SYNOPSIS FOR MINI PROJECT

Project Title: Online Voting Application

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Problem Statement

Traditional voting systems are time-consuming, require physical presence, and involve manual counting.Errors, fake votes, and fraud are common challenges.A digital solution is required for faster, secure, and reliable elections.

Project Overview

The Online Voting Application is a web-based system designed to provide a simple, secure, and user-friendly platform for conducting elections digitally. Traditional voting processes are often time-consuming, require physical presence, and involve manual counting, which can lead to inefficiencies and errors. This application leverages modern web technologies to create a transparent, reliable, and efficient voting mechanism that can be accessed from any device with internet connectivity.

Technology Stack

- **Frontend:** HTML, CSS, JavaScript
- **Backend:** Node.js with Express.js
- **Database (optional):** MongoDB / MySQL (for storing user data and votes)
- **Development Environment**: VS Code (IDE),NPM (Node package manager), Browser (Chrome/Edge/Firefox

Modules of the System

1. User Authentication Module

- **Sign Up / Registration:**
  - User registers with Aadhar card number (unique ID) and password.
  - Basic details like name, email, and phone number can also be stored.

- **Sign In / Login:**
    - Users log in using their Aadhar card number and password.
- **Change Password:**
    - Users can update/reset their password securely**.**

2. Candidate Management Module (Admin Only)

- Admin can add, update, or delete candidate details.
- Candidate details include Name, Party.
- Admin has no voting rights (he can only manage candidates).

3. Voting Module (User Side)

- Display the list of candidates with details.
- Allow the voter to select only one candidate.
- After voting, the system locks the account from voting again.
- Store vote securely in the database.

4. Security & Validation Module

- Ensure unique voting → one Aadhar number = one vote.
- Passwords stored using encryption/hashing (e.g., bcrypt in Node.js).
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5. Live Voting Result Module

- Route/page that shows the live vote counts.
- Results are displayed in descending order of votes (highest first).

6. Admin Authentication Module

- Separate admin login.
- Admin can only:
    - Manage candidate records.
    - Monitor live results.
- Admin cannot vote.

Routes for Online Voting Application

1. User Authentication

- **POST /signup** → Create a new user account
- **POST /login** → Log in with existing credentials. (Aadhar card number + password).

2. Voting

- **GET /candidates** → Retrieve the list of all candidates.
- **POST /vote/:candidateId** → Cast a vote for a specific candidate (user can vote only once).

3. Vote Counts / Results

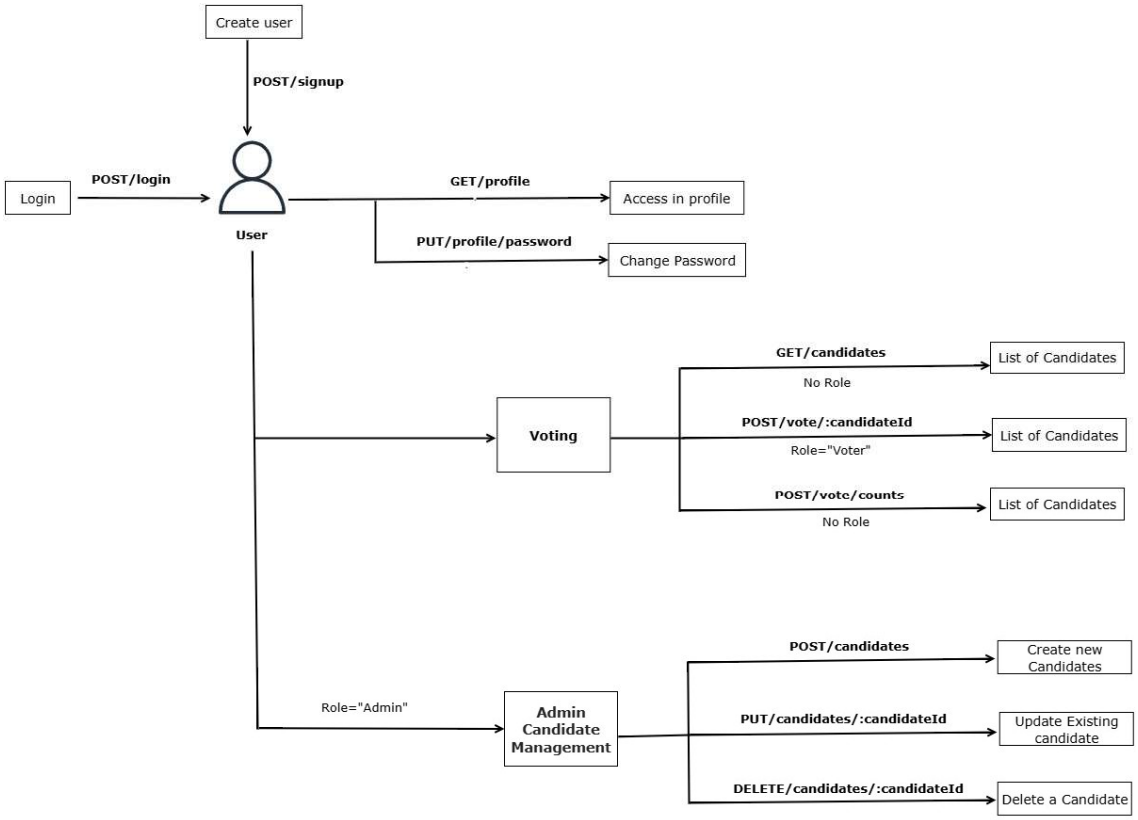
- **GET /vote/counts** → Get a list of candidates sorted by their vote counts (live results).

4. User Profile

- **GET /profile** → Fetch the profile of the currently logged-in user (name, Aadhar, voting status).
- **PUT /profile/password** → Update or change user password.

5. Admin Candidate Management
(Admin only, no voting rights)

- **POST /candidates** → Create a new candidate entry.
- **PUT /candidates/:candidateId** → Update an existing candidate's details.
- **DELETE /candidates/:candidateId** → Remove a candidate from the election.



Flow of the Application

Features

- Aadhaar-based secure authentication
- User-friendly web interface
- Secure vote storage and encryption

- Real-time result monitoring
- Candidate management for admins
- Prevention of double voting

Advantages

- **Accessibility:** Vote from anywhere with internet access.
- **Time-Saving:** Eliminates long queues and manual counting.
- **Transparency:** Live result updates.
- **Security:** Encrypted password and vote storage.
- **Cost-Effective**: Reduces need for paper ballots and physical polling booths.

Limitations

- Requires internet access.
- Aadhaar verification is assumed (not integrated with UIDAI in mini project).
- Limited to small-scale elections (for learning purpose).

Future Scope

- Integration with biometric or OTP-based Aadhaar verification.
- Implementation of blockchain for tamper-proof voting records.
- Mobile app support (Android/iOS).
- Multi-language support for wider accessibility.
- Role-based election types (school, college, corporate, government)

Testing Strategy

- **Unit Testing:** Checking individual routes (login, vote).
- **Integration Testing:** Checking modules together (auth + voting).
- **Validation Testing:** Ensuring one user = one vote.
- **Security Testing:** Password hashing, no duplicate votes.

Conclusion

The Online Voting Application demonstrates the potential of digital platforms in transforming the traditional voting process. With secure authentication, real-time results, and simplified management, it offers a reliable solution for conducting small-scale elections. This project can serve as a foundation for future large-scale, secure, and fully verified e-voting systems.