

# SMART Voting System

## DSA LAB –

**SEMESTER PROJECT REPORT**

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# SMART Voting System

## Introduction

### The Smart Voting System is designed to facilitate secure and efficient voting processes, providing both administrators and voters with a user-friendly interface.

### Key Features

#### Voter Management:

### Stores voter information (ID, name, password, location, vote status) in a CSV file.

### Allows administrators to add, edit, and view voter information.

### Handles change of location requests from voters.

#### Administrative Tasks:

### Provides a separate interface for administrators to manage voters and the voting process.

### Allows admins to check for notifications (e.g., change of location requests).

#### Secure Password Storage:

### Encrypts passwords using a simple Caesar cipher (can be enhanced for stronger security).

#### Voting Queue:

### Implements a queue to manage the order of voters casting their votes.

#### Vote Casting:

### Simulates the voting process (details not provided in the given code).

### Stores votes in a CSV file.

#### Vote Counting:

### Counts votes for each candidate and provides results.

**Code Structure:**

### Classes:

### Voter: Represents a voter with their information and vote status.

### Candidate: Represents a candidate but not currently used in the given code.

### VotingQueue: Implements a queue to manage voters during the voting process.

### AdminInterface: Provides functions for admins to manage voters and the voting process.

### Functions:

### caesarCipher: Encrypts/decrypts text using a Caesar cipher.

### loadVoters: Loads voter information from the CSV file.

### addVoter: Adds a new voter to the system.

### editInfo: Edits a voter's information.

### saveVoters: Saves voter information to the CSV file.

### checkNotifications: Checks for admin notifications (e.g., change of location requests).

### releaseVotes: Processes votes from the queue and updates vote status.

### countVotes: Counts votes for each candidate.

### Implementation Details:

### 470+ Electronic Voting Stock Illustrations, Royalty-Free Vector Graphics & Clip Art - iStock | Texas electronic voting machine, Electronic voting machineVoter and Candidate Data Management:

### Utilizes CSV files ("eligible\_voters.csv" and "eligible\_candidates.csv") for persistent storage.

### Data loaded into unordered\_map structures for efficient retrieval and dynamic updates.

### Voting Queue:

### A queue system processes votes efficiently, updating voter vote status upon completion.

### Data Structures Used

### Maps:

### Used for storing voter details in the AdminInterface and VotersInterface.

### Provides efficient lookup and retrieval of voter information based on the voter ID.

### Queues:

### Used to implement a queue for processing votes in the VotingQueue class.

### QueueNode represents a node in the linked list, and VotingQueue manages the queue operations.

### Vectors:

### Used for temporarily storing lines read from files during the loading of voter and candidate data.

### Stack:

### Used to store the number of attempts of a voter before denying their access.

### I/O Streams:

### std::ifstream and std::ofstream are used for reading from and writing to files, respectively.

### Advantages of Using SMART Voting System

### Efficiency & Convenience:

### Remote voting for user convenience.

### Efficient admin management of voter and candidate data.

### Transparency:

### Clear record of cast votes.

### Transparent candidate list for voters.

### Security:

### Password encryption using Caesar cipher.

### Secure access for eligible voters.

### Accessibility:

### Voter location change requests.

### Flexibility in managing account details.

### Real-time Notifications:

### Admin alerts for voter requests.

### Quick response to change requests.

**Conclusion:**

The Smart Voting System introduces a robust and adaptable solution for managing voting processes. Its modular design, efficient data management, and emphasis on security make it a reliable choice for electoral systems.