SMART ONLINE VOTING SYSTEM

A PROJECT REPORT

Submitted by

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to

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In partial fulfillment of the requirements for the award of the Degree of

MASTER OF COMPUTER APPLICATIONS

Thangal Kunju Musaliar College of Engineering
Kerala
DEPARTMENT OF COMPUTER APPLICATIONS

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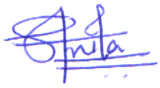
DECLARATION

I undersigned hereby declare that the project report SMART ONLINE VOTING SYSTEM , submitted for partial fulfillment of the requirements for the award of degree of Master of Computer Applications of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under supervision of Prof. Alshaina. This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.



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C E R T I F I C A T E

This is to certify that, the project report entitled **"SMART ONLINE VOTING SYSTEM"** is submitted by **ANILA S (TKM19MCA002)** to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the degree of Master of Computer Applications,is a bonafide record of the project work carried out by her under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Internal Supervisor Head of the Department External Examiner

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ABSTRACT

The SMART ONLINE VOTING SYSTEM was developed for a specific school. This project stores the candidate details, voters details, and etc. The voters in this project are the student of the school and in order for them to vote, they must register their system account and their student ID number is required. After the student registration to the system, the system admin user will activate the student accounts so they could vote for their candidates. The system has 3 types of users which are the Admin, Staff, and Voters. The admin can manage all of the data in this system and the staff has only limited access to manage the data. This Voting System generates a printable report for the total counts of the vote for all candidates.The SMART ONLINE VOTING system provides online voters registration forms for students where students registers and are allowed to log in as either students or delegates or candidates. Each registered user has a password to log in. The system provides an interactive platform where voters and candidates interacts and thus candidates perform their campaigns. The system allows preliminary voting and the results. The system compute and gives the election results for all the posts and provides reports for the whole election process. The main objective of this system is to design, develop and implement an efficient, user friendly, interactive web based student voting system.

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Chapter 1

INTRODUCTION

The SMART ONLINE VOTING system provides online voters registration forms for students where students registers and are allowed to log in as either students or delegates or candidates. Each registered user has a password to log in. The system provides an interactive platform where voters and candidates interacts and thus candidates perform their campaigns. The system allows preliminary voting and the results. The system compute and gives the election results for all the posts and provides reports for the whole election process. The main objective of this system is to design, develop and implement an efficient, user friendly, interactive web based student voting system.

The SMART ONLINE VOTING SYSTEM was developed for a specific school. This project stores the candidate details, voters details, and etc. The voters in this project are the student of the school and in order for them to vote, they must register their system account and their student ID number is required. After the student registration to the system, the system admin user will activate the student accounts so they could vote for their candidates. The system has 3 types of users which are the Admin, Staff, and Voters. The admin can manage all of the data in this system and the staff has only limited access to manage the data. This Voting System generates a printable report for the total counts of the vote for all candidates.Throughout history, election fraud has occurred in many electoral processes from which experience shows that the manual voting process is a major source of such vices and violence in many democratic countries as well as in Universities.E-voting will ensure that elections are held free and fair and that results are transmitted to

3 voters in a secure way better than the paper-based system of voting. Online voting is a termen-

compassing several different types of voting embracing both electronic means of countingvotes. Online voting, by contrast, is predicated on privacy, anonymity, and freedom fromoutside influence or coercion — but also on the absolute audit ability that is necessary to guarantee the principle of "one person, one vote" and to verify that each voter's intent isreflected in the election's outcome

1.1 Problem Definition

Online Voting system should be able to allow students to cast their vote by online.The main concept of this project is to build a website, which should be able to allow students to cast their vote by online.There are some challenges on online voting system, both dual voting and incorrect voting. With proper security and privacy, these challenges can be overcome.The Smart online voting system provides online voters registration forms for students where students registers and are allowed to log in as either students or delegates or candidates. Each registered user has a password to log in. The system provides an interactive platform where voters and candidates interacts and thus candidates perform their campaigns.online voting system that was designed to meet the electoral needs of universities and colleges.

1.2 Objective

The main goal of project is to design, develop and implement an efficient,secure, user friendly, interactive web based student voting system.

Specific Objectives :

- The system was developed for our college to Fast and easy way of conducting Election..
- The main concept of this project is to build a website, which should be able to allow students to cast their vote by online
- Voters can view background of each Candidate.
- Admin can verify the documents and details of Candidate.
- To develop a system that will capture candidates and voters details
- To develop a system that will generate reports for the election process.

Chapter 2

LITERATURE SURVEY

Literature review is the comprehensive study and interpretation of literature that relates to a particular topic. When one uses literature review research questions are identified, then one seek to answer this research questions by searching for and analyzing relevant literature. Some importance of literature reviews is that new insights can be developed by the re-analyzing the results of the study. A literature review is both a summary and explanation of the complete and current state of knowledge on a topic as found in academic books and journal articles. There are two kinds of literature reviews you might write at university: one that students are asked to write as a stand-alone assignment in a course, and the other that is written as part of an introduction to, or preparation for, a longer work, usually a thesis or research report. The focus and perspective of your review and the kind of hypothesis or thesis argument you make will be determined by what kind of review you are writing. One way to understand the differences between these two types is to read published literature reviews or the first chapters of theses and dissertations in your own subject area. Analyses the structure of their arguments and note the way they address the issues.

2.1 Purpose of the Literature Review

1. It gives readers easy access to research on a particular topic by selecting high quality articles or studies that are relevant, meaningful, important and valid and summarizing them into one complete report.

2. It provides an excellent starting point for researchers beginning to do research in a new area by forcing them to summarize, evaluate, and compare original research in that specific area.

3. It ensures that researchers do not duplicate work that has already been done.

4. It can provide clues as to where future research is heading or recommend areas on which to focus.

5. It highlights the key findings.

6. It identifies inconsistencies, gaps and contradictions in the literature.

7. It provides a constructive analysis of the methodologies and approaches of other researchers.

2.2 Related Works

S.Ganesh Prabhu is discussed by the system where the user can vote remotely from anywhere using his/her computer with biometrics.But it has some limitations such as Technical issues like extra devices is need for capturing biometrics.High security and assurance – Biometric identification provides the answers to "something a person has and is" and helps verify identity.It has Non-transferrable – Everyone has access to a unique set of biometrics.But It's no surprise that a more advanced security system would require significant investments and costs to implement. In a 2018 survey by Spiceworks, 67 percent of IT professionals cite cost as" the biggest reason for not adopting biometric authentication." Transitioning to a biometrics authentication wouldn't be the only thing a company would have to pay for, with 47 percentage of the surveyed stating a need to upgrade current systems in order to support a shift to biometric authentication on their devices.

Mohit kumar discussed an electronic voting portal should offer security and integrity along with the transparency of votes and privacy of voters. This paper proposes an e-voting system based on blockchain that eliminates some of the limitations in existing voting systems. The paper also presents state of art of some blockchain frameworks for e-voting. The presented implementation is suitable for small scale elections like inside corporate houses, board rooms etc. The implementation uses smart contract from Ethereum. Truffle framework is used in this paper for development,

testing and deploying smart contracts. Ganache is used as Ethereum client for testing. Here Metamask is used as browser wallet. But it has some limitations,Blockchain-based voting system can address many of the problems faced in today's election and promises new opportunities, from securing transparency, making the voting process more accessible, affordable and safe. But reflections about the risks of using electronic voting systems also needs to be taken seriously in order not to increase risks and security vulnerabilities in the voting process.

AMNA Qureshi discussed ,Online Smart Voting System Using Biometrics Based Facial and Fingerprint Detection on Image Processing and CNN[IEEE]2021 .This paper explain about Biometric voter registration implicates using biometric technology (capturing unique physical features of an individual – fingerprinting is the most commonly used), most of the times in addition to demographics of the voter, for polling registration and/or authentication. The enrollment infrastructure allows collecting and maintaining a database of the biometric templates for all voters.It has some limitations ,They may require an additional application or registration. Observing remote voting solutions may be more complex/difficult to organise than iperson voting. There may be information asymmetry between voters who vote in advance and those who vote on Election Day. Remote voting solutions which take place in an uncontrolled environment may present a higher risk of fraud, coercion, family voting, impersonation, violation of ballot secrecy or other compromises to the integrity of the vote.

Himanshu Agarwal is 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 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 Election Commissioner of India to announce the result within a very short period.

Melanie Volkame proposed, 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 got to the polling station through two step authentication of face recognition and OTP system.

Mohammad Hamdaqa develop electronic voting system based on blockchain that addresses some of the limitations in existing systems and evaluates some of the popular blockchain frameworks for the purpose of constructing a blockchain-based e-voting system. In particular, we evaluate the potential of distributed ledger technologies through the description of a case study; namely, the process of an election, and the implementation of a blockchain-based application, which improves the security and decreases the cost of hosting a nationwide election.

Chapter 3

METHODOLOGY

The Smart Online Voting system is made for the students to be able to vote for their representatives from any part of the globe. It is done on the Internet and as such can also be called the Internet Voting . It seeks (or should seek) to accurately reflect the voters' preferences. Online voting systems are appealing for several reasons but mostly because people are generally getting more acquainted with using computers to do all sorts of things, namely sensitive operations such as shopping and home banking, and it allows people to vote at their convenience, helping to reduce the rate of absenteeism which ranks as the highest malady plaguing the electoral process world over.
Remote e-Voting, where voters cast their votes anywhere and anytime there is Internet access; as well as voting through mobile devices. Here, voting is performed within the voter's sole influence, and is not physically supervised by representatives of governmental authorities (also called Internet-voting or Online voting). It seeks to maximize the convenience and access of the voters by enabling them to cast ballots from virtually any location that is Internet accessible

3.1 Proposed system

In the proposed voting system, everything from registration of voters, verification of voters,casting of the votes and tallying is done online. The system will be a web based information system that enables individuals to cast their vote only once. All the information filled in when registering as a voter is stored in a database.The main objective of the system is to ensure that all the limitations that exists in the manual voting system are dealt with accordingly. The system will ensure that

ID verification is carried outas it will liaise with the university registration database to ensure that students with a valid ID are the only ones who are eligible to participate in the elections.

Objectives of the Proposed System Objectives of the system:

- Coming up with an automated voting system for Universities
- Implementing a an automated/online voting system
- Providing students with a reliable voting system that can be easily accessed through the internet.
- Ensure security in the registration of voters and the anonymity of voters.
- Validating the system to ensure that only eligible voters are allowed to vote.
- To provide a system that automatically tallies cast votes for individual candidates
- To provide a system that archives summarized reports and statistics with regard to the conduct of an election process.

3.2 System Architecture

In propose system remote and user's can exercise. In the proposed system we can get the result without manually counting. The computerized counting is simple. that provides an online platform to vote. The system was developed for a specific school. This project stores the candidate details, voters details, and etc. The voters in this project are the student of the school and in order for them to vote, they must register their system account and their student ID number is required. After the student registration to the system, the system admin user will activate the student accounts so they could vote for their candidates. The system has 3 types of users which are the Admin, Staff, and Voters. The admin can manage all of the data in this system and the staff has only limited access to manage the data. This Voting System generates a printable report for the total counts of the vote for all candidates. The proposed system consist of three major phases:

- Admin phase

- Staff phase
- voter phase

3.2.1 Analysis

In this case the researcher analyzed the requirements, and fully understood the problems. Analysis was conducted on the current systems failures and strengths. This allowed a better understanding of the expected improvements. Further analysis was also conducted on the problem definitions to clearly understand what to tackle. This phase is usually accompanied by documentation for each requirement, which enables other members of the team to review it for validation.

Logical Design

Logical design characteristically looked at the intended system from a logical perspective without considering physical requirement. The project needed a logical design that modelled the flow of data and information through the system from input to output. Logical design also modelled the security checks that the system will be using as well as the formats for all data items in the system.

Physical Design

The physical design is concerned with how the physical architecture of the entire system interacted to achieve its objectives. It modelled the user interfaces, the server architecture and the database models.

3.2.2 Implementation

Once the designs are deemed to be viable, technical implementation begins. Implementing the project was the toughest part as all the coding was done in this phase. Being that the project serves only the web platforms, coding took place in two phases.

Database coding phase

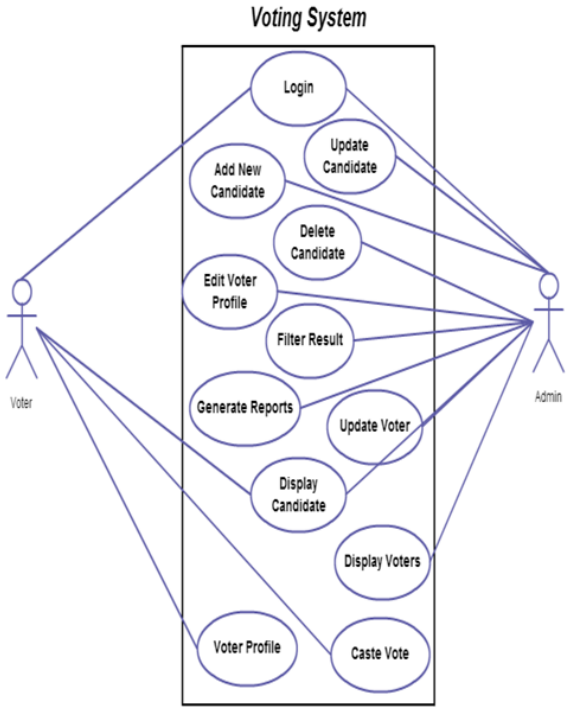
The backend relied on a robust implementation of MySQL database. The database is relational in architecture and host tables which can be abstracted into views for the front end as needed and by access level specifications. All the system's data is stored and processed here .

Web Coding

The project is coded in HTML + JavaScript +PHP for the web platform.

3.2.3 System design

USE CASE DIAGRAM



3.2.4 System Requirement

The following are the requirements needed for the system. The system runs only on the web platform and therefore the requirements were met to enable the expected performance.

CATEGORY	REQUIRED	DESCRIPTION
OS	Apple iOS, Android, MS Windows, Linux, Mac	Web browser host Platform OS
Web Browser	Above Chrome 12, Firefox 14, IE 7, Safari 2	Displaying Webpages
JavaScript	Supported and Enabled	Front end Logic execution
Processing	Single/Multi Core + 1GHz and Above	Microprocessor
RAM	512MB and Above	Host Operating System Memory
Internet Access	1MBps Downlink, 512KBps Uplink	WAN Online Functionality

Figure 3.1: System Requirement

3.3 Functional Requirement

3.3.1 Admin side

- Login/Logout
- Manage Candidate
- Activate/Deactivate Voters
- Manage Students
- Generate Election Report
- Manage User/Staff List

3.3.2 Staff side

- Login/Logout

- Manage Candidate
- Manage Students
- Generate Election Report
- View Voters/staff List

3.3.3 Voters side

- Register to the system
- vote

3.4 Software Requirement and Specification

The software used for the project:

• PHP

• Javascript

• Mysql

3.4.1 PHP

This article is about the scripting language. For other uses, see PHP (disambiguation). PHP PHP-logo.svg Paradigm Multi-paradigm: imperative, functional, object-oriented, procedural, reflective Designed by Rasmus Lerdorf Developer The PHP Development Team, Zend Technologies First appeared June 8, 1995; 26 years ago[1][2] Stable release 8.1.6[3] Edit this on Wikidata / 12 May 2022; 3 days ago Preview release 8.1.0 Beta 1[4] Edit this on Wikidata / 22 July 2021; 9 months ago Typing discipline Dynamic, weak since version 7.0:

Gradual[5] Implementation language C (primarily; some components C++) OS Unix-like, Windows, macOS, IBM i, OpenVMS License PHP License (most of Zend engine under Zend Engine License) Filename extensions .php,.phar,.phtml,.pht,.phps Website www.php.net Edit this at Wikidata Major implementations Zend Engine, HHVM, PeachPie, Quercus, Parrot Influenced

by Perl, HTML, C, C++, Java[citation needed], Tcl,[2] JavaScript, Hack[6] Influenced Hack, JSP, ASP PHP Programming at Wiki books PHP is a general-purpose scripting language geared toward web development.[7] It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1994.[8] The PHP reference implementation is now produced by The PHP Group.[9] PHP originally stood for Personal Home Page,[8] but it now stands for the recursive initialism PHP: Hypertext Preprocessor.[10]

PHP code is usually processed on a web server by a PHP interpreter implemented as a module, a daemon or as a Common Gateway Interface (CGI) executable. On a web server, the result of the interpreted and executed PHP code – which may be any type of data, such as generated HTML or binary image data – would form the whole or part of an HTTP response. Various web template systems, web content management systems, and web frameworks exist which can be employed to orchestrate or facilitate the generation of that response. Additionally, PHP can be used for many programming tasks outside the web context, such as standalone graphical applications[11] and robotic drone control.[12] PHP code can also be directly executed from the command line.

3.4.2 JavaScript

JavaScript is a high-level programming language that follows the ECMAScript standard. It was originally designed as a scripting language for websites but became widely adopted as a general-purpose programming language, and is currently the most popular programming language in use.[1] JavaScript is usually found running in a web browser as interactive or automated content, ranging from popup messages and live clocks to large web applications. JavaScript is also commonly used in server-side programming through platforms like Node.js,[2] or ”embedded” in non-JavaScript applications where the base programming language lacks the high-level functionality that JavaScript offers.

Despite the similarities in name and syntax, JavaScript is not related to the programming language Java. Though the names of both languages are trademarks of Oracle Corporation, the two languages follow different design principles, and are actively developed by unrelated organizations.JavaScript is a dynamic computer programming language. It is lightweight and most commonly used as a part of web pages, whose implementations allow client-side script to interact with

the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

JavaScript was first known as LiveScript, but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java. JavaScript made its first appearance in Netscape 2.0 in 1995 with the name LiveScript. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers.

3.4.3 Mysql

The SQL part of "MySQL" stands for "Structured Query Language". SQL is the most common standardized language used to access databases. Depending on your programming environment, you might enter SQL directly (for example, to generate reports), embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax.

SQL is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, "SQL-92" refers to the standard released in 1992, "SQL:1999" refers to the standard released in 1999, and "SQL:2003" refers to the current version of the standard. We use the phrase "the SQL standard" to mean the current version of the SQL Standard at any time.Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If you wish, you may study the source code and change it to suit your needs. The MySQL software uses the GPL (GNU General Public License), http://www.fsf.org/licenses/, to define what you may and may not do with the software in different situations. If you feel uncomfortable with the GPL or need to embed MySQL code into a commercial application, you can buy a commercially licensed version from us. See the MySQL Licensing Overview for more information .MySQL has standalone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress. MySQL is also used by many popular websites, including Facebook. If that is what you are looking for, you

should give it a try. MySQL Server can run comfortably on a desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention. If you dedicate an entire machine to MySQL, you can adjust the settings to take advantage of all the memory, CPU power, and I/O capacity available. MySQL can also scale up to clusters of machines, networked together.

MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.MySQL follows the working of Client-Server Architecture. This model is designed for the end-users called clients to access the resources from a central computer known as a server using network services. Here, the clients make requests through a graphical user interface (GUI), and the server will give the desired output as soon as the instructions are matched. The process of MySQL environment is the same as the client-server model.

Chapter 4

RESULTS AND DISCUSSIONS

4.1 SYSTEM TESTING

UNIT TESTING

Unit involves testing software with a small piece of source code (unit, component, and/or function) of the same software. During performing tests, some hypotheses were made, and the testing was then determined if true or false. This way, the developer was able to check whether a unit behaves as intended or whether a unit corresponds to the design specifications. All the sources used in unit testing were created by the developer as a part of software development. The following unit tests were performed to ascertain functionality.

TEST CASES (TC#)	TEST NAME	TEST DESCRIPTION	S/W	TEST ENVIRONMENT
TC1	Navigation Tests	This test verifies if the user is able to navigate the site and access all URLs. Testing a login scenario	ovs-core	Windows 10 Pro, 1TB HDD, 8GB RAM, Wamp(Apache) Server, MySQL Server
TC2	Authentication Tests	This test verifies the username and password to access ovs- core	ovs-core	Windows 10 Pro, 1TB HDD, 8GB RAM, Wamp(Apache) Server, MySQL Server

Table 4.1: unit test

4.2 INTERFACE TESTING

Interface Testing was performed to evaluate whether systems or components pass data and control correctly to one another. It was also used to verify if all the interactions between these modules are working properly and errors are handled properly. To perform the interface tests, the developer created a checklist that outlined all the functional requirements of the system and the various test cases to assess them.

Functional requirement	Description
FR01	Registering and Authentication for users of the application
FR02	Updating profiles in the system
FR03	Interacting and chatting
FR04	Voting, results and reports

Table 4.2: Interface testing

4.3 USABILITY TESTING

The table below summarized tests that were performed to ascertain the usability and experience of users while interacting with the system.

Element	Output
Flow from start to finish	Yes
Feedback from Actions performed	Instant Feedback
Seamless Navigation	Yes
Performance	Optimal
Failure or crashes	None
Runtime error messages	None
Slow or delayed loading	Acceptable

Table 4.3: usability test

4.4 INTEGRATION TESTING

This checks whether the various components of the system are integrated and working in sync. All the screens, functions, stores, data tables and other modules were connected with seamless interfacing. All the required outputs were produced successfully as expected from the systems and all inputs were validated and stored in the correct formats.

4.5 TEST CASES

The table below shows how each of the functional requirements were assessed using Test Cases.

TEST CASE (TC#)	FUNCTIONAL REQUIREMENT	TEST NAME	TEST DESCRIPTION	S/W	TEST ENVIRONMENT
TC1	FR1	Authentication	Verify and authenticate user using registration number and password	ovs-core	Windows 10 Pro, 1TB HDD, 8GB RAM, Wamp (Apache) Server, MySQL Server Android 6.0 Marshmallow, 3GB RAM
Action Performed	**Action's output**	**Valid Input**			
Enter Reg Number and password	Navigate to user's home page	Well formatted Reg Number and password			

Table 4.4: Interface testing

Chapter 5

CONCLUSION

The system allows users to sign up and therefore log in to interact with the system. The system allows the students, delegates and candidates to interact virtually with each other. The system also enables delegates to do the preliminary voting and even voting online and the results are displayed for all users to view. The system allows every user to like the candidates of their preferences and the most liked candidate is the most popular. The system is able to compute reports for the whole election process.

5.1 Advantages

The main merits of proposed model are:

- Only eligible voters are allowed to vote.
- Every voter shall cast only one vote
- It must be impossible to change anybody's vote
- The complete voting procedure must be so transparent
- User friendly
- Robustness; it functions no matter any failure

5.2 Future Enhancement

With the existing constraints, the developed systems is not what was planned initially. The primary aim of this project has been met. All the objectives that were set out have been completed and giving positive results in the ends. In the future some features that can be added will be about the two factor authentication. Although the user requirements were successfully met the application is not yet fully utilized because the users of this website are just learning about the benefits and working of the website. The user testing and evaluation of the application did however highlight rooms for the expansion. The application could therefore be developed further as soon as the user is fully aware of its working.

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APPENDIX

A Screenshots

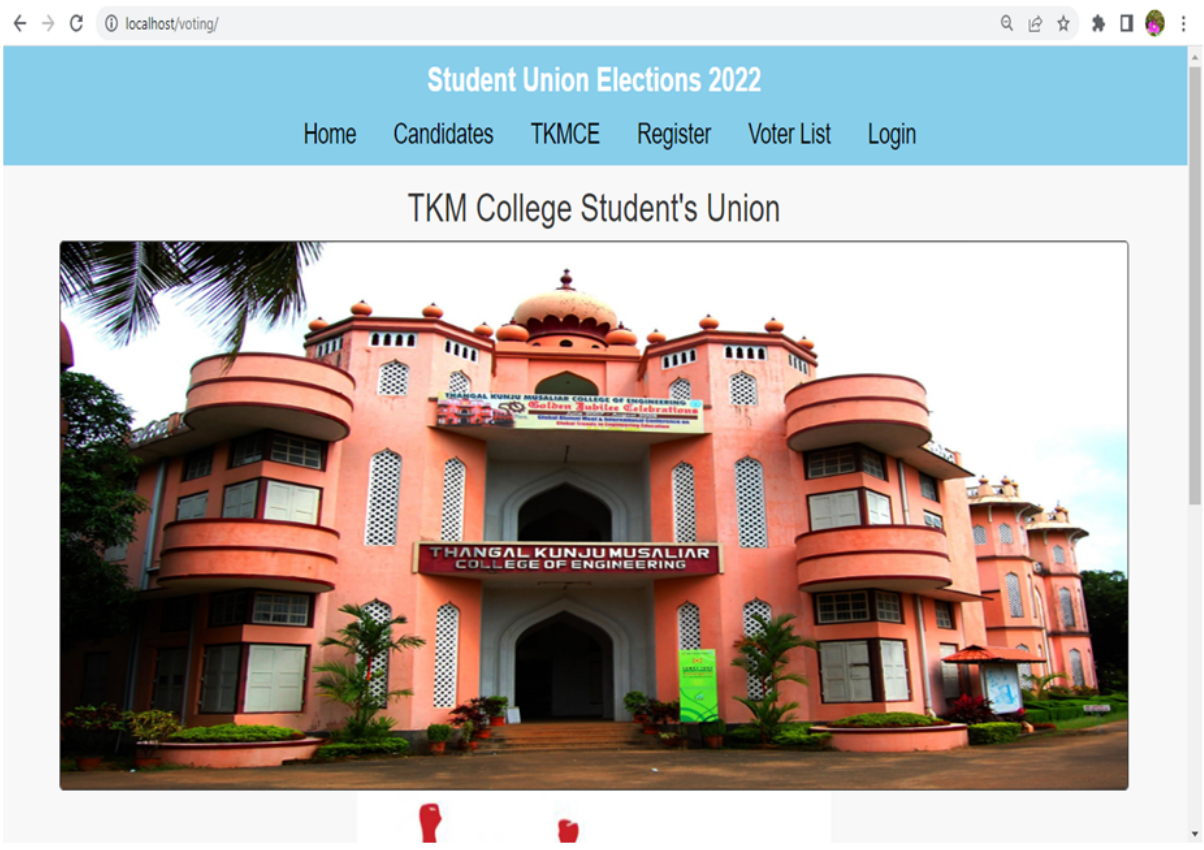

Figure A.1 : Home Page

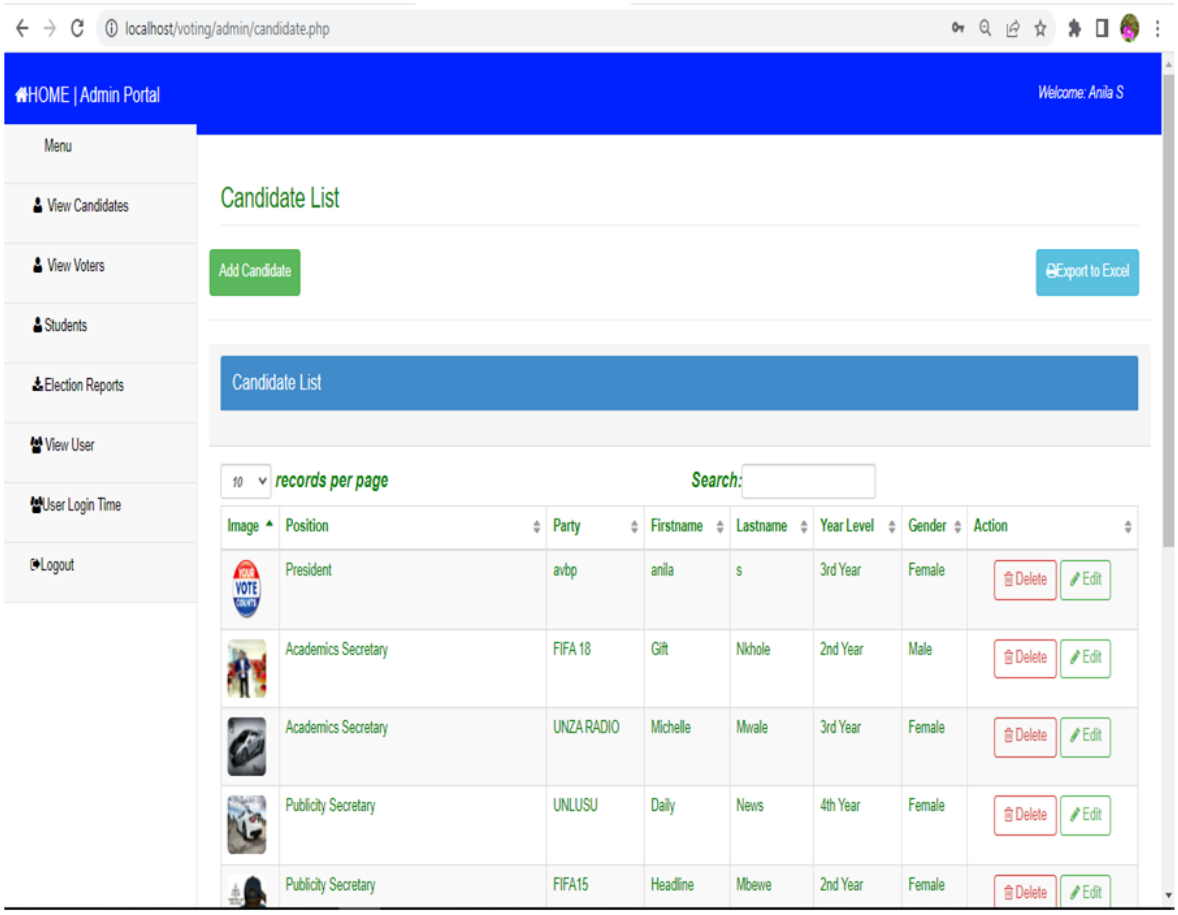

Figure A.2 : Admin page

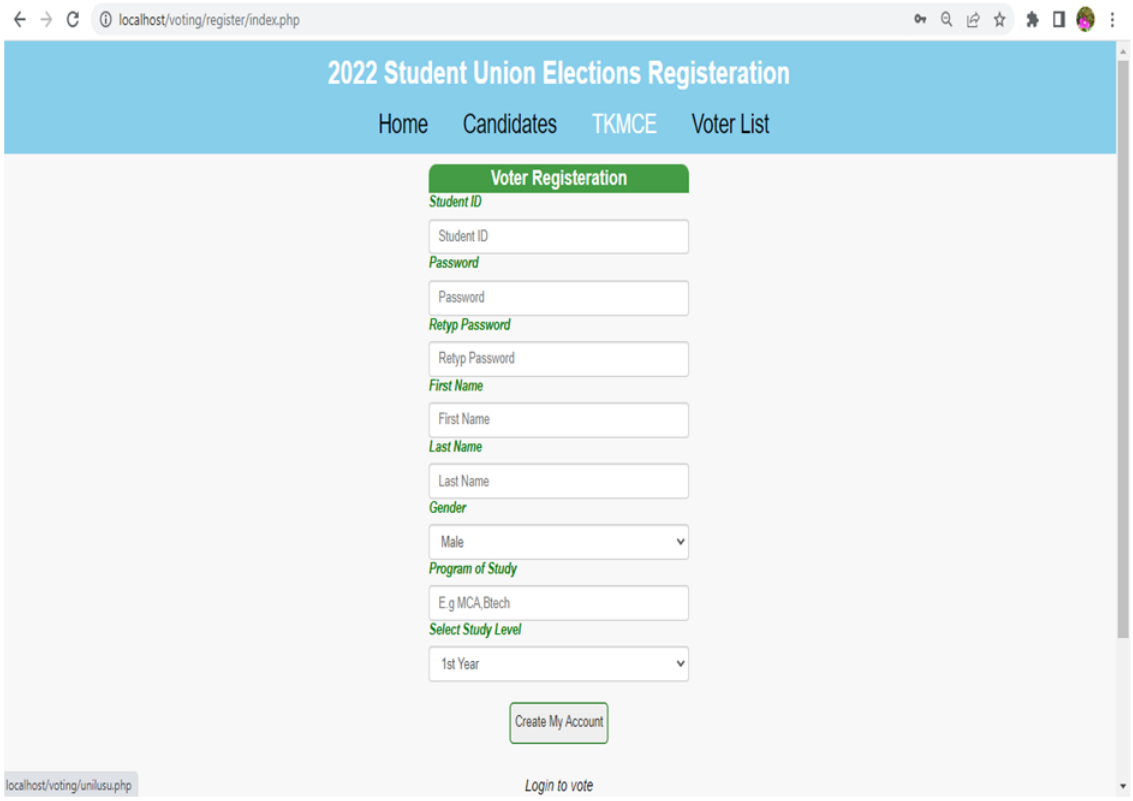

Figure A.3 : Voters registration page

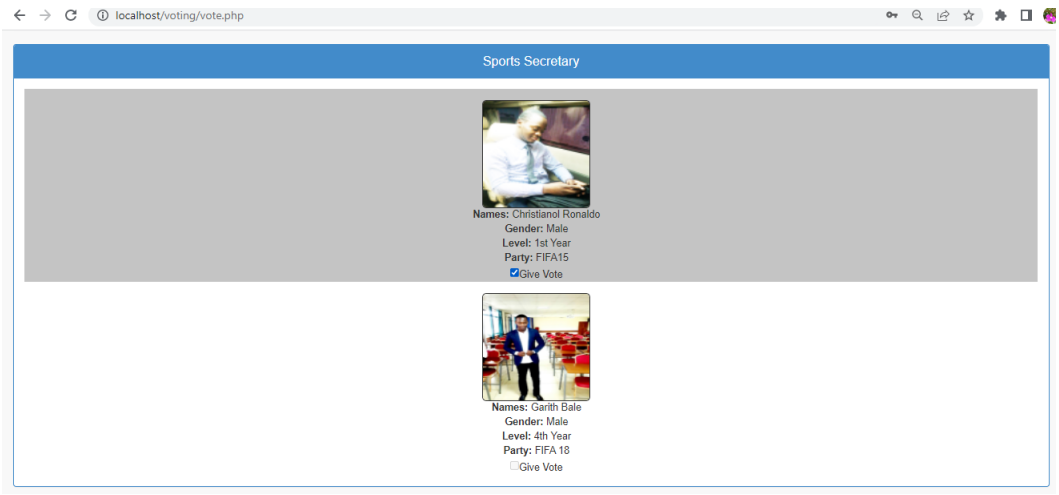

Figure A.3 : Voting page