm.

3.2 Technologies

Blockchain: A digital voting system leveraging blockchain technology represents a transformative approach to addressing longstanding issues in traditional voting systems. By harnessing the decentralized and secure nature of blockchain, this innovative solution aims to enhance the integrity, transparency, and efficiency of the electoral process.

Cryptography: In a blockchain-based digital voting system, cryptography is the cornerstone of a secure and trustworthy electoral process. Cryptographic techniques are strategically employed to address critical aspects such as voter authentication, ballot confidentiality, data integrity, and secure computation.

Smart Contracts: Smart contracts in a digital voting system using blockchain technology offer a transformative approach to conduct secure, transparent, and tamper-resistant elections. These self-executing contracts, powered by blockchain's decentralized and transparent nature, automate various aspects of the voting process, providing benefits such as enhanced security, increased efficiency, and greater trust in electoral outcomes.

3.3 UML Diagrams

UML is an acronym that stands for Unified Modeling Language. It is a modern approach to modeling and documenting software. In fact, it is one of the most popular business process modelling techniques. It is based on diagrammatic representations of software components. A UML diagram with the purpose of visually representing a system along with its main actors, roles, actions, artifacts or classes, in order to better understand, alter, maintain, or document information about the system.

Sequence Diagram : A sequence diagram is a visual representation that illustrates the sequential flow of actions, interactions, or processes within a system or software application. It outlines the step-by-step sequence of events or activities, depicting how different components or modules of the system interact with each other and the order in which these interactions occur. This diagram typically uses symbols, blocks, or objects connected by arrows or lines to demonstrate the flow of control, data, or information between various elements within the system, offering a clear and structured overview of the system's behavior in a chronological manner.

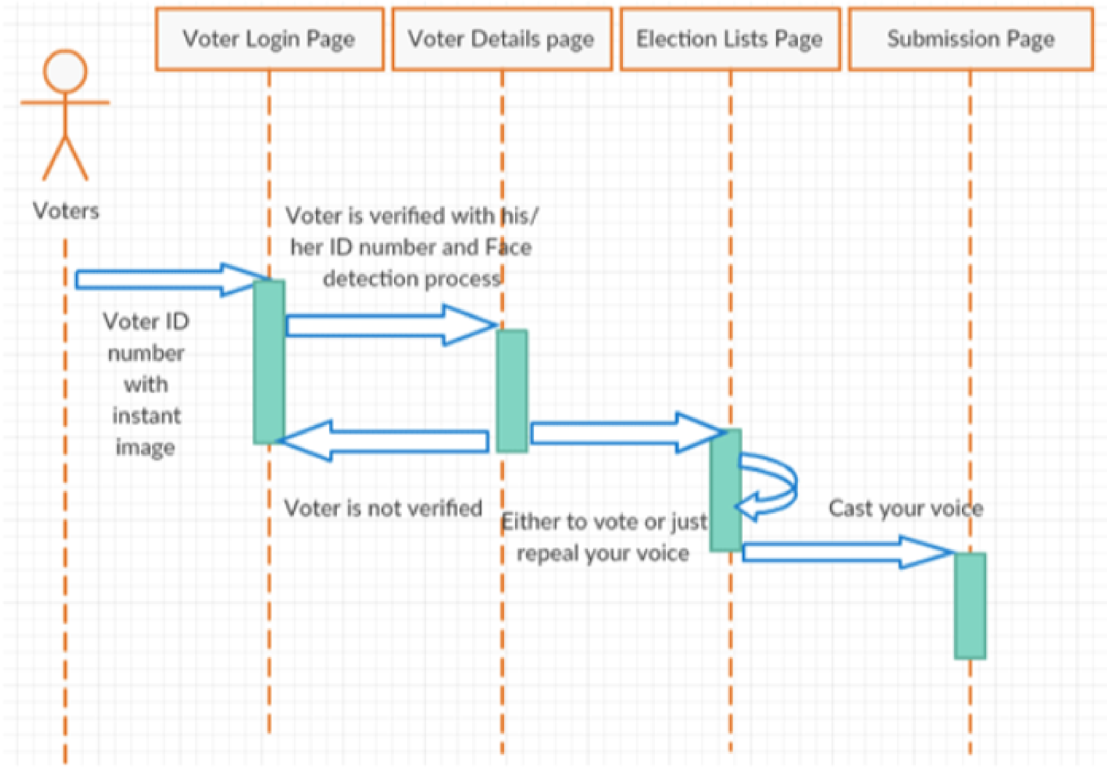


Figure 3.2: Sequence diagram

Use Case Diagram : A use case diagram is a graphical representation in Unified Modeling Language (UML) that illustrates how users interact with a system by depicting various use cases or scenarios and their relationships. It presents a high-level view of the system's functionalities from a user's perspective, showcasing different actions or tasks users can perform and how these actions relate to the system's components. This diagram helps in identifying and understanding user requirements, defining system boundaries, and mapping out user-system interactions, thereby serving as a communication tool between stakeholders and developers to visualize system behavior and functionalities.

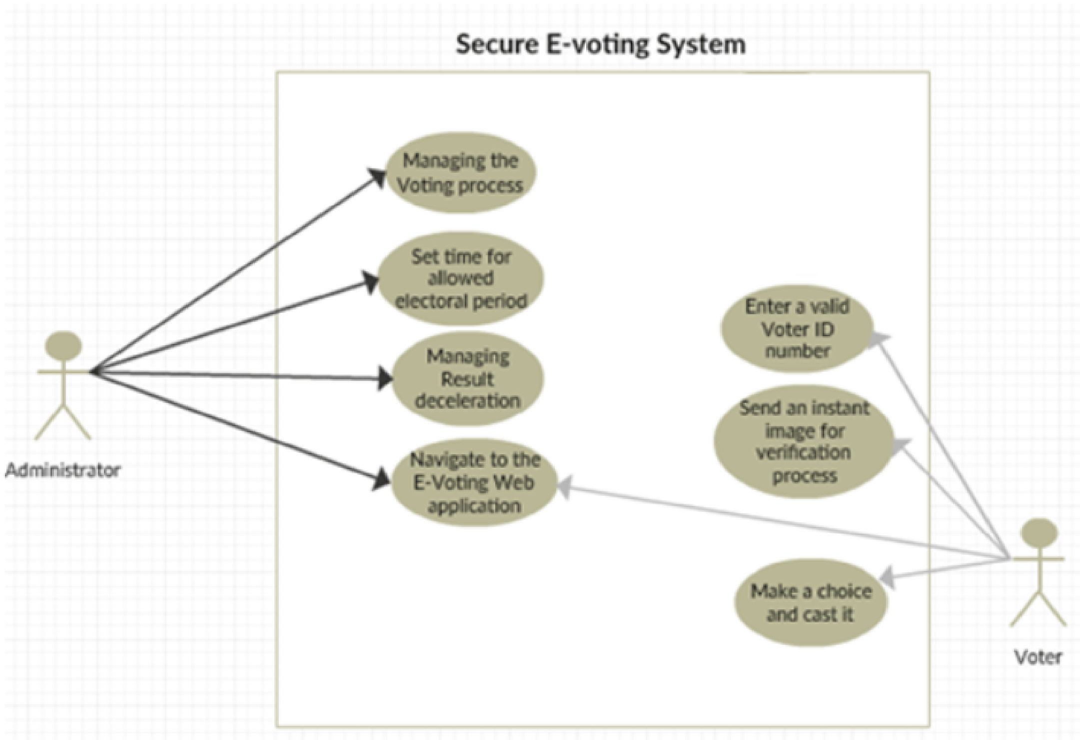


Figure 3.3: Use case diagram

3.4 Software and Hardware Requirements

Hardware

- Operating System: Windowss 11
- Processor: Intel Core i5
- Memory(RAM): 8GB

Software

- Blockchain
- Smart Contracts
- Database Management System
- Face API Integration

Chapter 4

Methodology

4.1 Tools and Libraries used

The following are the tools and libraries used involved in the project :

Blockchain : Blockchain revolutionizes the way transactions and assets are managed by providing a shared, immutable ledger within business networks. This innovative technology facilitates the secure and transparent recording of transactions, allowing for the tracking of a diverse range of assets, both tangible (such as houses, cars, and land) and intangible (including intellectual property, patents, copyrights, and branding). Blockchain's inherent features make it a versatile platform capable of handling virtually anything of value, offering a comprehensive solution for various industries.

Solidity : Solidity is a high-level programming language designed for implementing smart contracts. It is a statically typed object-oriented(contract-oriented) language.Solidity is highly influenced by Python, c++, and JavaScript which run on the Ethereum Virtual Machine(EVM).Solidity supports complex user-defined programming, libraries, and inheritance.Solidity is the primary language for blockchains running platforms.Solidity can be used to create contracts like voting, blind auctions, crowdfunding, multi-signature wallets.

Ganache : Ganache is a local blockchain tool that is used to develop and test Ethereum applications1. It is an in-memory blockchain server that emulates a full Ethereum client and allows developers to test and debug smart contracts without requiring a real blockchain1. Ganache serves a vital role in all stages of the development process with many plausible advantages2. It can be used throughout development, providing a secure and predictable environment for developing, deploying, and testing dApps.

MetaMask : MetaMask serves as a versatile and user-friendly software cryptocurrency wallet, acting as a gateway for individuals to interact with the Ethereum blockchain and decentralized applications (DApps). Accessible through a browser extension or mobile app, MetaMask simplifies the complexities of blockchain technology. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications. MetaMask provides support for ETH-based tokens such as ERC 721 and ERC-20 tokens. It facilitates the use of public and private keys and assigns an address to the user so that cryptocurrencies can be sent and received safely.

Firebase : Firebase is a product of Google which helps developers to build, manage, and grow their apps easily. It helps developers to build their apps faster and in a more secure way. No programming is required on the firebase side which makes it easy to use its features more efficiently. It provides services to android, ios, web, and unity. It provides cloud storage. It uses NoSQL for the database for the storage of data.Firebase stands as a comprehensive solution for developers, offering a wide array of services to expedite app development, enhance security, and provide versatile compatibility across multiple platforms. Its integration of cloud storage and utilization of NoSQL databases further solidify its position as a user-friendly and efficient platform for building, managing, and growing applications.

Face-API : The Face-API is a library used for face detection, face authentication, face recognition, etc. We used this library in our project to detect faces in the real time and get the count of the faces in real time. If the multiple faces are detected in the webcam then the system will show an alert to the user.One notable feature of the Face-API is its ability to handle scenarios involving multiple faces. In instances where the webcam captured multiple faces concurrently, the system triggered an alert to promptly notify the user. This alert mechanism served as an effective means of communication, ensuring that users were informed in real-time about the presence of multiple faces within the camera's field of view.

4.2 Algorithms Used

In a secure digital voting system using blockchain technology, the SHA-256 algorithm is employed to hash individual votes, creating unique faceprints for data integrity. Each vote, represented by its hash, is recorded as a transaction on the blockchain, forming an immutable and tamper-resistant ledger. The cryptographic properties of SHA-256 ensure that any attempt to alter vote data would result in a distinct hash value, providing a robust mechanism for detecting tampering. The blockchain's consensus mechanism and secure communication practices further enhance the overall security of the voting system, creating a transparent and trustworthy environment for recording and validating votes.

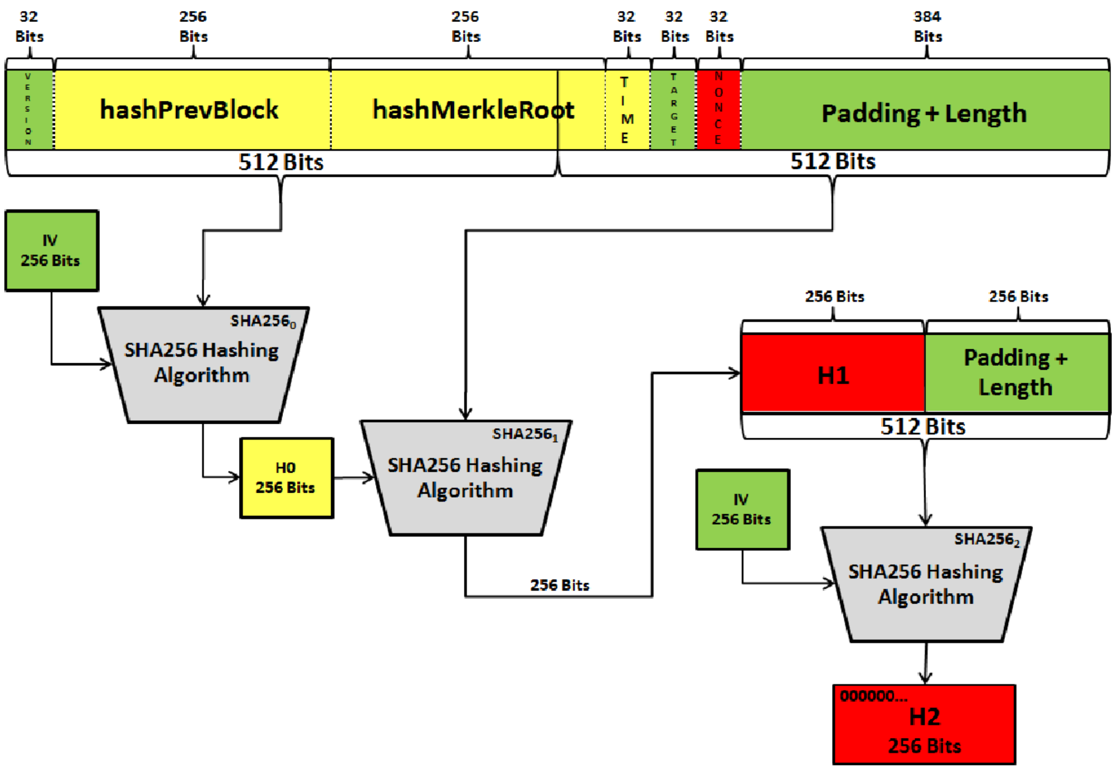


Figure 4.1: SHA-256 Algorithm Architecture

4.3 Modules

Register – The voter must first register on the MyVote site using the user's basic information, including name, address, phone number, date of birth, and Aadhar number. The system will notify the user that the aadhar number is already registered if it has already been registered in the database. Additionally, the portal will notify the user if the user's age as of the date of birth is less than 18 years old. If all went well, the system would enable successful registration and would also encrypt the Aadhar number using SHA-256 encryption for security reasons.

Face-Capture – After Entering all the basic details for registration the user will be redirected to the face capture page where the user's face will be captured and then the captured image will be converted in base64 string and stored in the database along with the user's basic information. The face is captured for avoiding the risk of fake voters.

Login – Voting requires logging in, thus users must do so in order to cast a ballot. The user's Aadhar number is required for the login process, and the system will then encrypt the aadhar number using SHA-256 Encryption and determine whether or not the user is already registered by doing a check. The OTP will be delivered to the user's registered mobile number if they are already registered. Likewise upon a successful verification. A redirect will take the user to the voting page.

Vote Casting –Following a successful login, the user will be taken to the voting page, where they can select a candidate from a dropdown box that lists all the candidates. From where the users can select the candidate whom they wants to vote and click the Vote button to cast their vote. After successfully casting the vote, the vote button will be disabled, making it difficult for the user to vote again.

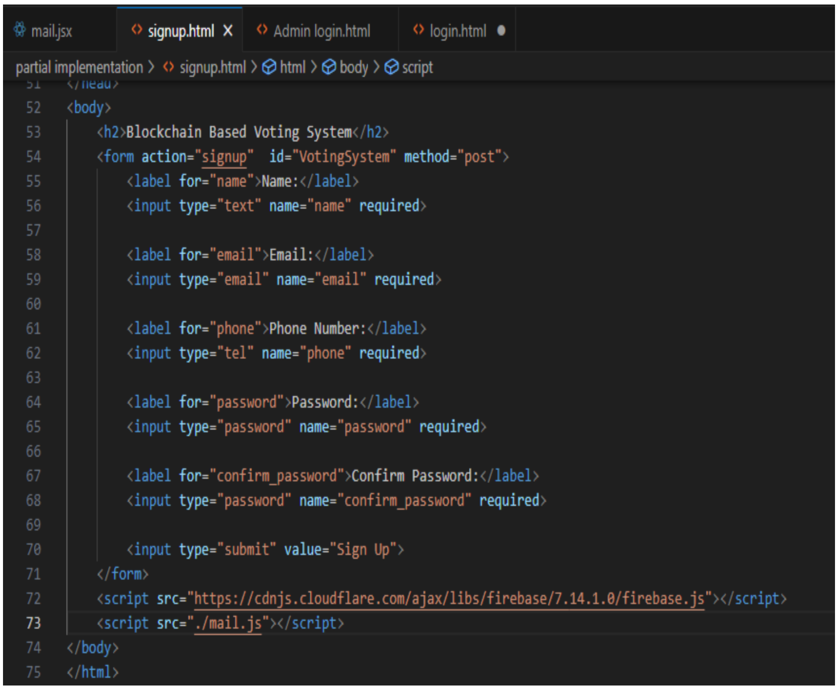
Face Proctoring – The system will be able to detect faces by using the camera on the user's device. We are utilizing the Face-API library to detect faces. If the camera detects more than one face, the system will display an alert to the user and also sent the user back to the home page and stop their voting process.

Display Result – A real-time update of the vote total will be shown. Thus the transparency will be maintained and user can also verify their vote is getting counted.

Chapter 5

Implementation & Results

In the implementation phase of the electronic voting system using blockchain technology, the detailed design undergoes the transformation into functional code. This phase implements the solidity platform in which it allows the user to register and cast vote with the blockchain ethereum platform.



```
mail.jsx   signup.html X   Admin login.html   login.html
partial implementation > signup.html > html > body > script
<body>
    <h2>Blockchain Based Voting System</h2>
    <form action="signup"  id="VotingSystem" method="post">
        <label for="name">Name:</label>
        <input type="text" name="name" required>

        <label for="email">Email:</label>
        <input type="email" name="email" required>

        <label for="phone">Phone Number:</label>
        <input type="tel" name="phone" required>

        <label for="password">Password:</label>
        <input type="password" name="password" required>

        <label for="confirm_password">Confirm Password:</label>
        <input type="password" name="confirm_password" required>

        <input type="submit" value="Sign Up">
    </form>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/firebase/7.14.1.0/firebase.js"></script>
    <script src="./mail.js"></script>
</body>
</html>
```

Figure 5.1: Signup Page Code

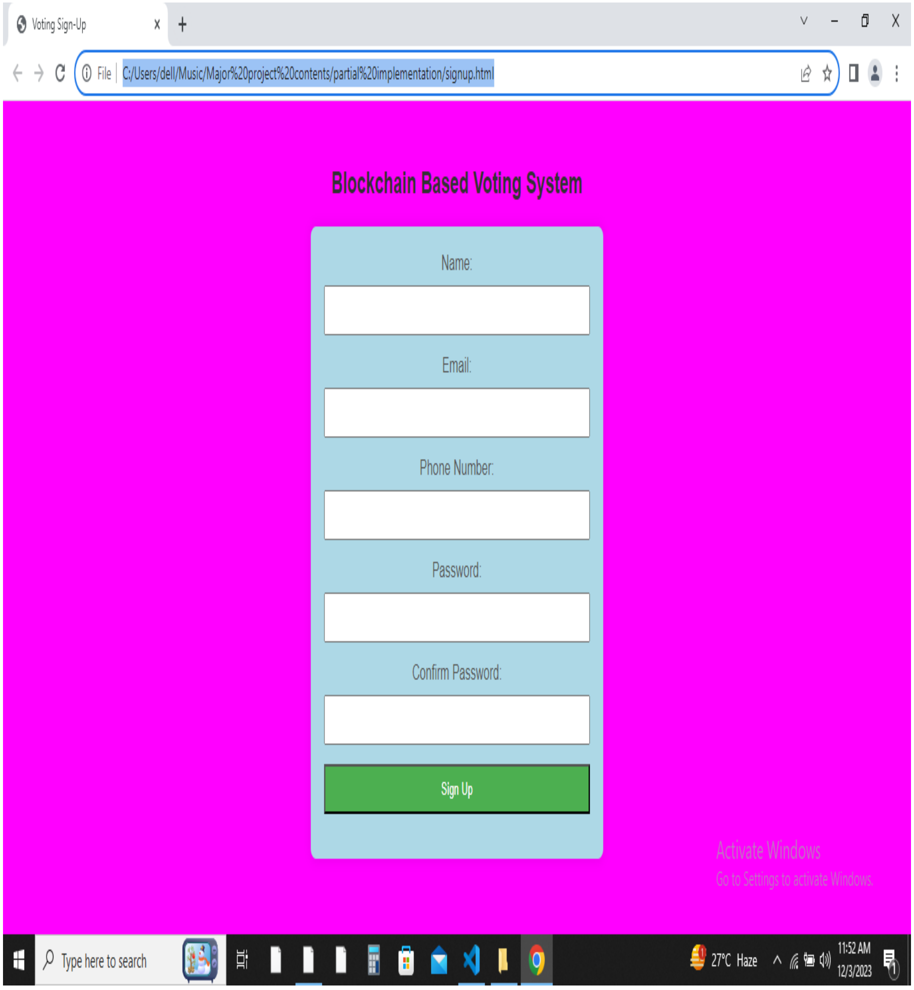
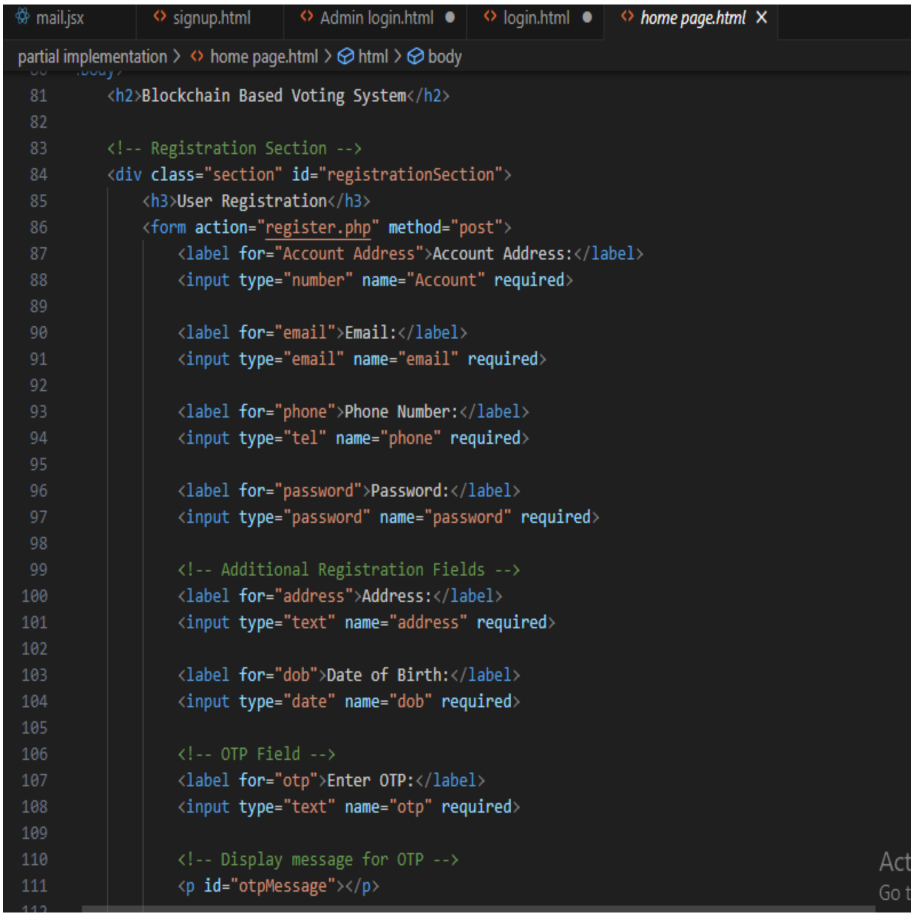


Figure 5.2: Signup Page

The HTML document creates a sign-up page for a Blockchain Based Voting System. Users can enter their name, email, phone number, password, and confirm password. The page is styled using CSS for a visually appealing layout. The form is designed to be responsive, and the page includes references to the Firebase JavaScript library and a local script (mail.js) for potential backend and mailing functionality.




```html
    <h2>Blockchain Based Voting System</h2>

    <!-- Registration Section -->
    <div class="section" id="registrationSection">
        <h3>User Registration</h3>
        <form action="register.php" method="post">
            <label for="Account Address">Account Address:</label>
            <input type="number" name="Account" required>

            <label for="email">Email:</label>
            <input type="email" name="email" required>

            <label for="phone">Phone Number:</label>
            <input type="tel" name="phone" required>

            <label for="password">Password:</label>
            <input type="password" name="password" required>

            <!-- Additional Registration Fields -->
            <label for="address">Address:</label>
            <input type="text" name="address" required>

            <label for="dob">Date of Birth:</label>
            <input type="date" name="dob" required>

            <!-- OTP Field -->
            <label for="otp">Enter OTP:</label>
            <input type="text" name="otp" required>

            <!-- Display message for OTP -->
            <p id="otpMessage"></p>
```

Figure 5.3: Voters Registration Code

This HTML code defines a user registration form for a website. Users are required to input their casting account address, email, phone number, password, address, date of birth, and a one-time password (OTP). The form is designed to submit this information to a server-side script when the user clicks the ”Register” button. The ”otpMessage” element appears to be reserved for displaying messages related to the one-time password.

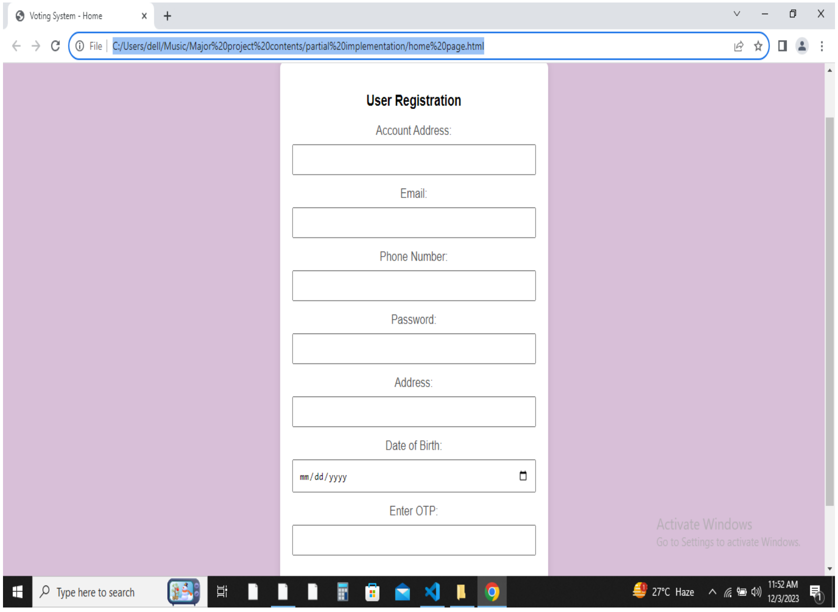


Figure 5.4: Voters Registration

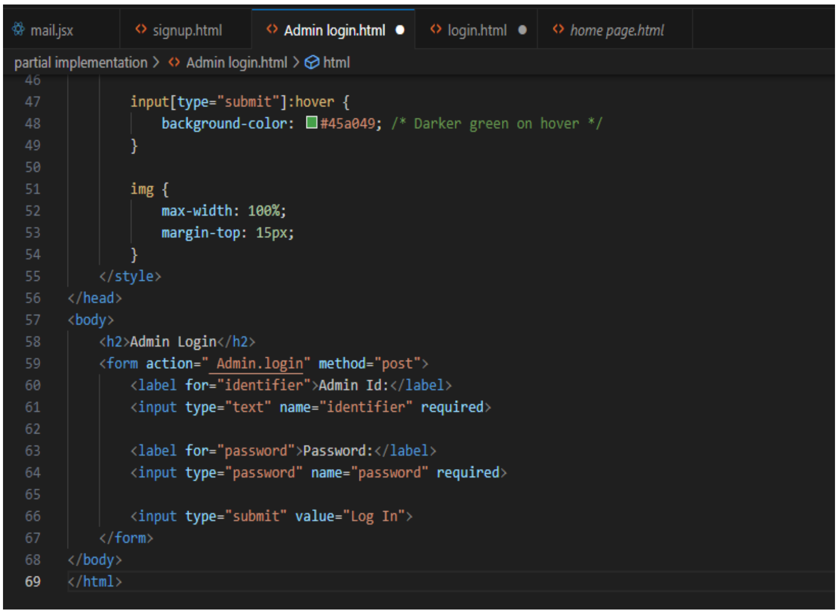


Figure 5.5: Admin Login Code

The HTML document is a visually styled admin login page. It features a light gray background with a centered form for admin credentials, including an admin ID and password. The form submits data to a server-side script named ”Admin.login” using the POST method. The design is clean, utilizing white form backgrounds, rounded corners, and green accents for the submit button.

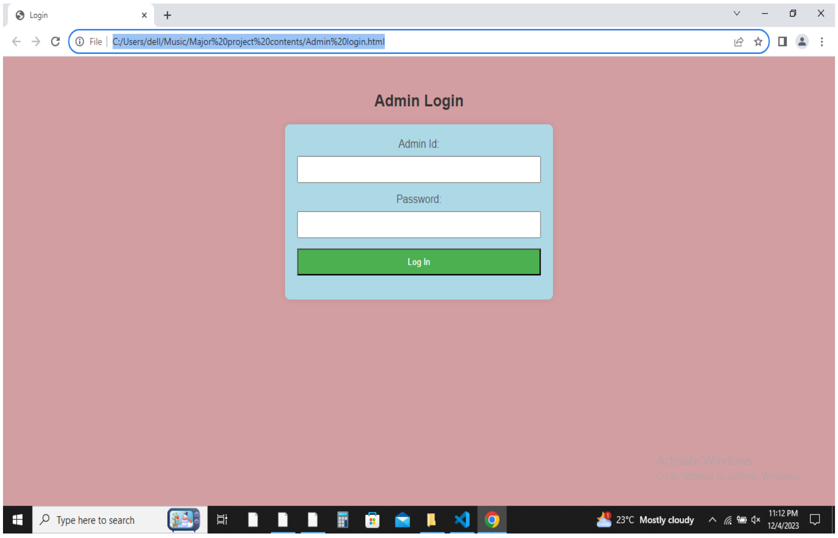


Figure 5.6: Admin Login

mail.jsx | signup.html | Admin login.html | login.html | home page.html

partial implementation > home page.html > html > body

```
    <!-- Admin Section -->
    <div class="section" id="adminSection" style="display: none;">
        <h3>Admin Section</h3>
        <!-- Display candidates list with party names and symbols -->
        <div class="candidate-list">
            <div class="candidate">
                <img src="trs.jpg" alt="Party 1 Symbol" class="party-symbol">
                Candidate 1 - Party 1
            </div>
            <div class="candidate">
                <img src="bjp.jpg" alt="Party 2 Symbol" class="party-symbol">
                Candidate 2 - Party 2
            </div>
            <div class="candidate">
                <img src="congress.jpg" alt="Party 2 Symbol" class="party-symbol">
                Candidate 3 - Party 3
            </div>
            <!-- Add more candidates as needed -->
        </div>
        <button onclick="goToVoting()">Go to Voting Phase</button>
    </div>
```

Figure 5.7: Party details Code

It displays a list of candidates with their associated party names, symbols, and candidate information. Each candidate entry consists of an image representing the party symbol and a text description of the candidate and party affiliation.

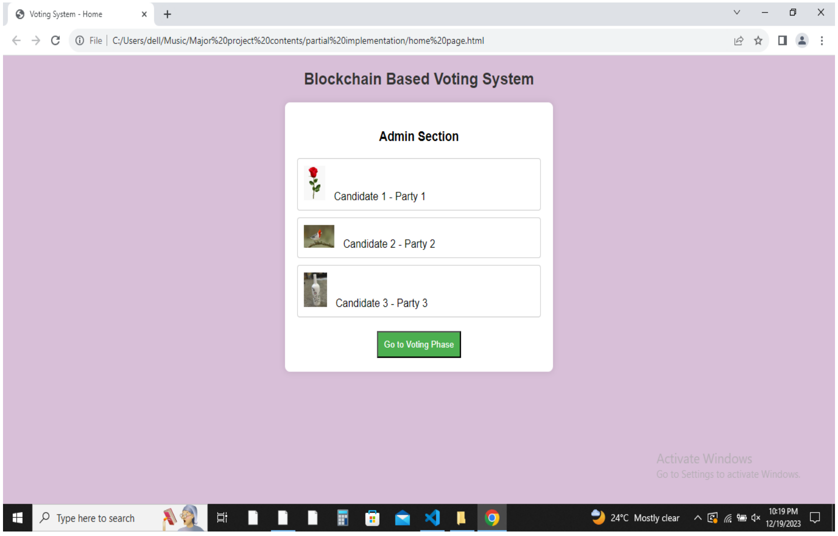


Figure 5.8: Party details

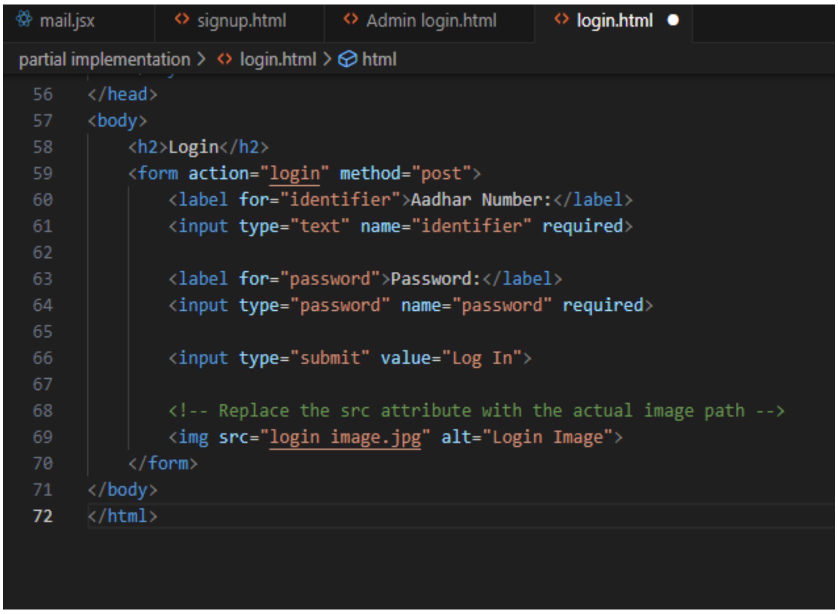


Figure 5.9: Voters login Code

The html document establishes a visual login page with a light pink background. The form within the page is styled for user login, requesting input for an Aadhar number and password. The design features a clean and centered layout, including a green submit button. An image is incorporated, designated to display a visual element related to login. The form is set to submit data to a server-side script named ”login” using the POST method.

Figure 5.10: Voters login

```
partial implementation > home page.html > html > body

<!-- Voting Phase Section -->
<div class="section" id="votingSection" style="display: none;">
    <h3>Voting Phase</h3>
    <!-- Display candidates added by admin -->
    <div class="candidate-list" id="votingCandidates">
        <!-- Candidates will be dynamically added here -->
    </div>
    <button onclick="Vote()">Vote</button>
    <button onclick="goToResult()">Go to Result Phase</button>
</div>

<!-- Result Phase Section -->
<div class="section" id="resultSection" style="display: none;">
    <h3>Result Phase</h3>
    <!-- Change the button to go back to Registration Section -->
    <button onclick="goToRegistration()">Go back to Registration</button>
</div>

<script>
    // Simulated data (replace this with data retrieved from your database)
    const candidatesData = [
        { name: "Candidate 1", party: "Party 1", area: "Area 1", symbol: "trs.jpg" },
        { name: "Candidate 2", party: "Party 2", area: "Area 1", symbol: "bjp.jpg" },
        { name: "Candidate 3", party: "Party 3", area: "Area 1", symbol: "congress.jpg" },
        // Add more candidates as needed
    ];

```

Figure 5.11: Voters Selection Code

It defines a section for the voting phase on a webpage. The section includes a heading ”Voting Phase” and a container (div) for dynamically displaying a list of candidates added by an administrator. Two buttons are provided: one for casting a vote (onclick=”Vote()”) and another to transition to the result phase (onclick=”goToResult()”). The actual candidates will be added dynamically within the ”voting Candidates”. container.

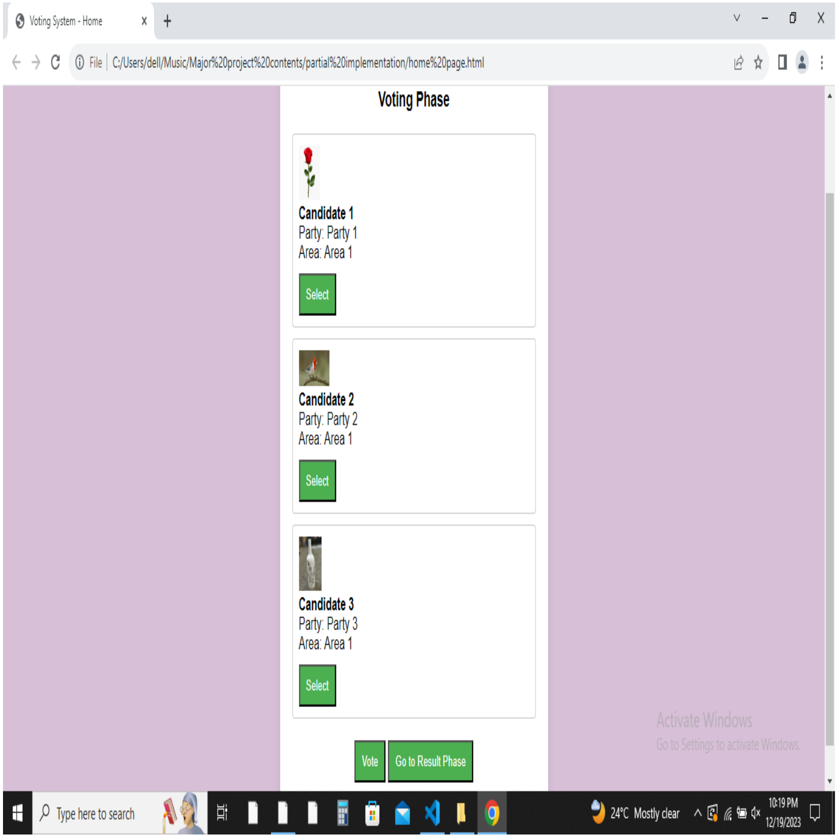


Figure 5.12: Voters Selection

This defines a section for the result phase on a webpage, initially hidden. The section includes a heading "Result Phase" and a button to go back to the registration section (onclick="goToRegistration()"). Additionally, a script is provided that simulates candidate data, generates random votes for each candidate, and dynamically creates candidate elements for the voting phase. The script includes functions to generate both voting and result elements, with a click event listener to vote for a candidate.

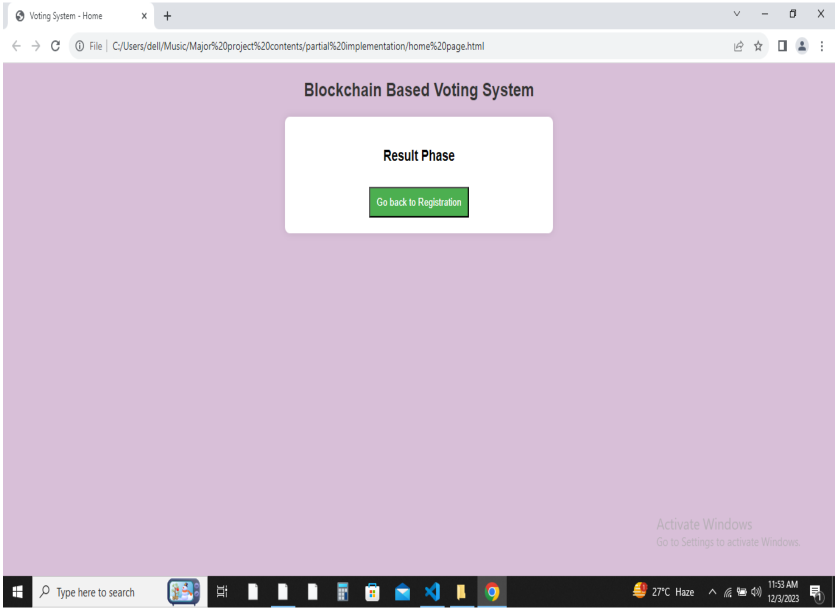


Figure 5.13: Result Selection

Figure 5.14: Partial deployment in solidity ethereum platform

Chapter 6

Extension Plan

An extension plan for an enhanced voting system should encompass an integration of voter count technology and face recognition for authentication. Leveraging electronic voting machines with blockchain technology can streamline and secure the vote-counting process, ensuring accuracy and transparency.

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