ADVANCED ONLINE VOTING SYSTEM
PROJECT REPORT

ABSTRACT

The **Online Voting System** is a secure web-based application developed to conduct elections electronically in a transparent and efficient manner.
The system enables voters to register, authenticate, and cast their vote securely while ensuring that **each voter can vote only once**.
Administrators can manage candidates, monitor voting activity, and view real-time election results.

The project is developed using **HTML, CSS, JavaScript, PHP, and MySQL**.
Security mechanisms such as **password hashing, session management, prepared SQL statements, and database constraints** are implemented to ensure data integrity and system reliability.

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1. INTRODUCTION

Voting is a critical process in democratic systems. Traditional voting methods are time-consuming, prone to errors, and require significant manual effort.
The **Online Voting System** replaces manual voting with a digital platform that improves efficiency, accuracy, and transparency.

This project demonstrates practical implementation of web technologies and database management concepts suitable for **BCA academic learning**.

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2. OBJECTIVES

- To develop a secure online voting platform
- To ensure **one voter can vote only once**
- To reduce manual effort and time consumption
- To provide accurate and instant election results
- To improve transparency in the voting process

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3. SCOPE OF THE PROJECT

The system is suitable for:

- College elections
- Student organizations
- Small institutions and societies

It is designed for **small to medium-scale elections**.

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4. SYSTEM ARCHITECTURE

The system follows a **Three-Tier Architecture**:

Presentation Layer

- User interface developed using HTML, CSS, and JavaScript

Application Layer

- PHP handles authentication, voting logic, session management, and database interaction

Database Layer

- MySQL stores voters, candidates, votes, and admin data

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5. DATA FLOW EXPLANATION

1. User registers or logs in
2. Credentials are validated
3. Session is created
4. Voter selects a candidate
5. Vote is stored in database
6. Database prevents duplicate voting
7. Admin views real-time results

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6. DATABASE DESIGN

Database Name: online_voting

Tables Used

- **Admin** – Stores admin credentials

- **Voters** – Stores voter details and voting status
- **Candidates** – Stores candidate information
- **Votes** – Stores voting records

Primary keys, foreign keys, and unique constraints ensure **data integrity and security**.

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7. MODULE DESCRIPTION

Admin Module

- Secure admin login and logout
- Add, update, and delete candidates
- View election results

Voter Module

- Voter registration
- Secure login
- Cast vote

Voting Module

- One voter = one vote
- Automatic vote counting

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8. SECURITY FEATURES

- Password hashing using password_hash()
- Session-based authentication
- Prepared SQL statements to prevent SQL injection
- Database constraints to block duplicate voting

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9. TESTING

Testing Methods Used

- Unit Testing

- Integration Testing
- System Testing

Sample Test Case

Test Case	Expected Result
Valid login	Login successful
Invalid login	Error message
Vote twice	Vote blocked
Result calculation	Accurate

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10. ADVANTAGES AND LIMITATIONS

Advantages

- Secure and reliable
- Fast and accurate results
- Easy to use
- Reduces manual work

Limitations

- Requires internet connection
- Limited scalability
- No biometric verification

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11. FUTURE ENHANCEMENTS

- OTP-based authentication
- Mobile application
- Aadhaar or biometric verification
- Blockchain-based voting system
- Live analytics dashboard

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12. CONCLUSION

The **Online Voting System** successfully provides a secure and efficient solution for conducting elections digitally.
It minimizes manual effort, improves transparency, and ensures accurate results.
This project enhances practical understanding of **web development, security, and database management**, making it ideal for BCA academic submission.