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ONLINE VOTING SYSTEM PROJECT REPORT

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This report presents the complete analysis, design, and implementation of an Online Voting System using Flask and MySQL.

1. Abstract

The Online Voting System is a secure, database-driven digital platform that allows users to cast their vote electronically. This project eliminates manual voting problems such as long queues, slow vote counting, and human errors. It integrates Flask for backend services, MySQL for database management, and HTML/CSS/JS for the user interface.

The system ensures one-person-one-vote validation and prevents duplicate voting by using database constraints. Users can register, log in, choose a candidate, and cast their vote. Candidates are displayed with images to improve clarity.

2. Introduction

Voting is a fundamental democratic process, but traditional voting methods require physical presence, paperwork, and manual counting. These issues often result in inefficiency and delays. The Online Voting System aims to digitalize this process with a secure web-based solution.

The system provides authentication, session tracking, database validation, and secure vote storage. It can be used in colleges, clubs, small organizations, and private elections.

3. Objectives

The main objectives of the Online Voting System are:

- To allow users to register and authenticate securely.
- To ensure that each voter can cast only one vote.
- To store voters and candidate information in a structured database.
- To prevent manipulation of results.
- To show candidates with photos for clarity.
- To count votes through SQL queries.
- To create a lightweight, fast, and secure voting portal using Flask and MySQL.

4. System Requirements

Hardware Requirements:

- Processor: Intel i3 or above
- RAM: Minimum 4GB
- Storage: Minimum 2GB

Software Requirements:

- Operating System: Windows/Linux/Mac OS
- Python 3.x
- Flask Framework
- MySQL Database
- Web Browser
- Visual Studio Code or any IDE

5. System Analysis

The existing manual voting process faces many challenges:

- Human errors during vote counting
- Time-consuming verification
- Difficulty in preventing duplicate voting
- Requirement of physical presence

The proposed Online Voting System overcomes all limitations through automation, digital authentication, and immediate vote recording. It ensures accuracy, speed, and transparency in the entire process.

6. System Design

The design methodology used includes:

- **Context Flow Diagram** – Shows how users interact with the system.
- **Data Flow Diagram (DFD)** – Represents the flow of user data.
- **Entity Relationship Diagram (ERD)** – Defines database tables and relations.

Database Tables:

1. voters1 – Stores user information.
2. candidates1 – Stores candidate details and image file names.
3. votes1 – Stores vote entries.

Relations:

- One voter → One vote
- Many votes → One candidate

7. Database Design

Database Name: voting_system1

Table: voters1

Fields: id, name, email, password

Table: candidates1

Fields: id, name, party, image

Table: votes1

Fields: id, voter_id, candidate_id

The database ensures referential integrity using foreign keys.

Sample Query for Vote Counting:

```
SELECT candidate_id, COUNT(*) FROM votes1 GROUP BY candidate_id;
```

8. System Implementation

The Online Voting System is implemented using the following technologies:

Frontend:

- HTML – For structure
- CSS – For design
- JavaScript – For form validation

Backend:

- Flask – Processes user input and handles logic
- Jinja2 Templates – Renders dynamic HTML pages

Database:

- MySQL – Stores all application data

Security Features:

- Password hashing (recommended)
- Duplicate vote prevention
- Session-based login authentication

9. Testing and Results

The system was tested with multiple users to ensure:

- Registration works correctly.
- Login prevents unauthorized access.
- Votes cannot be duplicated.
- Database updates instantly after each vote.
- Candidate images display properly.

All test cases produced successful results.

10. Conclusion

The Online Voting System provides a modern, efficient, and secure solution to traditional voting challenges. It offers accuracy, reliability, and time savings for any organization. With further enhancement such as OTP verification and blockchain-based vote validation, the system can be scaled for large-scale elections.

End of Report