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Design and Implementation of a Secure and Responsive Online Voting System

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Abstract: *Traditional electoral systems are often characterized by high operational costs, logistical complexities, and susceptibility to human error, which can undermine public confidence and limit voter participation. This paper introduces the design and implementation of a web-based* ***Online Voting System (OVS)*** *aimed at providing a transparent, secure, and highly accessible electoral platform. The OVS utilizes a three-tier architecture, implemented with a responsive web framework (e.g., React/Node.js or PHP/MySQL), and integrates multi-layered security protocols. Key features include robust user authentication (utilizing password hashing), end-to-end encryption for ballot data, and a secure relational database (MySQL) designed to prevent double voting and guarantee vote immutability. The system successfully demonstrates the feasibility of real-time result aggregation and secure administrative management, proving that OVS can significantly enhance electoral efficiency and transparency while maintaining high standards of data integrity and voter confidentiality. The conclusion proposes future integration with distributed ledger technology (Blockchain) to further decentralize trust and establish a tamper-proof audit trail*

Keywords: Online Voting, E-Voting, Web Development, PHP/MySQL, Data Security, Responsive Design

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