CMT 302 Project: Voting and Election Management System

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This project presents a comprehensive database-driven system designed to manage and facilitate remote voting in elections. It addresses key considerations such as security, transparency, and user-friendliness.

System Overview

Voters Table

Stores personal information of registered voters, ensuring accurate identification and preventing duplicate votes.

Candidates Table

Holds details about candidates, their respective parties, and the positions they are vying for.

Votes Table

Records all votes cast, providing a detailed audit trail for transparency and accountability.

Party Table

Maintains information about political parties, including their names and affiliations.

Position Table

Contains the positions being vied for by the candidates from respective political parties.

System Rationale

1 Transparency

The system provides an audit trail of votes, ensuring that results are accurate and publicly verifiable.

2 Security

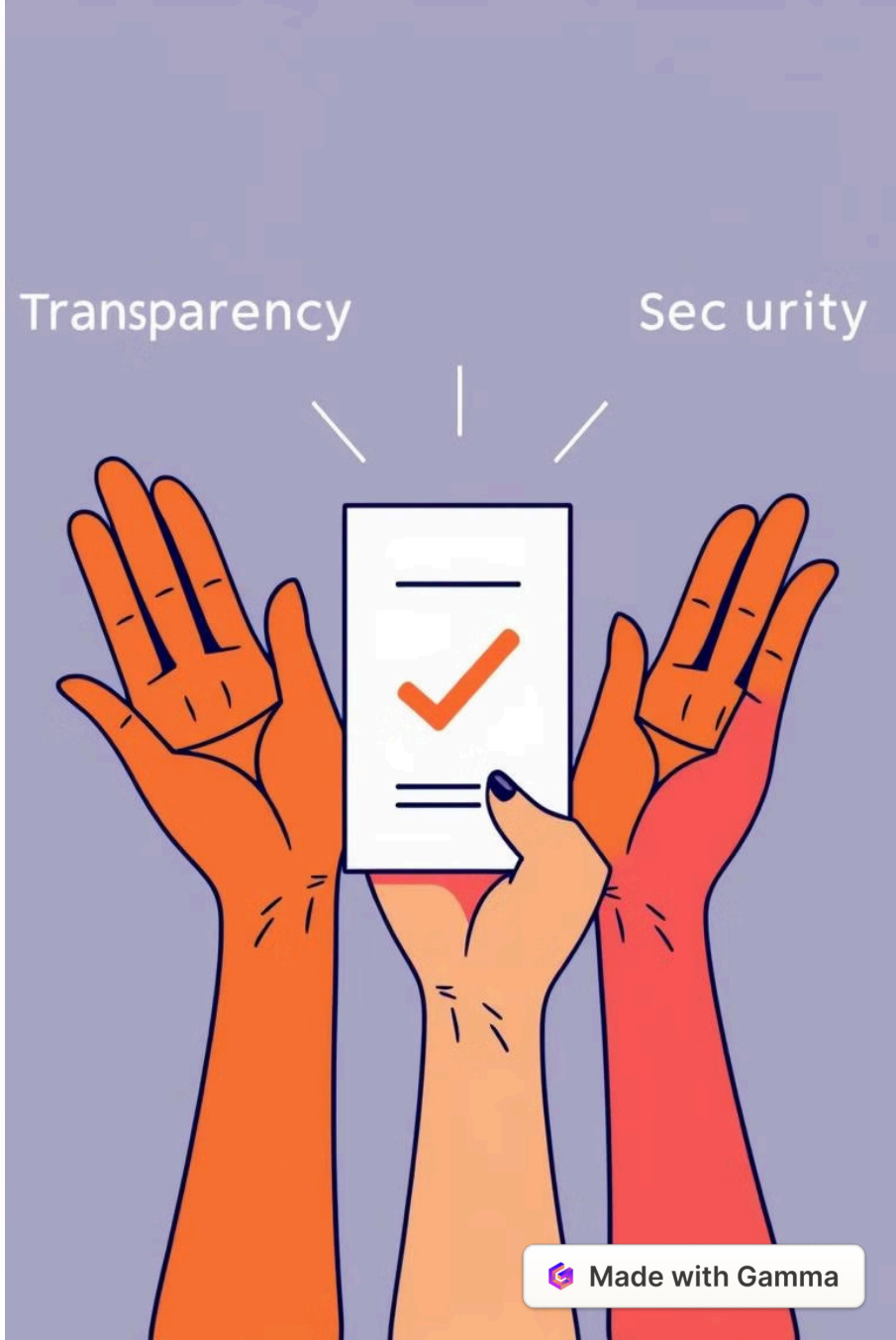
Robust measures are in place to protect voter and candidate information from unauthorized access or manipulation.

3 Centralized Data Management

All data is stored in a single, secure system, simplifying data storage, retrieval, and updates.

4 Conflict Resolution

Transparent vote recording and clear reporting help resolve disputes and maintain fairness.



System Objectives

1

Prevent Duplicate Votes

Ensures each registered voter can cast only one vote, maintaining the integrity of the election.

2

Confidentiality

Protects the privacy of voters' choices, allowing them to express their preferences freely.

3

Eco-Friendly Environment

Reduces paper consumption by utilizing a digital system, promoting sustainability.

4

Reduce Election Disputes

Transparent and accurate vote counting minimizes the possibility of disputes and challenges.

5

Reliability

The system is designed to handle large volumes of data reliably, ensuring smooth operation.

6

Data Accuracy

Ensures accurate vote tallying and reporting, contributing to the reliability of the results.

7

Speed Tallying

The system supports faster vote counting compared to traditional methods.

CRUD Operations

Operation	Description	Example
Create	Adds new data to a database table.	INSERT INTO voters (name, email, password) VALUES ('Ann Jean', 'ann@gmail.com', 'hashedpassword123');
Read	Retrieves and displays data from a table.	SELECT * FROM party;
Update	Modifies existing data in a table.	UPDATE candidates SET name = 'Vice President' WHERE id = 1;
Delete	Removes data from a table.	DELETE FROM candidates WHERE id = 1;

Testing and Validation

Functionality Testing

Verifies core functionalities like voter registration, ballot submission, and vote counting.

Usability Testing

Evaluates the user experience, ensuring the system is user-friendly and accessible to all.

Reliability Testing

Assesses the system's stability and performance over extended periods.

Conclusion and Recommendations

1

Monitoring Tools

Implement tools for monitoring system performance and detecting potential issues.

2

Advanced Encryption Protocols

Strengthen security by utilizing advanced encryption algorithms for sensitive data.

3

Real-Time Proof of Votes

Explore technologies that provide real-time evidence of vote casting and recording.

4

Regular Audits

Conduct regular audits to identify vulnerabilities and ensure ongoing compliance.

5

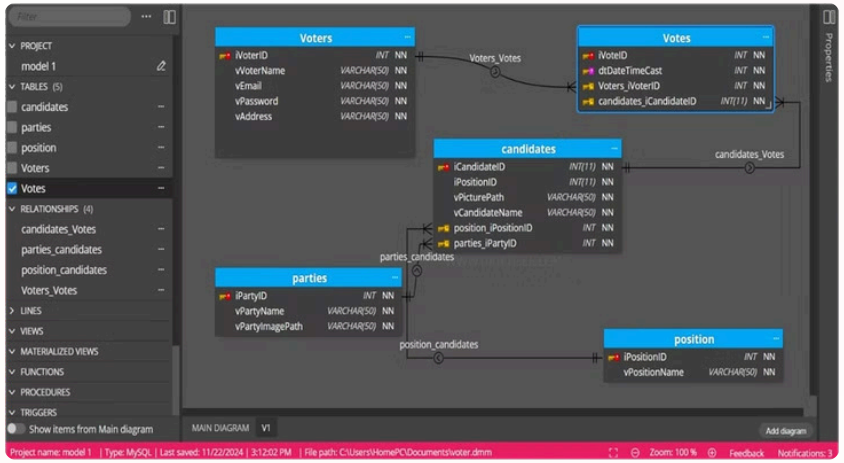
Continuous Training

Provide regular training to system administrators and users to keep them updated.

References

The following resources provide valuable insights into database systems and their applications in election management:

- https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-830-database-systems-fall-2010/
- https://db.cs.cmu.edu/
- https://pages.cs.wisc.edu/~dbbook/



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