**COLEGIO DE MONTALBAN SUPREME STUDENT COUNCIL VOTING MANAGEMENT SYSTEM**

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CHAPTER 1

**THE PROJECT AND ITS BACKGROUND**

**INTRODUCTION**

This system is designed to simplify voting processes within our school's Council of Colegio De Montalban. It provides real-time updates visible to all members, making decision-making more accessible and inclusive. Let's explore how this system enhances transparency and engagement within our school community.

Implementing the Real-Time Voting System in our school's Colegio De Montalban has many positive effects. It makes it easier for students to participate, as they can see updates in real-time. This system also promotes transparency, trust, and confidence in decision-making. Additionally, it speeds up the decision-making process and ensures that everyone feels included, regardless of their background. Overall, it improves communication and collaboration among students within our school community.

**Republic Act No. 8436, An Act Authorizing the Commission on Elections to Use an Automated Election System in the May 11, 1998 National or Local Elections and in Subsequent National and Local Electoral Exercises, Providing Funds Therefor and for Other Purposes.**

**Section 1. Declaration of policy. — It is the policy of the State to ensure free, orderly, honest, peaceful and credible elections, and assure the secrecy and sanctity of the ballot in order that the results of elections, plebiscites, referenda, and other electoral exercises shall be fast, accurate and reflective of the genuine will of the people.**

The system introducing a Real-Time Voting System, developers aim to make it easier for students to participate and contribute to important decisions. This system allows students from all backgrounds to share their opinions and helps build trust and accountability within our school community. Overall, it's about creating a fair and democratic process where every student has a voice in shaping the future of our school.

**PROJECT CONTEXT**

Introducing the school's innovative Colegio de Montalban Voting Management System! This system is designed to simplify the voting process, allowing students to easily cast their votes from any location with internet connection. By using this accessible platform, students can play an active role in selecting their leaders, promoting a culture of involvement and unity. Rest assured, your votes are protected with top-notch security features, guaranteeing fairness and confidentiality.

The Entity Relationship Diagram illustrates the connection between the entities within the system, showcasing their inter dependencies and relationships. The Colegio de Montalban Voting Management System entity-relationship diagram comprises six (6) major entities. The students entity has a four (4) attributes; it is student number, full name, institute and email that relates to entity user as registered as user; it has five (5) attributes that named student number, full name, institute, email and password. And this entity relates to candidates entity that apply for candidates and it has six (6) attributes named full name, year & section, institute, position, image and platform that relates to entity vote count that achieves vote count and it has four (4) attributes named student

id, candidate id, position and candidate type. While entity admin that relates to candidates that admin handles applications for candidates and admin entity has two (2) attributes only, username and password. Lastly, voting schedule entity that relates to admin that admin sets up voting schedule and it has also two (2) attributes named voting start date time and voting end date time.

In the flowchart of the website application, starting from the landing page, where you can register and log in to your account if the user has an account, it will go directly to the registered user dashboard. If not, the user must register. The registration will be based on the database of enrolled students in CDM. The user cannot register if the user is not enrolled as a student. The user dashboard consists of four menus. The first was the dashboard, where the user can see the updates on elections.  Also, there’s a notification button where the users can see the notification of their candidacy for elections if they want to participate in elections. The second is the candidate list, where the user can see a list of candidates in elections and applications for candidacy. Also, if the user wants to run for elections, the user needs to fill in the requirements for candidacy, it’s either independent or party list. Third is the vote page, where the user can vote and see the vote count of the candidates in each position. The user can see the progress of voting in elections. The user will see the progress of who is leading during the elections. Lastly, there is the result page, where the results of the elections will be announced when the voting schedule ends.

Admin for desktop application, it will direct to login or register page. Just like in the user. The admin can login if they already had account. In register, the admin will register they information also what role they have in admin. If the admin is login it will go to the dashboard where the admin can see how many of the students in CDM have registered, how many had already vote, and how many had didn’t vote. The next page it for candidacy application, where the admin can see the list of candidates participate in

elections. The admin can either accept the user application if it’s acceptable or not. That’s why there is notification where the admin can notify the applicants if the application of the user is accepted or rejected. Lastly the timer page, where the admin can create the timer for application in candidacy, the voting date, and the results date.

In Data-Flow Diagram of website we have a three (3) entities student, candidate, and votes. The user entity has processes, first one is the login/register process (1.1) that allows user to register and login to our website and next process (1.2) is the input user information process to register and login and last all the inputted information are stored in the data store (D1) of registered students. Next entity is candidate; first process (2.1) is the candidate application of the user (if he wants to) and input requirements process (2.2) that allows candidates to enter their information especially their advocacy and credentials then they wait for the approval of the admin to their candidacy application (2.3) and the candidates is stored in the database (D2). Last entity is vote; first process, (3.1) users chooses candidates that they want to vote during the election (3.2) and the votes will count and stored in database (D3). While in Data-Flow Diagram of our desktop application has 1 only entity which is admin. The admin has processes, first one is login process (1.1) and input credentials process (1.2) and data store of admin. Another process is manage solo/partylist candidacy application (2.1), accept/decline application process (2.2), send message process (2.2), update status process (2.3) and data store of application status. Last, set date and time for application, voting and result (3.1) and data store for voting schedule.

In the website application for student/user panel, we used HTML (Hyper Text Markup Language) for display, CSS (Cascading Style Sheet) for design of the website, and JS (Javascript) for the functionality and responsiveness of our website display design. The PHP code for connecting to MySQL database within an HTML document and lastly, MySql for the data of the user and what the user inputted. While the desktop application was developed using VB.NET for the front-end (for admin panel) and backend logic, as well as MySQL for database management on the server. We focused

on continuous testing and optimization to ensure the reliability and efficiency of our application remained intact.

**PURPOSE AND DESCRIPTION**

The purpose of our system is to make the voting process much easier and convenient for the users and the importance of our system is to enable user to participate in electing process by expressing their preferences in electing representative. In this era that most of us use technology that developers are aiming to make the voting system less hassle. The importance of our system not just only enable people to vote easier but also developers make data and information more secured. Once again in this era that most of the country all over the world uses technology and keep on enhancing it the Philippines should also adapt with the development. Programmers also prevent anomalies during the voting process. The target client in our system is all Colegio de Montalban students from 1st year to 4th year.

**OBJECTIVES**

**Main Goal**

The main goal of the Colegio de Montalban Voting Management System is to create a fair, clear, and effective process for choosing student representatives.

**Specifically, the Colegio de Montalban Voting Management System developers aim to:**

1. To develop a system to give CDM students the privilege to vote and run for council with even They are not on campus.

2. To develop a system that can give fast and accurate results in voting of CDM campus.

3. To make sure the system is reliable and secure for the students and candidates for the election.

4. To develop a system for real-time monitoring of who votes and what time they vote.

5. To continuously evaluate and improve the Colegio de Montalban Voting SSC Management System based on feedback from students and runners for the supreme student council.

**SCOPE AND DELIMITATION**

The CDVMS system will correctly count votes and decide who the winners are according to established guidelines, like plurality or majority voting. Plus, we'll help candidates register, making sure they qualify and submit all the required paperwork. Only registered students can access the voting system. If you are not registered, you don't have the privilege to vote. To avoid bias in the upcoming elections, the admin of our system can be held by the professor or have a high position on campus.

CDMVMS is specifically designed for use within the Colegio de Montalban and may not be applicable to other schools. The system is focused solely on facilitating elections for the Supreme Student Council and does not reach other types of elections. We have things we wanted to add to our system, but we didn't do it because they were no longer within our scope. An example is an event system where students can make announcements at upcoming events in our school.

**TECHNICAL BACKGROUND**

The Technical Background of a voting system is typically involves in designing and implementing a secure, efficient, and user-friendly system for conducting elections or other voting processes. This includes collecting of correct information of the user in the system, user/voter authentication, result tabulation and ensuring the integrity and confidentiality of the voting process. So in addition in our voting system it also incorporates regular measures in verifying the eligibility of voters and preventing the fraudulent activities. And the secure encryption of protocols will be implemented to safeguard the voting data. Lastly the regular audits in the system and checking of it will be conducted regularly to maintain the integrity of the system and to detect any anomalies or breaches that will come to our system. So what exactly are we going to use to make our system? First of all, our web application is Html and for its design we will use CSS and Javascript. And lastly for our desktop application, of course the main one we will use is vb.net. And for the database we will use is MySQL.

Chapter 2

**REVIEW OF RELATED LITERATURE, STUDIES, AND SYSTEMS**

**Review of Related Literature**

According to a case study by Vora Bhavan, Luxmi Koli, Lanka Rishi, and Mari Sankeerth Reddy of the International Journal for Research in Applied Science and Engineering Technology (IJRASET) in June 2022; they described their proposed web-based voting method. We all know the normal way of voting in many places and countries is by voting through a ballot that we can access only through the voting centers every year. So they designed a system for users to vote online without physically going to any places or voting centers. This case study starts with a short overview summarizing the key goals of the project, emphasizing its objectives, and separating it into two main sections: Admin Panel and Voters Panel. The users (voters) can vote through the website, and the admin can access and view it. Also, the admin or authorized person who handles the database of the voting system can manipulate the data, and he also manages the authentication of all the official voters and vote counts. According to them, they have some identified problems that they can face in this system; they identify the security concerns of any online platform related to online voting. They emphasize the need for safer systems to address issues such as denial-of-service attacks that affect the effectiveness and efficiency of the system in proving immediate and unbiased results of the votes. So they aim to develop an online voting platform that can meet security standards and enhance efficiency, convenience, and security. They also emphasize the accessibility of the system to any person and anywhere you are so that you don't have to go further from your home just to vote, and an accurate vote counts without a biased result. (Mesolania)

According to a case study by Oki Suprianto of Universitas Pendidikan Indonesia (2019)". Being active and grabbing the attention of many in voting can reduce the number of non-voters. In Indonesia, they still use the traditional manual voting method, including manually counting votes, which is time-consuming, energy, and costly. Even with paper ballots, more candidates mean more paper expenses. The e-voting process aims to reduce these issues and the hassle of voting. Another disadvantage of manual voting is the need to go to a specific location just to vote, and sometimes it can take hours due to the number of voters. Political interest primarily develops during school years, with schools having a stronger influence than family or friends. E-voting is a voting system that utilizes the internet, from registration to vote counting, using electronic devices or digital technology. E-voting is crucial in digitizing elections while maintaining voter confidentiality. E-voting is significant for students as it grabs their attention and encourages their participation in voting. The advantages of e-voting include effective and efficient vote counting, saving paper, practicality, flexibility, available language options, available choice information, and minimizing voter errors. Since it only requires the internet, anyone can use it, regardless of distance. It's important for everyone to participate in voting because it reflects their interest in current events. Higher participation means higher concern for their surroundings, while lower participation indicates lower interest. (Evangelista)

According to the study of Yuvi Darmayunata, Febrizal Alfarasy Syam, and Afriansyah of Universitas Lancang Kuning(2020), they described technology in today's era as not a scary thing anymore but a necessity in every line of life. Almost everything in this world uses technology, including schools. However, when it comes to voting or electing a student council, they are having a hard time because of preparing for the election, papers, time, effort, etc., and also because they experienced a lack of transparency in vote counting, time consumption, and errors in vote counting. So, the

researchers created and developed a web-based information system where electing a student council may be easy. E-voting is an electoral system where data is recorded, stored, and processed in the form of digital information. Their e-voting system is a system that provides information about the candidates, including their vision, mission, and performance, that can be assessed by voters anywhere and anytime so that all youths can participate in this election. Their analysis process breaks a system into parts to find and fix problems and errors, see opportunities, and figure out what's needed because, according to them, mistakes now can lead to big problems later. So system analysis helps make sure a system has the right information and ways to work. After their development, they implemented their application in schools, and the schools were very satisfied with the results of the voting, which were very transparent and easy to use by students and voters. So their problems about the election years ago are no longer a problem now. Using their application was very effective and efficient for the user. (Viovicente)

According to the researcher Odhiambo Lennox Omondi (2019), the researcher's introduction points out how the old system hasn't had the slightest adaptation of technology in their school. Just like our old system in CDM, where the students are relying on the old system, where the students need to attend the election just to participate, the difference in this system research is that the researcher focuses on the e-voting system in each classroom, while our system focuses on the student council of the school. According to the research, creating such a system creates many problems, for example, the security of the students' information and its accessibility. However, such problems are common in the election. And the researcher comes up with a solution to make the system more secure than the old system security. The research system and our system have a similar goal in creating the e-voting system. To give a student or the user a fast, secure, and easy-to-use electronic system to conduct the election way more efficiently and conveniently for the user. We are in the technological

age. We need to innovate and improve our way of life by making it easier and more efficient. (Cotanda)

According to Umeh Maryblessing. Department of Electronic and Computer Engineering, Nnamdi Azikiwe University, Awka (November 2019). This study focuses on the manufacture and use of electronic voting systems. One method for making such a decision is to vote. Voting is the formal process of expressing individual opinions for or against a motion. In the governance sector of many organizations, this process is always used as a means of selecting or electing a leader. the system created by Umeh Maryblessing C., which is the design and implementation of an e-voting system. Describe each step of the process followed in developing and testing the e-voting system. It also means that we are more reliable, faster, and more secure than the normal voting we do. (Caringal)

According to Raya AlAbri, Abdul Khalique Shaikh, Saqib Ali, Ali Hamad Al-Badi, The International Journal of Electronic Government Research (IJEGR) 18 (2), 1-29, 2022. This Research focus on preventing the failures that faced by the traditional electronic voting system and makes it more accurate and secure platform for voting. But not just only the main goal of this research is to design a framework for electronic voting system using blockchain technology. In order to do this blockchain technology there are several objectives to make this happen. And according to International Journal of Electronic number 1 is to explore and identify the challenges in existing voting system, the next one is to identify the methods that could enhance the security and privacy of the electoral voting system using blockchain technology, and the last objective of this research is to to design a framework for electronic voting systems that use Blockchain technology in order to address the flaws in current voting systems. According to them that there are mixed approach that applied in this study but we all know that it is part of it in order to explore the oppurtunities and challenges of this blockchain voting system and to design the framework accordingly in the plan. (Galon)

According to case study by Mr.Mohammad Hajian Berenjestanaki Orcid,Hamid R. Barzegar Orcid,Nabil El Ioini Orcid and Claus Pahl Orcid in 1996-2024 MDPI Basel Switzerland. This study is focusing on how blockchain can strengthen the security transparency, and privacy. They recognized that the Blockchain technology is a potential solution for secure and transparent of e-voting system. In this study it presents an extensive review of the existing research on e-voting systems that rely on blockchain technology. It improves a voter anonymity, and increase trust in the electoral process. Their study investigates a range of key research concerns, including the benefits, challenges, and impacts of such systems, together with technologies and implementations, and an identification of future directions of research in this domain. They look into the benefits, challenges, technological aspects, impacts, and potential research and development areas in the context of e-voting systems using the blockchain technology. The growing interest in blockchain based e-voting systems It indicates the importance of a comprehensive and systematic evaluation of the current knowledge in this domain. These aspects, although acknowledged, are not as comprehensively discussed as the key benefits in the proposed solutions for blockchain based e-voting systems, they considered studies have proposed well-structured solutions for blockchain based e-voting systems. In the Voting System Types and Requirements They categorize the types of voting systems before defining relevant requirements for them. The Voting Systems have been combined with advancements in information technology, making them increasingly efficient and accessible. In their System There are a number of voting system types that can be differentiated from a technical standpoint which is the Traditional Voting and E-voting, A traditional voting it is the conventional method where voters either mark paper ballots manually or use mechanical lever machines while, the E-voting is a method that uses electronic devices to record, cast, or count the votes. (Tomobo)

**Synthesis of the Review**

The synthesis of the review of related literature on electronic voting systems states that our old way of voting has been changed to online voting to solve the difficult and long voting process. Including efficiency, cost-effectiveness, accessibility, flexibility, and the potential for increased voter participation, especially among younger generations like students. Institutions have become test cases in schools so that the building of E-voting systems can be experimented more, which helps us to better see what considers are needed in the development of the perfect E-voting system. But despite the innovations that we can make in the voting method, we also face a problem with the security of votes; researchers identify concerns such as voter authentication, data manipulation, denial-of-service attacks, and the need for secure and transparent platforms to maintain trust in the election process but the integration of technologies is more explored to find a solution to the security concerns of our E-voting systems to further strengthen the integrity and security of votes in elections. System designs and implementations are also included in this research; Its target is to be user-friendly to be easy to use and easy to understand for people who are not very tech savvy. In general, there is an increasing interest in using technology to improve open voting systems' accessibility and overall integrity, as well as to update election procedures and solve issues.

Chapter 3

**EVALUATION, DESIGN, AND FRAMEWORK**

This chapter, we will talk about what we expect to achieve, why we believe it's important, how it will work in practice, and the ideas behind it. Developers also cover the tools we'll need, such as software, hardware, and what the client will need to provide. Lastly, we'll define some important terms related to the Colegio de Montalban SSC Voting Management System (CDMSSCVMS).

**Discussion of the Expected Output and Justification**

The CDMSSCVMS is designed to be a user-friendly voting management system for the students of Colegio de Montalban. It aims to make the voting process smoother, improve transparency, and boost student engagement in choosing their representatives for the Supreme Student Council. The system will offer real-time updates, secure authentication, optimized result tabulation, and easy access to candidate information. The Colegio de Montalban SSC Voting Management System (CDMSSCVMS) serves several important purposes. It is designed to increase student involvement by providing an easy-to-use voting platform and encouraging democratic participation in the school community. The system also prioritizes transparency and security by offering real-time updates and secure authentication methods, ensuring that the voting process is fair and accountable for both candidates and administrators. Furthermore, the CDMSSCVMS includes features like real-time monitoring, result tabulation, and detailed candidate profiles to enhance and improve the accuracy of elections, providing timely and trustworthy results.

In terms of login and registration features, the system will depend on the officially enrolled students of Colegio de Montalban before accessing the system. In this case, the system restricts outsiders from accessing the system and also prevents cheating on

the election of the Supreme Student Council because CDMSSCVMS provides an accurate and honest result of votes for SSC elections.

In terms of the voting process, the system will provide a form for every student to choose their desired candidates to vote, and after that, an email verification will occur before the votes are counted to determine if the voter is a legitimate user of the account.

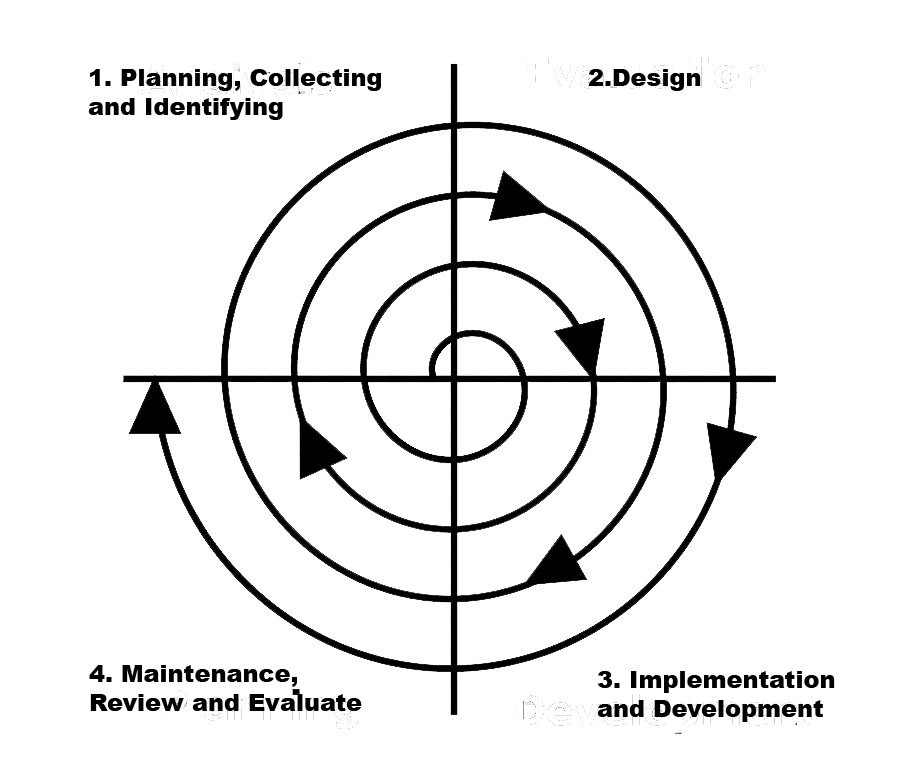
In terms of the candidacy application process, the system will provide a form that the president’s candidate on the party list is the only one who will fill out the form for his or her members, and the account of the members will not be necessary to apply because it is a single application while solo candidate will apply for himself or herself. And when the application is done, it will be added and posted to the user’s dashboard when they go to the candidate list section, where everyone will see it, including their personal information like their full name, year, section, and their advocacies.

In terms of the result, it will be posted on the result page, where it will announce the winner of every position in SSC.

For the admin panel, the desktop application is the surface that will be used by the admin to manage, secure, and manipulate the data coming from the website application. The admin will handle the accept and decline features of the application of the candidates, and the candidates will be notified using the notification features of the system if their application is accepted, and if it is declined, the admin will provide a message explaining why the application is declined. Admin can also set a time and date before and after the voting day; it is like a time bomb that if the time ends, voting will end too, and it can be disabled so one can vote after the election.

By achieving these expected outputs, the CDMSSCVMS aims to enhance the voting experience for all users with accurate and honest voting results from the Supreme Student Council of the Colegio de Montalban.

**Operational Framework**



**Figure 1**

**Spiral Model**

**An Operational Framework illustrating the development of the Colegio de Montalban Supreme Student Council Voting Management System**

The developers used the spiral model for the testing and maintenance of the CDM SSC Voting Management System. This process allows us to retrace each of our steps in building the system. In this process, we can further improve our system and solve every bug and error that our system encounters, which ensures that problems in the system can be reduced and solved immediately.

In the first step, developers collect all the necessary information for developing the system. The project has layouts of plan by detailing every process and essential features of the system. Also in this phase we can identify the possible problems that the developers may face during the development and make an immediate solution to take place. This step is crucial in ensuring that the system aligns with the needs of voting process.

The subsequent phase is Design, where the developers proceed to the designing phase of the system; creating the blueprint and the structure of the system for both website and desktop application. This includes also the GUI (Graphical User-Interface) and planning the integration of functionalities of the system both for users and admin panel. This phase allows the developers to visualize the different components of the system that will integrate to offer a voting system.

Moving forward, the Implementation and Development phase involves translating our design into a functional system. Project developers starts to code, integrate system components, and precise testing and identify any issues. This may include also the demonstration for users and admins to familiarize the system’s operation.

Finally, the Maintenance, Review, and Evaluation phase ensures the system's ongoing performance and improvement. Developers will deploy the system to collect reviews for users to improve what the system can offer to the users and test the effectiveness of early versions of the system. This iterative approach enables the refinement and optimization of our SSC voting system to meet the needs and expectations of our school community.

**Conceptual Framework**

**INPUT**



**OUTPUT**

• **PLANNING**

**• ANLYSIS**

**• DESIGNING •IMPLEMENTING**

**• TESTING**

**• DEPLOYMENT**

**• MAINTENANCE**

**Developed Colegio de Montalban SSC Voting Management**

• **Desktop App Development:** Visual Studio 2022 (VB.net), Mysql connector, Xampp.

• **Website Development:** Visual Studio Code, HTML, CSS, JavaScript

• **System development hardware**: 8GB RAM, 512GB SSD, Ryzen 7 5700U with Radeon graphics processor

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**FEEDBACK**

**Figure 2**

**A Conceptual Framework Showing the Development of Movie Ticket Reservation System**

The conceptual framework for the development of CDM Supreme Student Council Voting Management System encompasses input, process, and output. The first phase encompasses the essential tool for development and specifications for system necessary to the creation. This includes, Visual Studio 2022 (VB.Net) for desktop application, MySQL and XAMPP for database connectivity, and using Visual Studio-

Code with HMTL, CSS, Javascript for web development. The system developed by a hardware device with specs of 8GB RAM, a 512GB SSD, and a Ryzen 7 5700U processor with Radeon graphics. The process phase begins with planning and analysis, where the developers are gathered and analyzed comprehensively the proposal formulated requirements for the SSC Voting Management System. This involves understanding the functionalities needed for the secured online voting and management. After analyzing everything, the team starts the process of designing and executing the system following the stated technologies and development tools. In coding part of its implementation phase, they code and integrate components in order to create desktop as well as web apps. If testing is done right here and then it can be guaranteed that there will be no problems but just smooth operation running continuously 24 hours a day seven days in week or even more days if need be. Deployment means setting up the system for it to be used productively; but this would include continual maintenance process consisting of further support.

The output is that we have a Developed Colegio de Montalban SSC Voting Management System, meant for improving the voting process and giving students and administrators an advanced, friendly experience. For carrying out SSC elections efficiently and transparently, the system output aligns closely with the initial project objectives to offer a solid platform. Future iterations of this process will allow developers to improve how users interact with it because they will be continually getting feedback after release.

**Requirement Specifications**

The system will be a responsive website that is compatible with computers, laptops, and mobile devices. It is constructed with HTML, CSS, JavaScript, and PHP and interfaces with a MySQL database. User-friendliness will be given top priority in the website's design, which will make use of responsive design concepts to maximize navigation on a variety of screen sizes. Simultaneously, a desktop environment VB.NET admin panel will be constructed, integrating with a MySQL database for data administration. This panel will provide reporting features, CRUD capability for handling vote records and candidates, and secure user authentication.

Performance requirements determine the specs of a device; therefore an Intel Core i5 or comparable CPU with 8GB RAM and a 1366x768 screen resolution is suggested for average to higher spec devices, including desktops and laptops.

A12 Bionic or Snapdragon 600 series CPUs with a minimum of 2GB RAM and a 720p screen resolution are recommended for mobile phones. Older PCs or laptops with an Intel Core i3 CPU, 4GB RAM, and a comparable screen resolution may operate the system well even on lower-spec machines. The vote management system and admin panel will be more user-friendly for all users thanks to these requirements, which guarantee performance and accessibility across a variety of platforms and devices.

**DEFINITION OF TERMS**

**Election -** refers to the process where the students of CDM vote to choose their peers to represent them in the student council.

**Candidates -** candidates in a student council refers to the students of CDM who are running for various positions within the student council.

**Supreme Student Council -** they are elected students of CDM who lead and represent the entire student body, organizing events and addressing student issues.

**Real-Time Voting System -** it refers to a system where students of CDM can vote for their representatives. It allows for immediate counting and results, providing transparency and efficiency in the voting process.

**User-friendly -** refers to something that is easy to use and understand. It is designed to be accessible for the user/voter

**User/Voter Authentication -** it ensures that only eligible students of CDM can participate in the voting process. It verify the identity of the student voters to prevent fraud and maintain the integrity of the election.

**Result Tabulation -** refers to the process of collecting, counting, and calculating the votes to determine the outcome of an election. It ensures accurate and efficient tallying of votes, providing transparent and timely results.

**Entity Relationship Diagram (ERD) -** it is a visual representation of our system that shows the relationship between different entities in a database.

**Entity -** it refers to a distinct object, concept, or thing about which data is stored. It can be a person, place, event, object, or any other tangible or intangible item that can be uniquely identified and described.

**Attributes -** these are the properties or characteristics that describe an entity. They represent the specific pieces of information or data that can be associated with an entity.

**Dashboard -** it is a visual display of key information, metrics, or data points, designed to provide a quick overview and facilitate easy understanding of complex information.

**Flowchart -** it provides a visual representation of the step-by-step process from the start of the election to the announcement of results.

**Voting Rights -** refers to the entitlement of students to participate in elections for student council in CDM. These rights ensure that students have a voice in choosing their representatives and influencing decisions that affect their school community.

**Voting Management System (VMS) -** is a specialized software or platform designed to manage and facilitate the election process for student representatives in Colegio de Montalban.

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