

“Defence Ballot System”

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I. ABSTRACT

Voting is an important part of a democratic system. Defence personnel often work in border areas, military camps, and remote locations where it is difficult to visit polling stations during elections. Because of this, many of them face challenges in participating in the voting process. Existing methods such as postal ballots involve additional time and manual procedures.

The Defence Ballot System Using Web Technologies is developed to provide an easy and secure way for defence personnel to cast their votes online. The system allows authorized users to access election information, view candidate details, and vote from their place of duty. Administrators can manage elections, candidates, and voter records through a centralized platform.

The system is designed to improve accessibility, reduce paperwork, and support efficient election management. Security measures are included to protect voter information and ensure fair voting. This project demonstrates the use of web technologies in developing a reliable voting platform for defence personnel.

Keywords: Defence Ballot System, Online Voting, Election Management, Web Technologies, Security.

II. INTRODUCTION

Voting gives citizens the opportunity to select their representatives and participate in the democratic process. With the growth of internet technologies, many services have become available online, making them easier to access and manage. Online systems are widely used in education, banking, communication, and other fields.

Defence personnel are often assigned to locations far from their home constituencies. Due to their responsibilities and work schedules, travelling to polling stations during elections is not always possible. This situation creates difficulties in exercising their voting rights.

The Defence Ballot System Using Web Technologies is proposed to address this issue. The system provides a web-based platform through which defence personnel can participate in elections remotely. It also helps administrators manage election-related activities in an organized manner. The project aims to provide a secure, transparent, and user-friendly voting environment.

III. PROBLEM STATEMENT

Defence personnel frequently serve in remote areas, border regions, and military establishments where access to polling stations is limited. As a result, participating in elections becomes difficult for many service members.

The existing voting process for defence personnel mainly relies on postal ballots. This method involves physical document handling and may take additional time for processing and delivery. Delays and communication issues may affect the convenience of the voting process.

There is a need for a secure and efficient system that allows defence personnel to vote from their place of service. The proposed Defence Ballot System is developed to provide an online voting platform that improves accessibility and simplifies election participation.

IV. LITERATURE SURVEY

Electronic voting systems have been studied by many researchers to improve the efficiency and accessibility of elections. Traditional voting methods require manual effort in vote collection and counting, which can increase the time required for election management.

Several studies have shown that web-based voting systems help in reducing paperwork and simplifying election procedures. Researchers have focused on areas such as voter authentication, election management, vote confidentiality, and data security.

Different approaches have been proposed using secure databases, authentication mechanisms, and web applications. These studies highlight the importance of protecting voter information and preventing unauthorized access. The observations from previous works support the development of a secure online voting platform for defence personnel.

V. METHODOLOGY

The Defence Ballot System was developed using a systematic process consisting of requirement analysis, system design, implementation, testing, and deployment.

A. Requirement Analysis

The requirements of the system were identified by studying the challenges faced by defence personnel during elections. Features such as user authentication, election management, candidate management, vote casting, and result generation were defined. Security and usability requirements were also considered.

B. System Design

The overall structure of the application was planned during this phase. Different modules were identified, including login management, election management, voting, and result processing. Database design and data flow between modules were also prepared.

C. Implementation

The application was developed using React.js, Node.js, Express.js, and MySQL. Separate interfaces were created for administrators and voters. Backend services were implemented to process requests and manage data storage.

D. Testing

Each module of the system was tested to verify its functionality. Features such as login, election creation, vote casting, and result generation were checked. Errors identified during testing were corrected.

E. Deployment

After testing, the system was deployed in a web environment. Users can access the application through internet-enabled devices and participate in elections from their assigned locations.

VI.OBJECTIVES OF THE SYSTEM

The primary objective of the Defence Ballot System Using Web Technologies is to provide a secure and accessible online voting platform for defence personnel. The specific objectives of the system are as follows:

- To provide an online voting facility for defence personnel serving in different locations.
- To enable remote participation in elections through a web-based platform.
- To implement secure authentication mechanisms for voter verification.
- To prevent duplicate voting and ensure the integrity of the election process.
- To maintain the confidentiality and privacy of voter information and votes.
- To simplify the management of elections, candidates, and voter records.
- To reduce manual effort involved in traditional voting procedures.
- To support accurate and efficient vote counting and result generation.
- To improve voter participation among defence personnel who are unable to access polling stations.
- To provide a reliable and transparent environment for conducting elections.

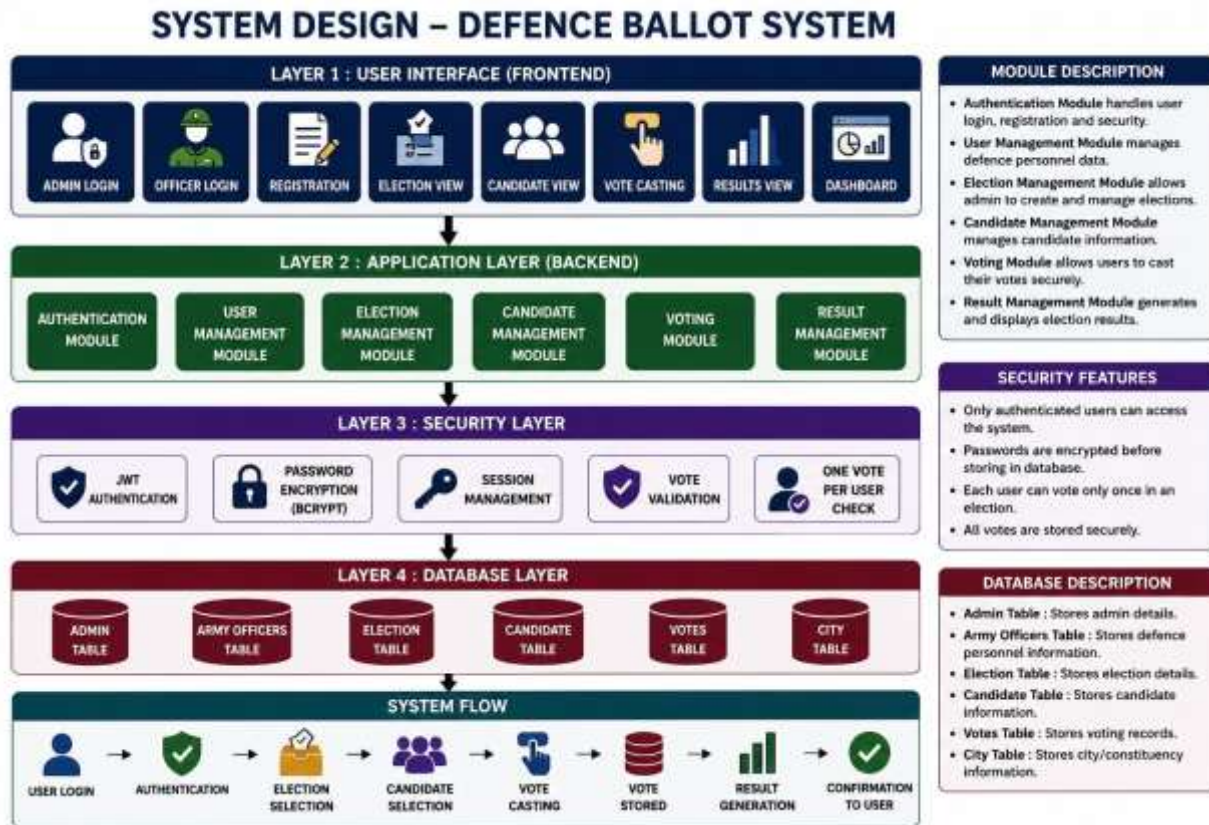
VII. PROPOSED SYSTEM

The proposed Defence Ballot System is a web-based application designed to support remote voting for defence personnel. The system provides a secure platform for users to access election information and cast their votes online from their place of duty.

The administrator manages elections, candidates, and user records through the system. Defence personnel can log in, view active elections, and vote for their selected candidates. The system validates user eligibility and records votes in a secure database.

The proposed approach reduces manual work and paper-based processing. It improves efficiency by automating election operations and supports better transparency in the voting process through structured digital handling of election data.

VIII. SYSTEM DESIGN



IX. TECHNOLOGIES USED

The Defence Ballot System is developed using modern web technologies to provide a secure, efficient and use friendly voting platform.

	TECHNOLOGY	PURPOSE
	HTML	Used to create the structure of web pages.
	CSS	Used for styling and designing the user interface.
	Bootstrap	Helps create responsive and mobile-friendly pages.
	JavaScript	Provides interactive features and client-side functionality.
	React.js	Used for developing the frontend user interface.
	Node.js	Used for server-side development and request handling.
	Express.js	Simplifies backend development and API creation.
	MySQL	Stores user, election, candidate, and voting data.
	JWT (JSON Web Token)	Used for secure user authentication.
	Bcrypt	Encrypts user passwords before storing them in the database.
	Visual Studio Code	Development environment used for coding.
	Git & GitHub	Used for version control and project management.

X. RESULTS AND DISCUSSION

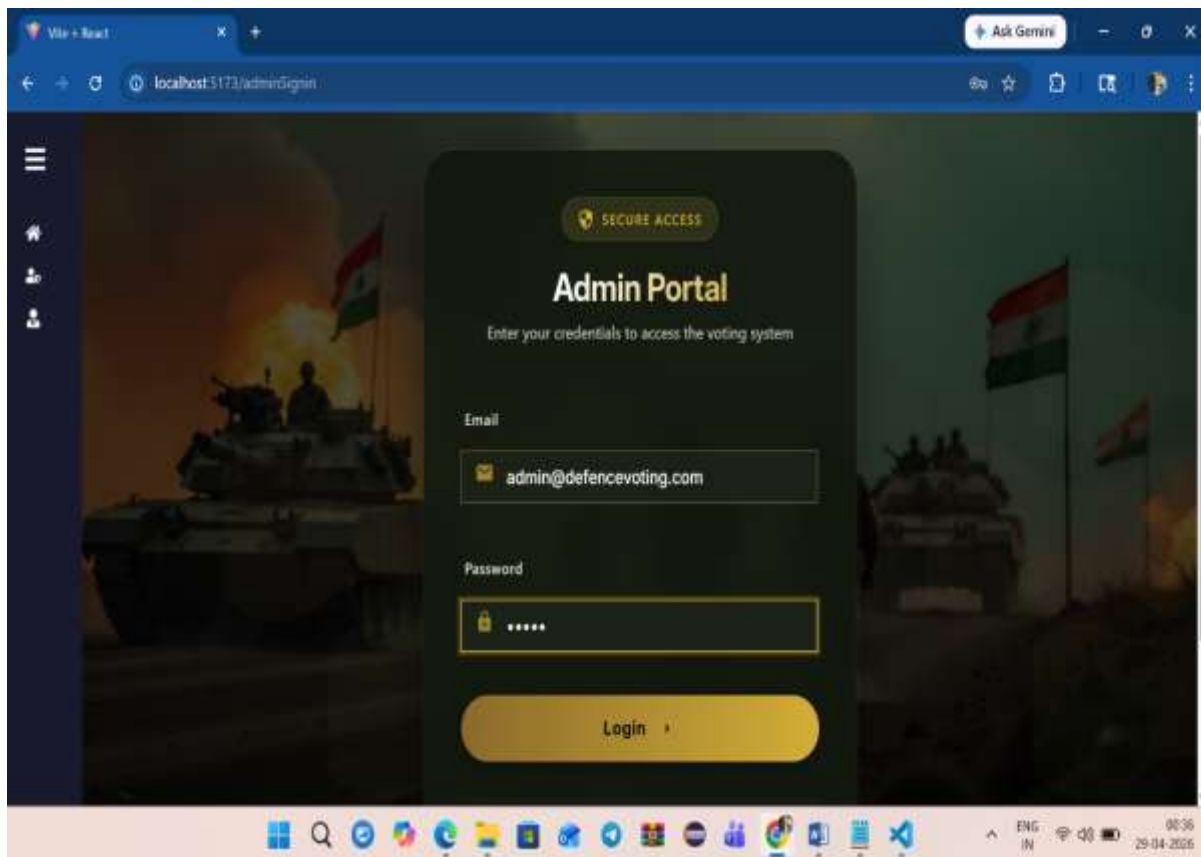
The Defence Ballot System was developed and tested successfully. The system provides features such as user login, election management, candidate management, vote casting, and result generation.

Users were able to access the system and participate in elections through the web application. The voting process was completed successfully, and duplicate voting was prevented.

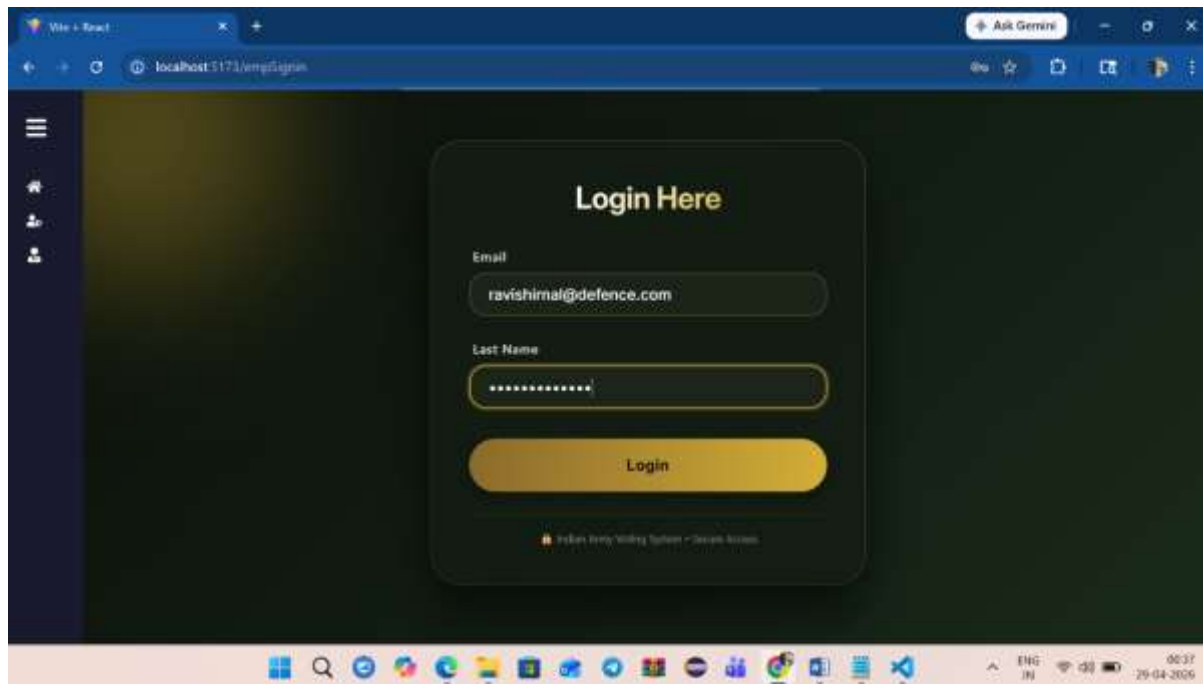
The administrator was able to manage elections and candidate information efficiently. Election results were generated automatically based on the recorded votes.

The developed system met the project requirements and improved the accessibility of the voting process for defence personnel.

Admin Login

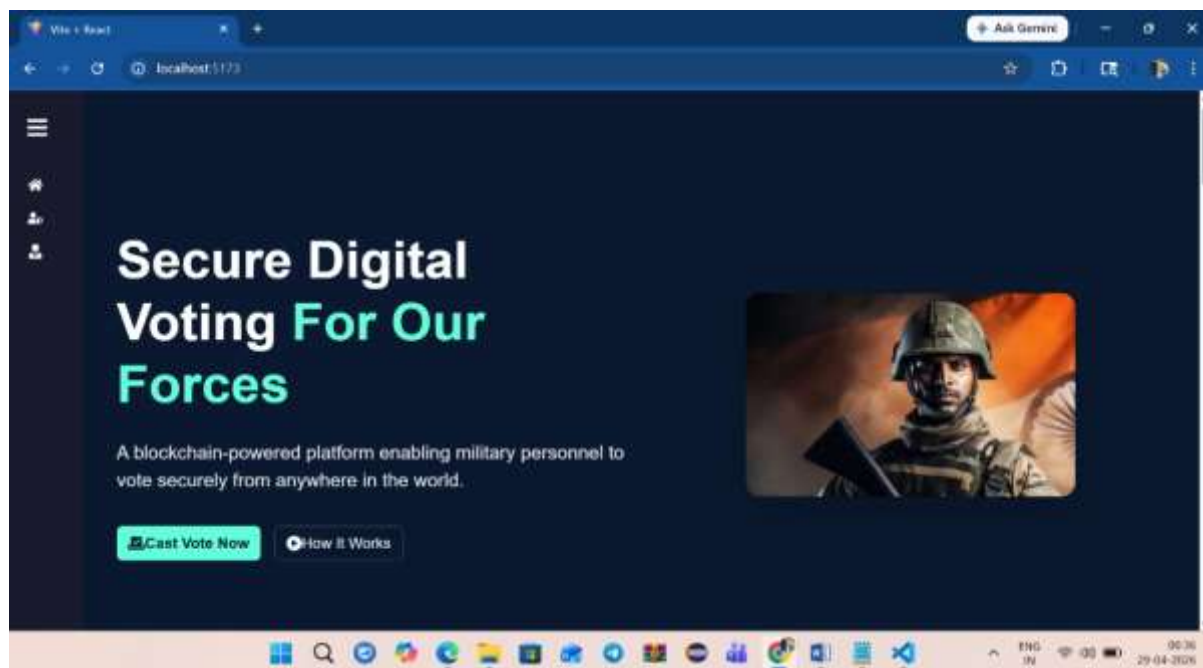


Army Officer Login

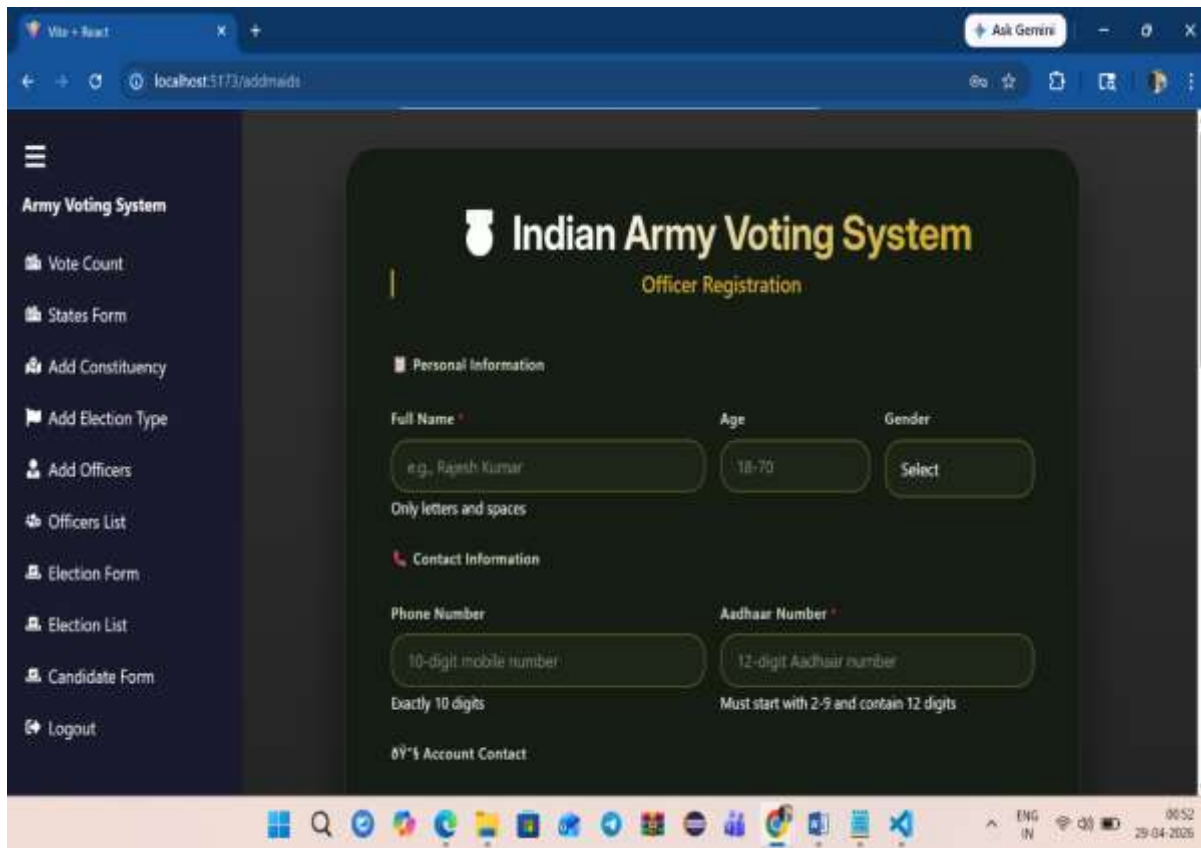


The screenshot shows a web browser window with the URL `localhost:5173/emp/login`. The page has a dark blue background with a central white login form. The form is titled "Login Here" and contains two input fields: "Email" with the value `ravishimal@defence.com` and "Last Name" with a masked value `*****`. Below the fields is a yellow "Login" button. At the bottom of the form, there is a small text link: "Indian Army Voting System - Secure Access". The browser's taskbar at the bottom shows various application icons and the system clock indicating 00:37 on 29-04-2026.

Main Screen / Home Page



Menu (Navigation Bar)



The screenshot displays a web application titled "Indian Army Voting System" with a sub-header "Officer Registration". The interface is dark-themed. On the left, a sidebar menu lists various functions: Vote Count, States Form, Add Constituency, Add Election Type, Add Officers, Officers List, Election Form, Election List, Candidate Form, and Logout. The main content area contains a registration form with two sections: "Personal Information" and "Contact Information". The "Personal Information" section includes fields for "Full Name" (with a hint "e.g., Rajesh Kumar" and a note "Only letters and spaces"), "Age" (with a range "18-70"), and "Gender" (with a "Select" dropdown). The "Contact Information" section includes fields for "Phone Number" (with a hint "10-digit mobile number" and a note "Exactly 10 digits") and "Aadhaar Number" (with a hint "12-digit Aadhaar number" and a note "Must start with 2-9 and contain 12 digits"). Below these fields is a label for "AAT Account Contact". The browser's address bar shows "localhost:5173/addmids". The Windows taskbar at the bottom shows the time as 00:52 on 29-04-2026.

XI. CONCLUSION

The Defence Ballot System Using Web Technologies was developed to provide a secure and convenient voting platform for defence personnel. The system enables users to participate in elections from their place of duty through an online platform.

The project includes features such as user authentication, election management, candidate management, vote casting, and result generation. The developed system reduces manual effort, improves accessibility, and supports efficient election management. The successful implementation of the project demonstrates the usefulness of web technologies in providing a reliable voting solution for defence personnel.

XII. FUTURE ENHANCEMENT

The Defence Ballot System can be extended in future versions to improve security, usability, and performance.

- Biometric authentication such as fingerprint or face recognition can be added to strengthen user verification.
- Mobile application support can be introduced to enable voting through smartphones.
- Multi-language support can improve accessibility for users from different regions.
- Integration with government databases can improve identity verification and data accuracy.
- Cloud deployment can enhance system scalability and availability.
- Advanced reporting and analytics can be added for better election insights.
- Real-time election monitoring can improve transparency during the voting process.

These improvements can further enhance the efficiency and reliability of the system in future development.

XIII. REFERENCE

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