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Aemilianum College Inc.
GRADUATE SCHOOL
Master in Information Technology
Piot, 4700 Sorsogon City, Sorsogon, Philippines

CHAPTER I

THE PROJECT BACKGROUND

This chapter presents the project context, purpose, and description of the study, its general and specific objectives, scope and delimitation, the significance of the study, and the project dictionary that defines the major terms conceptually, technically, and operationally for better understanding.

Introduction

Today's education system is the obsolete result of the industrial revolution. The assembly line learning classifies the way students create skills and does not account for changing technological advances and the professions of the future provides more integrated ways of thinking. Education is not something that occurs only in education. It also occurs when jobs move and new skills are required in the work. The approach that changes teaching from the linear to the nonlinear framework can help future graduates adapt as professions quickly change the structure and need new skills and mind-sets in the workplace. The curriculum should emphasize teaching learners how to be in a changing business world where automation augments human capacities.

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According to CHED Memorandum Order (CMO) No. 09, series of 2013 an educational institution/educational system seeks to form individuals who can later become productive citizens of the country and the world. Its responsibility is not only confined to the teaching and development of job skills, but also the acquisition of life skills and values. The individuals produced by the educational institution/ educational system should be able to contribute positively to the progress of his/her country and uplift the human condition. Student Affairs and Services therefore must systematically and deliberately address this end of the objective of producing citizens suited to the aims of this country and humanity. Higher Education Institutions must provide a set of student-centered activities and services in support of academic instruction intended to facilitate holistic well-rounded student development for active involvement as responsible citizens and leaders. These shall be collectively known as Students Affairs and Services. The students' enjoyment of their rights shall be balanced by the exercise of accountability and social responsibility, that is, for every right enjoyed, there is a corresponding duty and accountability. [1]

Changing the education system takes time. Professors or teachers allow student to see the outside theoretical institutions to adjust and increase mind-sets. A recent set of learning organizations like the General Assembly move between legacy educational institutions and the assisting to correct those realities. Utilizing these

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organizations to make credentials are good means to increase exposure to new technical skills not accessible to students in the traditional university environment. These credentials will help prepare students for the businesses of the time by engaging skills and knowledge across fields and throughout their lifetimes. The required people to develop specific collaboration skills and current business sensibilities.

The CHED is mandated to promote quality of education; take appropriate steps to ensure that education shall be accessible to all; and ensure and protect academic freedom for the continuing intellectual growth, the advancement of learning and research, the development of responsible and effective leadership, the education of high-level professionals, and the enrichment of historical and cultural heritage. Student Affairs and Services (SAS) are the services and programs in the higher education institutions that are concerned with academic support experiences of students to attain holistic student development and those that relate to institutional programs and services. Implementation of these services can be unique to an institution. Student Welfare Services are basic services and programs needed to ensure and promote the well-being of students. It refers to the services and programs designed for the exploration, enhancement, and development of the student's full

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potential for personal development, leadership, and social responsibility through various institutional and/or student-initiated activities. [2]

Exposing students to various activities aim to lay the groundwork for unity and cooperation among students by providing them with a venue where they can improve their skills and leadership abilities. It also seeks to train students to become better members of society with the ideals and principles of participative democracy. More importantly, it intends to harness the student government as a partner in achieving quality education and academic excellence.

Academics are not the "be all and end all" of education. Students need to be exposed to various engaging activities for them to become empowered and be able to manage and face the realities of life. Getting involved with extra-curricular activities is another component of a well-rounded education outside the regular academic program. Correspondingly, to fully address the need of the students to develop under diverse learning environments, various programs and projects are introduced by the Department of Education and one of which Supreme Student Government organization that will serve as a vehicle for developing leadership skills. [3]

Aemilianum College Inc. is one of the Catholic Institutions in the province of Sorsogon offering degree programs catering to the needs of industries like the Juris Doctor Program, Master in Information Technology (MIT), Bachelor of Science in

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Electronics and Communication Engineering (BSECE), Bachelor of Science in Computer Science (BSCS), Bachelor of Science in Information Technology (BSIT), Bachelor of Science in Industrial Technology (BSIT) major in Automotive Technology, Bachelor of Elementary Education (BSEE), Bachelor of Secondary Education (BSEd), Bachelor of Arts in Office Administration (BSOA), Bachelor of Arts in Communication (BACom), and Bachelor of Arts in Political Science (ABPolSci) the school is regulated by the Commission on Higher Education (CHED), and Legal Education Board (LEB). It continues to serve the community since 1985 with thousands of graduates during that time a lot of problems arise and were encountered. One of these is the automation of the electing officers of different organizations like the student council, during that time they use manual operation of the voting process.

Aemilianum College Inc. always chooses or elects officers in different organizations. Voting or elections have been perpetual activity in the school wherein the student/voter is required to choose from a set of candidates who will represent each position in the organization council.

To accomplish this, the student/voter must go to the Administration Office if he/she is a registered voter, then goes to the voting area and choose the candidate's likes. Then the student submits the filled-up ballot form to the voting administrator for his votes to be cast. Then the student is marked with indelible ink to signify that

he has already voted. After all the votes have been cast, the voting procedure goes again through several processes. The votes are collected and are then counted, which could take several hours to several days, depending on the volume of votes. [4] Which leads to a delay in the submission of the results of the winner.

The advancement of technology greatly enhances the speed and efficiency of the voting process. Results could be attained even right after the elections reducing the time to a mere fraction compared to the time it takes if the voting is done manually. It also increases the level of the voting experience because of multimedia enhancements. The manual voting system of Aemilianum College Inc. lacks advantages and security.

It is this effect that the proponent decided to propose a system to improve the existing manual voting system. The proponent aims to convert the existing manual system into Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. to take advantage of a visual program's possibilities.

An Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. guarantees highly reliable elections; voter-friendly interfaces, smooth performance, and swift results using software tools and security as well as mainstream computer technology.

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The purpose of this study is to design and develop a system that will automate the processes of voting in different organizations. The system will allow the students/voters to experience selecting and choosing preferred candidates online with multiple technology support. Thus, it lessens the duty of the election officers and another user involves in the system. Further, all the needed requirements can be submitted on schedule. Lastly, it encourages MIT students to become creative and productive in the field of programming.

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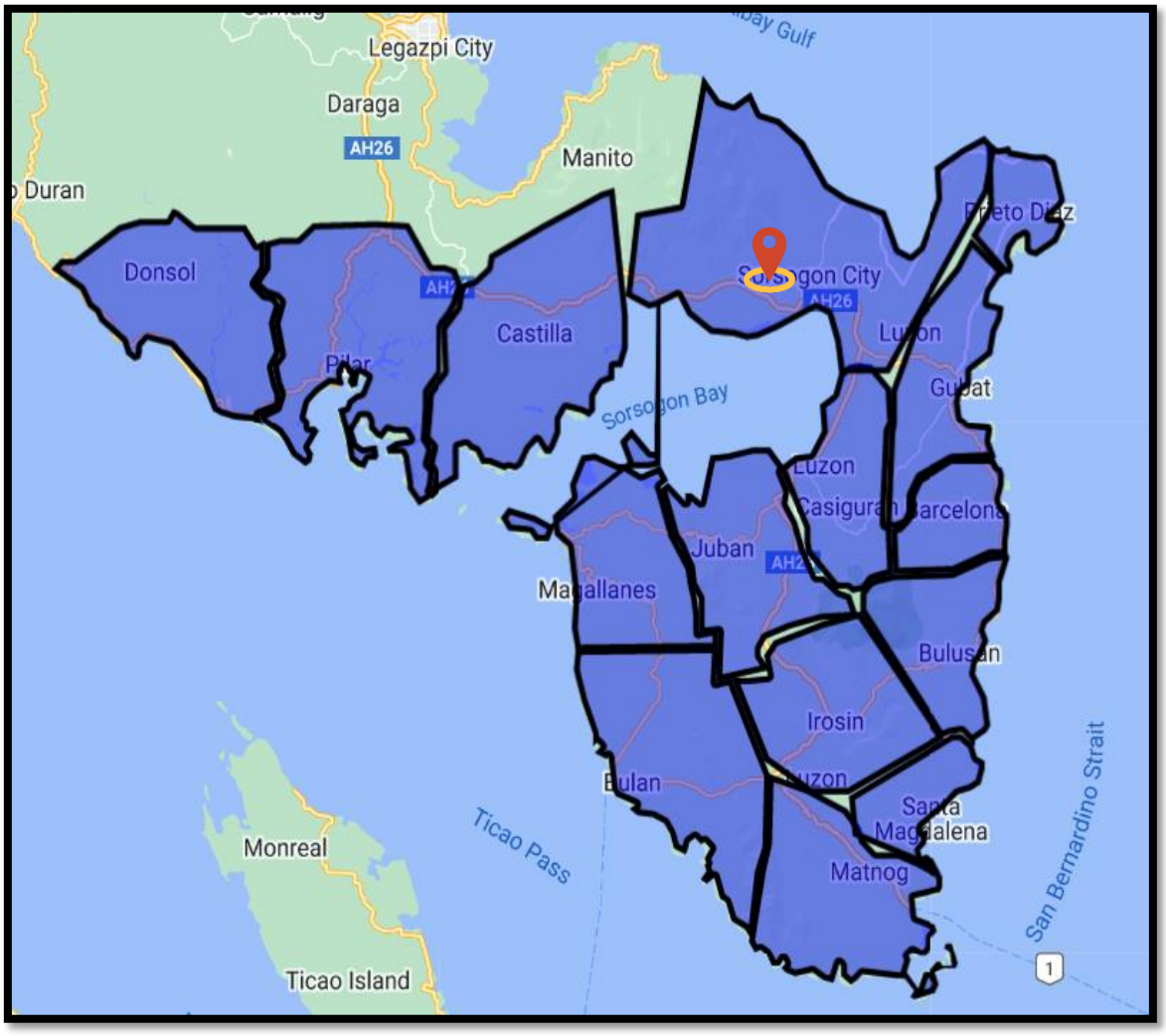

Legend

Aemilianum College Inc.

Figure 1.1 - Geographical Location of the System's Recipient

Sorsogon City serves as the main economic industry of the province. It also has a sizable number of residents. Due to that fact, the city has enough potential to attract universities and colleges. One of them is the Aemilianum College Inc. (ACI) which gives quality education in the field of Master in Information Technology. The beneficiary of the system is ACI. This will greatly help the Institution to upgrade, improve, and enhance the school's existing voting system as the researcher helps to propose automated system.

General Objective

This study aimed to design and develop Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.

Specific Objectives

Specifically, the study aimed to:

1. Develop Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. with the following features:

    1.1. Admin Features (Admin User Module):

        1.1.1. Dashboard

            1.1.1. a. Students/Voters Profile

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1.1.1. b. Candidates Profile

1.1.1. c. Newly Registered

1.1.1. d. Casted Votes

1.1.2. Voting Utilities

1.1.2. a. Open and Close Voting

1.1.2. b. Manage Positions

1.1.2. c. Manage Party List

1.1.2. d. Manage Login Settings

1.1.2. e. Create Tally

1.1.2. f. Set Voting Date and Time

1.1.2. g. Password and Permission

1.1.2. h. Set Print Settings

1.1.3. System Utilities

1.1.3. a. Manage Organization

1.1.3. b. Manage Courses

1.1.3. c. SMS Settings

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1.1.3. d. Manage School Year

1.1.3. e. Manage User

1.1.3. f. Backup Database

1.1.3. g. Restore Database

1.1.3. h. Refresh Database

1.1.4. Report Generation

1.1.4. a. Generate Results

1.1.4. b. Generate Tally Sheets

1.1.4. c. View Ballots

1.1.4. d. Print Voter's Information

1.1.5. Set Themes

1.2. Voter Features (Client User Module):

1.2.1. Different forms of authentication or stage authentication

1.2.2 Select, choose and vote candidates

2. To use multiple technologies support in implementing the proposed system namely:

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2.1 Smart TV

2.2 Barcode Reader

3.2 QR Scanner

3.4 Android Phone

3.5 Printer

3.6 RFID Reader

3.7 Internet

3.8 SMS

3. To evaluate the Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. using the industry software quality model – the ISO 25010 evaluation tool in terms of:

3.1 Functional suitability

3.2 Performance efficiency

3.3 Usability

3.4 Reliability

3.5 Security

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3.6 Maintainability

3.7 Portability

Scope and Delimitation

The Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. is an online web application. This proposed system provides automation for the election of different organizations. This allows students to access the system despite the distance from the college. It uses multiple technologies support like Smart TV, Android Phone, Barcode Scanner, QR Scanner, and other devices that will make the system user-friendly and accessible to the user.

QR Scanner/Barcode Scanner/ SMS OTP and regular username and password in the email are used as forms of authentication or stage authentication to verify voters who will access the Cloud Based Automated Voting System and Smart TV is used for displaying the voting results during the election.

The study is delimited only the knowledge about Cloud Based Automated Voting systems. It did not include the checking of attendance of the student. Further, it did not contain modules that discuss outside school premises. The system also cannot guarantee the persistence of a network signal, which is wholly dependent on

the network provider. The system will be evaluated by ten (10) IT professionals, ten (10) stakeholders using ISO25010.

Significance of the Study

Since the proposed system is intended for Aemilianum College Inc., the researchers believe that the study shall be beneficial and favorable to the following:

Aemilianum College Inc. The proposed system shall greatly improve the student services offered by the institution when it comes to organization elections. This study may be used by all departments for fast and reliable elections.

Student Affairs and Services (SAS). The proposed system will assist the office of Student Affairs and Services in selecting new sets of officers in different organizations.

Committee on Elections. The results of this study will be beneficial to the assigned committee for elections. It will assist them in providing systematic, organized, and reliable elections.

Graduate School. The study will help the Master's program especially in achieving its goals of pioneering a systematized student election.

Students. This study will encourage students to become proactive in participating in student elections as it provides students with a user-friendly platform.

Proponent. This study is an avenue wherein skills and learning throughout the years are applied. The proponent learned how to develop a Cloud Based Automated Voting System with Multiple Technologies Support for Aemilianum College Inc. Through this, the proponent's skills in designing, programming, and developing a system have been used, enhanced, and practiced.

Researchers. This study serves as a reference and guides for future researchers that will venture into conducting a related study.

Project Dictionary

The following are the technical words or terms used in this study. These were defined conceptually and operationally for a better understanding:

Cloud-based. Technology allows you to use programs and information that are stored on the internet rather than on your computer.[5] In this study, this refers to the online platform where the system will run.

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Automated. Refers to the method, technique, or system of operating or controlling a process using electronic devices.[6] In this study, this refers to the computerization of the system.

Voting System. Means a method of casting and processing votes that functions wholly or partly by the use of electromechanical or electronic apparatus or by use of mark-sense ballots and includes, but is not limited to, the procedures for casting and processing votes and the programs, operating manuals, supplies, printouts, and other software necessary for the system's operation. [7] In this study, it refers to the process of the election on how the election is run and conducted.

Voting. The casting of ballots to decide an issue; is usually used to refer to the casting of votes to elect officials or to decide a question on the ballot.[8] In this study, this refers to the process of selecting student leaders that will manage student organization.

Multiple Technologies. Other terms for Multi-Technology mean employing multiple technologies.[9] In this study, this refers to the integration of an online platform and multiple devices in the system

Aemilianum College Inc. A private Catholic institution run by Somascan Congregation.[10] In this study, this refers to the school where the proposed system is implemented by the proponent.

Admin. A person who controls a specific network. [11] In this study, it refers to the admin module where the user can control and manage the entire system.

Dashboard. A user interface on a computer display that presents constantly updated information, such as processing speed, in a format that resembles the dashboard of a vehicle.[12] In this study, this refers to the main module of the system to wit; the student profile, candidates' profile, and newly registered and cast vote.

Voters Profile. A degree of exposure to or contact with others, esp. the public.[13] In this study, this refers to the module of the registered voters wherein the admin can add and edit their information.

Voter. A person who has a right to vote; an elector, one who votes.[14] In this study, refers to the students, who by the virtue of their enrollment to ACI, have become qualified voters during student elections.

Candidates Profile. A short description of someone's life, work, character, etc. information about a person's life, work, and interests, etc. on a social networking website.[15] In this study, refers to the candidates of every party list in every different

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department wherein the administrator can add and edit the information of the candidates.

Newly Registered. Is a person or thing with formal or legal authorization, certification, or enrollment.[16] In this study, refers to the new voter who registers online in the system.

Casted Votes. A single vote, given by the person in charge of a meeting if the number of votes about something is equal that decides the matter. [17] In this study, refers to the total n ofumber casted votes counted by the system.

Voting Utilities. Is a small program that provides an addition to the capabilities provided by the operating system.[18] In this study, refers to the voting tools and settings of the system like open and close voting tools, managing positions, manage party lists, manage login settings, create a tally, set voting date and time, password and permission, and set print settings.

Open Voting. An opportunity granted to pursue a career or course of action. To begin to do something or go somewhere; go into action or motion. To begin a movement, activity, or undertaking.[19] In this study, set the client/ voters module open during election day.

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Close Voting. This means the end of voting hours as prescribed in the Act which states that Polls shall remain open until 8:00 p.m. on Voting Day unless designated as a reduced hour's poll under section 46(3). [20] In this study, set the client/ voter's module close after Election Day.

Manage Position. The manner in which a person or thing is placed or posed, or the manner in which parts are arranged; specif., any of various customary postures assumed by an individual. [21] In this study, refers to a module where the admin can add and edit positions.

Manage Party list. A ranked list of candidates nominated by a political party to fill the seats allocated in proportion to the party's share of the overall vote. [22] In this study, refers to a module where the admin can add and edit the party list.

Login Settings. A phrase that refers to the settings associated with an authorized user's profile in a computer network. These values are usually established when the user is first enrolled as an authorized user. [23] In this study, refers to a module wherein the admin can set voters organization, and add different forms of login that will use in voting verification.

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Create Tally. To count or to record an amount and it's a record or where a record is kept, particularly of points in a sporting event. [24] In this study, set and create voting tally sheets in the system.

Voting Date and Time. Means the date of the first meeting of the stockholders of the Company at which a vote of such stockholders in respect of the Required Stockholder Approval shall have been taken, which meeting shall be called by the Board in accordance with Section 9.05 and shall, in any event, take place no later than the first annual meeting of the Company's stockholders to be held after the Issuance Date. [25] In this study, refers to a module where you can set a date and time limit or duration of voting.

Password. A secret word, phrase, or sequence of characters must be presented in order to gain access or admittance. A sequence of characters must be entered in order to gain access to electronically locked or protected computer or security systems, files, etc. [26] In this study, it refers to the secret word or code of the voters to access the voting system.

Results Permission. An authorization to do something, as to quote from a book under copyright and the act of permitting, especially in giving formal consent;

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authorization. [27] In this study, refers to a module wherein the admin can grant users to view results of voting in one organization.

Print Settings. An ongoing task that lets you provide a more effective print environment for users. [28] In this study, select what type of ballot results can be generated by the system either hardcopy or softcopy through SMS, email or etc.

System Utilities. Are used to list or change information that is related to data sets and volumes, such as data set names, catalog entries, and volume labels. [29] In this study, refers to the system tools and settings of the system like manage organization, manage courses, SMS settings, manage school year, manage user, backup database, restore database, and rezero.

Manage Organization. Refers to the act of putting things into a logical order or the act of taking an efficient and orderly approach to tasks, or a group of people who have formally come together. [30] In this study, it is a module where the admin can add and edit organization.

Manage Courses. A set of classes or a plan of study on a particular subject, usually leading to an exam or qualification. [31] it's a class offered by a college or university. These courses are usually part of a program leading to an undergraduate

or graduate degree or a certificate. [32] In this study, it is a module where the admin can add and edit courses.

SMS Settings. Short Message Service (SMS) is the most basic communications technology for mobile data transfer and is characterized by the exchange of short alphanumeric text messages between digital lines and mobile devices. SMS messaging's key influential factor is affordability. [33] In this study, it refers to the online and offline SMS services of the system.

Manage School Year. The months of the year during which school is open and attendance at school is required. [34] In this study, it is a module where the admin can add and edit the school year.

Manage User. Alternatively referred to as an end user, a user is any individual who is not involved with supporting or developing a computer or service. It is another name for an account capable of logging into a computer or service. [35] In this study, it is a module where the admin can add and edit user information.

Backup Database. The process of backing up the operational state, architecture and stored data of database software. It enables the creation of a duplicate instance or copy of a database in case the primary database crashes, is

corrupted, or is lost. [36] In this study, refers to recopy or backing up the entire system database.

Restore Database. The process of copying files from a backup, typically a separate disk, to the original location or other appropriate file locations in order to facilitate proper database operations. [37] In this study, refers to replace or restore the entire system database.

Refresh Database / Rezero. The term database refresh means different to different databases technologies and it is often misused with the term database Cloning. Database refresh in Oracle may not mean the same as in SQL Server. Refreshing a database is a process of overwriting an existing database from your production or stage database or vice versa. In simple terms, it is a process of restoring a database to your stage or development environment from a production DB backup. [38] In this study, refers to resetting the permission level of the user to not yet vote and resetting the entire result and total votes of candidates to zero.

Report Generation. A computer programs whose purpose is to take data from a source such as a database, XML stream, or a spreadsheet, and use it to produce a document in a format that satisfies a particular human readership. [39] In this study,

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refers to the different reports of the system like results, tally sheets, view ballots, and print voters' information.

Results. It is how something ended or the outcome of some action. [40] In this study, it determines the winner and the total number of votes per position and refers to the summary of votes.

Tally Sheet. (Also called a Check Sheet) is a very simple way to accumulate data about the frequency of occurrence of events. It is a simple, flexible, and effective data collection tool where data can be collected in real-time at the location where it is generated. [41] In this study, tallies the results of the voting in the system.

View Ballots. Are slip or sheet of paper, cardboard, or the like, on which a voter marks his or her vote and it is the method of secret voting by means of printed or written ballots or by means of voting machines. [41] In this study, refers to the voter's ballot who voted during Election Day.

Print Voters List. Means the list of registered voters in a single or consolidated precinct or in an entire county. The voter list is updated by the elections official with public information related to who has voted in an election. [41] In this study, refers to the list of registered voters' that can be printed during Election Day.

Themes. A visual pattern or collection of patterns that determine the look and feel of a graphic interface. Themes are applied to just about any computer program that relies heavily on graphic elements, such as a browser, software program, or operating system. Themes incorporate both practical and stylistic considerations. [42] In this study, it set the color of the system to the color that you want.

Client. Is a computer that connects to and uses the resources of a remote computer, or server. Many corporate networks comprise a client computer for each employee, each of which connects to the corporate server. The server provides resources like files, information, Internet and intranet access, and external processing power.[43] In this study, refers to the voter's module wherein the voters can update profile, select candidates and vote.

Authentication Process. Verifying the identity of a user, process, or device, is often a prerequisite to allowing access to resources in an information system**.** [44] In this study, refers to the forms of verification in voting process during election example verification through barcode, qr code, user, password, etc.

Select/Choose Candidates. Means a candidate whose name appears in a list of candidates selected for appointment to any service, class or category by the

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Selection Authority. [45] In this study, refers to the selection of candidates in the client module.

Technologies Support. Other terms for Multi-Technology mean employing multiple technologies.[46] In this study, it refers to the integration of an online platform and multiple devices in the system

Smart TV. A television on which you can also use the internet**.** [47] is a digital television that is, essentially, an Internet-connected, storage-aware computer specialized**.** [48] In this study, refers to a device or technology used to display results of voting during Election Day.

QR/Barcode Reader. It is an electronic scanning machine that reads and sends barcode information. [49] is a set of lines of different widths and sizes representing data, that when read help identify the scanned object. Barcodes are often used to help organize and index information or prices about an object. [50] In this study, refers to a device or technology is used to lon, capture, and read the information in the system.

Android Phone. It is a powerful, high-tech smartphone that runs on the Android operating system (OS) developed by Google and is used by a variety of mobile

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phone manufacturers. [51] In this study, refers to a support technology that can be used to access and vote during Election Day.

Printer. It is an external hardware output device that takes the electronic data stored on a computer or other device and generates a hard copy. [52] A device used to print the results of the voting.

RFID Reader. A radio (frequency identification reader) is a device used to gather information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. [53] In this study, it is similar to the barcode used to log in using radio frequency identification.

Internet. Is a globally connected network system facilitating worldwide communication and access to data resources through a vast collection of private, public, business, academic, and government networks? It is governed by agencies like the Internet Assigned Numbers Authority (or IANA) that establish universal protocols. [54] In this study, it is used to access the system online.

SMS. Short Message Service (SMS) is the most basic communications technology for mobile data transfer and is characterized by the exchange of short alphanumeric text messages between digital lines and mobile devices. SMS messaging's key influential factor is affordability. [55] Short Message Service (SMS). A

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text messaging service via a GSM network that uses standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices.

Functional Suitability. Represents the degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions. [10] In this study, this refers to the entire functional requirements of the system and the correct results provided by the system.

Performance efficiency. Represents the performance relative to the number of resources used under stated conditions. [56] In this study, this refers to the response, maximum limit, and processing time of the system.

Compatibility. Refers to the extent to which software or device may share information with other devices or systems and execute the essential task when using the same hardware and software framework. [57] In this study, this refers to the hardware and software requirements of the system.

Usability. The degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. [58] In this study, this refers to the system designed as user-

friendly or flexible so that the administrator and the voters can perform their tasks easily and in an effective way.

Reliability. The degree to which a system, product, or component performs specified functions under specified conditions for a specified period. [59] In this study, this refers to the systems that should work rapidly, even in the face of numerous failures.

Security. The degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization. [60] In this study, this refers the confidentiality, integrity, accountability, and authenticity where votes should not be able to be modified, only authorized voters should be able to vote, no one should be able to determine how any individual voted and no voter should be able to vote more than once.

Maintainability. Represents the degree of effectiveness and efficiency with which a product or system can be modified to improve it, correct it, or adapt it to changes in the environment, and in requirements. [61] In this study, this refers to the reusability, analyzability, modifiability, and testability wherein the system can be used more than once, diagnose the system deficiencies or causes of failures, modify

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and test the system according to the user's need to maintain the quality of the systems.

Portability. Degree of effectiveness and efficiency with which a system, product, or component can be transferred from one hardware, software, or other operational or usage environment to another. [62] In this study, this refers to the full package running system.

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Notes

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CHAPTER II

REVIEW OF RELATED LITERATURE AND SYSTEMS

This chapter will present a review of related literature and systems which bear significance on the conduct of this study. The reviewed materials are vital to the thought process, visualization, and concepts of all undertakings that have been done and are therefore significant in understanding the context of this study. The synthesis of the state-of-the-art, gap bridged by the study, conceptual framework, and paradigm are likewise found in this chapter.

Related Literature

Presented in this section are the foreign and local literature that have significance to the present study. The cited literature is being discussed to support the bearing of the problem.

Foreign

According to the studies of Online Election Perfection and Municipal Election (2022), voting is a web-based online voting system that will help you manage your elections easily and securely. It also offers a secure and efficient online voting solution for municipal elections. Citizens may vote using either their computer or telephone.

Our system is completely secure, anonymous, and well-suited for small towns and large cities alike. [1]

It is said that voting is a web-based online voting system. It helps manage elections easily and securely. Voters may vote using computers or cell phones, through successful access to the website.

Independent writer Donald O. Graul Jr. American (2022) [2], perceived the American Association Voting process as perfect. The few initial challenges were answered promptly and completely. The management folks were able to make it simple and easy to take care of the task at a very reasonable cost.

ISO 25000 (2022), "ISO/IEC 25010", states that the quality model is the cornerstone of a product quality evaluation system. The quality model determines which quality characteristics will be taken into account when evaluating the properties of a software product. [3]

The abovementioned literature bears significance to the proposed study as this is used by several industries to test and evaluate the quality of their developed system. Likewise, the proposed system will use this standard to evaluate the system's functionality and other components.

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Studies of Organizations such as Election Buddy (2020) attest that Online voting does not only increase convenience for everyone involved but also helps protect elections from a major risk to their integrity and human error. Ballots may be lost, mistakes can be made while calculating results, and humans can be influenced to tamper with an election. ElectionBuddy protects the online voting process by limiting changes to the election during the voting period, providing audit trails of the few changes that are allowed, displaying results that can be manually calculated to verify the computer calculation, and more. Every detail is verifiable, and your election integrity is maintained. [4]

According to LucidChart (2020) [5], "Phases of Rapid Application Development Methodology", explains that RAD is an agile project management strategy popular in software development. The key benefit of a RAD approach is fast project turnaround, making it an attractive choice for developers working in a fast-paced environment like software development. This rapid pace is made possible by RAD's focus on minimizing the planning stage and maximizing prototype development. By reducing planning time and emphasizing prototype iterations, RAD allows project managers and stakeholders to accurately measure progress and communicate in real-time on evolving issues or changes. This results in greater efficiency, faster development, and effective communication.

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The cited literature bears significance in the proposed study because it serves as a guide and system development methodology for the proposed system. It will enhance the process and tractions of the proposed systems to the users. The proposed system is breakdown into a smaller sequence to make it more manageable. It serves as regular communication and constant feedback between system developers and end users.

According to the studies of Organization the YesElection in America (2019), for groups that have historically relied on paper ballots, transitioning to online elections may feel daunting. The good news is shifting from one voting method to another is much easier than you may think. Hybrid voting provides several options for associations considering a move to online elections. Online voting has emerged as one of the most popular voting options for associations across the globe. Among its key benefits: are convenience, reduced election costs, security, and increased turnout. Organizations known for operating elections the traditional way—mailed paper ballots are often unsure about how to proceed. To alleviate any pressure, you may be feeling about transitioning from one method to the next, here are hybrid methods that should help wean you off paper ballots before fully transitioning to online voting. [6]

The traditional way is good, there is a need to bench up into the modern era. Shifting from one to another is much easier. Online voting has emerged as one of the

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most popular voting options. Using this website, doubts can be lessened about the accuracy, for it is more convenient than the traditional way.

According to Cañeda (2019) [7], studies focused on designing a next-generation online web-based voting system. Like an automated tabulation, this system aims to eliminate the traditional manual way of casting and counting votes, which is said to be vulnerable to data tampering, fraud, and data loss. This system proves that a computerized solution is an effective way of eliminating human-related faults.

The literature from Cañeda is relevant to the research. This shows that using automation will eliminate the traditional manual way of casting and counting votes, which is said to be vulnerable to data tampering, fraud, and data loss. It is secure and easy for the election officer to cast and count the votes using an automated system.

Researchers Gardner and Walker (2019) [8], said that offering mobile phone voting to overseas citizens resulted in a marked increase in participation rates. Turnout rates for voters using the app overseas were higher than for those who went to the polls in person on Election Day. As we face challenges with voters abroad and contemplate emerging challenges at home like COVID-19, where large public gatherings and long-life spark new threats to consider. These are the everyday

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successes that internet-based voting is producing right now. And ought to be driving the discussion as we move forward slowly, responsibly, and confidently.

Nowadays, it is dangerous to keep on exposing people to potential risk of infection. There is a need to create a system that allows people to vote without exposing themselves to viral infections. The proposed system would answer to the problem in which voters could cast their votes through desktop, laptop, or cellphones as long as they have access to internet.

Hjálmarsson, et al., "Blockchain-based e-voting system." (2018) [9] said that building a secure electronic voting system that offers the fairness and privacy of current voting schemes while providing the transparency and flexibility offered by electronic systems has been a challenge for a long time. In this work-in-progress paper, we evaluate an application of blockchain as a service to implement distributed electronic voting systems. The paper proposes a novel electronic voting system based on blockchain that addresses some of the limitations in existing systems and evaluates some of the popular blockchain frameworks to construct 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.

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The literature from Hjálmarsson, et al is relevant to the research. It emphasized that a secure electronic voting system offers the fairness and privacy of current voting schemes. This show that a secure automated system can result in transparency and flexibility to prevent corruption of data, interception of data, and any loss of data or unauthorized access.

Corbyn (2018) [10], stated that Online Voting represents a method of participation that would reflect modern life. Online Voting has already been tried and tested, and various elections in Australia, Estonia, Pakistan, Switzerland, and the US have incorporated a remote online voting option he also "We must consider secure online voting".

In the modern era of man. When most of the population is using the technology. There is a need to upgrade including the system. According to Jeremy Corbyn - Online voting represents a method of participation and can reflect modern life. Online voting has been tried and tested in different parts of the world He also added that people must consider a secure online voting system. The researcher proposed online system for Aemilianum College Inc. The developer aims to provide a hassle-free system for the users. Also, the proposed system provides a secured voting system which symbolizes modernization.

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Based on the study of Salt Lake City in UTAH (2016), offering online voting, may expand the number of options citizens have to participate and made voting as convenient as possible. Technology proved key in engaging citizens and bolstering democracy. “We know old systems and long lines reduce participation and hurt the democratic process”, said Antonio Mugica, Smartmatic’s CEO. Voter feedback is clear. Online voting in the UTAH GOP caucus demonstrates how efficient, cutting-edge technology-based solutions help make elections more inclusive and the voting experience easier and more accessible. [11]

The literature from Salt Lake City in UTAH is relevant to the research. This shows the advantages of introducing online voting system which promote convenience for the voters to cast votes anywhere and anytime.

Based on the study of Salt Lake City in UTAH (2016) they expanded the number of options. Citizens have to participate and made voting as convenient as possible. [12] From Aemilianum College Inc.’s old system which is manual voting where the student needs to fall in line where they need to spend their time and patience, in my modern system which is online voting for the school election it will minimize the expenses and time. [12]

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According to an article organization in the USA (2016), "The right to cast a secret ballot in a public election is a core value in the United States" system of self-governance. Secrecy and privacy in elections guard against coercion and are essential to integrity in the electoral process. Secrecy of the ballot is guaranteed in the state constitutions and statutes nationwide. However, as states permit the marking and transmitting of marked ballots over the Internet, the right to a secret ballot is eroded and the integrity of our elections is put at risk. [13]

The literature mentioned above shows us that there is a need to use online voting for privacy and secrecy purposes. It guarantees that the use of online voting will lessen the burden of the voters in terms of writing the candidates in a secret ballot. Likewise, this system will exercise the right of everyone to vote.

According to an article of an organization in the USA (2016) the right to a secret ballot is eroded and the integrity of the election is at risk when we transmit the marked ballot over the internet on our newly developed web. We make sure that the detail of a voter is in a private. We make sure that the secrecy of the election is strictly observed to remove the doubt of individuals. To give them a peaceful and convenient election. [14]

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Alomari and Kamel [15], "E-voting adoption in a developing country." Transforming Government: People, Process and Policy 10.4 (2016), said that the purpose of this article is to present factors that affect e-voting adoption in the Middle East and, in particular, Jordan. Changing the election voting method for the people in Jordan from traditional voting to interactive voting via the web needs exploration to understand the factors affecting e-voting adoption by citizens. Therefore, it reports the study undertaken to identify the main factors that would influence citizens' intentions to adopt the use of an e-voting system in Jordan, using an established e-government adoption model and a theoretical framework consisting of the diffusion of innovations (DOI) theory and the technology acceptance model (TAM).

The literature from Alomari, and Kamel is relevant to the research. This shows the advantage of changing the election voting method from traditional voting to interactive voting via the web needs exploration. It tends to be more accurate than traditional paper-based systems.

Online Voting is a good way to engage busy voters that were according to Mr. Koitmae using a website, need not to go to another place. Need not make excuses just to attend the school election, by accessing to the internet an individual can cast their votes.

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An article from Mari (2014) [17], discusses the system vulnerabilities that were found in the e-voting system that could potentially tamper with the voting results of the Brazilian election. A public test of the equipment conducted by security and encryption specialists from Uni camp and Universidad de Brasília, suggests that it is possible to easily break the secrecy of the machine and unscramble the order of votes recorded by the device. Another issue is that the Brazilian machines, which are based on the Direct Recording Electronic (DRE) model, do not produce physical proof that the vote has been recorded. This means there is a constant danger of large-scale software fraud, as well as another non-technical tampering that could be perpetrated by former or current electoral justice staff and go totally undetected.

Local

One of the Educational institutions here in the Philippines gives their feedback or response to the said issue from a broad range of online voting solutions and professional support from Big pulse. Whether it's voting on a new board, collecting student feedback, choosing new union members, or running a student council election, anything is possible. You will save time and resources by eliminating time-consuming and costly paper-based elections.

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Online Voting has many Advantages you will save time and resources by eliminating time-consuming and costly paper-based elections, this was according to the educational institution here in the Philippines, our website gives you the following advantages we can fulfill our obligation by voting for our school and you can spend the rest of your time on your hobbies. SMS notifications help organizations disseminate information easier. Through Text Alerts, organizations can easily assemble response teams that will fix problems and cut down costs that involve too much hardware, material waste, time, and effort. No matter where your workforce is located, you'll often want to reach them with important corporate communications.

SMS notifications help organizations disseminate information easier the proponent put this SMS notification on this website for a more convenient site. No need for the student to attend school for voting or registering purposes. Through text alerts, the students can easily receive the password or some notification from our website.

According to Barrot, et al (2021) [18,] the education system has faced an unprecedented health crisis that has shaken up its foundation. Given today's uncertainties, it is vital to gain a nuanced understanding of students' online learning experience in times of the COVID-19 pandemic. Although many studies have investigated this area, limited information is available regarding the challenges and

the specific strategies that students employ to overcome them. Thus, this study attempts to fill in the void. Using a mixed-methods approach, the findings revealed that the online learning challenges of college students varied in terms of type and extent. Their greatest challenge was linked to their learning environment at home, while their least challenge was technological literacy and competency. The findings further revealed that the COVID-19 pandemic had the greatest impact on the quality of the learning experience and students' mental health.

According Regla, et al (2020) [19], the study is focused on implementing a document management system for Romblon State University, Cajidiocan Campus, Romblon, Philippines. To date, most Higher Education Institution like the Romblon State University generates the bulk of documents of several types like feedback reports, minutes of the meeting, syllabi, lesson plans, policies, memos, and other circulars. These documents are often stored in filing cabinets and are used as compiled evidence for accomplishment reports or accreditation purposes. With such, the school is faced with problems like storage space, document security and sharing of documents when needed.

The study is related to the proposed system they are both study that will support the facilitation of easy access to documents using technology across the academic organization as well as providing a larger storage space through cloud

computing. Furthermore, they also the same in the study designed to 1] track, manage and store documents digitally, 2] to keep records of various versions which were created or revised by different users and 3] to employ social technology to increase staff collaboration skills and work efficiency.

According to Mojares, et al (2018) [20], the advent of technology, communication becomes faster and easier in a tap of a fingertip. In an academic institution per se, communication between parents and school is very challenging and important one. It needs full effort to understand one another. One of the worries of the parents is that if their children are really attending or not in the school during their class period. This is one of the challenges that Lipa City Colleges is confronting, since at present, the school has no way of providing the immediate information to the parents if their children are in or out of the school premises in a particular time.

According to Lerma (2016) [21], Smartmatic provided the technology and vote counting machines used in the just concluded national elections. The Philippines has become a world reference point for automation and well-run elections. The Philippines has more than 54 million registered voters, is made up of over 7,000 islands, and has one of the largest Diasporas in the world. Without technology, votes would not have been processed so quickly and efficiently. The election on May 9, 2016, set records for size as the largest electronic vote count of its kind in history and

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the speed of the tally, with an 80 percent vote transmission rate just four hours after the polls closed. Months before the 2016 election, comprehensive audits, reviews, and certifications were conducted to show that the system was fully prepared in terms of speed, reliability, and security. On Monday, voters received paper copies of their ballots to validate that the system registered their votes correctly. More than 92,500 of Smartmatic's vote-counting machines were deployed Across 36,805 polling stations for the election. In addition, overseas voting in 18 countries was conducted with Smartmatic technology to process paper ballots.

The Philippines has become a world reference point for automation and well-run elections. That was according to Lerma (2016) [22] with the advanced machine Smartmatic and technology and this advancement, we used this technology to create this website without this vote would not have been processed so quickly and efficiently.

According to Samson (2016) [23], After the third presidential debate sanctioned by the Commission on Elections (COMELEC) which took place in Pangasinan, Young Public Administrators Guild (YPAG) and the Kapisanan ng mga Mag-Aaral sa Araling Panlipunan (KMAP) spearheaded the mock polls at the covered court of PSU-LC. The system of the mock polls was similar to the actual voting process. Respondents were asked to go to their respective precincts based on their college, where the mock poll's

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board of election inspectors (BEIs) provided them the sample ballot. After shading, the ballot was deposited in ballot box and the voters were marked by an ink. Davao City Mayor Rodrigo Duterte of PDP-LBN and Camarines Sur 3rd district representative Leni Robredo of the Liberal Party (LP) topped the presidential and vice presidential mock polls held at the Pangasinan State University Lingayen Campus (PSU-LC) 10 days before the elections. With 35.52% of the total votes, equivalent to 352 votes out of 991 respondents, Duterte outnumbered the other 4 presidential candidates. Robredo received 30.78% of the total votes (305 votes). Senator Grace Poe came in second place with a close 33.10% or 328 votes for the presidency while Senator Ferdinand "Bongbong" Marcos Jr got 30.58% or 303 votes for the vice presidency. The student organizations said “there are 991 students and faculty voters who participated in the 9 precincts that were laid down inside the covered court.” Senator Miriam Defensor-Santiago, another favorite among student-led mock polls, came in third among presidential candidates with 14.83% or 147 votes. Liberal Party standard bearer Mar Roxas and Vice President Jejomar Binay lagged behind with 8.38% or 83 votes and 6.76% or 67 votes, respectively. Meanwhile, 14 respondents or 1.42% of the mock voters said that they are still undecided on who to vote for in the May 9 elections. Pangasinan is the third most vote-rich province in the country, with 1,705,260 registered voters for the 2016 polls.

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According to Esmaquel II (2016) [24], The Commission on Elections (Comelec) on February 10, admitted more problems in the automated election system as the Comelec has less than 3 months to prepare for the May 9 elections. One of the new major problems afflicts the vote-counting machines (VCMs). In a recent test conducted by the Comelec, the machines rejected 1-2% of ballot papers. The other major problem, which Comelec admitted, involves the consolidation and canvassing system (CCS). The CCS is the system that consolidates election results from voting precincts on Election Day.

According to Merueñas (2016) [25], the COMELEC conducted demos for the election system to be used in the 2016 election. The Commission on Elections will not use the (PCOS) machines in the May elections, the poll body's spokesperson. Instead of the PCOS machines, which were used in the last two automated elections, the poll body will use (VCMs), which have larger and color screens that display more information, the VCMs come with a built-in "self-diagnosing lens", which alerts a machine operator to insert a cleaning sheet if the lens has already become dirty. The machines also have a special feature for persons with disability. After inserting the ballot into the machine, a PWD can use the headphones to listen as his votes are read out to him or her by the machine.

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After the traditional way which is the manual comes to the PCOS machine hence the VCM, all of this shows the evolution of vote counting, from manual counting to the use of machines, websites automatically record the vote with the use of computer - it's more convenient than the PCOS and VCM.

Based on the study of Lucky 3 Voting System Mindanao State University (Echavez, Garay, Ratunil) (2016) [26] their voting system is composed of a well-secured and user-friendly system that makes their Student Council reliable. Their system creates a more level playing field for political parties and their candidates and it even gives a chance for independent candidates to take on veteran players, this ultimately leads to a more dynamic and vibrant student politics at Mindanao State University.

It had been said that the future of our government is in the hands of the young ones. In the article of Echavez, Garay, and Ratunil (2016) their voting system is a secured and user-friendly system. The online voting must be executed without any fraud. The system could minimize illegal activities and expect a clean election.

Based on the article from University Voting System of the Polytechnic University of the Philippines (2016)[27] system used during Supreme Council Election. According to them, the system was built and developed for the enhancement of the voting process and the satisfaction of the voters during the elections. The offered

features of the system are efficiency, reliability, security, and accuracy. The system serves as an upgrade from the manual process to the automated process of election. The students use computers to vote instead of using paper.

The article bears relevance to the present study. Gave some insights into how to develop an online system with a high level of security to ensure secrecy of casted votes and attain reliability in the system.

The voting system of PUP (2016) was built and developed for the enhancement of the voting process. From manual to automated process. It was also featured on our website for the satisfaction of the student in our school, instead of using papers, they will only use computers or cellular gadgets to vote. [28]

The PUP voting system is one of the examples that inspired the developer to develop the system. The PUP article shows how happy and satisfied the students are to have a system that allows them to choose their leaders without fear of undesirable activities. Even if they are distant for some reason, they can still vote with confidence.

According to an article from Bautista, et al (2016) [29], the SMS voting system functions like a normal short messaging system (SMS), but the voter needs to verify using a fingerprint texture sensor. The user will vote and send the voting form

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through SMS after the verification using the fingerprint scanner of a well-secured and user-friendly system.

Bautista's article also provided insight to improve the system of sending notifications to users. These features are important to ensure that voters cast their votes successfully. The SMS notification is a part of the system that needs to be put in the proposed system.

Republic Act No. 9369, which amended the Automated Election Law, was passed on Jan. 23, 2007 "to encourage transparency, credibility, fairness, and accuracy of elections." Section 6 of the law states the minimum system capabilities that the automated election system must have. Among those is the provision for a voter-verified paper audit trail. The system should also provide the voter with a system of verification to find out whether or not the machine has registered his choice. The law also requires a system that would provide supporting documentation for verifying the correctness of reported election results, and provide for the safekeeping, storing and archiving of physical or paper resource used in the election process. (Atienza, A. 2016). [30]

As early as 1992, the Commission on Elections (COMELEC) has identified the modernization of the electoral process as a goal of what was called Operation Modex

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(Modex for "Modernization and Excellence"). In the following year, COMELEC commissioned foreign consultants to conduct studies on modernizing elections in the Philippines. Several COMELEC officials also travelled to the United States to inspect the voting system there. A US company was chosen to supply canvassing equipment. No contract between the government and the supplier could be signed, however, pending the passage of a law on the use of a new election system. (A History of Automated Elections in the Philippines, 2013) [31]

The May 13, 2013 poll is the second nationwide automated election in the country. The Automated Election System (AES) is mandated by Republic Act 8436 of 1997 that was fully implemented only in 2010. The Philippine AES that relies on the Precinct Count Optical Scan (PCOS) is not 100 percent automated as the paper ballot has not been eliminated. The voter still has to manually fill out the ballot by shading the oval beside the name of a candidate or a party-list group. After shading the oval, the voter inserts the ballot, which is electronically watermarked, into the PCOS machine. The machine then reads the ballot and records the votes of candidates based on its reading of the shaded oval. Each PCOS has a security key and authenticating PIN code. The 'Ballot Cast' at the bottom of the LCD screen gives a running count of the number of votes cast. In the AES, the voting precinct is not the same as the polling precinct in the manual election system. The voting precincts in the AES are actually

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clustered precincts. A clustered precinct may include up to five precincts with a maximum number of registered voters of 1,000. At the end of voting, the BEI would start the digital counting process. It then prepares for the printing of eight copies of Election Return (ER). The machine displays, "Ready to Transmit" and asks the BEI to plug the transmission cable. It then transmits the ER to the Comelec hub. After transmission, the PCOS will print 22 copies of the ER for national positions and 22 copies for local positions. After printing the ER, the PCOS will print the Statistics Report and Audit logs. [32]

The articles are an inspiration for successful elections. The system used in the election accommodated many voters and gave quick results. The articles above inspire the developer to do the proposed project to assist students in a clean and orderly election.

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Related Systems

Presented in this section are the related systems that have similarities to the present study.

Foreign

The developed systems of Ganesh J. D., et al. (2021) [33], helped in providing convenience, capturing, and counting the votes in an election. This project described e-voting using an Android platform. The e-voting system helped the user to cast the vote without visiting the polling booth. The development of web technologies provided growth to new applications that made the voting process very easy. E-voting helped in providing convenience, capturing and counting the votes in an election.

The cited systems were similar to the proposed system because it helped providing convenience, capture, and counting the votes in an election. The developed system of Ganesh used the android platform and the proposed Cloud-Based Automated system using multiple technologies support including the android phone while others only have two or three technologies integrated in the system.

The developed system of Vemula, et al [34], "Secure E-Voting System Implementation Using CryptDB" (2021), emphasized that voting process is important in any part of the world in public elections, private or autonomous bodies for electing

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someone. Due to the current pandemic situation, it was difficult to organize elections physically in the near future. Electronic voting (E-voting) was an alternative for organizing voting online through which a voter can cast his vote remotely from any corner of the world through PC or mobile. Electronic voting was a challenging task to ensure voting requirements like eligibility, Accuracy, Simplicity, robustness, privacy, and reliability of the user and the system. In Electronic voting to enable remote voting, all the election data and its application modules were supposed to be stored at Cloud infrastructure. With the increase in usage of cloud computing services, data security and integrity is a major concern among various organizations. To ensure privacy, encryption techniques are widely being used in research. The purpose of the research here is to ensure security and reliability using CryptDB in the Electronic voting process. In the proposed online Electronic voting system, voters' data, Candidates' data, and votes triggered by voters are stored in an encrypted database called CryptDB. CryptDB is already proven as a secure database that encrypts the data before storing them on the database and it follows multiple levels of encryption. The proposed systems do not reveal any information to the intruders at any level of polling system and hence the outcome of Voting process can be achieved using online system with Security, Confidentiality and integrity. With the help of CryptDB, our system protects information like the result of votes from malicious administrator who tries to influence the voters in the voting process.

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The cited system above has the same goal as the proposed system they were both used for organizing voting online through which a voter can cast his vote remotely from any corner of the world through PC or mobile. They both used databases, the proposed system used MySQL database while the cited system used CryptDB as already proven as a secure database that encrypts the data before storing them on the database and it follows multiple levels of encryption.

The developed system of Sulaiman, et al. [35], "An online voting system using face recognition for campus election" (2021), implemented in various countries for different purposes. It helps to improve accessibility and efficiency to the voter and organizer. Student council election in Universiti Teknikal Malaysia Melaka has been using an electronic voting machine that is placed at the polling site. Students need to come to the polling station to cast their votes thus causing an accessibility issue. This project aimed to develop a remote voting system for easier access during the voting day that allows voters to cast their vote remotely which is convenient and helps to improve accessibility to the student. Trust is highly related to the voting mechanism as it should be free and fair. To increase trust in online voting better authentication should be implemented. The inherence-based factor would be able to verify a person's characteristics, and they should be present at the moment of the verification process. This study implements facial recognition as a form of authentication to

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authenticate legitimate voters. Students and organizers would benefit from this system as it is remotely reachable, trusted, convenient, and reduces the time taken for the voting process.

The above-mentioned system has the same concept as the proposed system they both helped improve accessibility and efficiency for the voter and organizer in the student council. They both aimed to develop a remote voting system for easier access during the voting day that allows voters to cast their vote remotely which is convenient and helps to improve accessibility to the student. The proposed systems can implement QR Codes, barcodes, SMS, and other technical support as a form of authentication to authenticate legitimate voters while the above-mentioned systems implement facial recognition as a form of authentication to authenticate legitimate voters. While the present project has more than three technologies integrated in the system.

The developed system of Nuhi, Asri, et al. [36], "Smart attendance system using QR code." (2020) emphasized that, In higher education institutions, student participation in the classroom is directly related to their academic performance. However, the majority of student attendance registration is still conventionally done, which is tedious and time-consuming, especially for those courses that involve large numbers of students. Over the years, attendance management has been conducted

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manually at most universities. To overcome the manual attendance issues, we proposed and implemented a smart attendance system to encourage the potential use of the Quick Response (QR) code as a future attendance management system, to track and record student attendance in lectures and exercises for all relevant courses, as an aim of this paper.

The above-mentioned system was similar to the proposed system because they both use the Quick Response (QR) code to track and record student information. The proposed system used the Quick Response (QR) to access the client module which the students/voters can perform voting. While the system from Nuhi and Asri is for the attendance management system, to track and record student attendance in lectures and exercises for all relevant courses, as an aim of this paper.

Fong, Sim Liew, et al. [37], "Smart city bus application with QR code: a review." (2019) stated that Smart City Bus Application with QR Code is an Android application that provides bus information in real-time in Malaysia. It uses the commonly available function on any modern Android device such as the Global Positioning System (GPS). Other than that, Smart City Bus Application also provides many functions mainly QR code payment that might be useful for the public generally to make payments without using cash or card. This review paper brightens the idea of the application in a much simpler way.

The reviewed system above was similar to the proposed system they both used QR codes to provide real-time information. Fong, Slim system provided many functions mainly QR code payment that might be useful for the public generally to make payments without using cash or card. The proposed system allowed users to access the voting interface using QR Code without providing the username and password of the user.

Abdul Rabu, et al [38], "QR code utilization in a large classroom: Higher education students' initial perceptions." Education and Information Technologies 24.1 (2019) develop systems, that use the integration of Quick Response (QR) codes in classrooms and have been identified as an important tool in promoting active as well as distributed learning, especially in higher education. Even though the versatility of this technology within the educational milieu cannot be over-emphasized, the initial perceptions of students who are at the center of QR integration are important towards achieving the prospects of this technology in the pedagogical process, particularly in a large classroom context.

The mentioned system above was the same as the proposed system they both use the integration of Quick Response (QR) codes in classrooms to achieve prospects in the pedagogical process. The proposed system used QR Code to provide links in the system so that students can scan the QR Code and automatically view the website

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instead of having to type it in themselves. While the reviewed system used as a tool in promoting active as well as distributed learning, especially in higher education.

Purandare, et al. [39], "Application for an online voting system using the android device" (2018). Highlighted that Voting is an important aspect of democratic countries. Elections decide which candidate is capable and also decide the future of that country therefore elections should be as transparent as possible and should have a high level of security. But the existing voting system has some flaws like a time-consuming process because the voter has to wait in queue for casting their vote also there is lesser security in the present voting system. Due to this, the inclination of voters is decreasing toward voting, and the voting percentage decreases. To overcome these issues and to improve the existing voting system we are designing an online voting system using an android application which will give better system security and vote casting becomes a less time-consuming process and will provide better results.

Voters can cast votes remotely from anywhere in the country with the help of an android device and voting application on their device. Voters must have an internet connection on their android device to cast vote from a remote place. Android application will be compatible with almost all android devices so every voter should get the benefit of an online voting system. It has a higher level of security as it has a

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two-stage authentication technique i.e. Facial recognition and Time Password (OTP). Voter data is his facial images and his voter id will be stored in the database. The verification process is done by the server itself. The facial image of the voter will be fetched by an android application which will be then forwarded to the server for further verification, also thereafter One Time Password will be provided to the voter on his registered mobile number for further verification process for vote casting. The voter is allowed to cast his vote after successful verification with facial recognition and One Time Password. Results of the election will be displayed on individual voters' devices in terms of notification and voters will get updates about the election to enhance the system performance.

The cited system above was similar to the proposed system they have the same goal to improve the existing voting system. They both designed an online voting system using an android application which provided better system security and vote casting. Likewise, the system provided secure and better results. The proposed system used different forms of authentication or stage authentication while the Purandare and Himanshu system has a two-stage authentication technique, facial recognition and Time Password (OTP).

The developed SOV system by Clarian, et al (2018) [40], provided online voter registration forms for students where students register and are allowed to log in as

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either students or delegates or candidates. Each registered user has a password to log in. The system provided an interactive platform where voters and candidates interact and thus candidates perform their campaigns. The system allowed preliminary voting and the results are graphically represented in percentages. This system also allowed the candidates to be liked by users and the most liked candidate is the most popular. The system computed and gave the election results for all the posts and provided reports for the whole election process.

The developed SOV system by Makungu, et al was parallel to the proposed system. It provided online voter registration forms for students where students registry and cause allowed to log in as either students, delegates, or candidates. They both provide an interactive platform where voters and candidates interact. The proposed system allowed the students to register online. Likewise, the admin can add and register students in order to access the system. The admin can verify the student if he/she is a bonafide student of Aemilianum Collge Inc. While the developed reviewed system functioned on preliminary voting where the users are graphically represented in percentages.

Singh, et al. [41] "Secevs: Secure electronic voting system using blockchain technology" (2018), said that in today's digital environment, the voting system moves from paper-based to a digital system. A digital e-voting system has many properties

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such as transparency, decentralization, irreversibility, and non-repudiation. The growth in digital e-voting systems arises many security and transparency issues. In this paper, we used blockchain technology in a digital e-voting system to solve security issues and fulfill the system requirements. It offers new opportunities to deploy a secure e-voting system in any organization or country. The solution is far better as compared to other solutions because, it is a decentralized system that contains the results in the form of bitcoins, having different locations. We will also analyze the security of our proposed voting system, which shows our protocol is more secure as compared to other solutions.

The above-mentioned system was similar to the proposed system they are both used digital systems, solved security issues and fulfill the system requirements. The proposed system offered different forms of authentication or stage authentication while the mentioned system above offers new opportunities to deploy a secure e-voting system in any organization or country.

The developed systems by Hendry, et al (2017) [42], aimed to report an automated student attendance system modeled and developed for use at a Vocational school. This paper focuses on developing an application by using a QR code. This system enabled people to speed up the process of taking attendance and would save valuable teaching time. This was planned to help students avoid consequences that

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may result from poor attendance which eventually penalized them from sitting their final exam as required by the administrators.

The cited system above has comparable to the proposed system they both enabled us teachers to speed up the process of transactions and save us valuable teaching time. The cited system helped to speed up the process of taking attendance and avoid consequences that may result from poor attendance which would eventually penalize them from sitting their final exam. While the proposed system helped to provide a convenient process of voting and helped to manage a transparent voting process.

Ehteshami, [43], "Barcode technology acceptance and utilization in health information management department at academic hospitals according to technology acceptance model." Acta Informatica Medica 25.1 (2017) said that, nowadays, due to the increasing importance of quality care, organizations focus on the improving provision, management, and distribution of health. On one hand, incremental costs of the new technologies and on the other hand, increased knowledge of health care recipients and their expectations for high-quality services have doubled the need to make changes to respond to resource constraints (financial, human, material). For this purpose, several technologies, such as barcodes, have been used in hospitals to improve services and staff productivity; but various factors affect the adoption of new

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technologies and despite the good implementation of technology and its benefits, sometimes personnel don't accept and don't use it.

The cited system above emphasized the same goal as the proposed system. They both focused on improving provision, management, process, services, and staff productivity. The proposed system was created for the improvement of the transaction of the voting process of the school while the cited system was for utilization in the health information management department at academic hospitals.

The E-voting of Ganaraj K. (2017) [44], promised the possibility of a convenient, easy and safe way to capture and count the votes in an election. This project provided the specification and requirements using an Android platform. It means that the voting process in elections used an electronic device. The android platform was used to develop a voting application.

The reviewed system above was similar to the proposed system. They both used specifications and requirements using an Android platform that promised the possibility of a convenient, easy and safe way to capture and count the votes in an election. The proposed system used different forms of authentication or stage authentication to facilitate the voting process in order to capture and counts the vote

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while cited system used android as an electronic device to facilitate the voting process.

Selvarani, et al. [45], "Secure voting system through SMS and using smartphone application" (2017). Emphasized that the mobile voting system is used to cast their votes securely. Previously the votes were cast through the traditional methods of polling booths, punch cards, lever voting, and optical voting machine, which are now replaced through some electronic mediums. All of these consume more time to cast their votes. The proposed system is developed to select their candidate through a smartphone application. This process consists of three steps: online registration of voters, vote casting of voters, and display of results, through the concept of SMS (short messaging service). It provides more efficiency for voters to cast their vote from anywhere, at any time through the internet. The important aspect of this is to provide more security to the core, since every vote count, and each of the votes are to be remained confidential. This prevents voters to cast their vote more than once with the use of OTP (one-time password) for every sign-in and login. It also reduces the paperwork and eliminates the manual counting process. Here the security is provided through the RSA encryption algorithm.

The above-mentioned system was the same as the proposed system. They both provided more efficient ways for voters to cast their vote from anywhere, at any

time through the internet. They both have an important aspect which was to provide more security to the core since every vote count and each of the votes must remain confidential. Likewise, they both used OTP (one-time password) to prevent voters to cast their vote more than once with the use of OTP (one-time password) for every sign-in and log in. The proposed system used SMS to send the results to the voters and get a one-time password generated by the proposed system while the above-mentioned system emphasized that the mobile voting system is used to cast their votes and to select their candidate through a smartphone application.

Akorede, et al. [46], "Efficient remote-control system using SMS and WiFi technology for outdoor security lighting applications." (2017). Emphasized that this work aims to design and develop a control system using SMS and WiFi technology to remotely control the outdoor security lights in large organizations. The device comprises four main units, namely: the mobile phone or a computer system, the GSM modem, the switching unit, and the WiFi module. One feature that makes the developed system better than other related existing works is its ability to use two means of control. It makes use of WiFi when the operator is within the coverage area of the network of about 100 meters to the device, at no cost, otherwise, it uses SMS containing certain codes to control the lamps.

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The above-mentioned system was the same. the proposed system aimed design and develop a control system using SMS and other technology support to remotely control outdoor and indoor access. The proposed system can use in online mode and offline mode. The online mode required an internet connection at all times and allowed people to run the system on several devices and on the web simultaneously. All devices were synchronized and saved in real-time to the Cloud. Offline mode runs the system without the internet and is saved locally on your device, only a limited device, and one user at a time can access the information. While the mentioned system emphasized that this work aims to design and develop a control system using SMS and WiFi technology to remotely control the outdoor security lights in large organizations

Chondros, et al. [47], "D-DEMOS: A distributed, end-to-end verifiable, internet voting system" (2017). Emphasized that E-voting systems have emerged as a powerful technology for improving democracy by reducing election costs, increasing voter participation, and even allowing voters to directly verify the entire election procedure. Prior internet voting systems have single points of failure, which may result in the compromise of availability, voter secrecy, or integrity of the election results.

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In this paper, the developers presented the design, implementation, security analysis, and evaluation of D-DEMOS, a complete e-voting system that is distributed, privacy-preserving, and end-to-end verifiable. The system included a fully asynchronous vote collection subsystem that provided immediate assurance to the voter her vote was recorded as cast, without requiring cryptographic operations on behalf of the voter. Also, included a distributed, replicated, and fault-tolerant Bulletin Board component, that stored all necessary election-related information, and allowed any party to read and verify the complete election process.

The above-mentioned system was the same as the proposed system which is a powerful technology for improving democracy by reducing election costs, increasing voter participation, and even allowing voters to directly verify the entire election procedure. The proposed system-maintained voter secrecy or integrity of the election results and the above mentioned included a fully asynchronous vote collection subsystem that provides immediate assurance to the voter her vote was recorded as cast, without requiring cryptographic operations on behalf of the voter.

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Local

The system of Bacuna, and Dadiz. (2022) [48] helped the school generate attendance reports automatically and it played a key role. This system based on a server and mobile device is proposed in this study, along with a QR code that is provided to students at the beginning of lectures. The system generates QR codes that contain course, section, subject, date, and IN/OUT information. For attendance confirmation, students will scan a QR code on their mobile phones and upload the data to a server. Facial photos must be taken and sent to a server by students so that they can be stored in the system.

The reviewed system used QR code features. The system was used to monitor class students' attendance and can produce reports immediately. The developed system used QR codes, not for attendance monitoring but to cast votes in any set election at the school. Both used QR codes for different purposes, and both systems produced quick results.

Tahil, (2022) [49], "Library Automation: An Emerging Technology for State University and Colleges in Sulu Province." The developed system of Tahil adopted new technology that allows them to operate and function efficiently and effectively, increasing their productivity and improving their user services without adding

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personnel. The system used updated technology for faster, affordable, and user-friendly in providing various library services. Fortunately, new technologies have developed Barcode, Digital libraries, Quick Response codes, and RFID systems. Consequently, applying these technologies provides an end-to-end solution for easy library operation, such as borrowing and returning books, finding and locating books, and maintaining book records. The need to develop and enhance library services to meet users' demands is necessary.

The reviewed system from Tahil shows the complexity due to more than one feature in the system. Tahil's project provided fast and reliable results. On the other hand, the current project has eight (8) technologies. Tahil's project and the present systems, both provided quick results that gave satisfaction to the clients.

Bartolome, et al. [50], "Development and Pilot Testing of GoTrace: A Web Application for Contact Tracing Using Quick Response (QR) Codes" (2022). Develop a system focused on the development and pilot testing of GoTrace, a web-based contact tracing application that uses Quick Response (QR) codes. GoTrace integrates the collection of daily health surveys and location tracking data of the end-users on a digital and web platform to generate real-time, accurate, and reliable contact tracing reports. With the positive feedback of the participants during the pilot testing,

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GoTrace will offer a promising mobile contact tracing technology that can be adopted in various environments through its dynamic, flexible, and user-friendly architecture.

Thilakshika, (2022) [51] system, is a more convenient way for voting process which use less resources with compare to manual voting process. Access online voting system through internet is more convenient way for the most of the voters with rapid development of the technology. This may be good solution for increasing the voter turnout at polls. Even so the security is the most challenging aspect when consider about online voting. This study is about a software solution for voting through the internet. This system provides a way to record election data, process data and store them as digital information. Both casting a vote and counting votes provide through this online voting system. Other than voting, this system also able to create and handle voter, political party and candidates' details.

Sobejana, et al (2021), "Android-Based Classroom Monitoring System for Teacher Using QR Code Technology" develop an android-based classroom monitoring system for teachers using QR code technology for classroom management of the institution's administration and easy access to information for report generation regularly.

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The study is simply the development of the system and tested through a developmental process that is tested and implemented successfully. The major output is to (1) develop a module for using QR codes in smartphones; (2) develop a module for saving information into the device locally, and (3) develop a module that retrieves into the local server. The result of the project management where very successful using the JavaScript Object Notation (JSON) which serves as the imported library in the development. The study was implemented successfully during the class scheduled for the last term of the school year 2019-2020.

Gabatbat, et al. (2021) [53] system, used RFID as one of the best ways to track the student's in and out. Aside from the convenience, it will benefit both the school and the parent's side by allowing them to monitor and keep track of the student's school activities with a single touch. It is applicable to the employee module. It will reveal their time in and out by tapping the RFID. This will automatically record their attendance and make it easy to compute their income based on the sort of work they have, whether full-time or part-time. If they work full-time, their salary will be determined per day; if they only work part-time, their salary will be computed per hour.

Galvez, et al. (2020) [54], develop systems that used scheduling power control system in two classrooms that will be equipped with a Radio Frequency Identification

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Device (RFID) that will cater to the occupants. These devices can switch on/off automatically. The RFID-based Power Control with Scheduling System is a centralized system that can be monitored and controlled by the administration and by the college department to find out the whereabouts in their system. The faculty staff/member can use the device by tapping their RFID/ID by turning on/off the power control device in the classroom. Teachers can use the classroom up to their last period and the system will automatically turn off the controller of the classroom.

Intal, et al (2020) [55], developed a web-based system with Quick Response (QR) code functionality which is easy to use for mobile users. A prototype was made and comparison of service times between current and proposed processes was considered. The authors emphasized that the rapid growth of technology makes people look forward for innovation that makes transactions faster and easier. For the food industry, a search for techniques that would improve their business functions for the customers would mean an increase in revenue and customer satisfaction. The study highlights on the business process improvements of casual dining restaurant in the Philippines thru the application of Restaurant information system (RIS). Analysis of the current business processes was conducted through interviews and observations. The level of customer satisfaction was evaluated through SERVPERF questionnaires using five (5) dimensions: Tangibles, Reliability, Responsiveness,

Assurance, and Empathy. The results show that customer satisfaction levels in ordering, billing and payment processes require improvements.

Kumari, et al (2019) [56], developed mobile healthcare systems focus to achieve two specific goals: Making e-health applications and medical information available anywhere and anytime, and the invisibility of computing details. In this paper a cloud based mobile application has been initiated to identify herbal medicines of interest to the general population. This system responds to queries posted by users on medicinal plants relating to a particular disease by analyzing research articles from PubMed via PubMed CLOUD and MeSH thesaurus. In this proposal, we particularly focus on applying text mining techniques to the biomedical literature, to unearth information concerning the curing of disease based upon the phyto-chemical properties of medicinal plants. The framework also includes an ontological structure to buffer the retrieved information, and thereby enhances the overall system efficiency.

Juanatas, et al (2019) [57] system, presents the use of RFID in the library management system, as well as the broader accessibility through the Android mobile application. It also offers to handle and manage library routine processes that are generally not available in other library management systems.

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Yaagesh, and Malathi (2019) [58], developed systems affords an uncomplicated, beneficial, powerful way to vote wipe out the drawback of traditional approach. The developer urges a mobile voting system which is in essence an online voting system over which users can cast their vote through their smartphones or by applying an e-voting network page. To bring out the security, OTP accession is used which is most generally on the network to confess the variation between a human using a network services automated bot thus effecting the network page more guarded against spam-bot attacks.

Natividad, and Mendez. "Flood monitoring and early warning system using ultrasonic sensor" (2018) [59]. Highlighted that the purpose of the system is to develop a real-time flood monitoring and early warning system in the northern portion of the province of Isabela, particularly the municipalities near the Cagayan River. Ultrasonic sensing techniques have become mature and are widely used in various fields of engineering and basic science. One of the advantages of ultrasonic sensing is its outstanding capability to probe inside objectives non-destructively because ultrasound can propagate through any kind of media including solids, liquids, and gases. This study focuses only on the water level detection and early warning system (via the website and/or SMS) that alerts concerned agencies and individuals of a potential flood event. Furthermore, an inquiry system is also included in this study to

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become more interactive wherein individuals in the community could inquire about the actual water level and status of the desired area or location affected by flood thru the SMS keyword. The study aims in helping citizens to be prepared and knowledgeable whenever there is a flood.

The novelty of this work falls under the utilization of the Arduino, ultrasonic sensors, GSM module, web-monitoring, and SMS early warning system in helping stakeholders to mitigate casualties related to floods. The paper envisions helping flood-prone areas which are common in the Philippines, particularly the local communities in the province. Indeed, it is relevant and important as per needs for the safety and welfare of the community.

Mojares, et al (2018) [60], "iNotified: An SMS and FRID-Based Notification System of Lipa City Colleges, Lipa City, Batangas Philippines." Emphasized that Automation becomes a part of the IT advancement; many developers create an application that automates manual system. Automating a manual system has many advantages. It speeds up the process of the system, it can perform more than one process at a time, and it also reduces the error. As humans tend to think then act, it consumes time. Tend to become tired, human rests and also tends to create errors, thus, inconsistencies will exist. Since that are a lot of advantages the computer

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automation has to offer, it has a huge influence the way people accomplish task, it is used by different fields such as business, hospital, government, schools and the like.

The developer likewise emphasizes that the program evolves the needs of the parents of Lipa City Colleges in monitoring whether their children are in the school or not in specific time. It gives the parents to have information about the presence of their children in school. It tackles the time in and time out of every student as well as sending of SMS notification and generating the attendance report for the parents. Using RFID, a student requires to login in the system on a daily basis. The scanning of the ID is a must because it indicates students' data in the system. If the process is successful, the student will be allowed to enter in the campus. Then the next process is sending SMS notification on students' guardian on what time their children come to school. If the student leaves the campus logging-out is required. In this case, there is also a text message sends to the parents in order to know if their children are really attending the class. Because logging out of every student is considered necessary it will also determine the time out of the student in the school.

Go, et al. (2018) [61], "Presence: An Integrated Mobile Solution for Truancy Detection using RFID and Cloud-based Notification Services." Develop a system that use mobile and cloud-based notification services to detect truancy in students and notify the concerned party in a real-time basis. Attendance logs are captured by radio-

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frequency identification (RFID) scanners at the entrance and exit gates of the campus. Students' identification cards are embedded with a chip that uses radio frequency to communicate data to a reader. The mobile application pulls data from the database through a web service to reflect whether or not the student gets inside the campus. The presence of the students in their respective classes is further checked by the faculty through a user interface. Parents and sponsors can check, at real-time, the presence of the students in the campus as well as in their classes. To handle fresh new information in a timely fashion, the system implements cloud-based notification services called Google Cloud Messaging for Android (GCM). Parents get immediate notification about the students' missed classes, violations, and class suspensions.

Tamayo, et al (2017) [62], develop a collaboration system for teachers, parents and students that will be used to monitor the performance of the students. The developed prototype system is a web-based type of application and deployed on a cloud-based server for an efficient and cost-effective implementation. It was designed for private schools to enhance parental involvement and collaboration between the teachers and parents through online communication. This proposal is purposively for parent monitoring of the performance of their children in school. The system includes also a tool for communications between parents and teachers to strengthen their partnership.

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Caya, et al. [63], "Cashless transaction for resort club amenities using RFID technology" (2017). Develop a system that focused on creating a payment system and loading system using RFID technology to automate all the transaction records of the business and to incorporate convenience when within the resort. Both of the systems, that were made, use of an RFID reader/writer, an Ethernet module, a 16×2 LCD, and an ATMega328P Microcontroller.

All of the data is processed in the ATMega328P Microcontroller. The device also monitors real-time transactions for both of the systems by sending data to the database. Once the RFID card has been tapped, the system will then send the data to the database. Once the testing has been finished, all of the data sent can be viewed in the database. The group successfully created a cashless transaction system that also monitors data in real time.

Synthesis of the State-of-the-Art

The reviewed literature and systems brought insights for the researcher to gather vital information that could help in the development of the tracking system.

According to the studies of Online Election Perfection and Municipal Election (2022), and Based on the experience of Independent Writers Donald O. Graul Jr. American (2022), Voting is a web-based online voting system that will help you

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manage your elections easily and securely. it also offers a secure and efficient online voting solution for municipal elections. Management folks were able to make it simple and easy to take care of the task at a very reasonable cost. Based on Organization which is the ElectionBuddy (2020) and According to the studies of Organization the YesElection in America (2019), Online voting not only increases convenience for everyone involved, but it also helps protect elections from a major risk to their integrity — human error. Ballots can get lost, mistakes can be made while calculating results, and humans can be influenced to tamper with an election.

Based on ISO 25000 (2022), "ISO/IEC 25010" and other articles, state that the quality model is the cornerstone of a product quality evaluation system. The quality model determines which quality characteristics will be taken into account when evaluating the properties of a software product which bears significance to the proposed study because this will determine the quality of the proposed system which will be used in testing and evaluation. It helps to improve the quality of a system that satisfies the needs of its various end-users and stakeholders. Like needs in the functionality, performance, security, maintainability, etc.

The systems reviewed used QR codes, SMS, and many others. However, the current one uses more than three combinations of features that, even though complicated, can provide the fast and reliable results that clients need.

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Gap Bridged by the Study

Several systems are reviewed and are similar to the present study. All were unique and gave solutions for every problem in a company, establishment, hospital, academe, or workplace in public or private service. All served the purpose.

The present study gained insights from those systems. The application of Multiple Technologies in a Cloud-Based Voting System for Aemilianum College Inc. is different; the researcher integrated eight (8) technologies to enhance the interface; with these, the developed system is the first online use of multiple technologies. This is the gap that the researcher wants to bridge.

Conceptual Framework

The conceptual framework of this study is presented by using the systems approach, which includes the input, process, output, and outcomes.

The input includes the development of Multiple Technologies in a Cloud-Based Voting System for Aemilianum College Inc. for the following 1) Admin features: a) Dashboard for students, candidates, newly registered, and those who cast votes; b) Voting utilities with open and closed voting, manage the position, manage party list, manage login settings, create tally, set voting date and time, password and permission, and set print settings; c) System utilities with manage organization,

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manage courses, SMS settings, manage school year, manage user, back-up database, restore database, and refresh database; d) report generation that generates results, tally sheets, could view ballots, and print's voter's information; and e) the client/use module with different forms of authentication. 2) The use of multiple technologies support in implementing the proposed system namely: Smart TV, Barcode reader, QR Scanner, Android Phone, Printer, RID Reader, Internet, and SMS.

The process includes the utilization of Rapid Application Development (RAD) with four (4) phases namely: Requirements and Planning, User Design (which consist of prototyping, testing, and refinement), Construction, and Cut Over.

The Output of this study leads toward the development of application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.

Feedback is always received. The result of this study can be an important basis for improvement.

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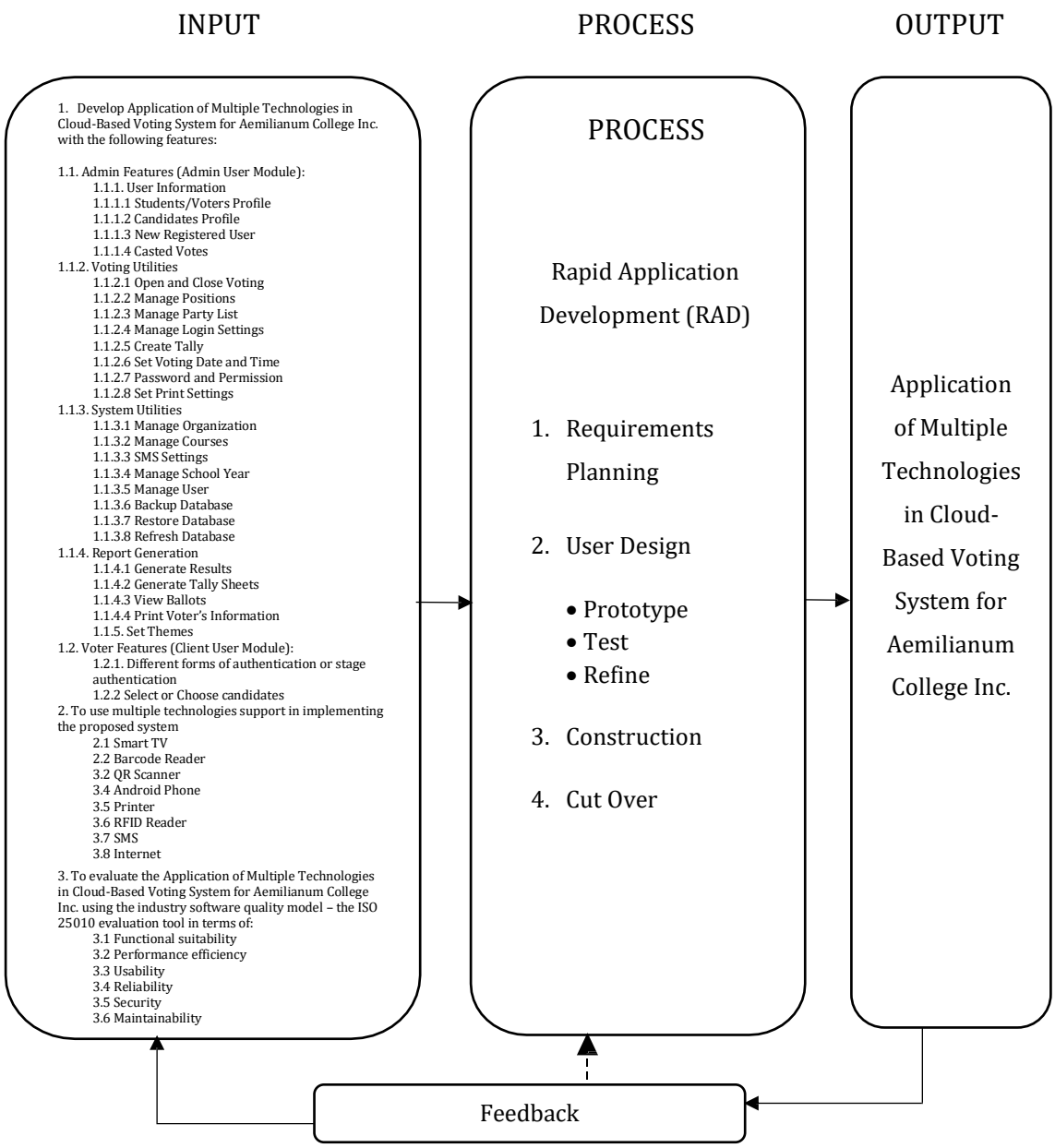

2.1 Conceptual Paradigm

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CHAPTER III
TECHNICAL BACKGROUND

This chapter contains the methods and procedures of research used in this study. It covers the following subtopics: the resources, stakeholders, constraints, and the methodology that was applied in the development of the proposed system.

Resources

The resources includeD all the software and hardware required for the development of the Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. Listed below were the minimum requirements to achieve the objectives, for better performance higher version can be used.

Table 3.1. Hardware Requirements for Project Development

Hardware	Specification
Computer Unit	Laptop or Desktop any brand
Processor	Intel Core i3 or Higher/ Any brand with equal or greater specification.
Hard Disk Drive	Any brand with 500 GB or Higher
RAM	Any brand with 4GB or Higher
Monitor	14 Inches Monitor or Higher
Smart TV	Any brand 24 inches or above
Printer	Standard Printer/Thermal Printer
Automatic Voltage Regulator	Standard AVR
RFID Reader	13.56 Mhz
RFID Card	13.56 Mhz
QR/Barcode scanner	Type: Wired, Connectivity Technology: USB Cable
Android Phone	OS with version 7.0 and above

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Table 3.1. displays the hardware requirements of the system. The proponent used a Laptop or desktop to develop the proposed system with the support of the different technologies mentioned above.

Table 3.2. Software Requirements for Project Development

Software	Specification
Operating System	Windows 7 Operating System up to the latest version
PHP Editor	Dreamweaver CS6 and Visual Studio 2019 up to the latest version
Web Server Solution	XAMPP version 7 up to the latest version
Database	MySQL 5 or higher
Browser	Microsoft Edge or Any browsers

Table 3.2. presents the software requirements of the system. To develop the system front-end, there are specific software and/or application that are needed for coding the proponent use Dreamweaver and Visual Studio as a Php Editor. Php and Javascript are the programming languages to be used for efficient functionality. The design and interface are established using bootstrap, Cascading Style Sheet (CSS), and Hyper Text Mark-Up Language (HTML) to make the system responsive. Likewise, the proponent used the Microsoft Edge browser to check the output design.

To store and manage data, the proponent used MySQL on XAMPP as an open-source relational database management system and back-end tool which served as a medium of communication between the server, system, and database.

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Stakeholders

The proposed study also examined the involvement of stakeholders, at this point, the tasks of the stakeholders were presented. This is to ensure that the system functions for a longer time.

Stakeholders were categorized according to their roles and concerns, as seen in the table below.

Table 3.3 Proposed System Stakeholders

Stakeholder	Use
Aemilianum College Inc.	The institution i s responsible for the implementation of the developed system.
College Registrar	The one who is in charge of students of Aemilianum College Inc.
Election Officers	The one who is in-charge in conducting elections in different organization
Systems Administrator	The one in charge of the technical aspects of the system
Computer Technician	In charge of the hardware maintenance of the system.
Voters	Responsible for selecting candidates
Candidates	The one who will leads the organizations

Table 3.3 presents the list of stakeholders with their respective tasks being identified so that the developed system will serve the institution for a period of time.

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Constraints

A constraint is any restriction that defines a project's limitations or the degree of risk to be considered in conducting the study. There are three (3) constraints that were considered in this study, time, and cost. [1]

Time Constraint

Time constraints refer to the schedule or timetable of completion of each deliverable. This required the submission of the actual completion as well. This can better be represented using the Gantt Chart. This displayed the priority rankings and dependencies of different activities within the project.

Table 3.4 Project Development Time Frame

Phase/Activity	Month																			
	1				2				3				4				5			
1. Requirements and Planning - Research, Interview and Observation - Define Scope and Limitation - Identified the resources, stakeholders, and constraints																				
2. User Design - Prototype - Test - Refine																				
3. Construction																				
4. Cutover																				

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Cost Constraints

The last constraint was the cost or the budget for the development of the system. Cost comprised financial resources needed to complete the project on time.[3]

All financial expenses in this study were carried out by the proponent as there was no funding assistance to expect. Therefore, there is a need to maximize current resources to achieve specific goals.

Project Development Methodology

To achieve the desired scope and planned results within the time frame and budget, there is a need to develop a project using specific Software Development Methods (SDM). According to Tutorials Point (2022) "A methodology is a model, which project managers employ for the design, planning, implementation and achievement of their project objectives." [4]

There are several methodologies in developing software but choosing the right method is significant as it interconnects activities in each phase from inception to retirement. According to Mahapatara, "selecting a methodology depends on project features or characteristics and no methodology is ideal or always the best." [5]

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In this study, the proponent used Rapid Application Development (RAD). RAD is an agile project management strategy for fast project turnaround. This method focuses on prototype development and minimizing the planning stage. In this manner, project stakeholders were provided with real-time evaluation on every prototype release. Thus, the proponent was able to address changes and updates as a result of the evaluation.

Requirements Planning. During this stage, developers, clients (software users), and team members communicate to determine the goals and expectations for the project as well as current and potential issues that would need to be addressed during the build. 1 In this phase, the proponent conducted the following: (1) Interviewed with the election officer in charge. (2) Defined the scope and limitation of the study. (3) Identified the resources, stakeholders, and constraints that may be encountered in the conduct of the study which includes but is not limited to time, scope and budget.

User Design. The developer's goal was to build something that they can demonstrate to the client. This can be a prototype that satisfies all or only a portion of requirements (as in early stage prototyping). [6] In this phase, the proponent will be worked closely with the stakeholders of the system. This includes the development and coding of the program. Iteratively, the proponent presented prototypes of the

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system that was tested and evaluated by future users. This was done until satisfactory design and functions were met.

Construction. The prototypes and beta systems from the design phase and converts them into the working model. Because the majority of the problems and changes were addressed during the thorough iterative design phase, developers can construct the final working model more quickly than they could by following a traditional project management approach. [5] In this phase, the proponent finalized the system based on the consolidated evaluation and iteration. This included the integration of modules.

Cutover. This is the implementation phase where the finished product goes to launch. It includes data conversion, testing, and changeover to the new system, as well as user training. All final changes were made while the coders and clients continue to look for bugs in the system. [6] The final step is when the proponent released the final product to the stakeholders.

To give an overview, Rapid Application Development is illustrated in Figure 3.1

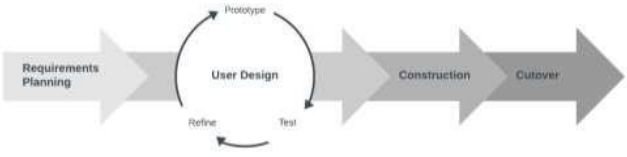

Figure 3.1. Rapid Application Development

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Notes

[1] Wrike; What Are Constraints in Project Management?; published: 2020; accessed: September 9, 2022; https://www.wrike.com/project-management-guide/faq/what-are-constraints-in-project-management/

[2] What is the project scope? ;2022; Retrieved on September 9, 2022; Retrieved From: https://searchcio.techtarget.com/definition/project-scope

[3] Lucidchart Content Team; 4 Phases of Rapid Application Development; 2022; Retrieved on September 9, 2022; Retrieved From: https://www.lucidchart.com/blog/rapid-application-development- methodology

[4] Mahapatra, H.; Selection of Software Development... preview & related info | Mendeley. International Journal of Advanced Research in Computer Science and Software Engineering; 2015; Retrieved on September 9, 2022

[5] Outsystem; What Is Rapid Application Development? (RAD). ; 2022; Retrieved on September 9, 2022, Retrieved From: https://www.outsystems.com/blog/posts/rapid-application-development/

[6] Tutorials Point; Project Management Methodologies - Tutorialspoint.; 2022; Retrieved on September 9, 2022.

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CHAPTER IV

APPLICATION OF MULTIPLE TECHNOLOGIES IN CLOUD-BASED VOTING SYSTEM FOR AEMILIANUM COLLEGE INC.

This chapter deals with methods of research used by the researcher in order to come up with a solution. The researcher used Rapid Application Development (RAD) methodology, data gathering, tools, and process flow diagrams were elaborated in this chapter.

Requirements and Planning

This phase is equivalent to a project scoping meeting. During this stage, developers, clients (software users), and other stakeholders communicated to determine the goals and expectations for the project as well as current and potential issues that would need to be addressed during the build.

A basic breakdown of this stage involves: Researching the current problem, defining the requirements for the project, finalizing the requirements with each stakeholder's approval. It is important that everyone has the opportunity to evaluate the goals and expectations for the project and weigh in. By getting approval from each

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key clients and developer, stakeholders can avoid miscommunications and costly change orders down the road.

The aim of this phase was to identify and solve the issues encountered by the College on the current process of voting in different organization. Gathering of data and planning was the beginning of the said phase. It did not require detailed requirements gathering instead, a broad idea description was enough. With this in mind, the researcher conducted a series of interview and observation to the different personnel of the college before starting with the system development. The interview was conducted through virtual and face to face meeting. Students, Teachers and Election Officers were interviewed to provide valuable input as the primary beneficiary of the system. Additionally, the researcher gathered some documents as an additional reference and basis in the development of the system. CHED and DepEd memoranda were the primary source of information.

The interviews and observations outcome dictated the system's priorities and objectives. The school, students, teachers and election officers addressed the current procedure and requirements for manual voting system of student organizations. As a result, the researcher was able to identify potential issues that could be addressed by developing Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. In addition, the researcher was able to draw the scope and

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limitations of the study. Finally, the students, teachers, election officers and other stakeholders were identified as they were the primary beneficiary the study.

Object Modelling

A logical interface, program, or device that is designed using object-oriented techniques is known as an object model. Prior to development or programming, it allows for the creation of an architectural software or system model. [1]

The diagrams that follow included the functional specifications as a result of the data collection process. This served as the basis in the design choices and development priorities.

Functional Decomposition Diagram

The aim of functional decomposition was to break down a large, complex process into smaller, simpler task units, allowing the developer to have a clearer understanding of the overall process. [2] The diagram below depicted how the system's processes are broken down.

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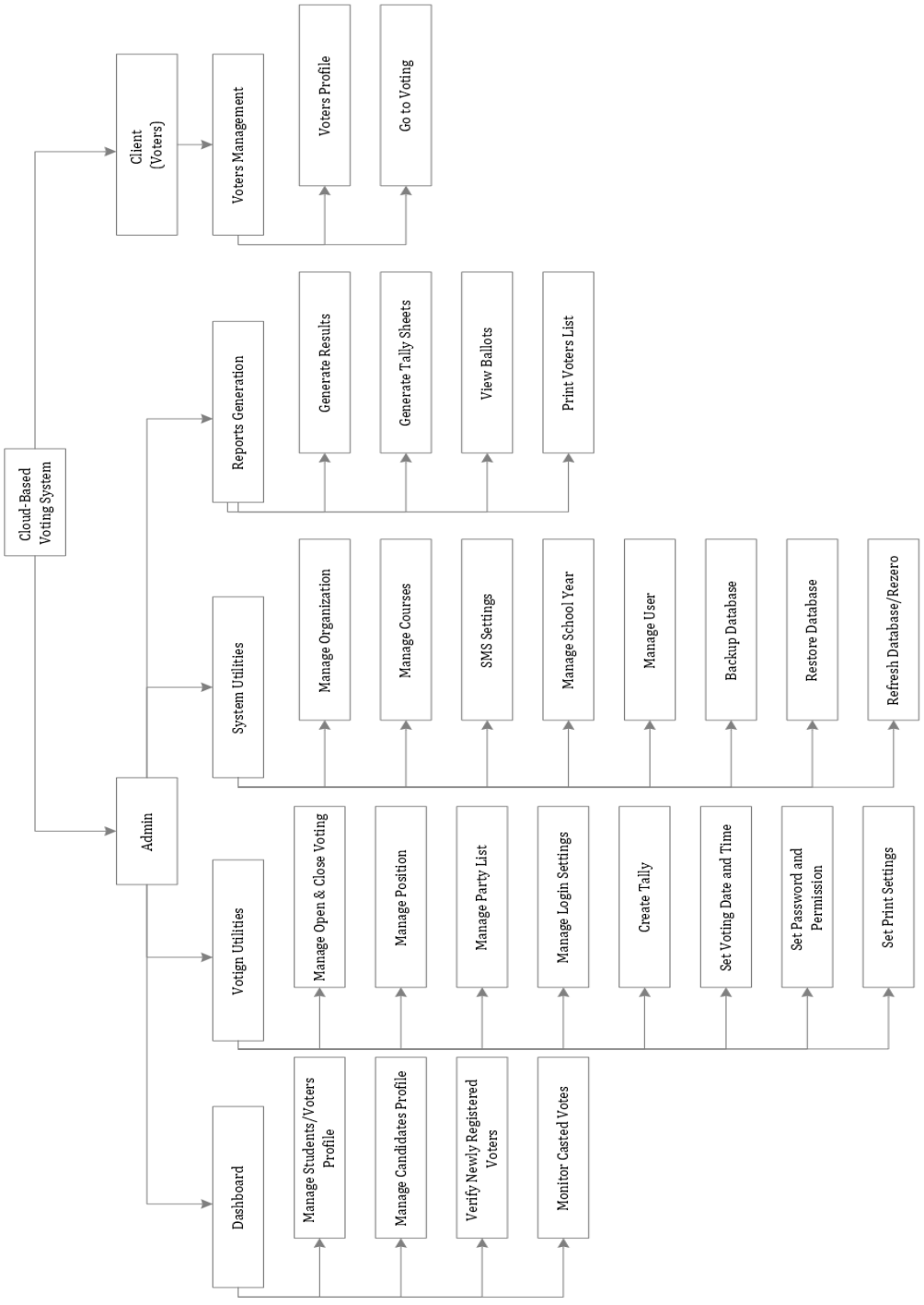

Figure 4.1 - Functional Decomposition of System

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The functional decomposition of the system Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. was shown in Figure 4.1 It gave a summary of the system's operation and capabilities. It also indicated the level of access that each user has. The system had two levels of accessibility: the election officers, who also acted as an administrator and the students.

User Case Diagram

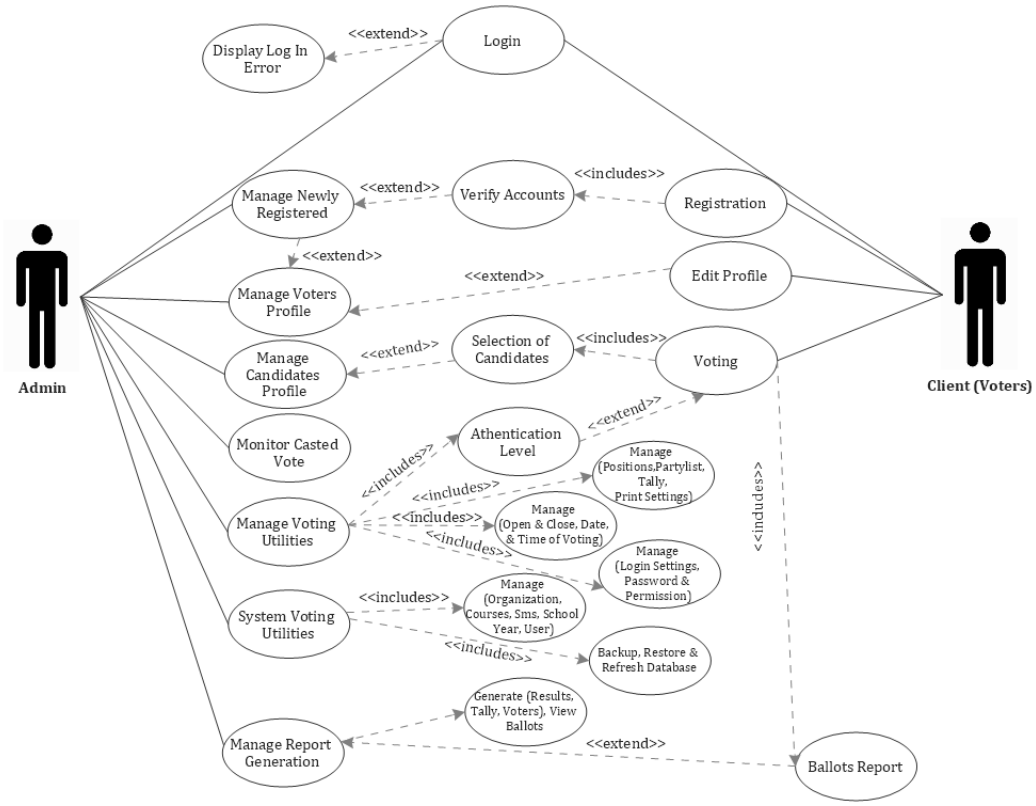

Figure 4.2 Use Case Diagram

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A Use Case Diagram depicted the system's features using actors and use cases. A collection of actions, services, and functions that the device must perform are referred to as use cases.[3] This diagram was significant to identify the internal and external factors that influenced the system.

The Admin as shown in the diagram in Figure 4.2, was the primary user of the study since they had complete control over the system. They were in charge of the entire process of voting. This included, newly registered, voters' profile, candidates' profile, monitoring casted vote, manage voting utilities, system utilities and reports generation. Meanwhile, the Voters were the second user in this scenario, and they were only allowed to update their information and vote their selected candidates.

User Design

During this phase, clients worked hand in hand with developer to ensure their needs were being met at every step in the design process. It was almost like customizable software development where the users can test each prototype of the product, at each stage, to ensure it met their expectations. All the bugs and kinks were worked out in an iterative process. The developer designed a prototype, the client (user) tested it, and then they came together to communicate on what worked and what didn't. This method gave developers the opportunity to tweak the model as they

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go until they reached a satisfactory design. Both the software developers and the clients learn from the experience to make sure there was no potential for something to slip through the cracks. [4]

Data Process and Modelling

Data Model was an abstract model that organized data definition, data semantics, and data consistency constraints. It emphasized on the outcome and organizations instead of the process to be performed.[5] The data model was used by the researcher to develop a conceptualization of the relationship between data objects.

Context Diagram

The context diagram was used to establish the context and boundaries of the system to be modelled: which things were inside and outside of the system being modelled, and what was the relationship of the system with these external entities. [6] It gave a lot of weight to project stakeholders, external variables, and incidents. All of which should be taken into account when developing the system's constraints. Using a context diagram was significant to demonstrate how external factors can affect to the system as whole. It also provided an overview of the general specification of the system.

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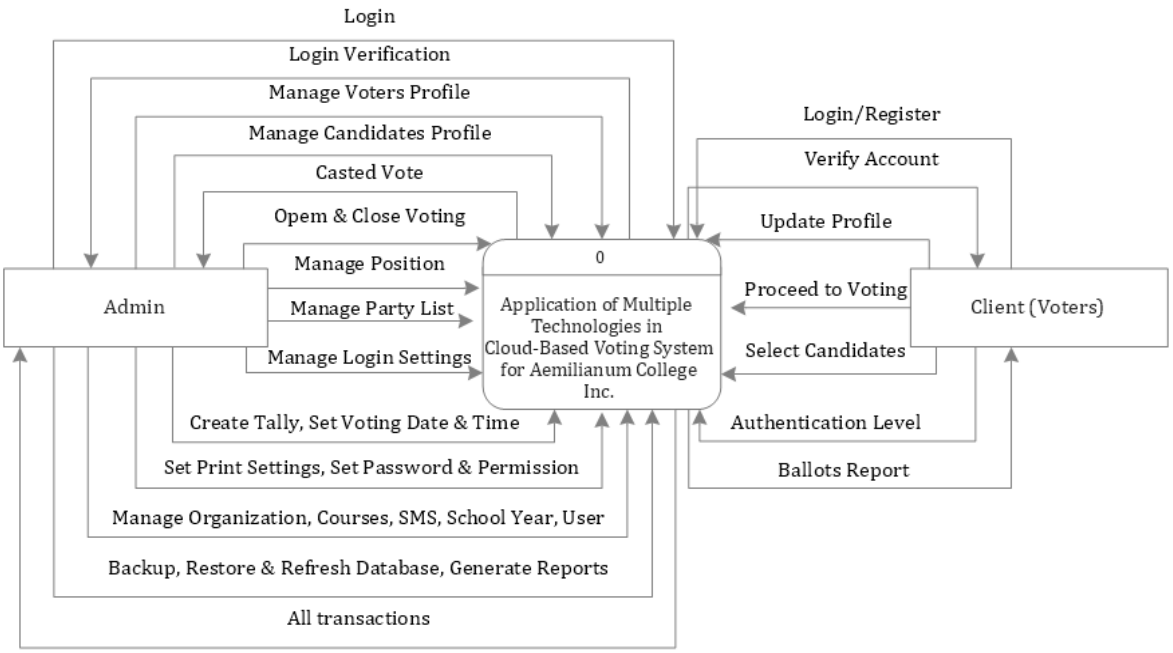

Figure 4.3 - System Context Diagram

The Figure 4.3 showed the Zero Level Pictorial Diagram of Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. It illustrated how end-users, such as voters, partner institutions, and admin, can interact with the system. It also demonstrated the flow of data among users.

Data Flow Diagram

The Data Flow Diagram (DFD) showed the way information flows through a process or system. It included data inputs and outputs, data stores, and the various sub processes the data moves through. DFDs were built using standardized symbols

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and notation to describe various entities and their relationships. Data flow diagrams visually represent systems and processes that would be hard to describe in just words. You can use these diagrams to map out an existing system and make it better or to plan out a new system for implementation. Visualizing each element makes it easy to identify inefficiencies and produce the best possible system. [6]

A data flow diagram (DFD) was typically used as a first step in creating a system overview. The following diagrams were shown to provide a visual representation of the system's different processes.

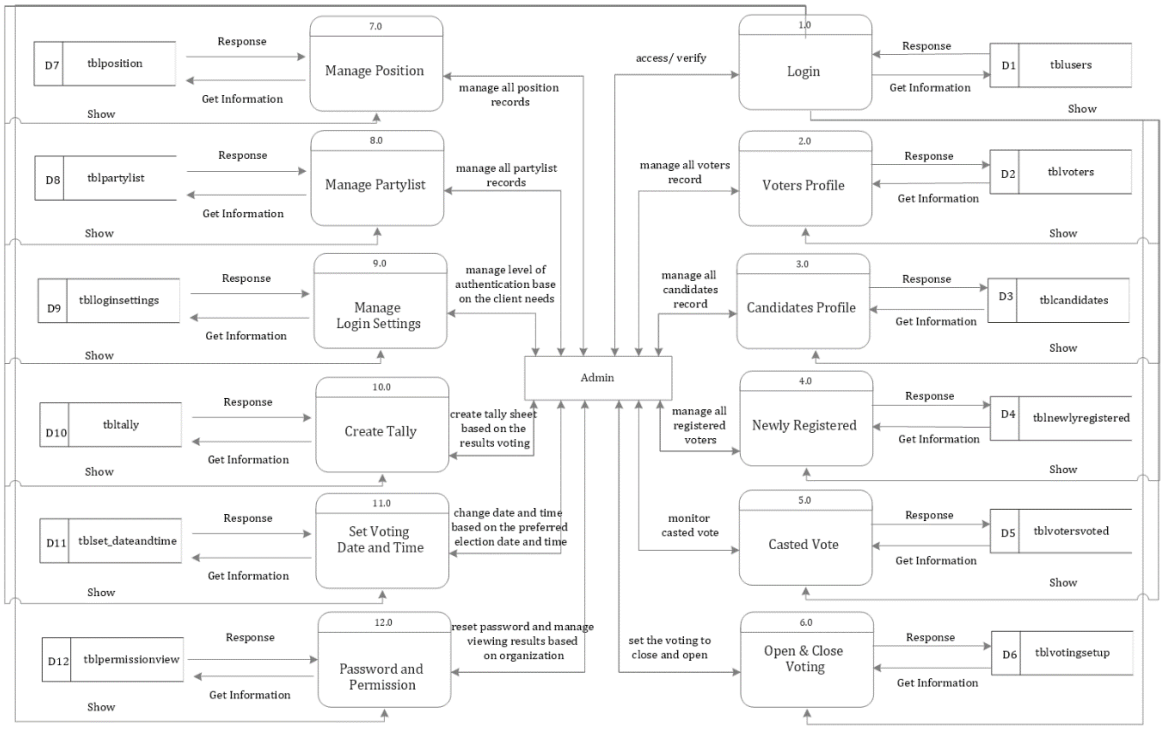

Figure 4.4 - System Data Flow Diagram of Admin

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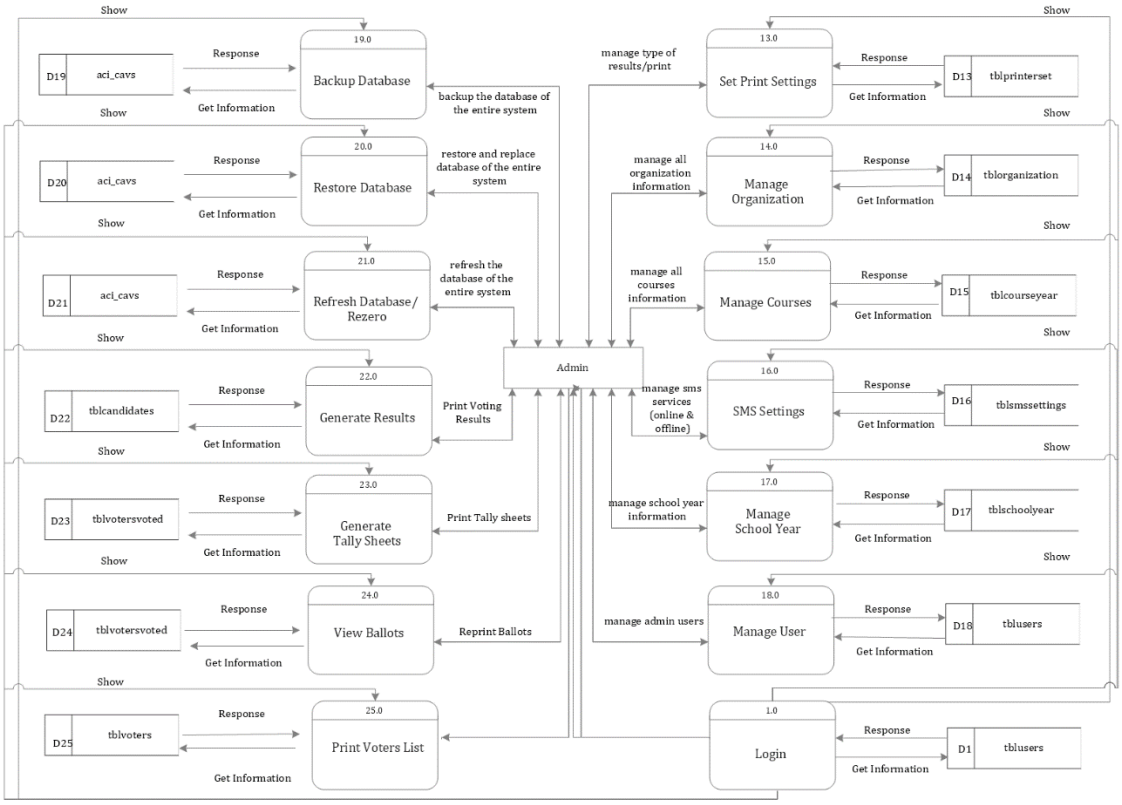

Figure 4.5 - System Data Flow Diagram of Admin

Figure 4.4 and Figure 4.5 - System Data Flow Diagram of Admin: First Level Pictorial Diagram of Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc., elaborated the high-level process of admin user. It was a basic overview of the whole system or system being analyzed or modeled. It was designed to be an at-glance (recognize it immediately) view. High Level Entities and process flow of the system included, Managing the Dashboard (Students/Voters Profile, Candidates Profile, New Registered, Casted Votes), Managing Voting Utilities (Open and Close Voting, Positions, Party List, Login Settings, Create Tally, Set Voting

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Date and Time, Password and Permission, Set Print Settings), Managing the System Utilities (Organization, Manage Courses, SMS Settings, Manage School Year, Manage User, Backup Database, Restore Database, Refresh Database), Managing Report Generation (Generate Results, Generate Tally Sheets, View Ballots, Print Voter's Information), Managing the selection and voting of candidates or managing of voting/counting)

The First Level Pictorial Diagram of Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. goes one step of deeper into parts of Level 0 of proposed system. It showed how the system was divided into sub-systems (processes), each of which dealt with one or more data flows and which together provided all of the functionality of the Cloud-Based Automated Voting System as a whole. It also identified internal modules under the Dashboard, Voting Utilities, System Utilities, Report Generation that must be present in order for the system do its job. Low level functionalities of the proposed system were as follow: Admin login to the system and managed all the functionalities of the proposed system. Admin can add, edit, delete and view records in the proposed system. Admin can manage the details and information in the proposed system. Admin can also generated reports in the proposed system. Admin can track and search the detailed information in the proposed system.

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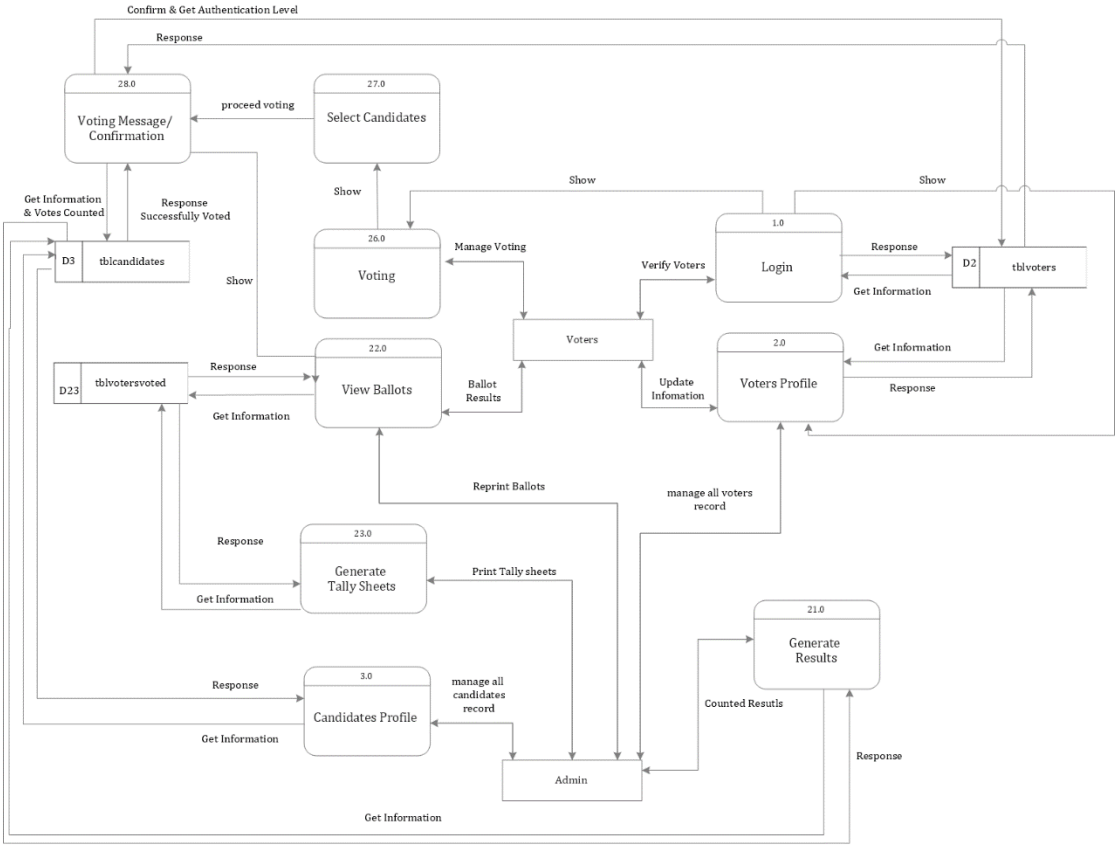

Figure 4.6 - System Data Flow Diagram of Voters (Client)

The Second Level Pictorial Diagram of Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc., elaborated the high-level process of client users the voters. It was basic overview of the voter's access to the system being analyzed or modelled. High Level Entities and process flow of the system included different forms of authentication level in order to proceed voting. Likewise, it showed the relationship of administrator and clients. Registered voter (client) allowed to manage all the features of the voting.

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Data Design

Data design is the method of creating a detailed database data model, which was a logical design of data storage structures. It demonstrated the flow of data from the end user, to how it interacted with the system. The researcher first devised a strategy for determining which entities/objects were used in the system's development and how they communicated.

Entity Relationship Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. ER diagrams are related to data structure diagrams (DSDs), which focus on the relationships of elements within entities instead of relationships between entities themselves. ER diagrams also are often used in conjunction with data flow diagrams (DFDs), which map out the flow of information for processes or systems. [7]

Entity Relationship Diagram was developed to provide conceptual visualization in designing relational databases. As a result, the researcher would be

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able to detect any design vulnerabilities that might arise, resulting in effective database debugging.

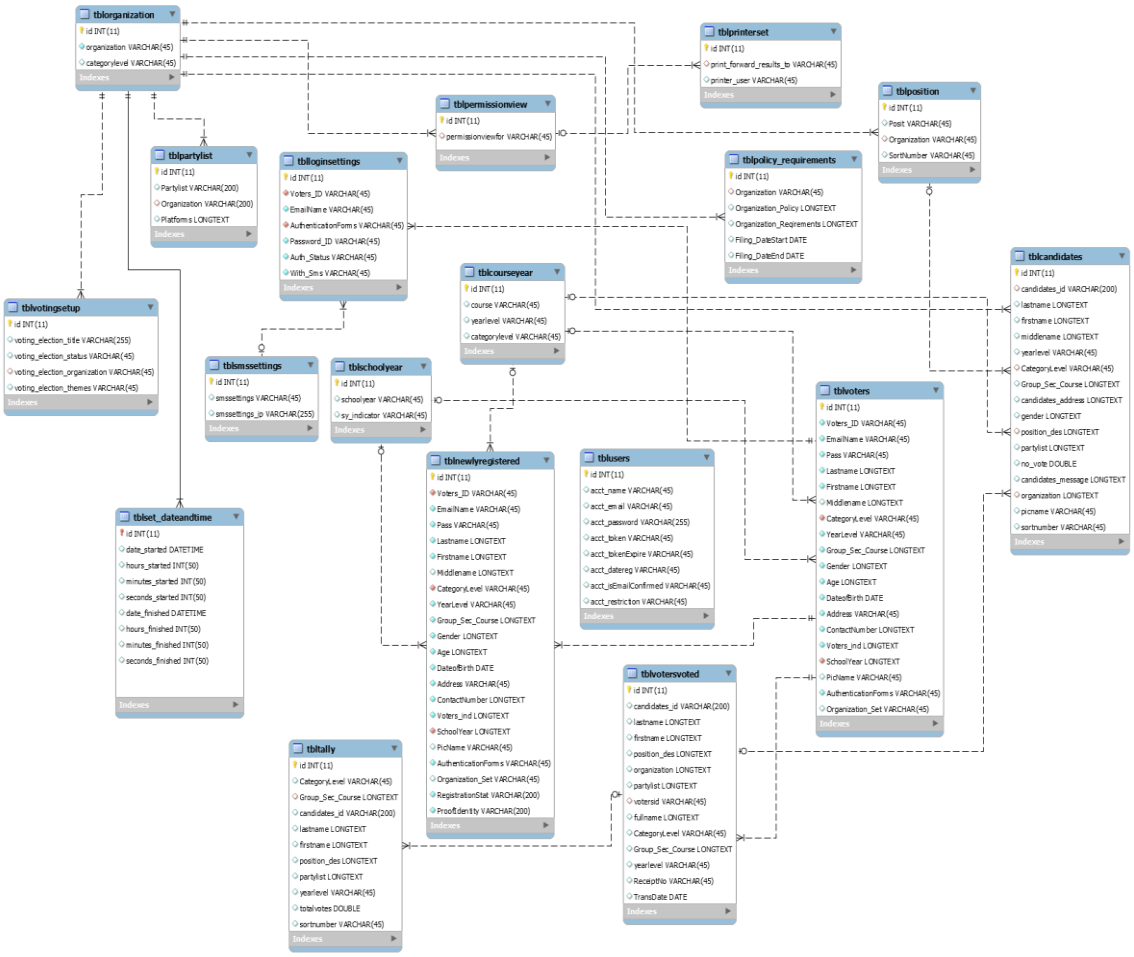

Figure 4.7 – Entity Relationship Diagram

The Figure 4.7 referred to the Entity Relationship Diagram of the Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. Each table and entity were accurately designed to meet the requirements of the

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system specification. The diagram represented the backend flow of the system which showed the relationship from one table to another.

Construction

The phase 3 took the prototypes and beta systems from the design phase and converted them into the working model. The majority of the problems and changes were addressed during the thorough iterative design phase, developers can construct the final working model more quickly than they could by following a traditional project management approach. The phase was broken down into several smaller steps: preparation for rapid construction, program and application development, coding, unit, integration, and system testing. The software development of programmers, coders, testers, and developers work during this stage to make sure everything is working smoothly and that the end result satisfies the client's expectations and objectives. [8] This third phase was important; the client still gets to give input throughout the process. They can suggest alterations, changes, or even new ideas that can solve problems as they arise.

Output and User-Interface Design

This part showed the interaction between the user and the system. This furtherly showed the appearance of every functionality that the end-user interacted

with. It was critical for an interface to be user-friendly, with actions and choices that were simple to learn and comprehend.

The System

This part showed the overall design and user interface of the system. This consisted of forms and designs which offered the functionalities in accordance with the system specification.

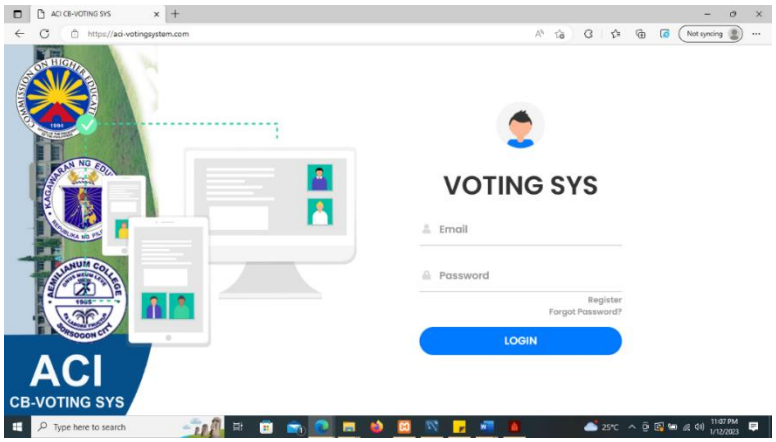

Figure 4.8 Log-in/Log-out Security Module

Figure 4.8 Log-in/Log-out Security Module, referred to one of the features of the proposed system that required authorized users to enter their email and password to be able to access their user account in the administrator's module and voter's module.

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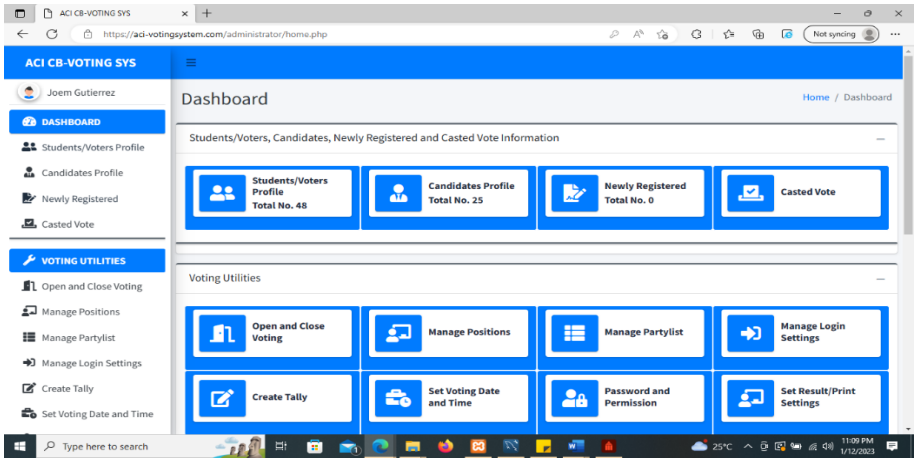

Figure 4.9 Administrator's Main Module

Figure 4.9 Administrator's Main Module, allowed the designated system administrator to manage all the features of the systems. In this module, administrator can save, update, delete, backup, restore and refresh data in the backend of the system.

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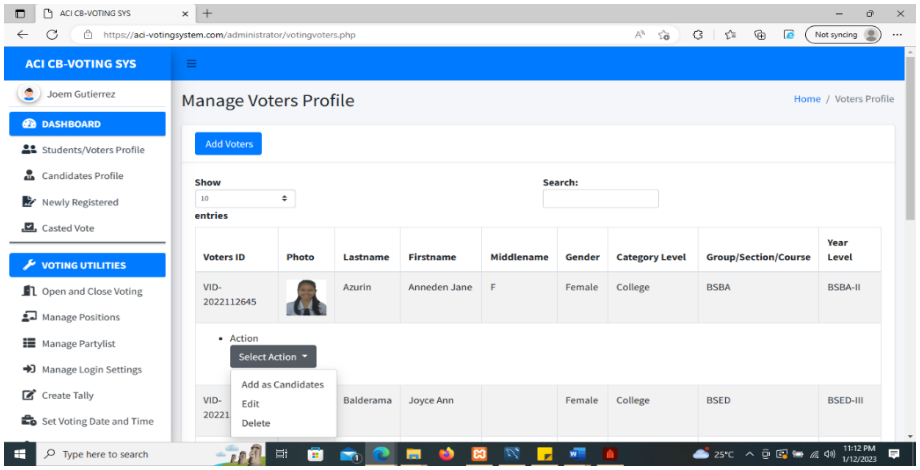

Figure 4.10 Voters Profile

Figure 4.10 Voters Profile, referred to one of the features of the system wherein the administrator can register voters, add and edit information.

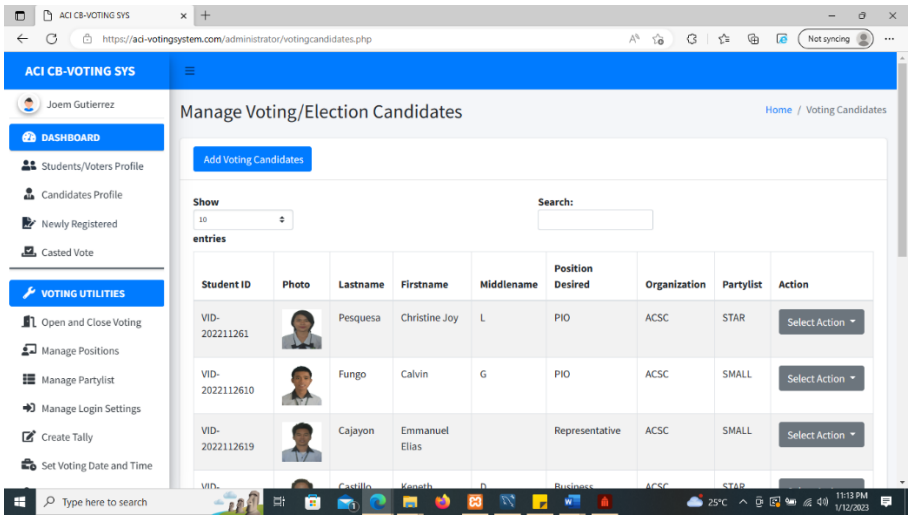

Figure 4.11 Candidates Profile

Figure 4.11 Candidates Profile, referred to one of the features of the system wherein the administrator can add, edit and delete information of the candidates in different department and different party list.

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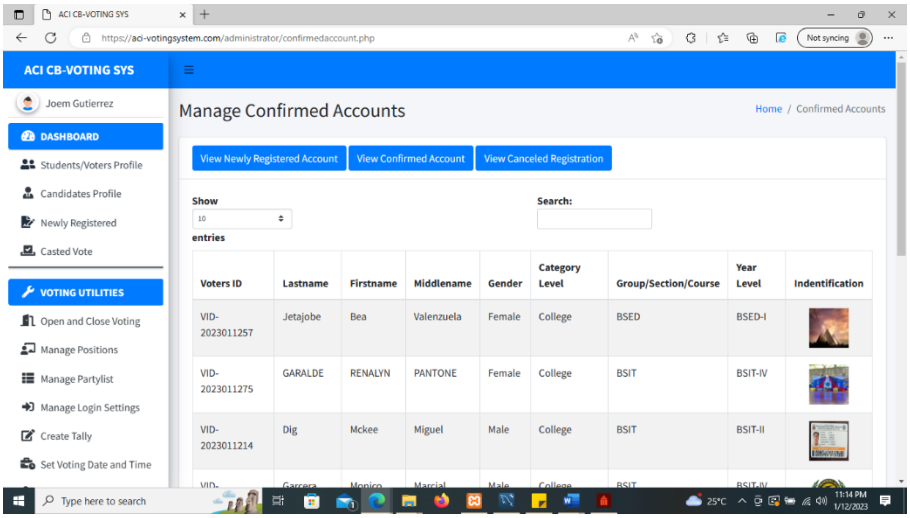

Figure 4.12 Newly Registered

Figure 4.12 Newly Registered, referred to one of the features of the system wherein the administrator can track registered accounts and verify if the account are legit voters of the Aemilianum College Inc. Likewise, this referred to the new voter who registered online in the system.

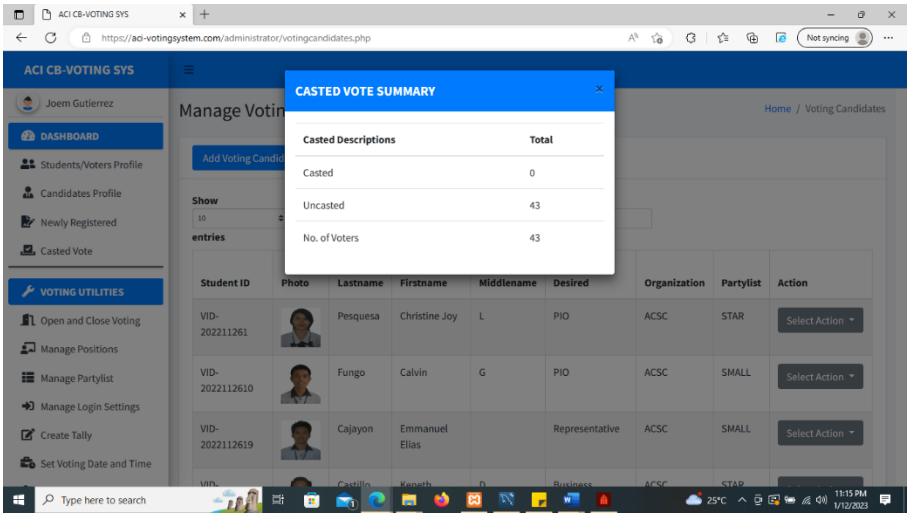

Figure 4.13 Casted Vote

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Figure 4.13 Casted Vote, referred to one of the features of the system wherein the administrator can monitor the total number of casted and uncast vote counted by the system.

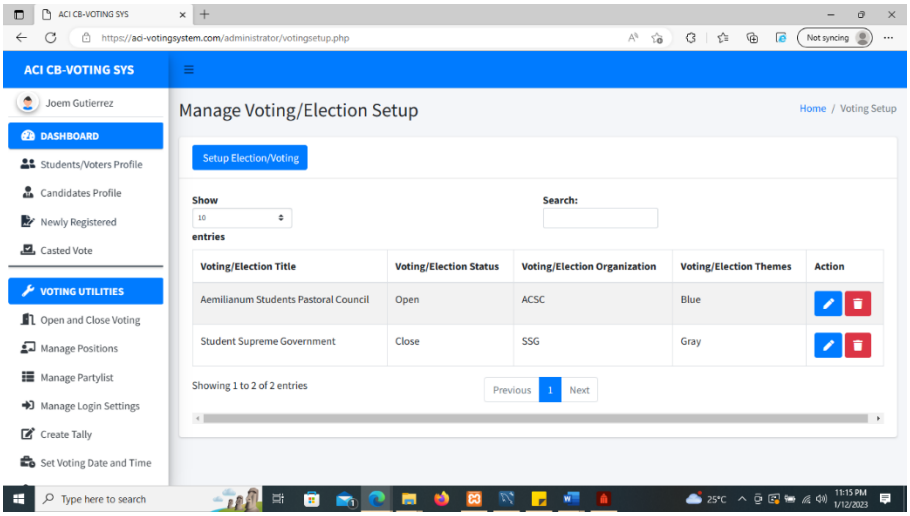

Figure 4.14 Open and Close Voting

Figure 4.14 Open and Close Voting, referred to one of the features of the system wherein the administrator can open and close voting during the election day.

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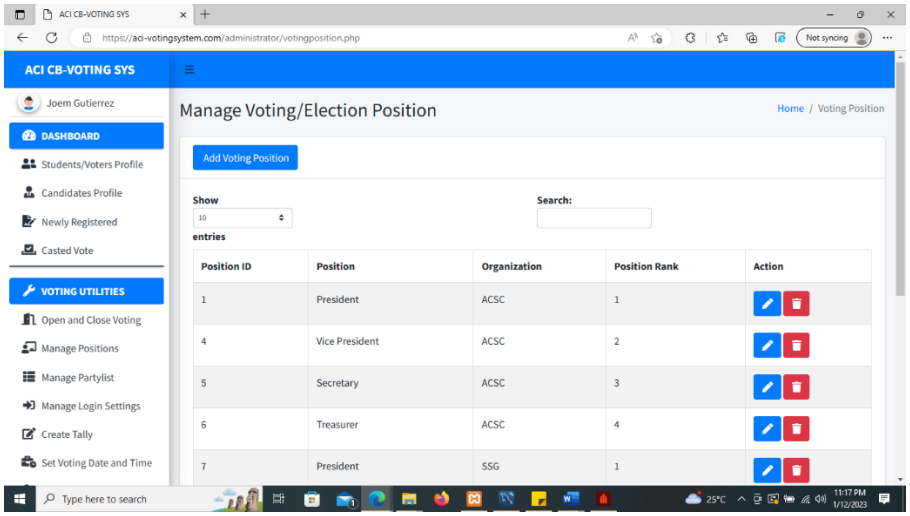

Figure 4.15 Manage Position

Figure 4.15 Manage Position, referred to one of the features of the system wherein the administrator can add, edit and delete position information.

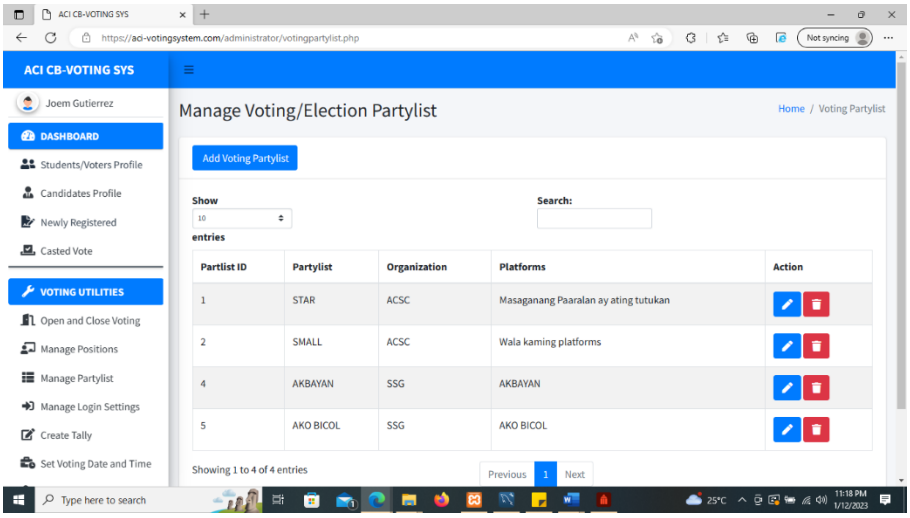

Figure 4.16 Manage Party List

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Figure 4.16 Manage Party List, referred to one of the features of the system wherein the administrator can add, edit and delete party list information.

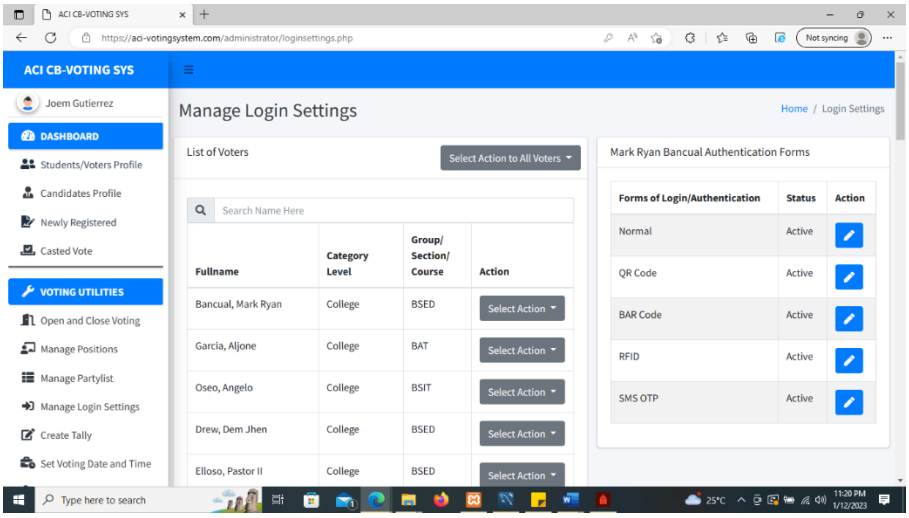

Figure 4.17 Login Settings

Figure 4. 17 Login Settings, referred to one of the features of the system wherein the administrator can set voters organization, and add different forms of login that were used in voting verification.

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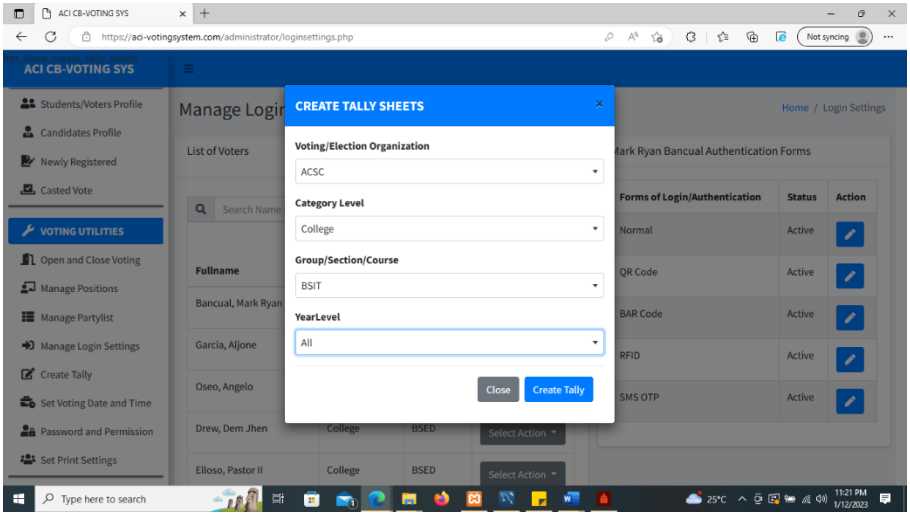

Figure 4.18 Create Tally

Figure 4.18 Create Tally, referred to one of the features of the system wherein the administrator can set and create voting tally sheets in the system.

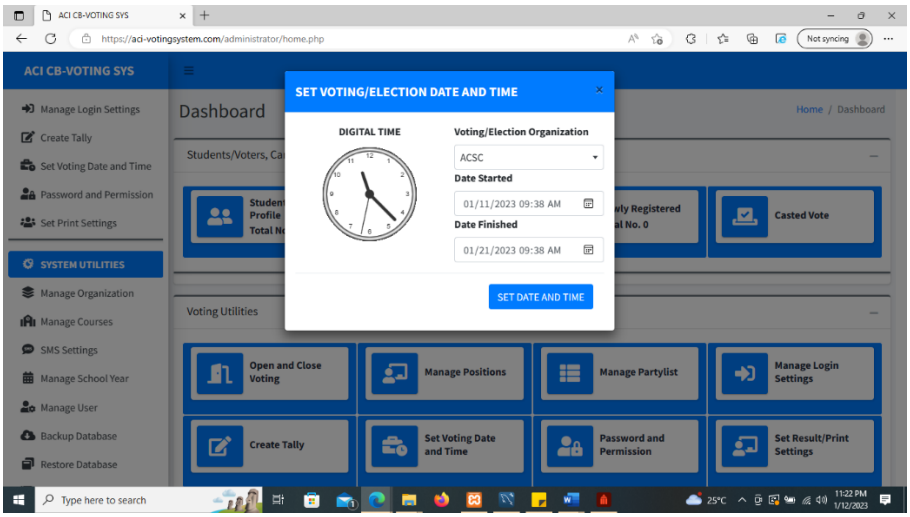

Figure 4.19 Manage Voting Date and Time

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Figure 4.19 Manage Voting Date and Time, referred to one of the features of the system wherein the administrator can set a date and time limit or duration of voting.

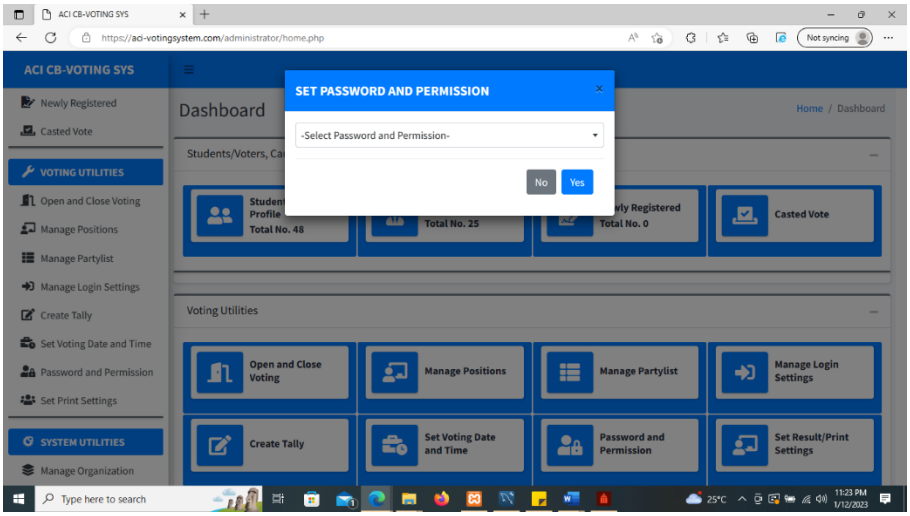

Figure 4.20 Password and Permission

Figure 4.20 Password and Permission, referred to one of the features of the system wherein the administrator can reset voter's password and grant users to view results of voting in one organization.

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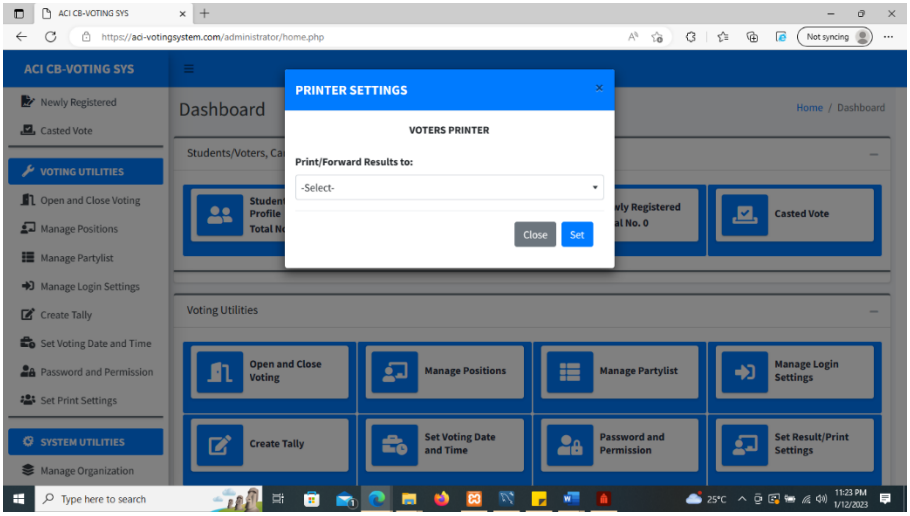

Figure 4.21 Print Settings

Figure 4.21 Print Settings, referred to one of the features of the system wherein the administrator can select what type of results can be generated by the system either hardcopy or softcopy through SMS, email or etc.

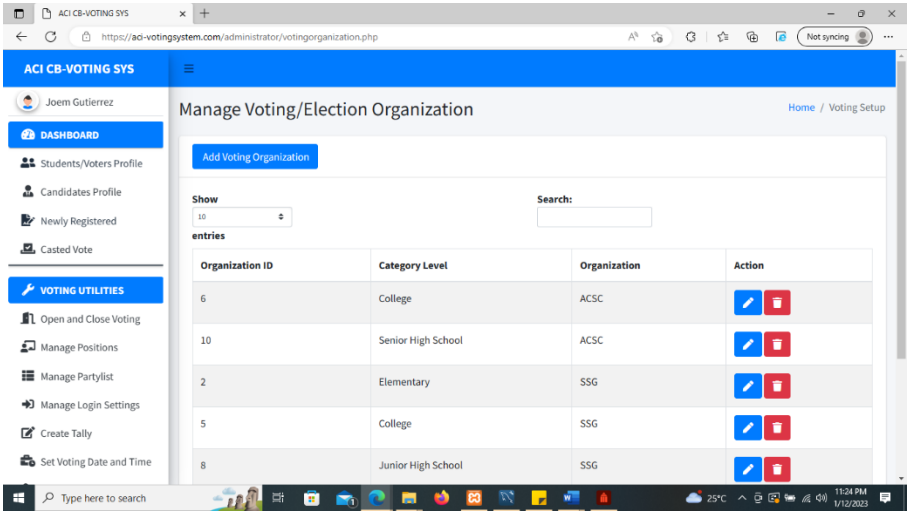

Figure 4.22 Manage Organization

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Figure 4.22 Manage Organization, referred to one of the features of the system wherein the administrator can add, edit and delete organization information.

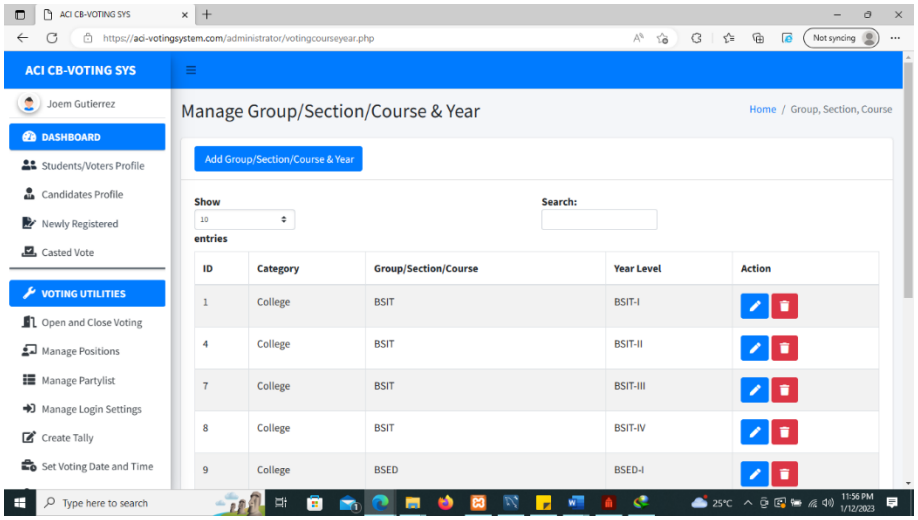

Figure 4.23 Manage Courses

Figure 4.23 Manage Courses, referred to one of the features of the system wherein the administrator can add, edit and delete organization information.

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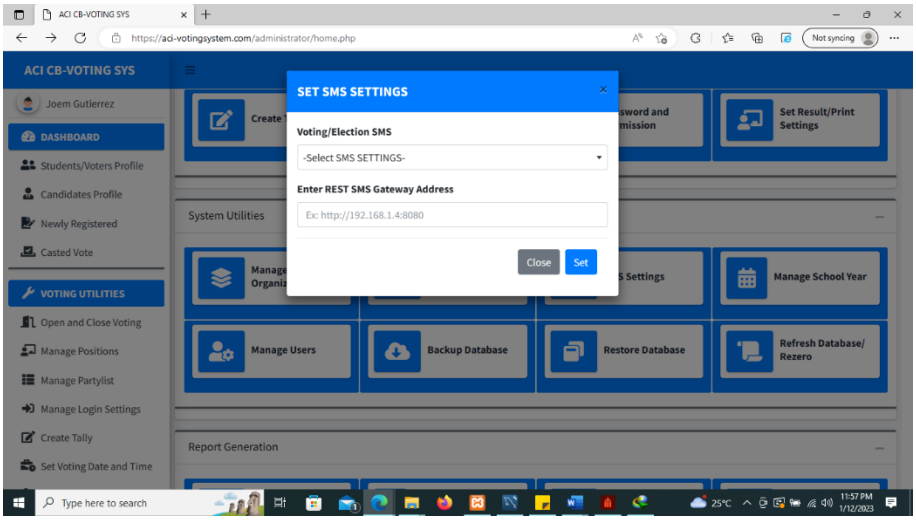

Figure 4.24 SMS Settings

Figure 4.24 SMS Settings, referred to one of the features of the system wherein the administrator can set the services of system SMS to online and offline.

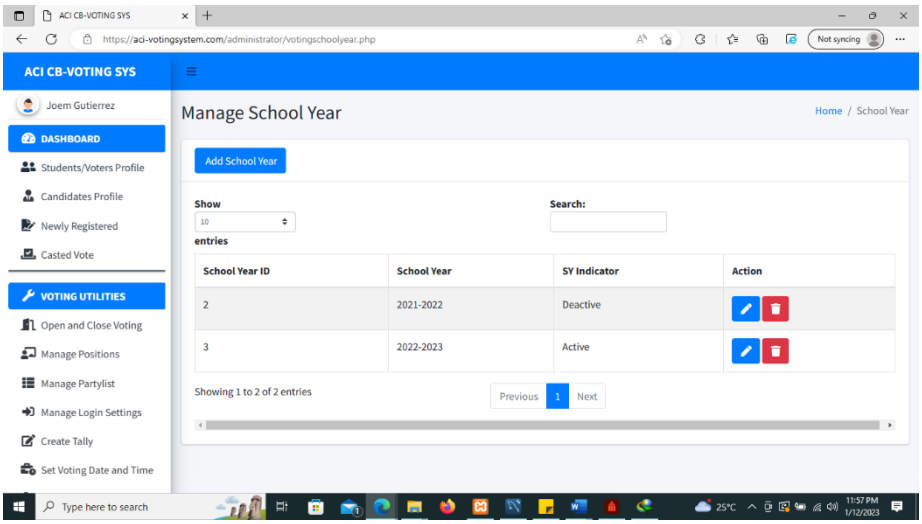

Figure 4.25 Manage School Year

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Figure 4.25 Manage School Year, referred to one of the features of the system wherein the administrator can add, edit and delete school year information.

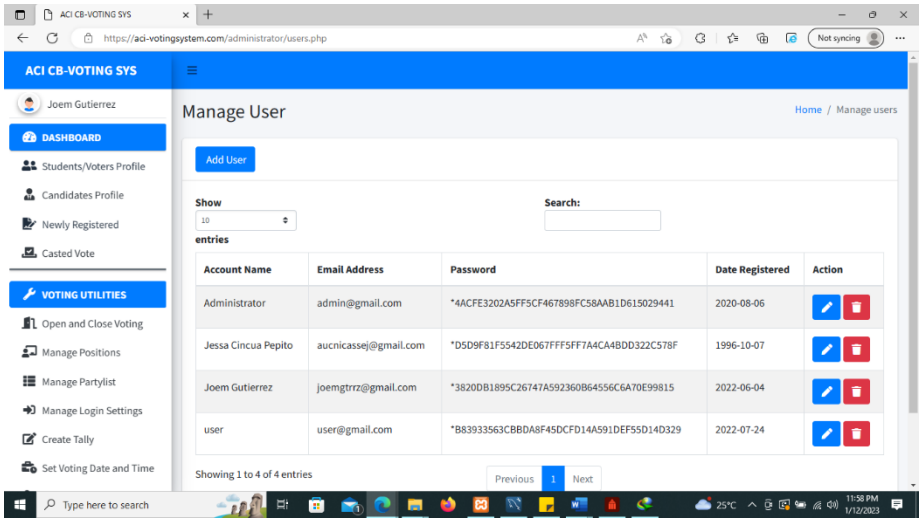

Figure 4.26 Manage User

Figure 4.26 Manage User, referred to one of the features of the system wherein the administrator can add, edit and delete user information. In this module, the system is limited to delete the two remaining admin user for data integrity.

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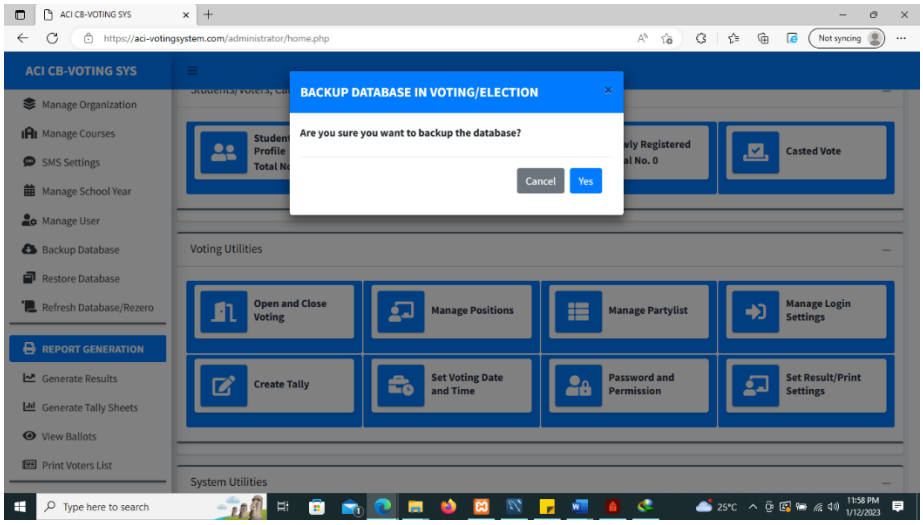

Figure 4.27 Backup Database

Figure 4.27 Backup Database, referred to one of the features of the system wherein the administrator can store, secure and recopy the entire system database.

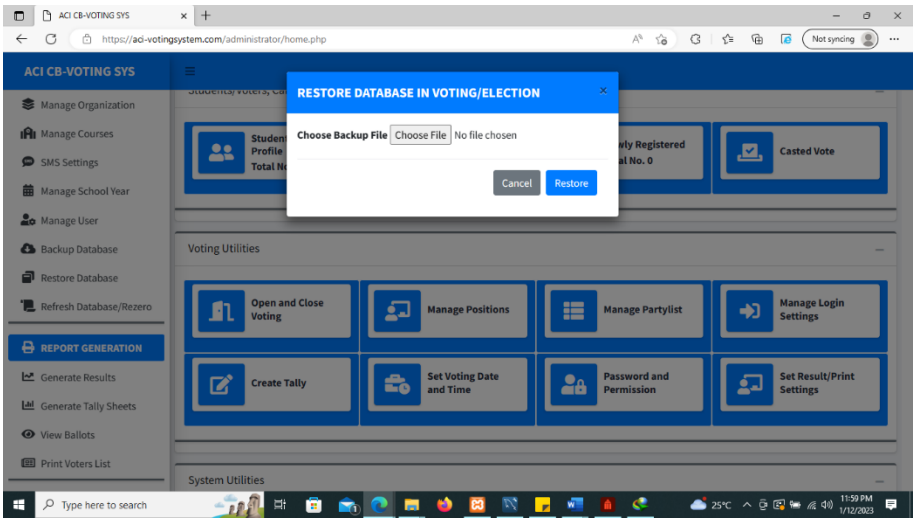

Figure 4.28 Restore Database

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Figure 4.28 Restore Database, referred to one of the features of the system wherein the administrator can retrieve and replace the entire system database to old database backup.

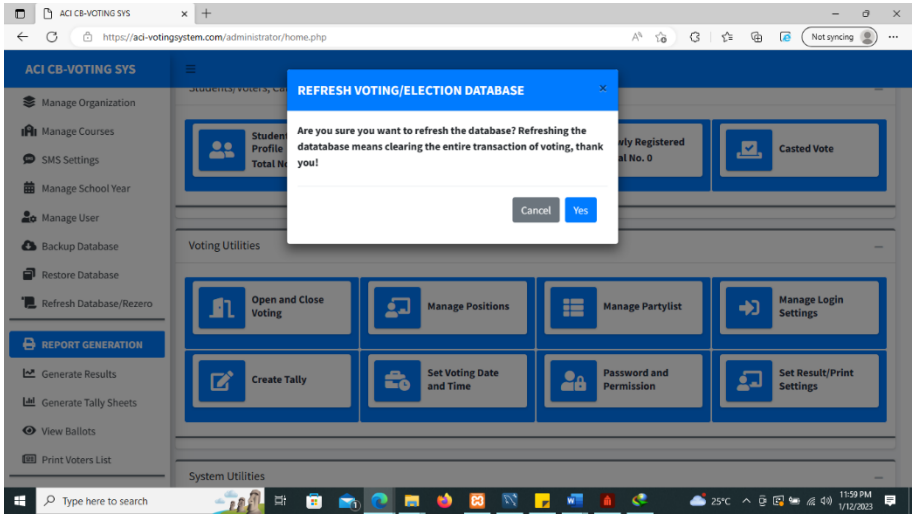

Figure 4.29 Refresh Database/ Rezero

Figure 4.29 Refresh Database/ Rezero, referred to one of the features of the system wherein the administrator can delete all the ballots, reset permission level of the voters to not yet vote and reset the entire result and total votes of candidates to zero.

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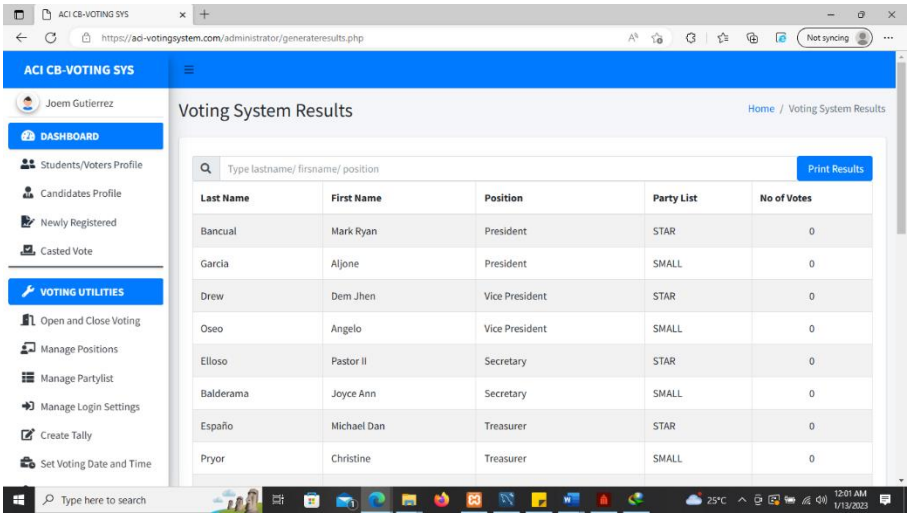

Figure 4.30-1 Results

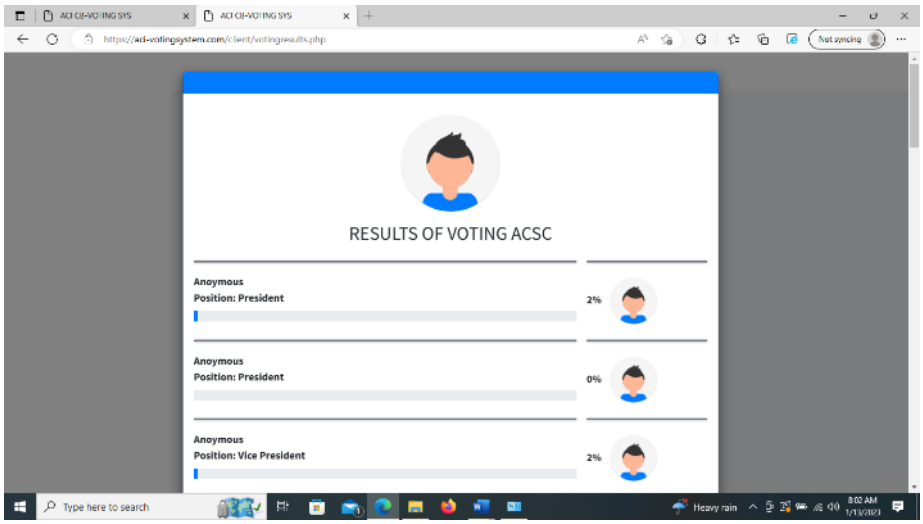

Figure 4.30-2 Results

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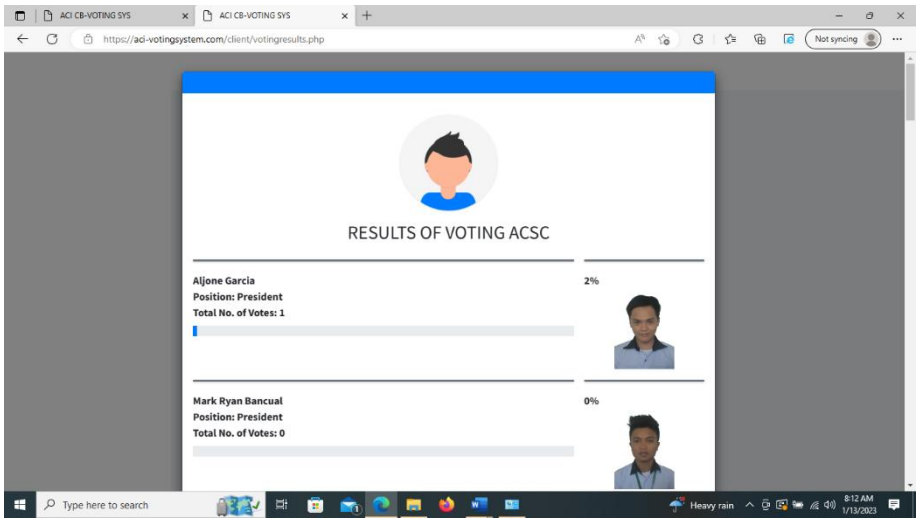

Figure 4.30-3 Results

Figure 4.30-1, Figure 4.30-2, Figure 4.30-3 Results, referred to one of the features of the system determined the winner and the total number of votes per position. Likewise, it referred to the summary of votes.

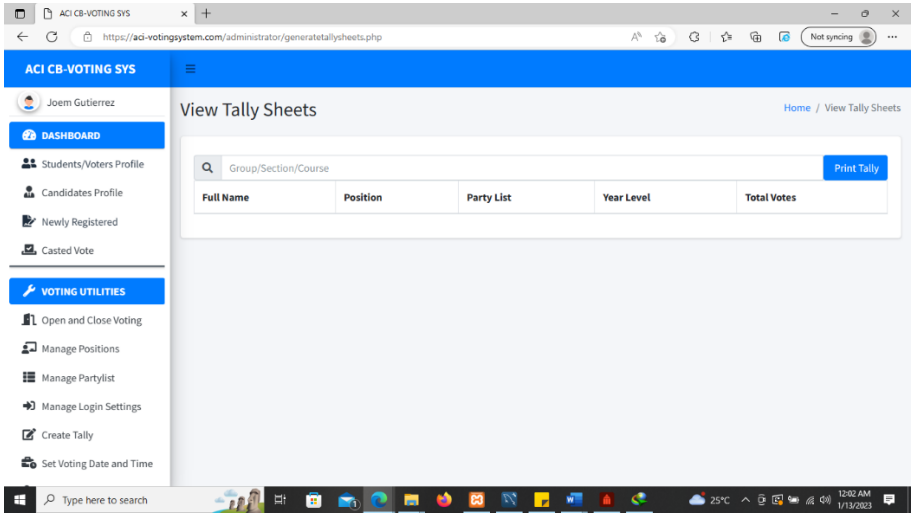

Figure 4.31 Tally Sheets

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Figure 4.31 Tally Sheet, referred to one of the features of the system wherein the administrator can view the tallied the results of the voting in the system.

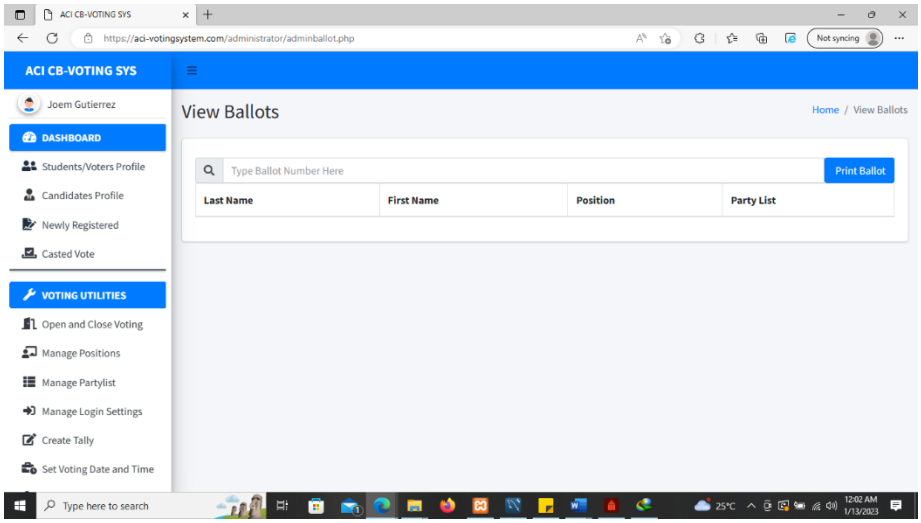

Figure 4.32 View Ballots

Figure 4.32 View Ballots, referred to one of the features of the system wherein the administrator can reprint the voter's ballot who voted during election day.

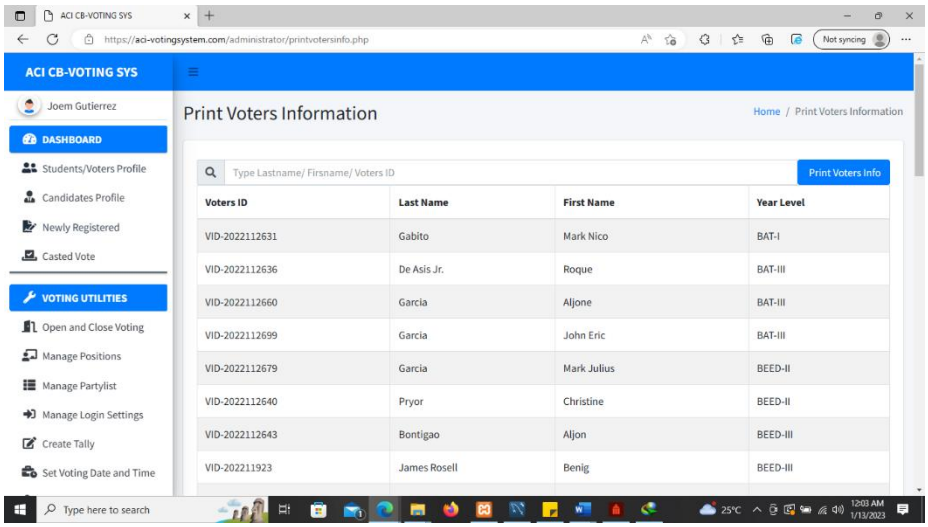

Figure 4.33 Print Voters List

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Figure 4.33 Print Voters List, referred to one of the features of the system wherein the administrator can print list of registered voters' during election day.

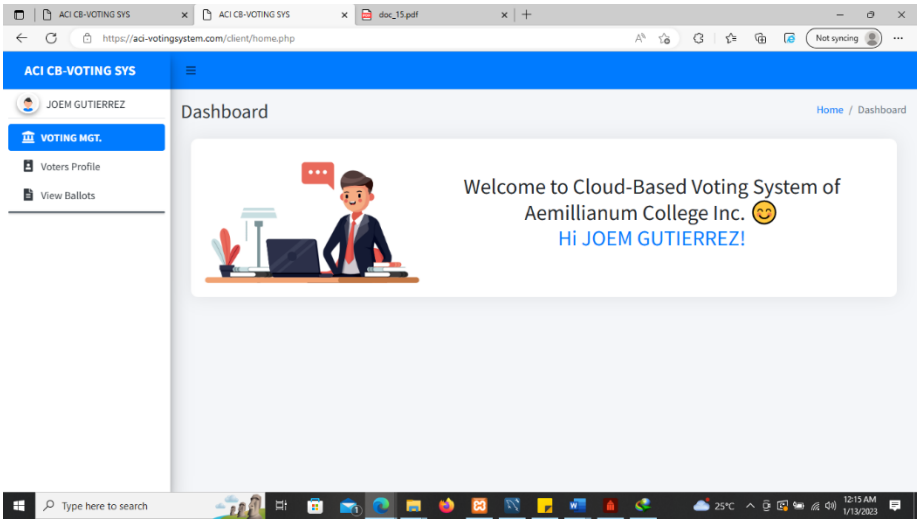

Figure 4.34 Voters Module

Figure 4.34 Voter's Module, allowed the registered voter to manage all the features of the voting. In this module voters will use different forms of authentication or stage of authentication in order them to proceed voting.

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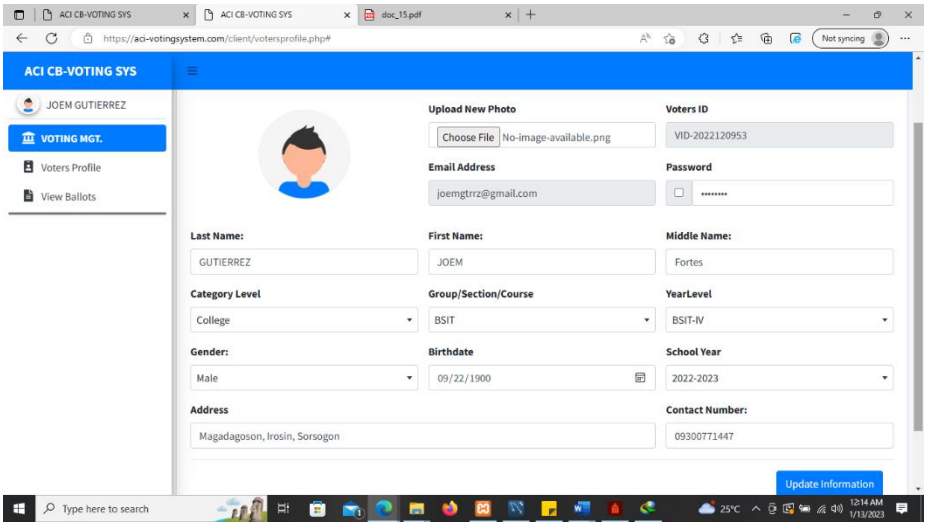

Figure 4.35 Client - Voters Profile

Figure 4.35 Voters Profile, referred to one of the features of the system wherein the system allowed the voters to edit and update their information.

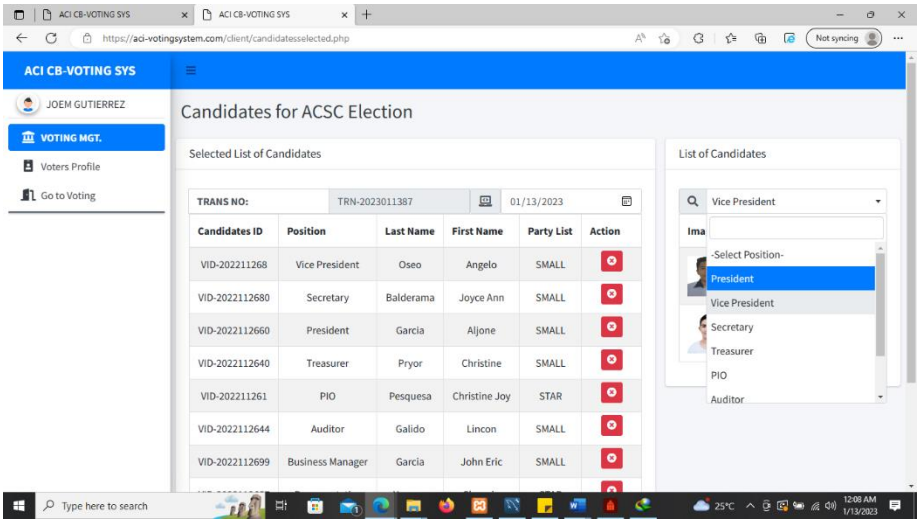

Figure 4.36 Voting Module

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Figure 4.36 Voting, one of the most important features of the system wherein the voters is allowed to select candidates that they want to vote. In this module, voter used different forms of authentication or stage of authentication in order them to vote.

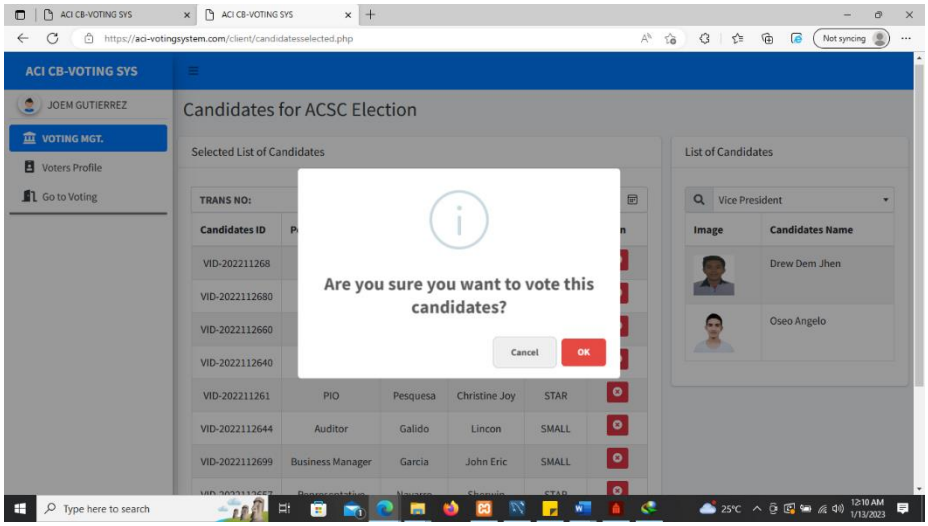

Figure 4.37 Voting Message

Figure 4.37 Voting Message, one of the features of the system wherein system prompted the voters if they are sure to their selected candidates.

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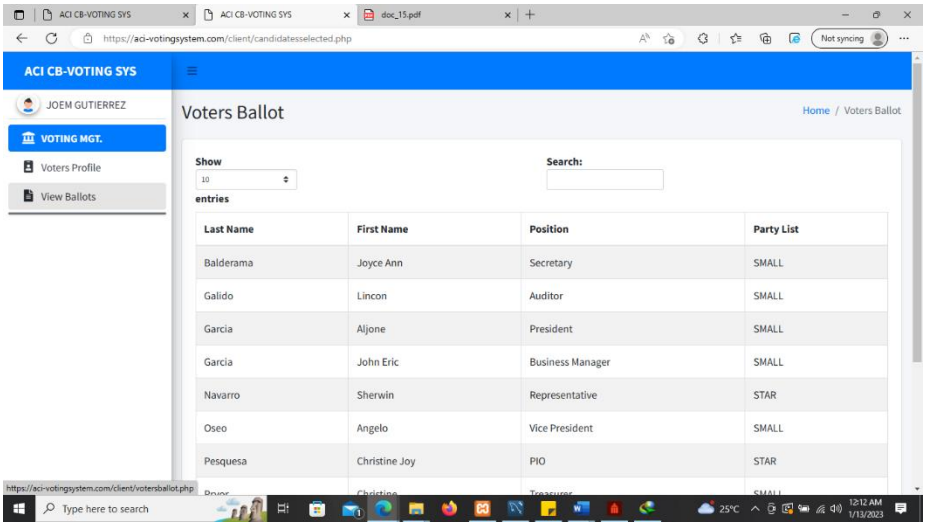

Figure 4.38 Voting Ballot

Figure 4.38 Voters Ballot, one of the features wherein system generated the ballots of the voters.

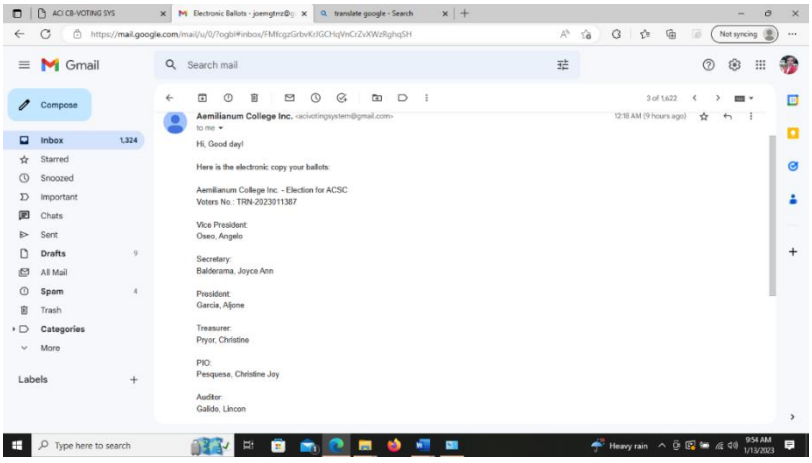

Figure 4.39 Electronic Generated Ballot

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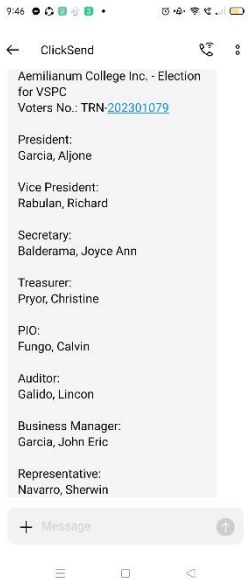

Figure 4.40 SMS Generated Ballot

Figure 4.41 Printed Generated Ballot

Figure 4.39 Electronic Generated Ballot, Figure 4.40 SMS Generated Ballot, and Figure 4.41 Printed Generated Ballot were copies of ballots generated by the system. This generated ballot was based on selected type of print, that set by the administrator.

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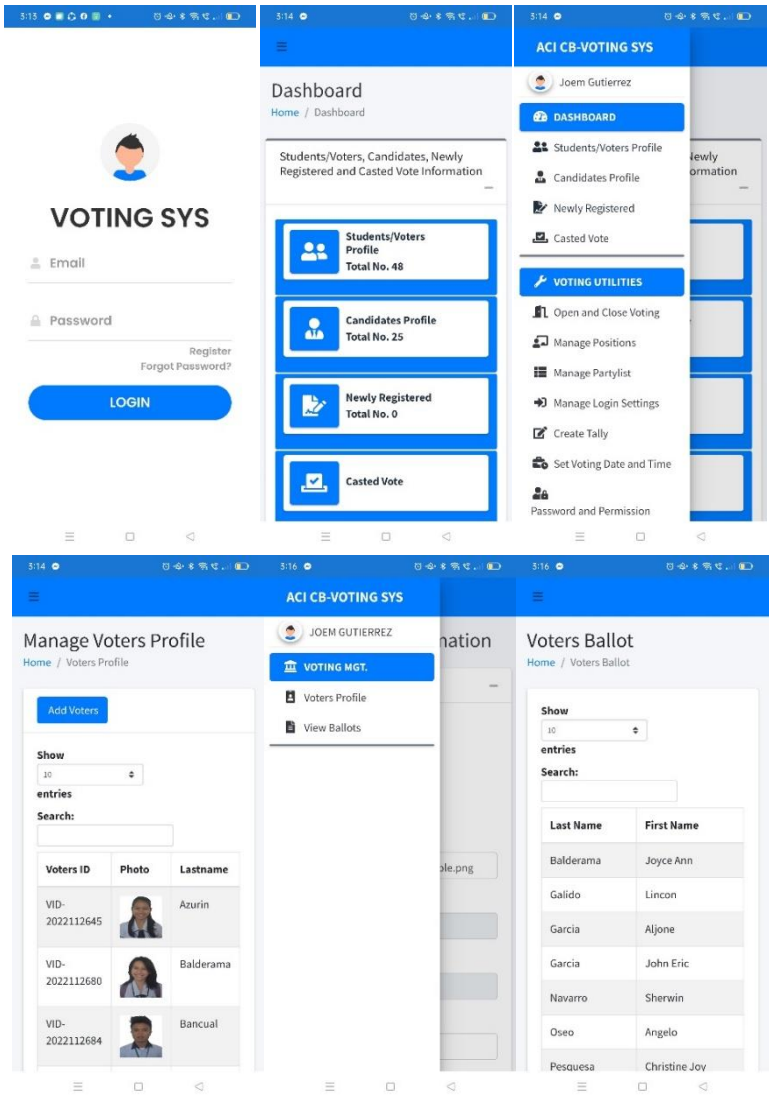

Figure 4.42 Android Phone Application of Admin & Client

Figure 4.42 Android Phone Application of Admin & Client (Voters), one of application of multiple technology support of the system. It allowed the user to use the system via mobile phone with the same function of cloud-based voting system.

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Cutover

This study significantly included the system's conception, which contributed immeasurably to the provision of the stated solutions to the problems. It was necessary to identify the software, hardware, and program requirements that served as the researcher's guide in the full implementation of the system. This thoroughly considered all criteria before design starts, reducing later redesign, coding the data, and retesting. In this manner, the developer's time and effort required to achieve the desired goals, as well as the development cost were reduced.

To ensure the functionality and quality standard of its parts, ISO 25010 was used in the evaluation of the system. The response was measured using a Likert scale. Respondents were asked to score items on a degree of agreement using this scale. The researcher was guided in analyzing the results of the questionnaire using this method. The scale represented the respondent's rating, which were used to assess the system's efficiency by determining whether they agree or disagree with the statement. The result of the respondent's response was critical in determining the system's effectiveness. The verbal interpretation was the respondents' acceptance level of the proposed system. The result of the evaluation was shown in the next page.

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Table 4.1 Likert Scale

Scale	Range	Interpretation	Description
5	4.20 - 5.00	Highly Acceptable	The system's quality is exquisitely acceptable in terms of functionality, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
4	3.40 - 4.19	Acceptable	The system's quality is acceptable in terms of functionality, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
3	2.60 - 3.39	Slightly acceptable	The system's quality is slightly acceptable in terms of functionality, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
2	1.80 - 2.39	Slightly unacceptable	The system's quality is slightly unacceptable in terms of functionality, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.
1	1.00 - 1.79	Not Acceptable	The system's quality is unacceptable in terms of functionality, performance efficiency, compatibility, usability, reliability, security, maintainability and portability.

Table 4.1 displays the Likert Scale used in the system's evaluation conducted by the evaluators.

Ten (10) IT experts and ten (10) stakeholders who used this system assessed the application. The following criteria were used to evaluate the project: functionality, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability.

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Table 4.2 Adjectival Interpretation

Rating	Verbal Interpretation
5	Far more than what is expected
4	More than what is expected
3	Presence of the expectation
2	Less than what is expected
1	Absence of the expectation

Table 4.2 presents the Table of Adjectival Interpretation that was utilized in order to interpret and describe the user satisfaction level of the system's efficiency and effectiveness.

Table 4.3 System Functional Suitability Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Completeness	5.00	4.75	4.88	Far more than what is expected
Correctness	4.40	4.75	4.58	Far more than what is expected
Appropriateness	4.60	4.63	4.61	Far more than what is expected
Suitability	5.00	5.00	5.00	Far more than what is expected
Accurateness	4.90	4.75	4.83	Far more than what is expected
Interoperability	4.90	4.75	4.83	Far more than what is expected
Security	4.90	4.75	4.83	Far more than what is expected
Average	**4.81**	**4.77**	**4.79**	**Far more than what is expected**

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Table 4.3 shows the result of the evaluation from the respondents, with an overall mean of 4.79, the system means highly acceptable and the system is deemed to be "far more than what is expected" in terms of its functional suitability. This implies that the system meets the functional objectives. As shown in data above suitability is highest with average mean of 5.0 which means that the proposed system is appropriate to the needs of Aemillinum College Inc.

Table 4. 4 - System Performance Efficiency Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Time Behavior	4.90	4.63	4.76	Far more than what is expected
Resource Utilization	4.40	4.75	4.58	Far more than what is expected
Capacity	4.40	4.75	4.58	Far more than what is expected
Average	**4.57**	**4.71**	**4.64**	**Far more than what is expected**

Table 4.4 shows the results of the various respondents' evaluations of system performance efficiency. With an overall mean of 4.64, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". As shown in data above the proposed system is strong in terms of time behaviour which means system responds and processes data in a little amount of time.

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Table 4. 5 - System Compatibility Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Co-Existence	4.40	4.75	4.58	Far more than what is expected
Interoperability	4.90	4.63	4.76	Far more than what is expected
Average	**4.65**	**4.69**	**4.67**	**Far more than what is expected**

Table 4.5 reflects the results of the various respondents' evaluations of system compatibility. With an overall mean of 4.67, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". The data shows above that interoperability is strong when it comes in exchange of information and use the information that has been exchanged.

Table 4. 6 - System Usability Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Appropriateness recognizability	4.50	4.63	4.56	Far more than what is expected
Learnability	4.90	4.75	4.83	Far more than what is expected
Operability	4.50	4.88	4.69	Far more than what is expected
User error protection	4.00	4.75	4.38	Far more than what is expected
User interface aesthetics	4.30	4.75	4.53	Far more than what is expected
Accessibility	4.40	4.75	4.58	Far more than what is expected
Average	**4.43**	**4.75**	**4.59**	**Stakeholders**

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Table 4.6 displays the results of the various respondents' evaluations of system performance usability. With an overall mean of 4.59, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". The data shows that the proposed system is high in terms of learnability means that the system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.

Table 4. 7 - System Reliability Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Maturity	5.00	4.88	4.94	Far more than what is expected
Availability	4.80	4.88	4.84	Far more than what is expected
Fault Tolerance	5.00	4.63	4.81	Far more than what is expected
Recoverability	4.40	4.50	4.45	Far more than what is expected
Average	**4.80**	**4.72**	**4.76**	**Far more than what is expected**

Table 4.7 presents the results of the various respondents' evaluations of system performance reliability. With an overall mean of 4.76, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". The data shows above that the proposed system is strong in terms of Maturity meaning system is ready to handle

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and manage records/ data and/ or information storage needs of Aemilianum College Inc.

Table 4. 8 - System Security Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Confidentiality	4.50	4.75	4.63	Far more than what is expected
Integrity	4.60	4.75	4.68	Far more than what is expected
Non-repudiation	4.90	4.88	4.89	Far more than what is expected
Accountability	5.00	4.88	4.94	Far more than what is expected
Authenticity	5.00	4.88	4.94	Far more than what is expected
Average	**4.80**	**4.83**	**4.81**	**Far more than what is expected**

Table 4.8 shows the results of the various respondents' evaluations of system security. With an overall mean of 4.81, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". The data shows above that proposed system is strong in terms of accountability which means action of an entity can be traced uniquely to the entity.

Table 4. 9 - System Maintainability Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Modularity	5.00	4.75	4.88	Far more than what is expected
Reusability	4.50	4.75	4.63	Far more than what is expected
Analyzability	4.60	4.75	4.68	Far more than what is expected
Modifiability	4.50	4.75	4.63	Far more than what is expected
Testability	4.90	4.75	4.83	Far more than what is expected
Average	**4.70**	**4.75**	**4.73**	**Far more than what is expected**

Table 4.9 presents the results of the various respondents' evaluations of system maintainability. With an overall mean of 4.73, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". The data above shows that in terms of modularity the proposed system is capable.

Table 4. 10 - System Portability Rates

Sub-Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Adaptability	4.50	4.63	4.56	Far more than what is expected
Reusability	4.50	4.38	4.44	Far more than what is expected
Analyzability	4.40	4.75	4.58	Far more than what is expected
Modifiability	4.40	4.75	4.58	Far more than what is expected
Testability	4.40	4.75	4.58	Far more than what is expected
Average	**4.44**	**4.65**	**4.55**	**Far more than what is expected**

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Table 4.10 presents the results of the various respondents' evaluations of system portability. With an overall mean of 4.55, this means that the system meets the objective as to its efficiency which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**". Adaptability shows strong in the area of portability it means that the proposed system is easily to move to another environment.

Table 4. 11 - Overall Evaluation of the Developed System

Characteristic	IT Experts	Stakeholders	Weighted Mean	Interpretation
Functional Suitability	4.81	4.77	4.79	Far more than what is expected
Performance Efficiency	4.57	4.71	4.64	Far more than what is expected
Compatibility	4.65	4.69	4.67	Far more than what is expected
Usability	4.43	4.75	4.59	Far more than what is expected
Reliability	4.80	4.72	4.76	Far more than what is expected
Security	4.80	4.83	4.81	Far more than what is expected
Maintainability	4.70	4.75	4.73	Far more than what is expected
Portability	4.44	4.65	4.55	Far more than what is expected
Over All Average	**4.65**	**4.73**	**4.69**	**Far more than what is expected**

Table 4.11 reflect the final results of the various respondents' evaluations of system. With an overall mean of 4.69, this means that the system meets the objective of all characteristic which is interpreted as "**Far more than what is expected**" and rated as "**Highly Acceptable**".

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CHAPTER V

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions, and recommendations on the Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.

Summary of Findings

During the development and after testing and evaluation of the developed system the following findings have been established:

1. The developed Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc. is available online and can be used offline. The system provides automation for the election of different organizations. It allows the voters to access the system despite the distance from the college. It uses multiple technologies support that make the system user-friendly and accessible to the user.

2. Multiple technologies support made easier, faster and more effective the process of voting. It provides various services that made the system better to the user.

3. ISO 25010, is an industry accepted software quality model which was applied in the evaluation of the developed system. The functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability has been evaluated by identified IT experts and selected stakeholders and passed the assessment.

Conclusions

Based on the findings of this study the following conclusions are formulated:

1. The developed system was ready to reach out the different organization of Aemilianum College Inc. with the result of the testing and evaluation, the system now can be used or can be implemented.
2. Incorporating updated multiple technologies to the system provides an end-to-end solution for easy voting operation and faster of generating results. The need to develop and enhance voters' services meet users' demands is necessary.
3. Upon presenting to the identified evaluators the developed system was obtained an over-all weighted average rating of 4.69 which was interpreted as "Far more than what is expected" and rated as "Highly Acceptable".

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Recommendations

Based on the conclusion, the following recommendation are hereby offered:

1. Features may be added in the system like including the organization policy, automatically print or generate ballot results to the voters as their copy, moving of request OTP button to the go to voting module.
2. Adding options for forgot password like change email or change password only, enhancing the voter's interface to attract system users, additional settings for position, voting by category like representative the representative selected only by year level, by course and by categories.
3. Upgrade server hosting to reduce load times on your website, speed up your time to first byte (TTFB) and make the visitors comfortable to the system, which is a measurement used as an indication of the responsiveness of a web server or other network resource.

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APPENDICES

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APPENDIX A

Communications

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January 10, 2023

Mrs. MARILYN D. BERDIN, MPA
Assistant Director for Administration
Aemilianum College Inc., Sorsogon City

Madame,

The undersigned is a student under Master in Information Technology (MIT) program of Aemilianum College Inc. and currently working on the capstone project entitled: "**Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc**." in partial fulfilment of the requirements for the degree of Master in Information Technology.

In this regard, may we request your presence and 10 other evaluators: The College Instructor, ACSC Officer and MIT students that will complete the set of evaluators which we invite to evaluate, make some suggestions and recommendations to help me further develop my capstone project. In addition, the researcher developed an evaluation tool for your feedback. Rest assured that your response will be used solely for the study's data generation and will therefore be kept confidential.

I sincerely thank you for taking the time to answer the questions and evaluate the system on January 12, 2023, at 11:00 a.m. in ACI.

Thank you.

(SGD) **JOEM F. GUTIERREZ**
Researcher

Noted:

(SGD) **JOSEFINA R. SARMIENTO, MIT**
Dean, MIT

Conforme:

(SGD) **Mrs. MARILYN D. BERDIN, MPA**
Assistant Director for Administration

Email: aemilianumcollege@gmail.com Website: www.aemilianum.edu.ph Contact No.: 211-6012

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December 28, 2022

_____
IT Expert
Legazpi City, Albay

Ma'am/Sir:

The undersigned is a student at Aemilianum College Inc. Graduate School and is currently working on the capstone project "**Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.**" in partial fulfilment of the requirements for the degree of Master in Information Technology.

In this regard, may we invite you as one of the evaluators that will stand as an IT expert, to evaluate, make some suggestions and recommendations to help us further develop our capstone project. In addition, the researcher developed an evaluation tool for your feedback. Rest assured that your response will be used solely for the study's data generation and will therefore be kept confidential.

We sincerely thank you for taking the time to answer the questions and evaluate the system on January 3, 2023, at 5:00 p.m. via Zoom Meeting or Google Meet.

Thank you.

Very truly yours,

(SGD) **JOEM F. GUTIERREZ**
Researcher

Noted:

(SGD) **JOSEFINA R. SARMIENTO, MIT**
Dean, MIT

Conforme:

_____
IT Expert

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APPENDIX B

Evaluation Tool

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RESPONDENT'S EVALUATION TOOL

1. Profile of the Respondent

Name (Optional) : _____

Location of Work : _____

Position/Designation: _____

2. General Direction: *Using the scale 1 through 5 as indicated below, kindly tick the appropriate column corresponding to your evaluation of the system*.

The following is an evaluation of the **"Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.",** in which you are a respondent. Please rate the items as truthful as possible so as to provide more reliable assessment of the proposed system. Your cooperation is highly valuable for its success.

Thank you and God bless!

Rating Guide for the Eight Sections of the Evaluation	
Rating	Verbal Interpretation
5	Far more than what is expected
4	More than what is expected
3	Presence of the expectation
2	Less than what is expected
1	Absence of the expectation

Characteristic	Sub-Characteristic	Key Areas (Indicators)					
1. **Functional Suitability** *is the capability of the system to provide functions which meet stated and implied needs when the software is used under the specified conditions*			5	4	3	2	1
	Completeness	The system set of functions covers all the specified tasks and user objectives.					
	Correctness	The system provides the correct results with the needed degree of precision.					
	Appropriateness	The system facilitates the accomplishment of specified tasks and objectives.					
	Suitability	The system is appropriate to the needs of **Aemilianum College Inc**.					
	Accurateness	The records/data managed by the system are accurate.					

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	Interoperability	The component parts are fully functioning and essential to the entire operation of the system.					
	Security	The software prevents unauthorized access? The records/data stored and managed by the system are secured from potential loss and undue technological manipulation.					
2. Performance Efficiency *is the capability of the software product to provide appropriate performance, relative to the amount of the resources used.*							
	Time Behavior	The system responds and processes data in a little amount of time.					
	Resource Utilization	The system utilizes very minimal hardware resources such as memory and hard drive.					
	Capacity	The degree to which the maximum limits of a product or system parameter meet requirements.					
3. **Compatibility** *is the capability system can exchange information with other products, systems or components, and/or perform its required functions while sharing the same hardware or software environment*			5	4	3	2	1
	Co-Existence	The system can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.					
	Interoperability	The system can exchange information and use the information that has been exchanged.					
4. **Usability** *is the ability of the system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.*			5	4	3	2	1
	Appropriateness recognizability	Degree to which users can recognize whether a product or system is appropriate for their needs.					
	Learnability	The system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.					
	Operability	The system has attributes that make it easy to operate and control.					
	User error protection	The system protects users against making errors					

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	User interface aesthetics	Degree to which a user interface enables pleasing and satisfying interaction for the user.					
	Accessibility	The system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.					
5. **Reliability** *is the capability of the system or component performs specified functions under specified conditions for a specified period of time.*			5	4	3	2	1
	Maturity	The system is ready to handle and manage records/data and/or information storage needs of Aemilianum College Inc.					
	Availability	Degree to which a system, product or component is operational and accessible when required for use					
	Fault Tolerance	The system has the ability to preserve the integrity of data in case of malfunction?					
	Recoverability	The system is capable of correcting errors and restoring damaged or loss data.					
6. **Security** *is the capability of the system to system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization.*			5	4	3	2	1
	Confidentiality	The system ensures that data are accessible only to those authorized to have access.					
	Integrity	The system prevents unauthorized access to, or modification of, computer programs or data.					
	Non-repudiation	Degree to which actions or events can be proven to have taken place so that the events or actions cannot be repudiated later.					
	Accountability	Degree to which the actions of an entity can be traced uniquely to the entity.					
	Authenticity	Degree to which the identity of a subject or resource can be proved to be the one claimed.					
7. **Maintainability** *is the capability of the system can be modified to improve it, correct it or adapt it to changes in environment, and in requirements.*			5	4	3	2	1

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	Modularity	The system program is composed of discrete components such that a change to one component has minimal impact on other components.					
	Reusability	Degree to which an asset can be used in more than one system, or in building other assets.					
	Analyzability	Degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified.					
	Modifiability	Degree to which a product or system can be effectively and efficiently modified without introducing defects or degrading existing product quality.					
	Testability	Degree of effectiveness and efficiency with which test criteria can be established for a system, product or component and tests can be performed to determine whether those criteria have been met.					
8. Portability *is the capability of the software to be transferred from one environment to another.*			5	4	3	2	1
	Adaptability	The system be moved to other environments.					
	Reusability	The system can be used in more than one system.					
	Analyzability	Degree of effectiveness and efficiency with which it is possible to assess the impact on a product or system of an intended change to one or more of its parts, or to diagnose a product for deficiencies or causes of failures, or to identify parts to be modified					
	Modifiability	The system can be effectively and efficiently modified without introducing defects or degrading existing product quality.					
	Testability	Degree of effectiveness and efficiency with which test criteria can					

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		be established for a system, product or component and tests can be performed to determine whether those criteria have been met.					

_____

Signature

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APPENDIX C

Certifications from the Evaluators

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CERTIFICATION

We here certify that JOEM F. GUTIERREZ presented to us her developed system entitled: **Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc.** last January 3, 2023 via Zoom Meeting for System Evaluation.

Issued this 3th day of January 2023 via Zoom Meeting.

(SGD) JEYMAR B. BETIZ, MIT

(SGD) MARITA A. YAP, MIT

SGD) RHODORA FAYE A. BROSAS, MIT

(SGD) JAY G. CANTOJOS, MIT

(SGD) JOMAR CONSORTE, MIT

(SGD) NOEMI D. DIONEDA, MIT

(SGD) MARNEIL ALLEN G. SANCHEZ, MIT

(SGD) MARCO ESPINOSA, MIT

(SGD) REDENTOR B. FOSTER, MIT

(SGD) JESSA P. OSCILLADA, MIT

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APPENDIX D

System Testing Documentation

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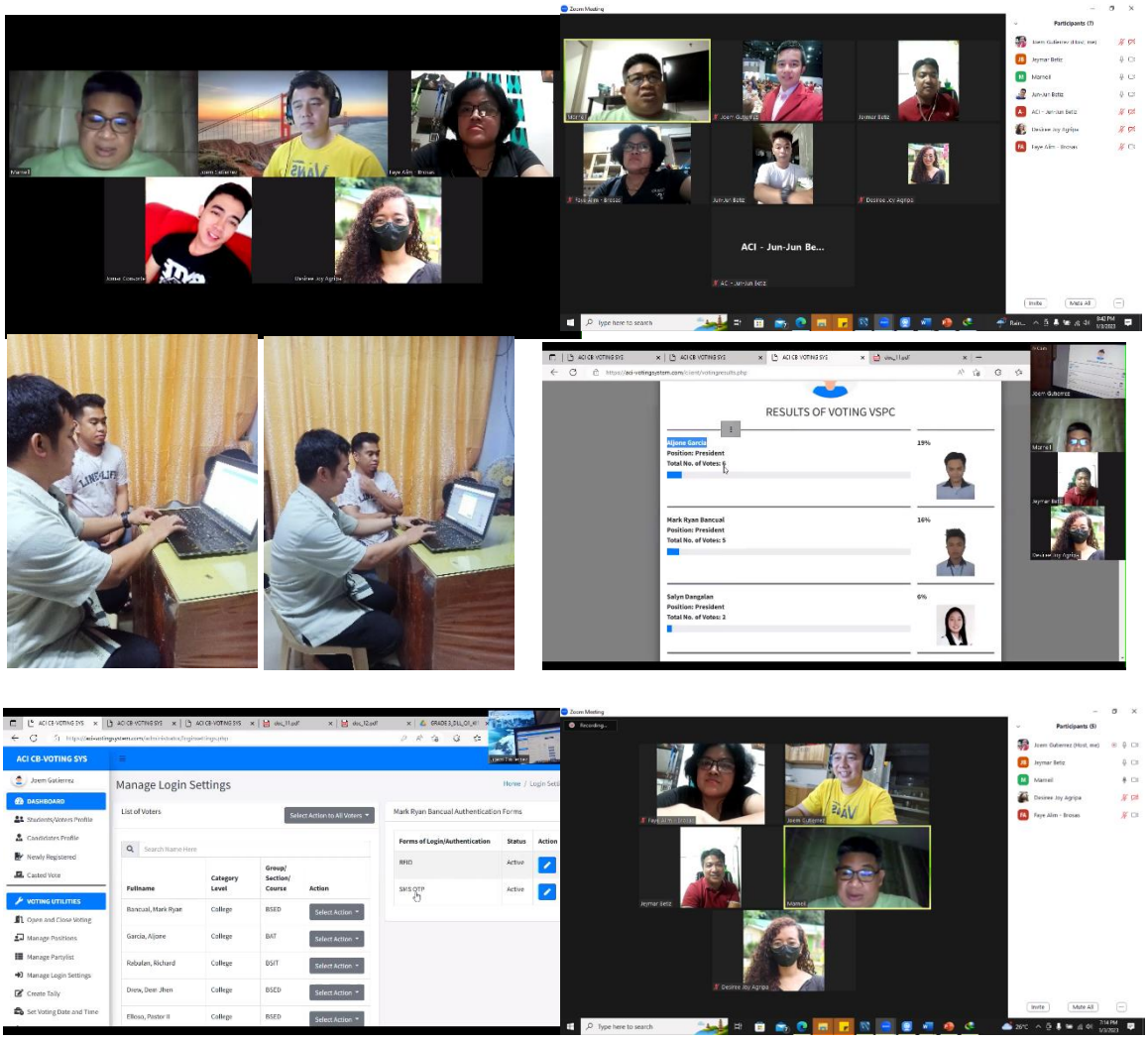
IT Experts



Ten (10) IT Experts evaluate the developed system – the "**Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc**.

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Stakeholders

Ten (10) Selected Stakeholders evaluated the develop system – the "**Application of Multiple Technologies in Cloud-Based Voting System for Aemilianum College Inc**.

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APPENDIX E

Source Codes

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Application of Multiple Technologies in Cloud-Based Voting System Source Codes

```
<div class="content-wrapper">
  <!-- Content Header (Page header) -->
  <div class="content-header">
   <div class="container-fluid">
    <div class="row mb-2">
     <div class="col-sm-6">
      <h1>Manage Voters Profile</h1>
     </div><!-- /.col -->
     <div class="col-sm-6">
      <ol class="breadcrumb float-sm-right">
       <li class="breadcrumb-item"><a href="#">Home</a></li>
       <li class="breadcrumb-item active">Voters Profile</li>
      </ol>
     </div><!-- /.col -->
    </div><!-- /.row -->
   </div><!-- /.container-fluid -->
  </div>

  <section class="content">
   <div class="container-fluid">
     <!-- Info boxes -->

    <div class="row">
    <div class="col-md-12">
     <div class="card">
       <div class="card-header">
       <button type="button" class="btn btn-primary code_ko_sa_add_voting_voters"><i
class="fa"></i> Add Voters </button>
       <!--button type="button" class="btn btn-warning addold-student"><i class="fa"></i> Old
Student </button-->
     </div>
<div class="card-body">

<div class="row">
  <div class="col-sm-12">
  <div class ="table-responsive">
   <table id= "example1" class="table table-bordered table-striped ">
     <thead>

    <th>Voters ID</th>
    <th>Photo</th>
    <th>Lastname</th>
    <th>Firstname</th>
    <th>Middlename</th>
```

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```
      <th>Gender</th>
      <th>Category Level</th>
      <th>Group/Section/Course</th>
      <th>Year Level</th>
      <th>Action</th>
      </thead>
      <tbody>

  <?php

 $sql = "SELECT * from tblvoters";

  $query = $con->query($sql);

  while ($fld = $query->fetch_assoc()) {
  ?>
  <tr>
   <td><?php echo $fld["Voters_ID"]; ?></td>
   <td align="center"><?php echo "<img width=60 height=60
src='voters_img/".$fld["PicName"]."'/>"; ?> </td>
   <td><?php echo $fld ["Lastname"]; ?></td>
   <td><?php echo $fld ["Firstname"]; ?></td>
   <td><?php echo $fld ["Middlename"]; ?></td>
   <td><?php echo $fld ["Gender"]; ?></td>
   <td><?php echo $fld ["CategoryLevel"]; ?></td>
   <td><?php echo $fld ["Group_Sec_Course"]; ?></td>
   <td><?php echo $fld ["YearLevel"]; ?></td>
   <!--td><?php //echo $fld ["gender"]; ?></td-->

   <td>

<div class="dropdown">
          <button class="btn btn-secondary dropdown-toggle" type="button"
id="dropdownMenuButton" data-toggle="dropdown" aria-haspopup="true" aria-expanded="false">
 Select Action
 </button>
          <div class="dropdown-menu" aria-labelledby="dropdownMenuButton">
          <a  data-var_ascandidate_id="<?php echo $fld["id"]; ?>" class="dropdown-item
code_ko_sa_add_as_candidates" href="#"></i>Add as Candidates</a>
<a  data-var_id="<?php echo $fld["id"]; ?>" class="dropdown-item code_ko_sa_edit_voters_info"
href="#"></i>Edit</a>

<a  data-var_id_del="<?php echo $fld["id"];  ?>" class="dropdown-item
code_ko_sa_delete_voters_info" href="#">Delete</a>
<!--a  data-var_id_authlevel="<?php //echo $fld["id"]; ?>" class="dropdown-item
code_ko_sa_set_voters_authentication_level" href="#"></i>Set Forms of Authentication</a>
```

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```
<a  data-var_id_auth="<?php //echo $fld["id"]; ?>" class="dropdown-item
code_ko_sa_voters_add_auth_level" href="#"></i>Add Forms of Authentication</a-->
                    </div>
            </div>
   <!--button type="button" data-var_id="<?php //echo $fld["id"]; ?>" class="btn btn-warning
code_ko_sa_edit_voting_candidates"><i class="fas fa-pen"></i> </button>
   <button type="button" data-var_id_del="<?php //echo $fld["id"]; ?>"class="btn btn-danger
code_ko_sa_delete_voting_candidates" ><i class="fas fa-trash"></i> </button-->
   </td>
</tr>

 <?php } ?>

</tbody>

       </table>
    </div>
   </div>
</div>


</div>
    </div>
   </div>

      </div>
      </div>
    </section>
</div>


<?php
include_once 'includes/user_session.php';
include_once 'public/header.php';
?>
<!--link rel="stylesheet" type="text/css" href="vendors/styles/core.css">
<link rel="stylesheet" type="text/css" href="vendors/styles/icon-font.min.css">
<link rel="stylesheet" type="text/css" href="src/plugins/cropperjs/dist/cropper.css">
<link rel="stylesheet" type="text/css" href="vendors/styles/style.css"-->
<body class="hold-transition sidebar-mini layout-fixed layout-navbar-fixed layout-footer-fixed">

<div class="wrapper">
<?php
 include 'public/nav-bar.php';
 include 'public/side-bar.php';
```

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```
include_once 'views/view-voting-voters.php';

?>
</div>

<?php
include_once 'modals/frmvotingvoters.php';
include_once 'modals/frmaddcandidates.php';
include_once 'modals/frmaddauthenticationlevel.php';
include_once 'modals/frmsetauthenticationlevel.php';
include_once 'public/scripts.php';

?>

</body>
<script>

$(document).ready(function(){
$(document).on('click','.code_ko_sa_add_voting_voters',function(){
$('#frm_show_voters').modal('show');
//alert('oy');
});


$(document).on('click','.code_ko_sa_voters_add_auth_level',function(){
// $('#frm_show_add_authen').modal('show');

//alert('oy');

var id = $(this).data('var_id_auth');
//alert("oy"+id)
$.ajax({
type: 'POST',
url: 'module/searchcode_votersinfo.php',
data: {getid:id},
dataType: 'json',
success: function(dbfields){

//frmEditStudents hali sa location admin/modal/Student-Modal.php

$('#frm_show_add_authen').modal('show');
console.log(dbfields);
document.getElementById('txt_authid').value=dbfields.id;
document.getElementById('txt_vid').value=dbfields.Voters_ID;
document.getElementById('txt_emailaddress').value=dbfields.EmailName;
document.getElementById('txt_fn').value=dbfields.Firstname+' '+dbfields.Lastname;
```

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```
    }
     });


  });

$(document).on('click','.code_ko_sa_set_voters_authentication_level',function(){

//alert('oy');
var id = $(this).data('var_id_authlevel');
//alert("oy"+id)
$.ajax({
type: 'POST',
url: 'module/searchcode_votersinfo.php',
data: {getid:id},
dataType: 'json',
success: function(dbfields){

//frmEditStudents hali sa location admin/modal/Student-Modal.php

$('#frm_show_set_authen_level').modal('show');
console.log(dbfields);
document.getElementById('txt_authenticationid').value=dbfields.id;
document.getElementById('txt_fullname').value=dbfields.Firstname+' '+dbfields.Lastname;
// $('.txtvotersname').html(dbfields.Lastname+', '+dbfields.Firstname);
// $('.txtpositiondes_title').html(dbfields.position_des);

    }
});

});

$(document).on('click','.code_ko_sa_edit_voters_info',function (){
var id = $(this).data('var_id');
//alert(id);
$.ajax({
type: 'POST',
url: 'module/searchcode_votersinfo.php',
data: {getid:id},
dataType: 'json',
success: function(dbfields){

$('#frm_show_voters_editinfo').modal('show');
console.log(dbfields);
document.getElementById('txt_id').value=id ;
document.getElementById('txt_votersid1').value=dbfields.Voters_ID;
```

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```
document.getElementById('txt_votersid2').value=dbfields.Voters_ID;
document.getElementById('txt_lastname1').value=dbfields.Lastname;
document.getElementById('txt_emailadd1').value=dbfields.EmailName;
document.getElementById('txt_emailadd2').value=dbfields.EmailName;
document.getElementById('txt_firstname1').value=dbfields.Firstname;
document.getElementById('txt_password1').value=dbfields.Pass;
document.getElementById('txt_middlename1').value=dbfields.Middlename;
document.getElementById('cmb_category_level1').value=dbfields.CategoryLevel;
document.getElementById('cmb_votersgender1').value=dbfields.Gender;
document.getElementById('cmb_votersgroupcourse1').value=dbfields.Group_Sec_Course;
document.getElementById('txt_birthdate1').value=dbfields.DateofBirth;
document.getElementById('cmb_votersyearlevel1').value=dbfields.YearLevel;
document.getElementById('txt_contactnumber1').value=dbfields.ContactNumber;
document.getElementById('cmb_sy1').value=dbfields.SchoolYear;
document.getElementById('txt_agenow1').value=dbfields.Age;
document.getElementById('txt_address1').value=dbfields.Address;

const fileInput = document.querySelector('input[type="file"]');

// Create a new File object
//const myFile = new File(['Hello World!'], 'myFile.txt', {

const myFile = new File([dbfields.PicName], dbfields.PicName, {
            type: 'text/plain',
                                                lastModified: new Date(),
});

// Now let's create a DataTransfer to get a FileList
const dataTransfer = new DataTransfer();
dataTransfer.items.add(myFile);
document.getElementById('txt_photo1').files  = dataTransfer.files;

    }
    });
});


$(document).on('click','.code_ko_sa_delete_voters_info',function (){
var id = $(this).data('var_id_del');
//alert("oy"+id)
$.ajax({
type: 'POST',
url: 'module/searchcode_votersinfo.php',
data: {getid:id},
dataType: 'json',
success: function(dbfields){
```

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```
//frmEditStudents hali sa location admin/modal/Student-Modal.php

$('#frm_show_voters_info_delete').modal('show');
console.log(dbfields);
document.getElementById('txt_id2').value=dbfields.id ;
document.getElementById('txt_voters_id5').value=dbfields.Voters_ID ;
$('.txtvotersname').html(dbfields.Lastname+', '+dbfields.Firstname);
// $('.txtpositiondes_title').html(dbfields.position_des);

}
});
});

});


/*$(document).ready( function() {

var today_Date= new Date();
var daynow = String(today_Date.getDate()).padStart(2, '0');
var monthnow = String(today_Date.getMonth() + 1).padStart(2, '0'); //January is 0!
var yearnow = today_Date.getFullYear();
today_Date = yearnow + '-' + monthnow + '-' + daynow ;

document.getElementById('txt_datenow').value=today_Date;

});*/

$(document).on('change','.code_ko_sa_autocheck',function (){
if (document.getElementById("checkbox_name").checked == true){

var today1= new Date();
var dd1 = String(today1.getDate()).padStart(2, '0');
var mm1 = String(today1.getMonth() + 1).padStart(2, '0'); //January is 0!
var yyyy1 = today1.getFullYear();
today1 = yyyy1 + '' + mm1 + '' + dd1 ;
var newid1=today1+''+(Math.floor(Math.random() * 100 + 1))
document.getElementById('txt_votersid').value='VID-'+newid1;
}else
{
        document.getElementById('txt_votersid').value='';
}
});
$(document).on('change','.code_ko_sa_autocheck1',function (){
if (document.getElementById("checkbox_name1").checked == true){
```

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```
var today11= new Date();
var dd11 = String(today11.getDate()).padStart(2, '0');
var mm11 = String(today11.getMonth() + 1).padStart(2, '0'); //January is 0!
var yyyy11 = today11.getFullYear();
today11 = yyyy11 + '' + mm11 + '' + dd11 ;
var newid11=today11+''+(Math.floor(Math.random() * 100 + 1))
document.getElementById('txt_votersid1').value='VID-'+newid11;
}else
{
	document.getElementById('txt_votersid1').value='';
}

});

$(document).on('click','.code_ko_sa_unmask',function(){
var x = document.getElementById("txt_password");
/*if (x.type == "password") {
	x.type = "text";
} else {
	x.type = "password";
}*/
if (document.getElementById("checkbox_unmask").checked == true){
	x.value="aci12345";
}
else
{
	x.value="";
}

  });

$(document).on('click','.code_ko_sa_unmask1',function(){
var xx = document.getElementById("txt_password1");
/*if (x.type == "password") {
	x.type = "text";
	} else {
	x.type = "password";
}*/
if (document.getElementById("checkbox_unmask1").checked == true)
{
	xx.value="aci12345";
}
else
{
	xx.value="";
}
```

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```
});

        $(document).on('change','.code_ko_sa_agecalcu',function (){
         var var_birthdate = document.getElementById("txt_birthdate").value;
                var dob = new Date(var_birthdate);

        //calculate month difference from current date in time
        var month_diff = Date.now() - dob.getTime();

        //convert the calculated difference in date format
        var age_dt = new Date(month_diff);

        //extract year from date
        var year = age_dt.getUTCFullYear();

        //now calculate the age of the user
        var age = Math.abs(year - 1970);
        document.getElementById("txt_agenow").value=age;

 });

        $(document).on('change','.code_ko_sa_agecalcu1',function (){
         var var_birthdate1 = document.getElementById("txt_birthdate1").value;
        var dob1 = new Date(var_birthdate1);

        //calculate month difference from current date in time
        var month_diff1 = Date.now() - dob1.getTime();

        //convert the calculated difference in date format
        var age_dt1 = new Date(month_diff1);

        //extract year from date
        var year1 = age_dt1.getUTCFullYear();

        //now calculate the age of the user
        var age1 = Math.abs(year1 - 1970);
        document.getElementById("txt_agenow1").value=age1;
 });


$(document).on('change','.code_ko_sa_loadcourse',function (){
var var_categorylevel = document.getElementById('cmb_category_level').value;
//        alert("oy"+id)

$.ajax({
type: 'POST',
```

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```
url: 'module/searchcode_selectcourseyear.php',
data: {getcategorylevel:var_categorylevel},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box
//$("#cmb_votersgroupcourse").removeItem(0);
if(dbfields.length) {

        var lst = document.getElementById("cmb_votersgroupcourse");
        var lstval = document.createElement("option");
        //Code ko s clear
        var i, L = lst.options.length - 1;
        for(i = L; i >= 1; i--) {
        lst.remove(i);
}
//$("#cmb_votersgroupcourse").options.clear;
$("#cmb_votersgroupcourse").append("<option selected='selected' disabled='disabled'>-Select
Group/Section/Course-</option>");
$.each(dbfields, function(key,value){
$("#cmb_votersgroupcourse").append("<option
value='"+value.course+"'>"+value.course+"</option>");

                        });
                }
    }
     });
});

$(document).on('change','.code_ko_sa_loadyearlevel',function (){
var var_course = document.getElementById('cmb_votersgroupcourse').value;
//alert("oy"+id)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectyearlevel.php',
data: {getcourse:var_course},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box
if(dbfields.length) {
```

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```
            var lst = document.getElementById("cmb_votersyearlevel");
            var lstval = document.createElement("option");
            //Code ko s clear
            var i, L = lst.options.length - 1;
            for(i = L; i >= 1; i--) {
            lst.remove(i);
}
$("#cmb_votersyearlevel").append("<option selected='selected' disabled='disabled'>-Select
YearLevel-</option>");
$.each(dbfields, function(key,value){
$("#cmb_votersyearlevel").append("<option
value='"+value.yearlevel+"'>"+value.yearlevel+"</option>");

                                    });
                        }
    }
     });
});


$(document).on('change','.code_ko_sa_loadyearlevel2',function (){
var var_course1 = document.getElementById('cmb_votersgroupcourse1').value;
//alert("oy"+id)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectyearlevel.php',
data: {getcourse:var_course1},
dataType: 'json',
success: function(dbfields){
//alert("oy"+dbfields.yearlevel);

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box

if(dbfields.length) {
                        var lst = document.getElementById("cmb_votersyearlevel1");
                        var lstval = document.createElement("option");
                        //Code ko s clear
                        var i, L = lst.options.length - 1;
                        for(i = L; i >= 1; i--) {
                        lst.remove(i);
}
```

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```
$("#cmb_votersyearlevel1").append("<option selected='selected' disabled='disabled'>-Select
YearLevel-</option>");
$.each(dbfields, function(key,value){
$("#cmb_votersyearlevel1").append("<option
value='"+value.yearlevel+"'>"+value.yearlevel+"</option>");
//alert("oy"+value.yearlevel);
                                    });
                        }

    }
     });
});


$(document).on('change','.code_ko_sa_loadcourse1',function (){
var var_categorylevel = document.getElementById('cmb_category_level1').value;
//alert("oy"+id)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectcourseyear.php',
data: {getcategorylevel:var_categorylevel},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box

if(dbfields.length) {

            var lst = document.getElementById("cmb_votersgroupcourse1");
            var lstval = document.createElement("option");
            //Code ko s clear
            var i, L = lst.options.length - 1;
            for(i = L; i >= 1; i--) {
            lst.remove(i);
}

$("#cmb_votersgroupcourse1").append("<option selected='selected' disabled='disabled'>-Select
Group/Section/Course-</option>");
$.each(dbfields, function(key,value){
$("#cmb_votersgroupcourse1").append("<option
value='"+value.course+"'>"+value.course+"</option>");

                                    });
```

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```
                    }


    }
     });
});


$(document).on('click','.code_ko_sa_add_as_candidates',function (){
var id = $(this).data('var_ascandidate_id');
// alert(id);
$.ajax({
type: 'POST',
url: 'module/searchcode_votersinfo.php',
data: {getid:id},
dataType: 'json',
success: function(dbfields){

$('#frm_show_add_candidates').modal('show');
console.log(dbfields);
document.getElementById('txt_candidatesid9').value=id ;
document.getElementById('txt_studid9').value=dbfields.Voters_ID;
document.getElementById('txt_lastname9').value=dbfields.Lastname;
document.getElementById('txt_firstname9').value=dbfields.Firstname;
document.getElementById('txt_middlename9').value=dbfields.Middlename;
document.getElementById('cmb_voting_gender9').value=dbfields.Gender;
document.getElementById('cmb_category_level9').value=dbfields.CategoryLevel;
document.getElementById('cmb_votersgroupcourse9').value=dbfields.Group_Sec_Course;
//document.getElementById('txt_photo9').value=dbfields.PicName;
document.getElementById('cmb_voting_yearlevel9').value=dbfields.YearLevel;
//document.getElementById('cmb_voting_position9').value=dbfields.position_des;
// document.getElementById('cmb_voting_organization9').value=dbfields.organization;
//document.getElementById('cmb_voting_partylist9').value=dbfields.partylist;
//

//document.getElementById('txt_message9').value=dbfields.candidates_message;
// document.getElementById('txt_sortnumber9').value=dbfields.sortnumber;
//alert("ok na");
const fileInput = document.querySelector('input[type="file"]');

// Create a new File object
//const myFile = new File(['Hello World!'], 'myFile.txt', {

const myFile = new File([dbfields.PicName], dbfields.PicName, {
type: 'text/plain',
```

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```
lastModified: new Date(),
});

// Now let's create a DataTransfer to get a FileList
const dataTransfer = new DataTransfer();
dataTransfer.items.add(myFile);
document.getElementById('txt_photo9').files  = dataTransfer.files;
//var filepath=window.location;//$('#txt_photo9').val();
//document.getElementById('txt_location').value=filepath;
//alert(filepath);



var var_categorylevel =
dbfields.CategoryLevel;//document.getElementById('cmb_category_level9').value;

$.ajax({
type: 'POST',
url: 'module/searchcode_selectorganization.php',
data: {
        getcategorylevel:var_categorylevel,
},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box

if(dbfields.length) {
//$("#cmb_voting_organization1").append("<option value='Joem'>Joem</option>");

var lst = document.getElementById("cmb_voting_organization9");
var lstval = document.createElement("option");
//Code ko s clear
var i, L = lst.options.length - 1;
for(i = L; i >= 1; i--) {
                lst.remove(i);
}
//$("#cmb_voting_organization").append("<option selected='selected' disabled='disabled'>-Select
Group/Section/Course-</option>");
$.each(dbfields, function(key,value){
$("#cmb_voting_organization9").append("<option
value='"+value.organization+"'>"+value.organization+"</option>");

                        });
```

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```
                    }
                }
});
    }
   });
 });

/* $(document).on('change','.code_ko_sa_loadcourse9',function (){
 var var_categorylevel = document.getElementById('cmb_category_level9').value;
//alert("oy"+var_categorylevel);

$.ajax({
type: 'POST',
url: 'module/searchcode_selectcourseyear.php',
data: {getcategorylevel:var_categorylevel},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box
//$("#cmb_votersgroupcourse").removeItem(0);
if(dbfields.length) {

var lst = document.getElementById("cmb_votersgroupcourse9");
var lstval = document.createElement("option");
//Code ko s clear
var i, L = lst.options.length - 1;
for(i = L; i >= 1; i--) {
            lst.remove(i);
}
//$("#cmb_votersgroupcourse").options.clear;
//$("#cmb_votersgroupcourse").append("<option selected='selected' disabled='disabled'>-Select
Group/Section/Course-</option>");
$.each(dbfields, function(key,value){
$("#cmb_votersgroupcourse9").append("<option
value='"+value.course+"'>"+value.course+"</option>");

        });
      }

    }
     });
  });*/

/*$(document).on('beforeonload','.code_ko_sa_loadorganization9',function (){
```

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```
//function myfunction(){
var var_categorylevel = document.getElementById('cmb_category_level9').value;
//alert("oy"+var_categorylevel);
//var var_categorylevel= $("#cmb_category_level9").val();
$.ajax({
type: 'POST',
url: 'module/searchcode_selectorganization.php',
data: {
        getcategorylevel:var_categorylevel,
},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);

//code ko sa pag load ng data sa option/ combo box

if(dbfields.length) {
        //$("#cmb_voting_organization1").append("<option value='Joem'>Joem</option>");

        var lst = document.getElementById("cmb_voting_organization9");
        var lstval = document.createElement("option");
        //Code ko s clear
        var i, L = lst.options.length - 1;
        for(i = L; i >= 1; i--) {
           lst.remove(i);
        }

//$("#cmb_voting_organization").append("<option selected='selected' disabled='disabled'>-Select
Group/Section/Course-</option>");
$.each(dbfields, function(key,value){
$("#cmb_voting_organization9").append("<option
value='"+value.organization+"'>"+value.organization+"</option>");

        });
     }
}
});
});*/
//}

$(document).on('change','.code_ko_sa_loadpartylist9',function (){
var var_org = document.getElementById('cmb_voting_organization9').value;
//alert("oy"+var_org)

$.ajax({
```

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```
type: 'POST',
url: 'module/searchcode_selectpartylist.php',
data: {getorg:var_org},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);
//document.getElementById('txt_sortnumber').value="";
var lst = document.getElementById("cmb_voting_partylist9");
var lstval = document.createElement("option");
//Code ko s clear
var i, L = lst.options.length - 1;
for(i = L; i >= 1; i--) {
        lst.remove(i);
}
//code ko sa pag load ng data sa option/ combo box
if(dbfields.length) {
$.each(dbfields, function(key,value){
$("#cmb_voting_partylist9").append("<option
value='"+value.Partylist+"'>"+value.Partylist+"</option>");

                                        });
                                }
                        }
            });
});

$(document).on('change','.code_ko_sa_loadposition9',function (){
var var_org = document.getElementById('cmb_voting_organization9').value;
//   alert("oy"+id)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectposition.php',
data: {getorg:var_org},
dataType: 'json',
success: function(dbfields){

console.log(dbfields);
//document.getElementById('txt_sortnumber1').value="";
var lst = document.getElementById("cmb_voting_position9");
var lstval = document.createElement("option");
//Code ko s clear
var i, L = lst.options.length - 1;
for(i = L; i >= 1; i--) {
lst.remove(i);
```

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```
}
//code ko sa pag load ng data sa option/ combo box
if(dbfields.length) {
$.each(dbfields, function(key,value){
$("#cmb_voting_position9").append("<option value='"+value.Posit+"'>"+value.Posit+"</option>");

        });
     }
    }
     });
  });

/*$(document).on('change','.code_ko_sa_loadyearlevel9',function (){
var var_course = document.getElementById('cmb_votersgroupcourse9').value;
//alert("oy"+var_course)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectyearlevel.php',
data: {getcourse:var_course},
dataType: 'json',
success: function(dbfields){
console.log(dbfields);
//code ko sa pag load ng data sa option/ combo box
if(dbfields.length) {

var lst = document.getElementById("cmb_voting_yearlevel9");
var lstval = document.createElement("option");
//Code ko s clear
var i, L = lst.options.length - 1;
for(i = L; i >= 1; i--) {
        lst.remove(i);
}
//$("#cmb_voting_yearlevel").append("<option selected='selected' disabled='disabled'>-Select
YearLevel-</option>");
$.each(dbfields, function(key,value){
$("#cmb_voting_yearlevel9").append("<option
value='"+value.yearlevel+"'>"+value.yearlevel+"</option>");

        });
     }
    }
});
});*/

$(document).on('change','.code_ko_sa_search_sortnumber9',function (){
```

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```
var var_org = document.getElementById('cmb_voting_organization9').value;
var var_posit = document.getElementById('cmb_voting_position9').value;
//   alert("oy"+id)

$.ajax({
type: 'POST',
url: 'module/searchcode_selectsortno1.php',
data: {
getorg:var_org,
getposit:var_posit,
},
dataType: 'json',
success: function(dbfields){

//console.log(dbfields);
//if (dbfields.SortNumber!=="")
//{
        document.getElementById('txt_sortnumber9').value=dbfields.SortNumber;
//}
//else{
//  document.getElementById('txt_sortnumber').value="";
//}
}
});
});

</script>
</html>

<?php

include_once '../includes/config.php';

if(isset($_POST['btn-addvotersinfo'])){
date_default_timezone_set('Asia/Manila');

$target_dir = "../voters_img/";
$target_file =  $target_dir.basename($_FILES["txtfileToUpload"]["name"]);

$uploadOk =1 ;
$filename = $_FILES['txtfileToUpload']['name'];
$imageFileType = strtolower(pathinfo($target_file,PATHINFO_EXTENSION));

$txtvotersid = $_POST['txtvotersid'];
$txtlastname = $_POST['txtlastname'];
$txtfirstname = $_POST['txtfirstname'];
```

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```
$txtmiddlename = $_POST['txtmiddlename'];
$txtemailadd = $_POST['txtemailadd'];
$txtpassword = $_POST['txtpassword'];
$cmbcategorylevel = $_POST['cmbcategorylevel'];
$cmbvotersgender = $_POST['cmbvotersgender'];
$cmbvotersgroupcourse = $_POST['cmbvotersgroupcourse'];

$txtbirthdate =$_POST['txtbirthdate'];
$txtagenow =$_POST['txtagenow'];

//$dateOfBirth = date($txtbirthdate);
//$today = date($txtdatenow);
//$diff = date_diff(date_create($txtbirthdate), date_create($txtdatenow));

$cmbvotersyearlevel = $_POST['cmbvotersyearlevel'];
$txtcontactnumber = $_POST['txtcontactnumber'];
$cmbsy = $_POST['cmbsy'];
$txtaddress = $_POST['txtaddress'];

$sql_email = "SELECT * FROM tblvoters where EmailName ='$txtemailadd'  LIMIT 1";
$query_email = $con->query($sql_email);

if($query_email->num_rows == 1){
echo '<script>alert("email already exist in database")</script>';
// echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";
}else{

$sql = "SELECT * FROM tblvoters where Voters_ID ='$txtvotersid'  LIMIT 1";
$query = $con->query($sql);

if($query->num_rows == 1){
echo '<script>alert("voters id already exist in database")</script>';
// echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";
}else{
if ($filename!=="")
{
$check = getimagesize($_FILES["txtfileToUpload"]["tmp_name"]);
if($check !== false){
//echo "file is an image -".$check["mime"].".";
$uploadOk =1;
if($uploadOk == 1){

        move_uploaded_file($_FILES["txtfileToUpload"]["tmp_name"],$target_file);
}
```

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```
}
else{
//echo "file is not an image -";

        $uploadOk =0;
}

}else{
        $filename='No-image-available.png';
}

$sql_insert = "INSERT INTO tblvoters (Voters_ID, EmailName, Pass, Lastname, Firstname,
Middlename, CategoryLevel, YearLevel, Group_Sec_Course, Gender, Age, DateofBirth, Address,
ContactNumber, Voters_ind, SchoolYear, PicName, AuthenticationForms, Organization_Set)
VALUES ('$txtvotersid', '$txtemailadd', '$txtpassword', '$txtlastname', '$txtfirstname',
'$txtmiddlename', '$cmbcategorylevel', '$cmbvotersyearlevel', '$cmbvotersgroupcourse',
'$cmbvotersgender', '$txtagenow', '$txtbirthdate', '$txtaddress', '$txtcontactnumber', 'NYV', '$cmbsy',
'$filename', 'Normal', 'NYS')";
$query_insert = $con->query($sql_insert);

if($query_insert){

echo '<script>alert("saved in database")</script>';
//echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";


}else{
echo '<script>alert("Oppss.. Something went wrong .. Please try again")</script>';
echo "<script>window.location='../votingvoters.php'</script>";
                                        }
                                }
        }

 }


<?php

include_once '../includes/config.php';

if(isset($_POST['btn-editvotersinfo'])){
date_default_timezone_set('Asia/Manila');

$target_dir = "../voters_img/";
$target_file =  $target_dir.basename($_FILES["txtfileToUpload1"]["name"]);
```

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```
$uploadOk =1 ;
$filename = $_FILES['txtfileToUpload1']['name'];
$imageFileType = strtolower(pathinfo($target_file,PATHINFO_EXTENSION));

$txtvotersid = $_POST['txtvotersid1'];
$txtlastname = $_POST['txtlastname1'];
$txtfirstname = $_POST['txtfirstname1'];
$txtmiddlename = $_POST['txtmiddlename1'];
$txtemailadd = $_POST['txtemailadd1'];
$txtpassword = $_POST['txtpassword1'];
$cmbcategorylevel = $_POST['cmbcategorylevel1'];
$cmbvotersgender = $_POST['cmbvotersgender1'];
$cmbvotersgroupcourse = $_POST['cmbvotersgroupcourse1'];

$txtbirthdate =$_POST['txtbirthdate1'];
$txtagenow =$_POST['txtagenow1'];

//$dateOfBirth = date($txtbirthdate);
//$today = date($txtdatenow);
//$diff = date_diff(date_create($txtbirthdate), date_create($txtdatenow));

$cmbvotersyearlevel = $_POST['cmbvotersyearlevel1'];
$txtcontactnumber = $_POST['txtcontactnumber1'];
$cmbsy = $_POST['cmbsy1'];
$txtaddress = $_POST['txtaddress1'];

$sql_email = "SELECT * FROM tblvoters where EmailName ='$txtemailadd'  LIMIT 1";
$query_email = $con->query($sql_email);

if($query_email->num_rows == 0){
echo '<script>alert("email address not found in database")</script>';
// echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";
}else{

$sql = "SELECT * FROM tblvoters where Voters_ID ='$txtvotersid'  LIMIT 1";
$query = $con->query($sql);

if($query->num_rows == 0){
echo '<script>alert("voters id not found in database")</script>';
// echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";
}else{
if ($filename!="")
        {
```

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```
		$check = getimagesize($_FILES["txtfileToUpload1"]["tmp_name"]);
if($check !== false){
		//echo "file is an image -".$check["mime"].".";
		$uploadOk =1;
if($uploadOk == 1){

		move_uploaded_file($_FILES["txtfileToUpload1"]["tmp_name"],$target_file);
		}
}
else{
		//echo "file is not an image -";

		$uploadOk =0;
}

}else{
		$filename='No-image-available.png';
}

$sql_update = "UPDATE tblvoters SET Pass='$txtpassword', Lastname='$txtlastname',
Firstname='$txtfirstname', Middlename='$txtmiddlename', CategoryLevel='$cmbcategorylevel',
YearLevel='$cmbvotersyearlevel', Group_Sec_Course='$cmbvotersgroupcourse',
Gender='$cmbvotersgender', Age='$txtagenow', DateofBirth='$txtbirthdate', Address='$txtaddress',
ContactNumber='$txtcontactnumber', SchoolYear='$cmbsy', PicName='$filename' WHERE
Voters_ID='$txtvotersid' and EmailName='$txtemailadd' ";
$query_update = $con->query($sql_update);


if($query_update){

echo '<script>alert("updated in database")</script>';
//echo "<script>window.location='../home.php'/script>";
echo "<script>window.location='../votingvoters.php'</script>";


}else{
echo '<script>alert("Oppss.. Something went wrong .. Please try again")</script>';
"<script>window.location='../votingvoters.php'</script>";
                                        }
                                }
		}

 }

<?php
```

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```
include_once '../includes/user_session.php';

if (isset($_POST['getid'])){
   $id = $_POST['getid'];
   $sql = "SELECT * from tblvoters where id = '$id' limit 1";
   $query = $con->query($sql);
   $row = $query->fetch_assoc();
   echo json_encode($row);

}


?>
```

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APPENDIX F

Curriculum Vitae

Aemilianum College Inc.
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Joem F. Gutierrez
Magdagoson, Macawayan,
Irosin, Sorsogon
Email Address: joemgtrrz@gmail.com

Personal Information

Gender	:	Male
Age	:	32
Nationality	:	Filipino
Date of Birth	:	September 22, 1990
Civil Status	:	Single
Father's Name	:	Romeo F. Gutierrez
Mother's Name	:	Fe N. Fortes

Educational Background

Tertiary	:	Veritas College of Irosin Bachelor of Science in Information Technology San Julian, Irosin, Sorsogon SY 2007 - 2011
Secondary	:	Gallanosa National High School San Pedro, Irosin, Sorsogon SY 2003 - 2007
Primary	:	Irosin Central School San Julian, Irosin, Sorsogon SY 1997 -2003

Seminars / Certifications

- Computer Systems Servicing NC II
- Trainers Methodology Certificate I
- Computer Hardware Servicing NC II
- Oct 8 - Oct 10, 2012 (3rd Module of the 2ND Phase of the CENERGY-USAID)
- Sep 5, 2012 (GNPower Mariveles Coal Plant Ltd. Co.)
- December 29, 2011 Certificate of Eligibility (The Civil Service Commission)
- Oct 8 - Oct 9, 2011 (SEMINAR – WORKSHOP IN DATABASE USING MYSQL)
- Jan 15, 2011 (SEMINAR ON CONTEMPORARY ENGLISH)
- Jan 7, 2011 System Development (ADO.Net Programming Using MySQL and Visual Studio .Net)
- Jul 21 - Jul 23, 2010 (2nd Province Wide Seminar Workshop on Campus Journalism)
- Sep 11, 2009 (Comparative Approach in C Language, C++, C#, VB6 and VB.net)