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ORIGINAL CONTRIBUTION

Design and Web Framework of Secure Electronic Voting System

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ABSTRACT

In this day and age, the internet has made practically every aspect of our lives easier, from online banking to online banking, online food ordering, online shopping, digital credential acquisition, minor medical consultations, bill paying, etc. Time-consuming issues like traveling to the polling station and waiting in a long line to cast a ballot have persisted, and because there was no online voting system, it was difficult for the government to encourage the public to take part in the election process. However, the internet and software engineers deserve all the credit for making it possible for everyone to vote for the candidate of their choice with unprecedented simplicity in the near future. The obligation of creating simple, user-friendly software for the same aim presents additional difficulty for software engineers. Because PHP is a straightforward, sophisticated, and potent software development tool, it may be used to accomplish this purpose quite successfully. Designed to create dynamic websites and applications, PHP is a general-purpose server-side scripting language that is executed by a web server. PHP is a secure, quick, and dependable web development alternative that provides many additional benefits to make it widely available.

KEYWORDS: *e-polling, PHP, MySQL, XAMPP*

1. INTRODUCTION

The development of a democratic society depends heavily on electronic voting [1]. The current voting method requires people to visit polling places in order to cast their ballot. Either new polling stations are built or only a few public spaces are used. Both voters and the election commission would save a great deal of time if electronic voting were used. Fully effective online voting with common household gadgets is what an ideal voting application should enable [2-5]. Voter count can be done anonymously and automatically. Due to its reliance on the internet, e-voting systems present new risks and difficulties while also resolving issues with existing voting methods. The "e-POLLING APP" is a Web application for online voting. Voters of

any gender who are Indian citizens and above the age of eighteen can use this app to cast their ballots online without having to visit a polling place. All of the voter names and complete information are kept in a database that is kept up to date. Voters can easily exercise their right to vote online with the "e-POLLING APP." To cast a ballot, they must first register. For security purposes, the system administrator primarily completes registration. All the system administrator has to do is fill out a registration form to register voters on a specific website that they visit. It is anticipated that those who wish to register will get in touch with the system administrator and provide their information. The citizen is then registered to vote once the system

administrator has verified that they are indeed citizens of India by matching the information they have provided with records already in place, such as those kept by the Registrar of Persons. The voter receives a private voter ID upon registration, which they can use to access the system and take advantage of its features, including voting. The citizen is not registered to vote if they submit inaccurate or invalid information [7-9]. The primary goals of e-Voting are to:

- Provide voters with better voting services by enabling quick, easy, and convenient voting;
- Lower the expenses incurred by the ECI during voting hours in order to pay numerous clerks hired to ensure the success of the manual system; and
- Verify that only registered members are casting ballots. Additionally, there are less instances of "Dead People" voting.

To create an efficient election administration system, an e-POLLING APP will need to be extremely accurate or cost-effective. For this reason, the following are important features that this e-POLLING APP highlights.

- Reduce the number of employees needed for the election.

Why It is much simpler to independently moderate the elections using this software, which will subsequently strengthen their fairness and transparency.

Examining India's current voting procedure or methodology is one of the project's specific goals. India is developing an automated voting system. Putting in place an online or automated voting system. Confirming only eligible voters are permitted to cast ballots by validating the system.

2. LITERATURE REVIEW:

The phrase "e-POLLING APP," usually referred to as "e-Voting," encompasses a variety of voting methods, including electronic vote counting. Packed cards, optical scan voting systems, and specialized voting kiosks (such as self-contained direct-recording electronic voting systems, or DRE) are examples of electronic voting

technology [10]. Additionally, ballots and votes may be transmitted over the internet, private computer networks or cellphones. Using a web-based program, e-Voting is an electronic method of selecting leaders. Voters can vote whenever it is most convenient for them, and there is less traffic when using e-Voting instead of the traditional "queue method." Additionally, it reduces vote-counting errors. To determine which candidate has received the most votes for a certain position, the individual votes are entered into a database that can be queried. Given that the voter turnout for the previous voting procedure was just about 60%, this app aims to increase the voting percentage in India. If high security is implemented with the app, the number of instances of erroneous votes will decrease. Voters can easily exercise their right to vote online with the "e-POLLING APP." Before being able to cast a ballot, he or she must first register to vote. To allow for database data updates, registration must be completed before the voting day. But voting isn't open to everyone. One must meet the qualifications in order to take part in the elections. For example, he or she must be at least eighteen years old and a registered citizen. As previously mentioned, only registered voters have access to the "e-POLLING APP," an initiative that offers quick and easy voting [11].

Internet voting systems are attractive for a number of reasons, including the fact that people are becoming more accustomed to using computers for a variety of tasks, including private ones like online banking and shopping, and that they enable voters to cast ballots from a distance, which lowers the absenteeism rate. 3.

3. METHODOLOGY

Technology Used

The technologies used in this project are the following:

Frontend

Hyper Text Markup Language, or HTML for short, is the most popular programming language for creating web pages. Despite the fact that HTML 4.01 is still commonly used, the HTML-5

version, which was released in 2012, is an expansion of HTML 4.01. CSS: CSS is used to control the style of a web document in a simple and easy way. CSS is the acronym for "Cascading Style Sheet".

JavaScript is a programming language with first-class functions that is lightweight, interpreted, or just-in-time compiled. The ECMAScript Language Specification (ECMA-262) and the ECMAScript Internationalization API specification (ECMA-402) are the standards for JavaScript. The most recent drafts of ECMA-262 and ECMA-402 serve as the foundation for the JavaScript documentation across MDN. Documentation and examples in MDN articles may also make use of new ECMAScript capabilities that have already been proposed and implemented in browsers.

Backend

PHP is a general-purpose programming language designed specifically for web development. A computer language called PHP Hypertext Preprocessor (PHP) enables web developers to produce dynamic content that communicates with databases. Numerous well-known databases, such as MySQL, Postgre SQL, Oracle, Sybase, Informix, and Microsoft SQL Server, are connected with it.

Database

The Structured Query Language, the most widely used language for organizing and accessing database records, is the foundation of the relational database management system MySQL.

Xampp Control Panel

Apache Friends created XAMPP, a free and open-source cross-platform web server solution stack bundle that primarily consists of the MariaDB database, the Apache HTTP Server, and interpreters for PHP and Perl scripts. It facilitates the process of moving from a local test server to a live server because the majority of real web server

deployments use the same components as XAMPP. A developer can quickly and easily install a WAMP or LAMP stack on an operating system with XAMPP's deployment ease. Additionally, Bitnami can be used to install popular add-in apps like WordPress and Joomla! with comparable ease. The ease of deployment and instantiation of a WAMP webserver stack is XAMPP's most evident feature. Later, Bitnami offered a few widely used packed programs that were simple to install. Among other things, XAMPP supports MariaDB and SQLite database creation and manipulation.

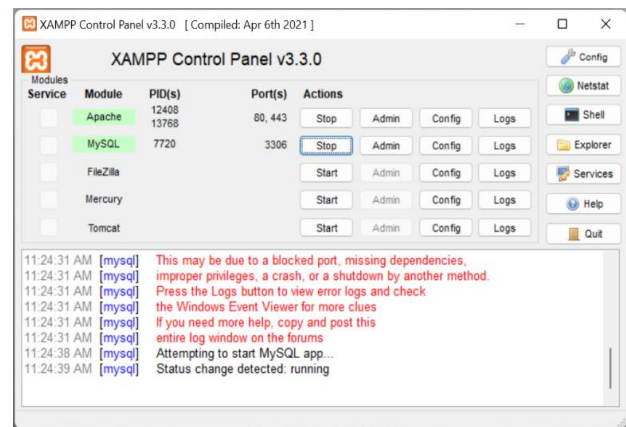


Fig 1: Xampp Control Panel Page

Block Diagram

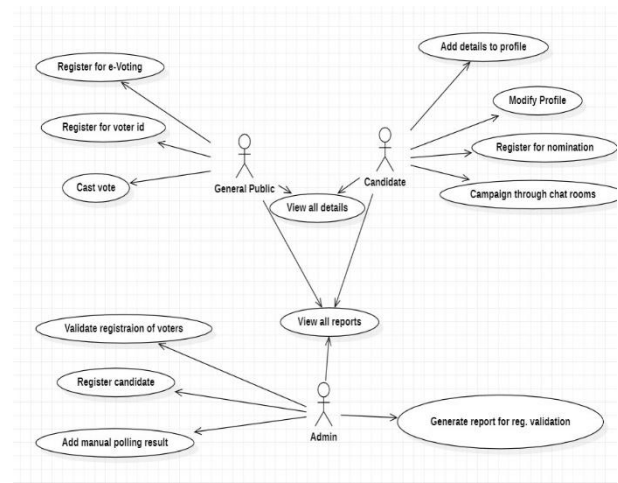


Fig 2: Block Diagram

ER Diagram

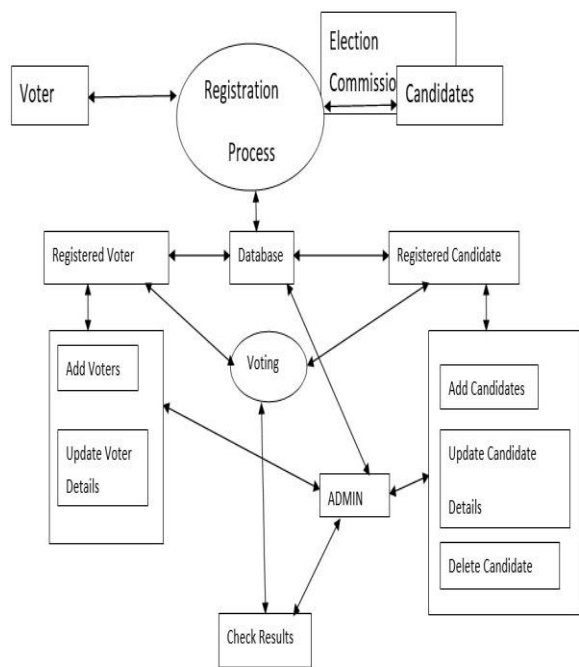


Fig 3: ER Diagram

Data Flow Diagram

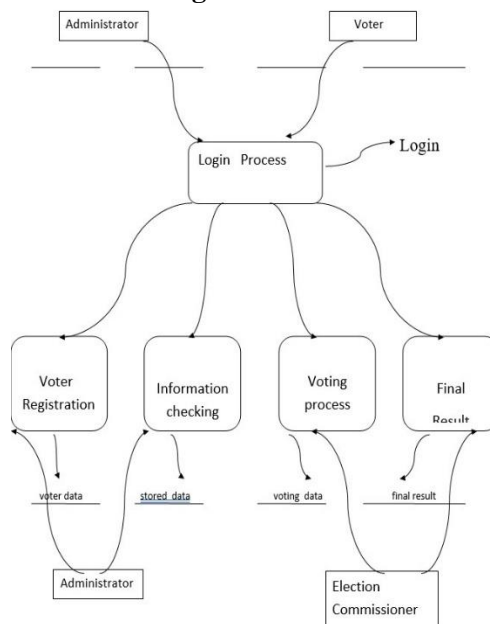
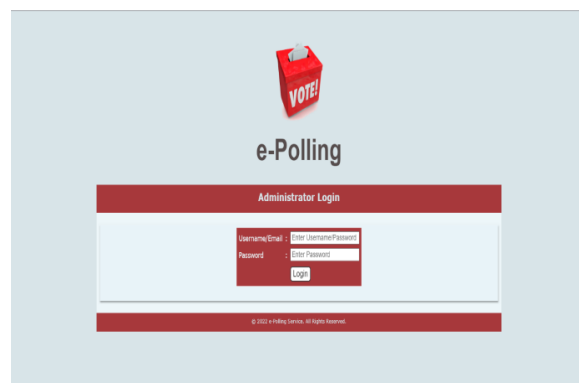


Fig 4: Data Flow Diagram

4. USER INTERFACE DESIGN

Administrator UI Snapshots:



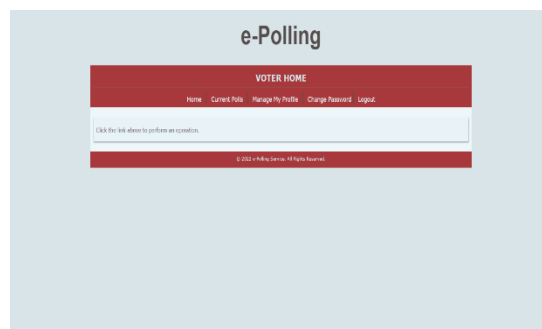
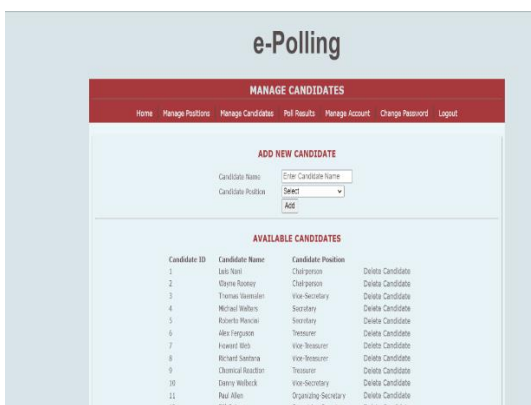
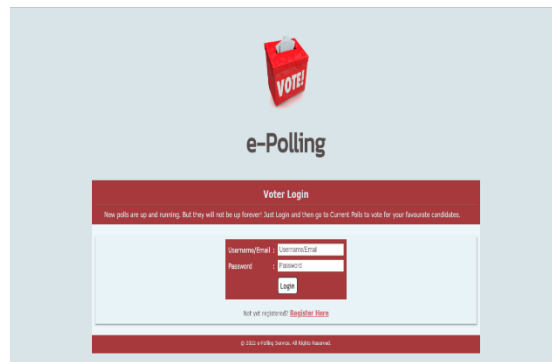
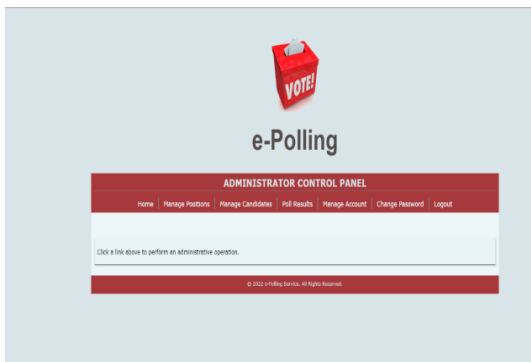


Fig 6: (a-b) Voter UI Pages

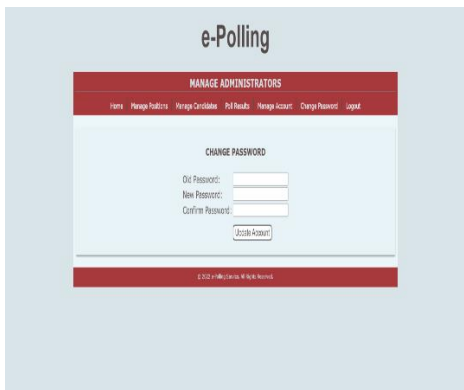


Fig 5: (a-d) Administrator UI Pages

Voter UI Snapshots

5. DATABASE DESIGN

Database Tables

In this work, following tables are obtained.

Table 1 Administrator Table

Field Name	Data Type	Description
Admin_id	Integer	Admin id for Administrator(Primary key)
First_name	Varchar	First Name of the Administrator
Last_name	Varchar	Last Name of the Administrator

email	Varchar	Email of Administrator
Password	Varchar	Password of Administrator

Last_name	Varchar	Last Name of the Member
email	Varchar	Email id of Member
Password	Varchar	Password of Member

Table 2 Candidate Table

Field Name	Data Type	Description
Candidate_id	Integer	Candidate id for Candidate(Primary key)
Candidate_name	Varchar	Name of the Candidate
Position	Varchar	Position of Candidate
Candidate_votes	Integer	Vote Count of Candidate

6. CONCLUSION AND FUTURE SCOPE

Voter information will be managed by this e-POLLING APP, which will allow voters to log in and exercise their right to vote. Every voting system function will be integrated into the system. It counts the overall number of votes cast for each party and gives the facilities for keeping voters' votes for each party. The Election Commission of India (ECI) maintains a database that contains all voter names and all of their pertinent data.

With the use of this software, users who are at least eighteen years old can register their details in a database. They can then vote for any party only once after logging in with their ID and password. Voting information is saved in a database, and the outcome is calculated and shown. The percentage of votes cast rises with the use of online voting systems. It cuts down on the time and expense of voting. It takes a lot less time and is quite simple to use. It is quite simple to debug. For our e-Polling Web Application, we intend to include UI responsive design and improved security capabilities in the future, like voter biometric authentication, mobile OTP verification, and SMS voting confirmation.

Table 3 Member Table

Field Name	Data Type	Description
Member_id	Integer	Member id for Member(Primary key)
First_name	Varchar	First Name of the Member

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