

Design and Implementation of a Secure Voting System Using Database Management System (DBMS)

A Capstone Project Report

Submitted by

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**CSA0535 - DATABASE MANAGEMENT SYSTEM FOR DATA
TRANSFORMATION**

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OBJECTIVES

This project aims to develop a secure and reliable online voting system by leveraging the capabilities of a Database Management System (DBMS). The system will be designed to ensure the integrity, confidentiality, and availability of the voting process. By utilizing a robust DBMS, we aim to enhance data management, scalability, and security within the voting system. This paper outlines the architecture, design principles, and implementation details of the proposed DBMS-based voting system, highlighting its effectiveness in ensuring the integrity of electoral processes.

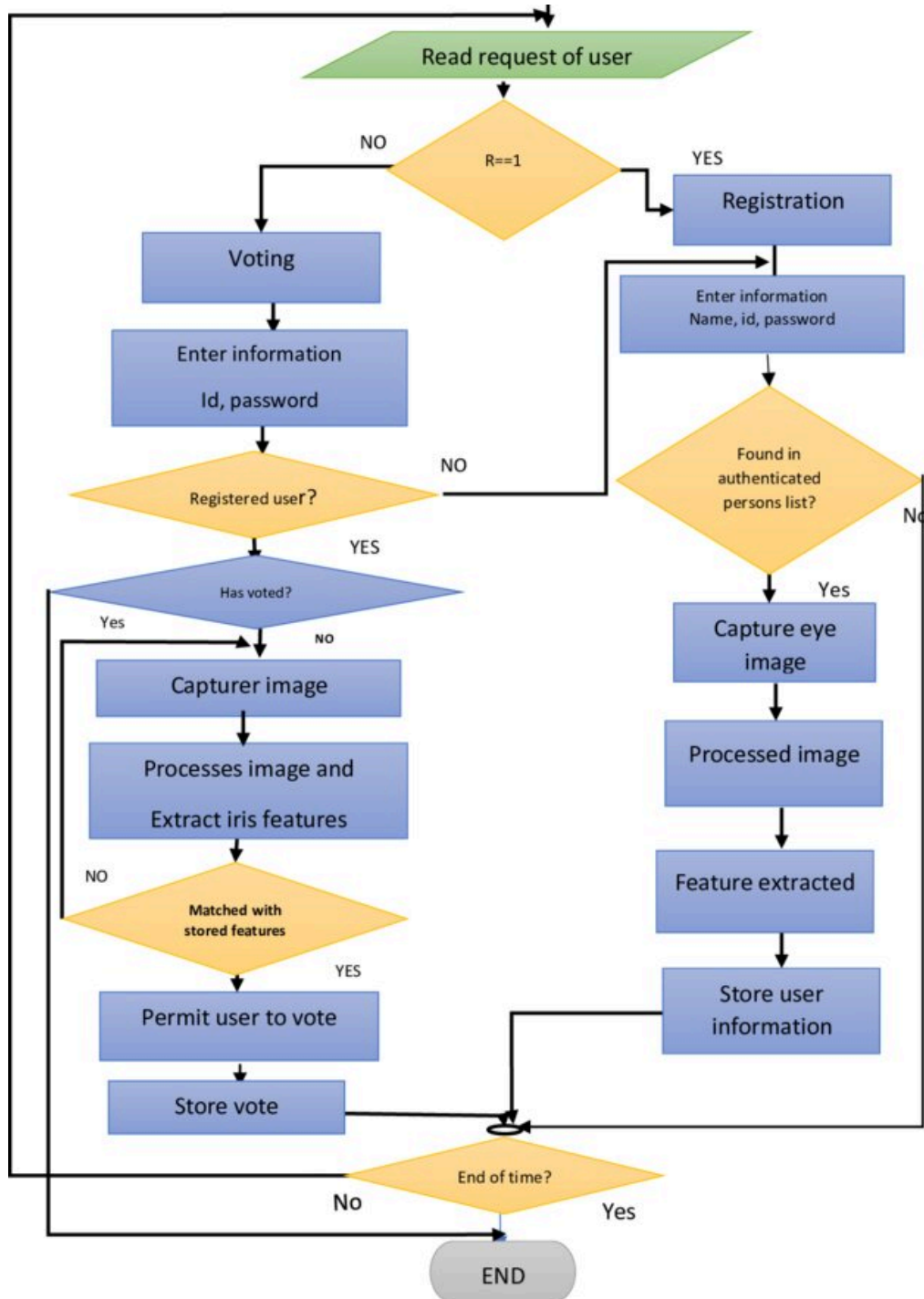
To maintain transparency and accountability, "SecureVote" will establish comprehensive audit trails of voting activities, allowing for thorough monitoring and review. Thorough testing and validation will be conducted to ensure the functionality, security, and usability of the system before deployment. Ongoing technical support will be provided to users and administrators to address any issues or concerns that may arise during the voting process.

To optimize system availability, the voting system architecture will be designed to handle high volumes of concurrent users and ensure continuous availability, minimizing downtime and disruptions during the voting period. Scalable DBMS technologies will be employed to accommodate increasing demand and maintain optimal performance under varying loads, ensuring scalability and responsiveness. Moreover, a user-friendly interface will be developed to facilitate easy and secure voting for voters, enhancing accessibility and usability.

GANTT CHART

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15
Abstract and Introduction															
Literature survey															
Materials and Methods															
Results															
Discussion															
Report															

FLOW CHART



INTRODUCTION

Traditional paper-based voting systems often face challenges such as voter fraud, logistical issues, and counting errors. Transitioning to an online voting system offers potential solutions to these challenges, but it also introduces new security concerns. By integrating a DBMS into the voting system architecture, we aim to address these concerns and create a platform that enables secure and efficient electronic voting.

DBMS serves as the backbone of modern information systems, providing a structured and efficient way to store, manage, and retrieve data. By harnessing the capabilities of DBMS in the context of online voting, we can address several key concerns such as data integrity, confidentiality, availability, and scalability. The use of a robust DBMS not only facilitates secure storage and management of voter information and ballot data but also enables the implementation of sophisticated security measures to protect against cyber threats and unauthorized access.

LITERATURE SURVEY

G. N. Pandey et al. An online voting system for Indian elections is proposed for the first time in this paper. The proposed model has a greater security in the sense that voter high security password is confirmed before the vote is accepted in the main database of Election Commission of India. The additional feature of the model is that the voter can confirm if his/her vote has gone to the correct candidate/party. In this model a person can also vote from outside of his/her allotted constituency or from his/her preferred location. In the proposed system the tallying of the votes will be done automatically, thus saving a huge time and enabling the Election Commissioner of India to announce the result within a very short period.

Ramya Govindaraj et al. In this research work. Voting is commonly related to politics and is finished with often exploitation and manual approach where voters stand to vote for his or her decisions. Manual voting may lead to malpractices sometimes. so there is a need to implement an online voting system. This is to expand the technology from manual voting system to digital voting system. In this specific research our idea is to implement an online voting system with features like the schemes that the specific party has implemented, based on the features we are going to vote . The main reason we need to shift from a normal voting system to an online voting system is that we can consume our time and can vote from anywhere through online. We have implemented this by using C# as a programming language, Microsoft SQL server 2012 and Microsoft azure as a cloud.

Srivatsan Sridharan et al. This paper aims at creation of a voting system by providing a cost effective solution to the government along with ensuring non-traceability and integrity of the votes cast while providing great convenience to voters. This system is developed robustly to ensure that all eligible voters having a Universal Identification Number of their country (For Example the Smart Card in USA) is allowed to cast their respective vote. The voters, who cast multiple votes during the process of voting is ensured to be prevented. Also to ensure the maintenance of authenticity, any biometric identification of the voters could be used for accessing the terminal to cast their vote and restricting them to cast again. The process of online voting could be deployed with three phases - the voter registration online vote capturing and the instant online counting and result declaration. A Secret Voting Password provided to voter during registration acts as an authentication mechanism which enables the voters to securely cast their vote along with their captured biometric identification.

Himanshu Vinod Purandare et al. Voting is an important aspect for democratic countries. Elections decide which candidate is capable and also decides the future of that country therefore elections should be as transparent as possible and should have high level of security. But the existing voting system has some flaws like time consuming process because voter has to wait in queue for casting their vote also there is lesser security in present voting system. Due to this, inclination of voters is decreasing towards voting and voting percentage decreases. To overcome these issues and to improve the existing voting system we are designing online voting system using android application which will give better system security and vote casting become less time consuming process and it will provide better results. Voter can cast vote remotely from anywhere in the country with the help of an android device and voting application on his device. Voters must have internet connection on their android device to cast vote from remote place.

Awsan A. H. Othman et al. Voting process is a democratic practice that has been used over the years as a primary method used by people in democratic countries to express their opinions on issues and discussions that concern them. This paper seeks to facilitate and protect the voting process by making an online voting system for elections and referendums connected with voting devices. The IoT and Blockchain have been used with this system to ensure that users' data are protected from theft and prevent eavesdropping or vote tampering to guarantee the integrity of the voting. The blockchain encrypts votes in order to protect every vote from forgery. This system is not directed to governments only, but to all governmental and private agencies.

S Ganesh Prabhu et al. Our country, India is the largest democratic country in the world. So it is essential to make sure that the governing body is elected through a fair election. India has only offline voting system which is not effective and upto the mark as it requires large man force and it also requires more time to process and publish the results. Therefore, to be made effective, the system needs a change, which overcomes these disadvantages. The new method does not force the person's physical appearance to vote, which makes the things easier. This paper focusses on a system where the user can vote remotely from anywhere using his/her

computer or mobile phone and doesn't require the voter to go to the polling station through two step authentication of face recognition and OTP system. This project also allows the user to vote offline as well if he/she feels that is comfortable.

In comparing to the above papers, SecureVote: online voting system surpasses existing online voting systems with its advanced security features, intuitive interface, and regulatory compliance. By prioritizing robust encryption and user-friendly design, SecureVote: online voting system ensures both the integrity of the voting process and accessibility for all users. In redefining digital democracy,

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