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- **Topic Name**: Polling and voting Platform

Index

1) Problem Description

A polling and voting platform is a digital tool or system designed to facilitate the process of conducting surveys, polls, or elections, typically online. These platforms are used for a wide range of purposes, from collecting public opinions and feedback to managing formal elections and decision-making processes within organizations or groups.

Voting is a fundamental process in democratic societies, allowing citizens to participate in choosing their representatives and making decisions on various issues. In the digital age, there is a growing need for secure and convenient online voting platforms that can efficiently manage the voting process, ensure the integrity of votes, and provide transparency to all stakeholders.

The objective is to design and develop a secure, user-friendly, and efficient online voting system that caters to the needs of both voters and administrators.

2) Requirements

The requirements for the Online Voting System project can be categorized into functional and non-functional requirements. Functional requirements describe what the system should do, while non-functional requirements specify how well the system should perform. Below is a list of key requirements for the project:

Functional Requirements:

1. User Registration:

- Allow voters to register by providing their personal information, including name, email, mobile number, and branch of engineering.
- Implement a secure password creation and storage mechanism.

2. User Authentication:

- Enable users to log in using their registered email and password.
- Implement multi-factor authentication (MFA) for added security.

3. Voter Profile Management:

- Allow voters to create, view, and update their profiles, including the ability to upload a profile picture.
- Voters should be able to change their passwords and update contact information.

4. Email Verification:

- Send a verification email upon registration to confirm the voter's email address.
- Users must verify their email to activate their accounts.

5. Voting Process:

- Display a list of subjects or branches of engineering for voters to choose from.
- Allow voters to cast their votes for a selected subject.
- Ensure each voter can vote only once for a specific subject.

6. Confirmation and Notifications:

- Send confirmation emails to voters after they successfully cast their votes.
- Allow administrators to send notifications and announcements to all voters.

7. Admin Dashboard:

- Create a dashboard for administrators to manage the system.
- Administrators should have the ability to view and search voter details and voting results.

8. Vote Counting and Result Display:

- Implement a vote counting mechanism to tally votes for each subject or branch.
- Provide administrators with a graphical or tabular representation of voting results.

Non-Functional Requirements:

9. Performance:

- The system should be responsive and capable of handling a large number of concurrent users.

- Voting operations should be efficient, and the system should have low latency.

10. scale:

- The system should be able to scale to accommodate a growing number of users without significant performance degradation.

11. Availability:

- The system should be highly available, with minimal downtime during maintenance.

- Implement load balancing and fail over mechanisms to ensure availability.

3) Technologies

Frontend Technology:

1. React js
2. Bootstrap

Backend Technology:

1. mysql
2. Node.js

4) API's

User Authentication and Authorization:

User Registration API: This API allows users to register an account by providing their details, including name, email, password, and other relevant information.

User Login API: Users can log in by providing their email and password. The API validates the credentials and issues a token for authentication.

User Profile API: Users should be able to view and edit their profiles, including uploading a profile picture.

Admin Registration and Login: Similar to user registration and login, but for administrators.

User Authorization: APIs to check if a user or admin is authorized to access certain features or perform specific actions, like voting or viewing vote counts.

Voting:

Vote Submission API: Users can submit their votes by selecting a candidate or option in a specific election or poll. This API records the vote in the database.

5) Modules

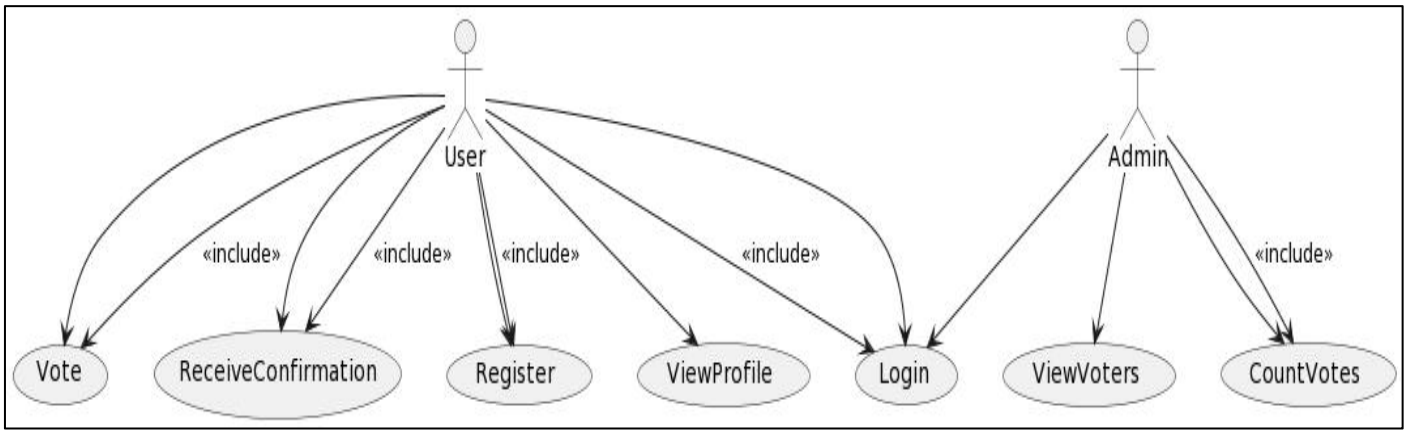
Voter Module:

1. User Registration: Voters can sign up with valid credentials.
2. User Login: Registered voters can log in to their accounts.
3. Profile Management: Users can create and edit their profiles, including uploading a profile picture.
4. Email Verification: The system sends verification emails to users.
5. Voting: Voters can participate in elections by selecting a specific branch.
6. Confirmation Emails: After voting, users receive confirmation emails.
7. View Voting History: Voters can review their voting history.

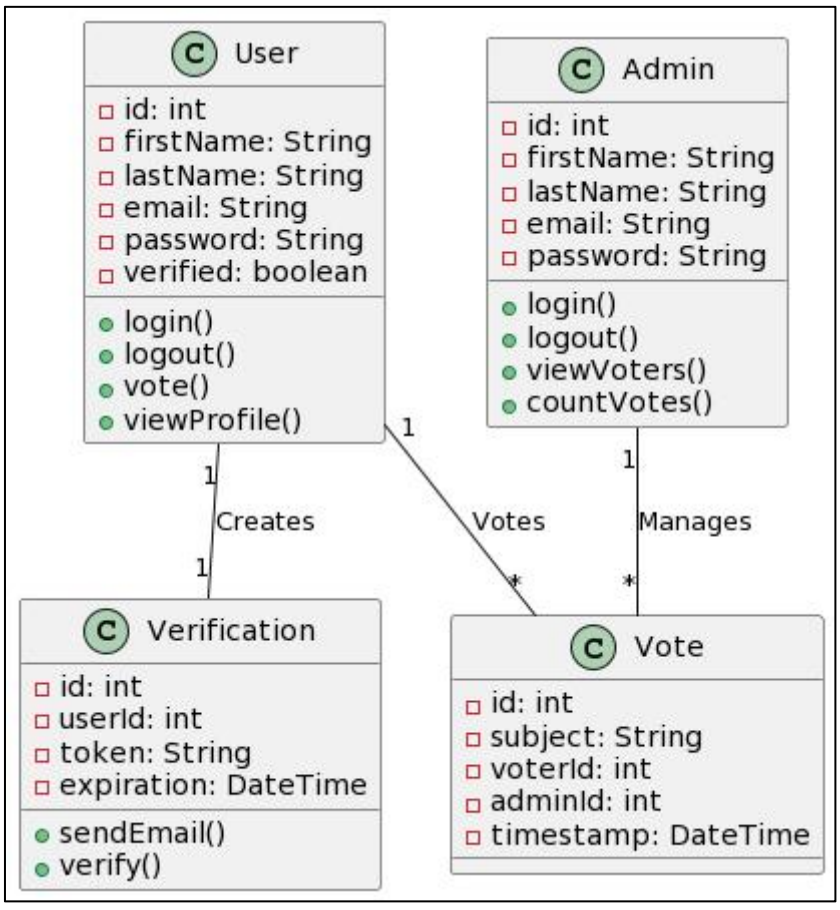
Admin Module:

1. Election Management: Admins can create, manage, and monitor elections.
2. User Management: Admins oversee user accounts and activity.
3. Vote Counting: Admins view the counting of votes for each branch.
4. Notification Management: Admins customize and receive notifications.
5. Report Generation: Administrators generate reports for analysis.
6. Security: Admins ensure the system's security and integrity.

6) Use case Diagram

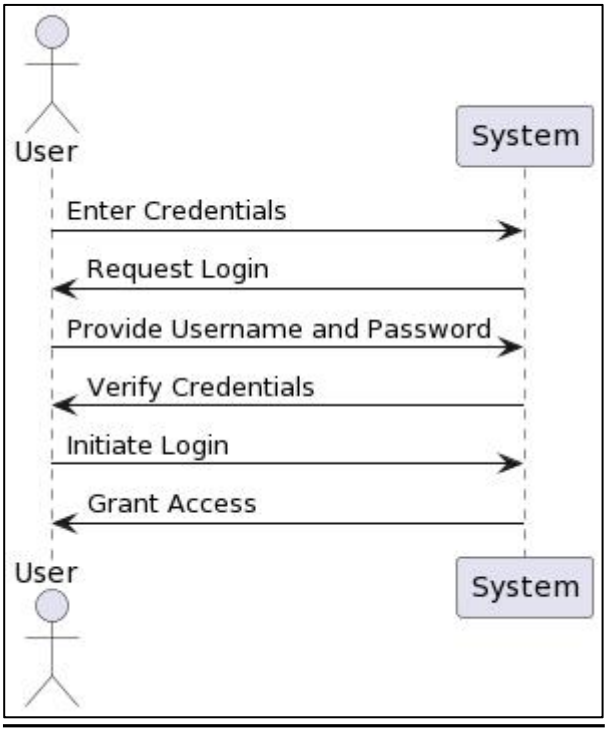


7) Class Diagram

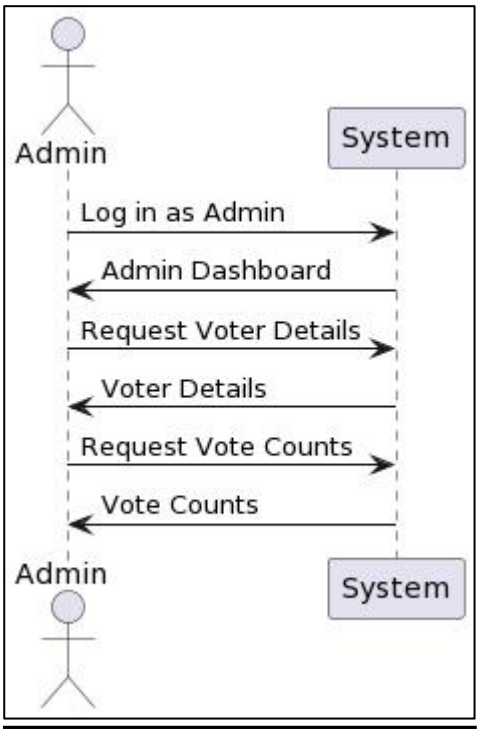


8) Sequence Diagram

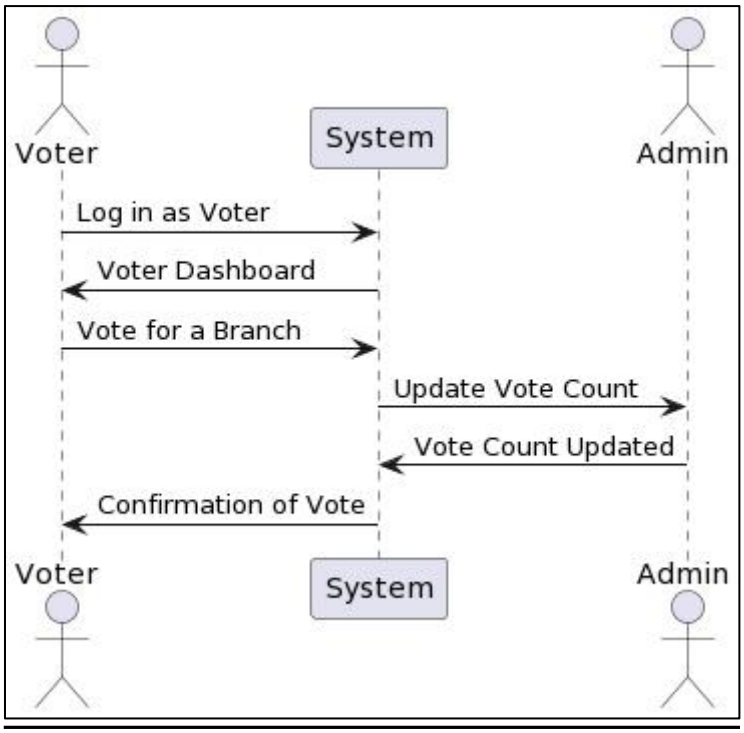
User



admin



Voting



9) Future Scope

The future scope for the online voting platform can include several enhancements and extensions to make it more robust and efficient. Here are some potential future scope areas:

Security Enhancements: Implement advanced security features, such as blockchain technology, to ensure the integrity and confidentiality of the voting process.

Biometric Authentication: Integrate biometric authentication for voters to enhance identity verification and prevent fraud.

Mobile Application: Develop a mobile app for convenient and accessible voting, allowing users to vote from their smartphones.

Ranked Choice Voting: Implement ranked choice voting options to support more complex voting methods.

Real-Time Results: Provide real-time vote counting and results display to engage voters and enhance transparency.