REQUIREMENTS SPECIFICATION

OF

CITE'S WEBSITE AND SG'S ONLINE VOTING AND MANAGEMENT SYSTEM

(December 2017)
(Lipa City, Batangas)

Presented by:

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Revision History:

Revision	Date	Author	Description of Revision
A	8 October 17	1. Janella Marie Miranda	Client Change
B	19 October 17	1. Janella Marie Miranda 2. Ralph Darantinao 3. Leonilo Santiago III	Chapter 1 & 2 revisions; added more capabilities to the system. Supposedly just a voting system and now has a website for news & announcements
C	7 Nov 17	1. Leonilo Santiago III 2. Janella Marie Miranda	1. Modified the conceptual framework 2. Unsure about model to be used
D	13 Nov 17	1. Janella Marie Miranda	Lacks content for the technical feasibility and cost benefit analysis
E	19 Nov 17	1. Leonilo Santiago III 2. Janella Marie Miranda	Lacks content for the feasibility study
F	20 Nov 17	1. Ralph Darantinao	Lacks content for Training plan
G	28 Nov 17	1. Ralph Darantinao 2. Leonilo Santiago III	Wrong database schema
H	3 Dec 17	1. Janella Marie Miranda 2. Leonilo Santiago III 3. Ralph Darantinao	Proofreading and Finalization

A. Business Requirements Speculation

1. Introduction

De La Salle Lipa's digital campus initiatives are under way as the institution fortifies its drive for contemporary educational innovations. Despite these innovations, which is mainly focused on the learning management system, other areas such as Student Government Elections, fast delivery of announcements, and information dissemination are still left behind.

The voting and election proper begin with the filing of candidacy of the students. The examination of the candidate's academic and discipline record will take place, and if passed, he or she will be approved and counted as a candidate for the upcoming election. It will then be followed by the (manual) voting system, with the list of all candidates running for a specific position in that year. Students will be given a chance to cast their vote or abstain. In determining the winners, the candidate would need at least 50% + 1 votes of the specific group they belong to (e.g., 2nd year, 3rd year, etc.) In electing the CITE Governor, however, they would need at least 50% + 1 votes of the whole CITE student population to gain the position. If the said conditions are not met, a failed election would come into place. Special and administrative appointments will be considered, as indicated in the constitution, to be decided by the current officers of College Student Activities Office and COMELEC.

Committee on Elections, also known as COMELEC, aims to give life and meaning to the fundamental principle that sovereignty resides in the students and all Student Government authority emanates from them. It exists to maintain authority and independence in the conduct of the election proper. The COMELEC is mandated to exercise and support clean and honest elections and preserve the student's rights to suffrage.

De La Salle Lipa held its recent election last April 24-27, 2017 which was extended until May 3, 2017. Supposedly, the election should have only lasted for about 6 days, but due to the busy schedule of the students, a lot were not able vote. The officers and volunteers of the Student Government even performed room to room visits to remind and allow the students to cast their vote. But despite these constant reminders, many of them still declined and reasoned that they were preoccupied with academic requirements given by their professors. Even some professors did not allow their students to vote during class hours.

The organization utilized the manual voting system in determining the Student Government officers for academic school year 2017-2018. Since it had not been an automated voting nor was held online, the volunteers manually counted every single vote from each and every class to ensure no votes were left out. The Student Government, along with the COMELEC, and the participation of students and professors held a successful election despite the setbacks and shortcomings encountered.

Another concern lies with announcements and updates. Facebook acting as the main source for students to learn about CITE's latest updates has some disadvantages. For one thing, liking or joining CITE's page is not mandatory. The steps involved in

order to know these said announcements include going to Facebook, searching for CITE's Facebook page, requesting for acceptance, and waiting for someone to accept the request.

Another problem is with the notifications. Sometimes, mobile or desktop notifications go unnoticed due to random clutter such as someone sending a game request, or someone commenting on a post that has another person's profile tagged. Users cannot always rely on facebook or other social media for the important announcements. This is the reason why including an official website will be beneficial and reliable. Just like with the new learning management system, Canvas, and the official website of De La Salle Lipa, the students would be highly encouraged to visit CITE's official website for full updates for any news or announcements.

1.1 Problem

1. There is no existing system for the election of the Student Government officers; it is completely paper-based, manual and requires a lot of time to conduct.
2. Counting votes manually usually causes a delay in final vote tallies and announcement of results.
3. The traditional way of counting votes is inaccurate and still susceptible to errors because of its tedious process.
4. Many of the students are unaware of the election and voting process. They are not able to cast their votes due to lack of information regarding the scheduled dates and voting precincts.
5. Manual elections lack the transparency that is needed to reduce fraudulence and corruption.
6. Students do not have a direct and reliable source in receiving the latest and important news about CITE. Official announcements are neglected or not given much attention.

1.2 Objectives

Here are the objectives that arise based from the previous said problem statements:

1. To refine the current system, the team is encouraging a paperless, more advanced and easier approach in voting without compromising the time it takes to cast a vote.
2. To speed-up the process of the existing voting processes without requiring the students to go to a specific venue or classroom just to vote (e.g. precinct).
3. To produce a software that is more accurate, efficient and not time consuming compared to the manual procedures which tend to be more prone to errors.
4. To make the voting system accessible and convenient to the students wherever and whenever as long as they have the required device and internet connection.

5. To ensure students that their votes are well-counted and accurate which leads to a confidential and transparent election. Student's personal information are stored and encrypted for security and privacy.
6. To make sure that students receive important news and announcements as quickly as possible.

1.3 Purpose

The main purpose of the online voting system is to improve the existing manual operations of the Student Government CITE elections. This document serves as an aid to provide the reader a complete overview and detailed description of the proposed system. Moreover, it includes the requirements specifications and software that is essential to the progress of the system. All of this requires the collaboration and consistent communication with the client which is vital in forming a suitable, satisfactory and working software which will enhance news delivery and advance the present traditional-manual functions and operations of the voting process.

1.4 Definition of Terms

1. **COMELEC**

   Commission on Elections, an organization of De La Salle Lipa consisting of students or members who are inspired by the ideals and vision of St. John Baptist De La Salle and guided by Divine Providence to seek and promote truth, justice and peace by ensuring free, honest and meaningful elections.

2. **Student Government**

   The Student Government of De La Salle Lipa is a community of Servant-Leaders responding to the challenge of leading the student body to actively participate in its own growth and formation, to utilize all means to help form a student body that is committed to the core values of Faith, Zeal for Service and Communion in Mission.

3. **CITE**

   College of Information Technology and Engineering, a college department in De La Salle Lipa which provides students with interest in engineering and information and communications technology a venue for knowledge and technical skills in fields of Electronics Engineering, Electrical Engineering, Computer Engineering, Industrial Engineering, Computer Science, Information Technology, and Information Systems.

4. **Ballot**

   It is a medium used to cast votes in an election, and may be a piece of paper or a small ball used in secret voting. It was originally a small ball used to record decisions made by voters. Each voter uses one ballot, and ballots are not shared.

5. **Online Voting System**

It is a system that integrates the stages of registering and certifying voters and collecting their votes. A computer-based voter registration station accesses a database to verify that the voter is eligible to vote. Vote entry stations provide a computer-based interactive graphic interface for permitting the voter to enter votes.

1.5 References

- De La Salle Lipa College Student Services: COMELEC. (2017). Dlsl.edu.ph. Retrieved 11 October 2017, from http://www.dlsl.edu.ph/studentservices/csao/comelec.asp
- Lakshmi, R., Nivya, M., & Selvanayaki, K. (2015). Tamil Nadu. Retrieved from http://www.ijtrd.com/papers/IJTRD185.pdf
- Rahman, M., Bhuiyan, S., & Hossain, R. (2007). ELECTRONIC VOTING SYSTEM. Dhaka, Bangladesh. Retrieved from http://dspace.bracu.ac.bd/bitstream/handle/10361/387/Electronic%20Voting%20System.pdf
- Student Electronic Voting System lauded. (2017). Cuea.edu. Retrieved 11 October 2017, from http://www.cuea.edu/index.php/news-and-events/173-student-electronic-voting-system-lauded

2. Project Description

2.1 Project Perspective

In order to address the problems encountered in the past elections and challenges faced by the coordinators and officers, a solution was made by the team to come up with an online voting and management system that will enhance, improve and promote a new voting experience. The proposed system is entitled “SG CITE’s Website and Online Voting and Management System.” It mainly focuses on the voting module which encourages every student from CITE to cast their vote in the easiest and most convenient way while also touching on the subject of fast news delivery.

SG CITE’s Website and Online Voting and Management system will be implemented with the knowledge and expertise in Web and Mobile development. HTML, CSS, jQuery, and some skills in Photoshop, are prerequisites to form the user interface and layout. While PHP was used for the backend.

The system will mainly use the manual operations and traditional way of voting as references. However, enhancements will be made possible. The different modules inclusive in the system will give users important announcements and information. It will also show the recent achievements and activities of all the degree programs under CITE such as BS CS, BS IT, BS EE,BS IS BS ECE, BS CpE and BS IE. And lastly, each user has their own scope of access to the system for security and privacy purposes.

2.2 Conceptual Framework

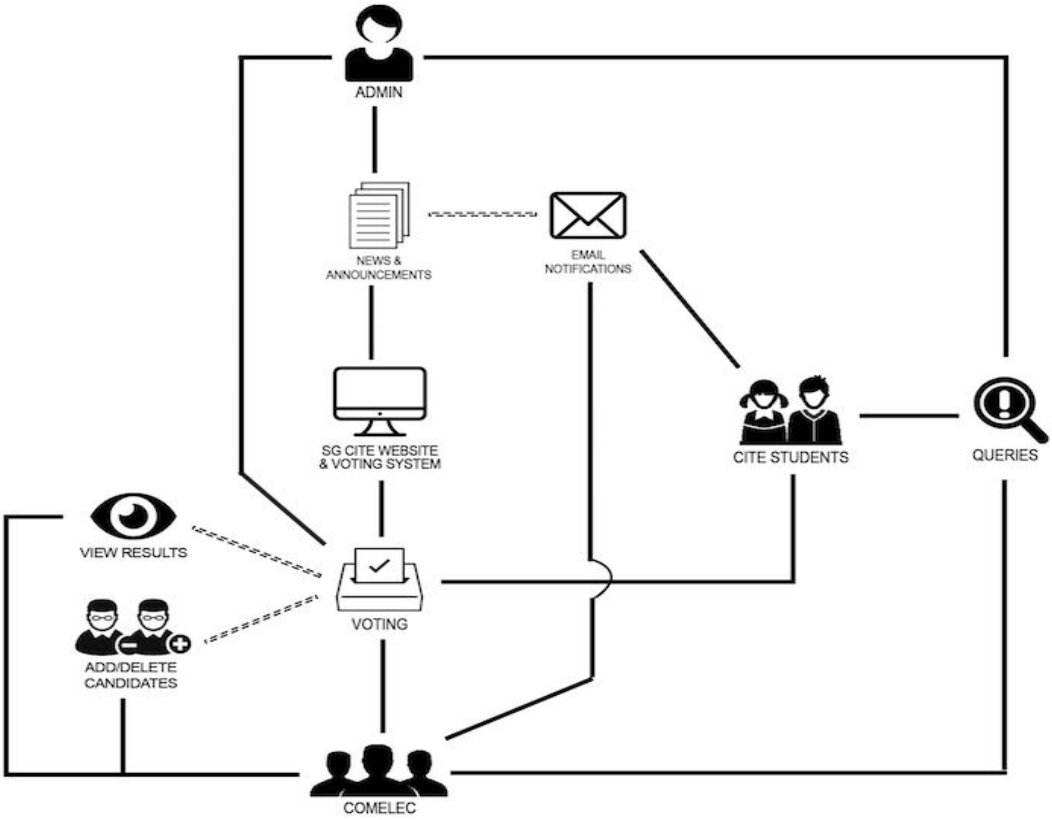


Figure 1: Conceptual Framework

The figure above visually depicts the aerial view of the system. SG CITE's Website contains various modules, but emphasizes two sections: Voting and News Dissemination. The Voting System will run seasonally as elections only happen once a year to replace the existing batch of officers for a new one. Everything involved in this particular module is all taken care of by the COMELEC. Here, the COMELEC can add candidates, remove them if necessary, and view the final results of the election.

The Admin has the overall control of the system. Managing a lot of the modules, excluding the COMELEC's privileges with the voting system. They can post articles, add or disable accounts, and, as said, modify some modules in the website. One unique feature the Admin has is to notify everyone, including the COMELEC, about the recent posts or changes in the system. On the other hand, students or voters can only view the articles and other modules, and simply cast their vote. They can send queries and concerns to the COMELEC and/or Admin.

2.3 User Characteristics

There are three users in the system: The Administrator, COMELEC, and students of CITE. Each of them has their own scope of access and responsibilities in the system.

All CITE students shall be monitored carefully. Two qualifications for each student are required in order to access the system and be able to cast his or her vote. First, they should be currently enrolled in De La Salle Lipa. Second, they should be a student under any of the programs of CITE. They will be able to access the system by logging in using their student number as the username and the default password of dlsl1234.

The Administrator is the current Student Government President, and their access to the system is more precise and larger in scope compared to the regular students. Since he or she is also a student, they can access the voting module and cast their vote just like any ordinary student. They will have access to manage, edit, update, add and/or delete information on the following modules: About Us, News, Gallery, Organizations and Contact Us. They can also enable and disable user accounts at any time if necessary.

The COMELEC, on the other hand, will have access to the database where all the information and votes are stored and tallied. As a student, he or she is qualified to vote. They will have a special access on the voting module as they can modify it by adding or deleting candidates on every position. They have the bird's eye view of the voting module, making sure that the students are able to cast their vote in the specified voting scheduled dates. Note that the COMELEC only sees who has not voted and not who is currently voting. They will be able to view other parts of the website and the system just like ordinary CITE students.

2.4 Project Components

- **Login Module**

  The system would only need three variables, namely:

  A. The Administrator
  B. The COMELEC
  C. CITE Students

  The three entities involved will be able to use the features of the system. Each of whom, however, will have varying functions to access depending on the logged in account. The Admin, or the S.G. President, has the overall control of who can access the system since he/she can disable accounts like stated in Chapter 2.3. With the login module itself, information such as the person's username and password will be required.

  The default username would be their student number, and password, "dlsl1234". If it is the user's first time logging in, the system will automatically send them an email requesting for a change in password.

- **Voting Section**

  Every variable involved has the ability to vote. The only difference is with the COMELEC. Both CITE students and Admin will be able to vote, but that is the extent of what they can do in this specific module. The COMELEC, on the other hand, can do both the voting and adding of candidates. Adhering to

"The Right to Privacy", the COMELEC will not be able to know the candidate anyone voted for, but instead, have the access to the information of who has voted or not voted yet based on what is indicated in the database. The COMELEC can also view the final results of the voting to determine if the election is a failure or success.

- **News and Announcements Section**

  The Admin is the only entity who can post news and announcements; however, the CITE students and COMELEC can view them. These articles would require header photos since they will be featured in the homepage.

- **Contact Section**

  There comes a time when certain topics or information come to a blur for students; the contact section is the solution to that. The contact section will accommodate all questions and feedbacks. CITE students can point their concerns to both the COMELEC and Admin. The COMELEC and Admin, in turn, can respond to the queries.

- **Gallery**

  Only the Admin has the access on adding, updating and deleting photos. Images to be placed in this section are the featured photos of the website, ranging from sports events to other important activities and achievements. The COMELEC and CITE students can only view the photos.

- **Information Sections**

  These sections contain most of the basic and fundamental information about The College of Information Technology and Engineering. Ranging from Degree Prospectuses to Professional Organizations' Mission Visions and currently elected officers for school year 2017-2018.

2.5 Project Constraints

The use of mobile phones is not recommended when using the system, especially with the voting module. Besides from not being mobile-optimized, interface issues might be experienced. Problems will be encountered once they try to vote with their smartphones. Moreover, the system will not show or generate a detailed record of the names of the candidates a student has voted for in order to increase security and prioritize privacy.

2.6 User Interface

Red symbolizes the College of Information Technology and Engineering which is apparent in the whole system. Atop the website is the logo and customized header that serves as the banner that stays throughout the rest of the subpages. The navigation is easy to locate as it is spread horizontally with the links in all-caps. The spacing is not too far, yet not too narrow to maintain its readability. At the bottom is the footer. A table was

used in order to separate each group: Sitemap, Services and Social Media. Along with it is a small CITE logo which sits on the right side of the page.

The Homepage is only comprised of 3 parts: the featured article, the four previous articles, and the suggestion bar. The featured article has a white background that includes a header photo, the title, and its body. The body will contain a brief description of the story, then a *"Read Article"* is placed below that links the reader to the full article. The four previous articles follows the same style, but is placed in front of a red gradient background and is separated into four different sections. The *"Read more"* button is a link that sends the visitor to the old articles that is not featured in the homepage. Also, photos in this section are not required to be in red, black and white. The photos automatically get filters without altering the original image. The last part is the suggestion bar. It acts as a conversant sentence to the reader in order to promote CITE's social media accounts. A note is in the left side that reminds the user that if he/she has queries, they can proceed to the Contact page.

The login page is straightforward. It contains forms which asks for the user's username and password and a login button. Once logged in, a pop-up message greets the user with their name & type of account.

The voting section contains what the position the user is currently voting on, checkboxes/radios for the candidates and a red "next"/"previous" buttons. The word "Election [year]" is attached between the footer and voting section.

The other links in the site more or less follows the same format but with a little tweaking. Like with the articles converting photos into black & white to emphasize and make it clear to the reader what the title of the article is, or the Organizations page where each sections are divided horizontally. The only two fonts were used in creating the system namely: Lora and Roboto.

2.7 Hardware Interface

In implementing the system the users will need the necessary hardware to fully experience the effectivity of the system. They will need laptops, desktops or computers and modem or router for the internet connection.

2.8 Software Interface

The proposed system will be the pioneer system to be used by the COMELEC and CITE Student Government, thus no other existing system will be connected. However, the email of the students would be a part of the process. News and updates would automatically get sent to their respective dlsl gmails once the admin posts something new. In addition, Facebook and Twitter integration is involved, specifically in the voting module. Sharing or tweeting that they have already voted would be a way to encourage their peers to vote as well.

2.9 Assumptions and Dependencies

This CITE website and online voting management system for the Student Government will be of great help to the students, COMELEC and CITE as a whole.

For the students, there will be an easier, faster and convenient way to get updated with the latest news and vote even on the busiest of days, all while making absentee voting possible.

For the COMELEC, it would be a huge improvement compared to the previous elections since this new system makes it possible to tally the votes quickly with no delays. Announcing the newly-elected officers will be swift, accurate and reliable in reducing errors and miscalculations.

Internet connection is the main dependency of this system. New updates, the voting itself and other modules will require such. Another dependency to consider is the student's information, particularly with their student number, which serves as their main identity in casting votes.

2.10 Proposed Future Requirements

- **Mobile App**

  A lot of people nowadays are mostly on their phones more than their computers. They are light, portable and convenient. It would be better for mobile devices to have an optimized application like this instead of just by using computers desktops/laptops.

- **SMS Notifications**

  Inside the campus, the best and most practical way to send updates is through email. The WiFi throughout the campus has made it easy for students to get their phones or laptops and check their gmail accounts if there are any updates. When students are outside the campus, however, not everyone has access to the internet. SMS notifications is the best way to get updates instantly without going through the hassle of searching for WiFi hotspots just to open your mailbox if any important announcements were posted in the website.

- **Large-scale Accommodation**

  There are two parts to this:

  1. Additional college departments to have the same features as the existing one; and
  2. Accounts for organizations

  The additional college focuses on making the same system for at least another department (CEAS, CON, CBEAM, COL or CIHTM). To visualize, a website should be made that links the visitor to each and every college department. Those departments would have the same layout and functionalities as the existing system but with different color schemes, logos, etc.

  Adding organization accounts is another proposal as the current system only has three entities that can use the functionalities of the system. These

organizations should be able to post announcements, independent from the Admin's news, and forming an updates section of their own.

3. Specific Requirements

3.1 Registration (Login Module)

The accounts made by the developers are only for the students of CITE (College of Information Technology and Engineering) department, DLSL COMELEC and SG President, or the Admin. The users can access the system through their student numbers and the default passwords. All users can verify their identity and accounts through this module.

3.2 Information Sections

The fundamental information and announcements are conveyed in this section such as the curriculum of every degree programs under CITE, each program's mission vision, the professional organizations under it. Included with it is the page for the elected officers for the current school year, and CITE's upcoming events and news. These information are all stored and kept secured in their respective sections and repositories by the admin and COMELEC.

3.3 Voting Section

The admin, students and COMELEC must cast their votes by choosing a candidate or representative of who they think best fits each position. If they refuse to vote, they can always opt to abstain. This section receives the votes from the users to present the result or details of the voting process. It will produce and generate the winners of the newly-elected officers of the said school year based on the tallied scores.

3.4 Contact Sections

Every query or concern in accessing or viewing the website, including the voting process, can be discussed within the system. The users can easily proceed to the specific sections of the website for their questions to be addressed. The additional features such as the organizations and gallery will give benefits to the students.

4. Feasibility Study

4.1. Operational Feasibility

Once developed and implemented, the proposed system will improve the annual election of CITE Student Government. The students of CITE will also benefit from the latest announcements and information inclusive in the system through the website. The following are the advantages and benefits that the users and the organizations will be having from the proposed system: It will enhance the traditional manual functions of the election and voting process. It will enable the admin, the COMELEC and CITE students to log in and easily access the system anytime and anywhere. The proposed system will provide an opportunity to speed-up and improve the existing voting process in the most efficient and convenient manner. It will increase the accuracy, efficiency, and credibility of the previous election and voting process. Accessibility and convenience are the

amplifying features which will be provided in the proposed system to the students and other users. The end users of each organization directly supports the proposed system and communicates well with the team members which reduces challenges towards the new system. They are currently having problems and challenges with the manual voting system, thus they consider that the proposed system will be of great help in terms of time management, efficiency and costing. They are willing to accept the proposed system and welcome the change. Moreover, there would be a substantial decrease in the number of volunteers since their workload can be all be done by the online voting system. will lead This proposed system will produce an overall positive impact to the students and organizations, most especially in the forthcoming elections.

4.2. Technical Feasibility

The proposed system only requires the users to have a computer and internet connection. Only three users will be able to use this system: The Admin, The COMELEC, and CITE students. The content of the website from different modules (like for articles and news), along with voting results, would be stored in the database that is only accessible to the Admin and COMELEC respectively.

The computers are already available in the COMELEC and Admin's office. In the case of the CITE students, the BYOD (or Bring Your Own Device) Initiative has made it possible for almost everyone to access the system without buying a computer for this specific proposal.

Minimum System Requirements:

Device:	● Laptop ● Desktop Computer
Operating System:	● Windows 7 ● macOS 10.10
System Architecture:	● 32-bit
RAM:	1 GB
Internet Browser:	● Mozilla Firefox ● Google Chrome ● Opera ● Edge ● Safari ● Internet Explorer (10 and above)

Table 1: Minimum Requirements

4.2.1. Hardware/Software Requirements vs. Existing Hardware/Software Requirements

In order for the system to work, several hardware and software requirements have to be considered to ensure a smooth browsing experience.

	Existing Hardware/Software
Device	Laptop or Desktop computer
Operating System	Windows 10
System Architecture	32-bit
RAM is at least 1GB	Yes
Internet Browsers	● Mozilla Firefox ● Google Chrome ● Edge ● Internet Explorer

Table 2: Existing Hardware/Software

Comparing this to Table 1 from the above subchapter, it is clear that the required software and hardware would suffice to the needs of the proposed system.

4.2.2. Availability of Required Hardware/Software

The Admin and COMELEC, who control most of the system's functions, have laptops that possesses the specified requirements listed above. Both can also access the internet. The CITE Students, who are main end-users of the system, will also be encouraged to have laptops with the same software and hardware specifications, in order to access system inside the campus. To access the system inside the school, students must first coordinate with the school's ICT Department for registration.

4.2.3. User Requirements vs. User Profile

The end-users is required be computer literate, as accessing the proposed system requires basic knowledge of the ins and outs of web browsing. All of the proponents know how to do such task. Both the Admin and COMELEC should at least have some basic knowledge on how database work since some of the actions the Admin & COMELEC can do is the addition/deletion of students and candidates respectively.

Almost all CITE students are computer literate and know how to browse the internet. Adapting to the system would not be an issue. Viewing news or articles and

voting is similar to Facebook posts and online polls. The system will be user-friendly and provide accessibility.

4.3. Economic Feasibility

4.3.1. Cost Benefit Analysis

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Paper Reduction		4,137.00	4,137.00	4,137.00	4,137.00	4,137.00	4,137.00
Reduced Volunteers		32,000	32,000	32,000	32,000	32,000	32,000
More Timely Results		1,360	1,360	1,360	1,360	1,360	1,360
Faster Data Retrieval		1,360	1,360	1,360	1,360	1,360	1,360
More Accurate Results		1,360	1,360	1,360	1,360	1,360	1,360
Fewer Processing Errors		1,360	1,360	1,360	1,360	1,360	1,360
Reduced Data Loss		1,360	1,360	1,360	1,360	1,360	1,360
Higher Quality Service		5,000	5,000	5,000	5,000	5,000	5,000
Net Economic Benefit		47,937.00	47,937.00	47,937.00	47,937.00	47,937.00	47,937.00

Discount Rate (15%)	1	0.87	0.76	0.66	0.57	0.50	0.43
PV of Benefits		41,705.19	36,432.12	31,638.42	27,324.09	23,968.50	20,612.91
NPV of all Benefits		41,705.19	78,137.31	109.775.73	137.099.82	161,068.32	181,681.23
System Cost	-100,000						
Web Hosting	-2,694						
Training for the users	-3,000						
One time Cost	-105,694						
Maintenance Cost		-2,500	-2,500	-2,500	-2,500	-2500	-2500
Renewal of Web Hosting		-2,694	-2,694	-2,694	-2,694	-2,694	-2,694
Recurring Cost		-5,194	-5,194	-5,194	-5,194	-5,194	-5,194
Discount Rate (15%)	1	0.87	0.76	0.66	0.57	0.50	0.43
PV of Recurring Cost		-4,518.78	-3,947.44	-3,428.04	-2,960.58	-2,597	-2,233.42

NPV of All Costs	-105,694	-110,212.78	-114,160.22	-117,588.26	-120,548.84	-123,145.84	**-125,379.26**
Yearly NPV Cash Flow		37,186.41	32,484.68	28,210.38	24,363.51	21,371.50	18,379.49
Overall NPV Cash Flow	-105,694	-68,507.59	-36,022.91	-7,812.53	16,550.98	37,922.48	**56,301.97**

Table 3: Cost-Benefit Analysis (CBA)

Return on Investment:

(Overall NPV Cash Flow / NPV of All Costs) x 100

= (56,301.97/ 125,379.26) x 100

= 0.4490532

= **44.91%**

Payback Period:

(Yearly NPV Cash Flow – Overall NPV Cash Flow) / Yearly NPV Cash Flow

= (24,363.51-16,550.98) / 24,363.51

= 0.3206652

The year the cost of investment is recovered is between the third and fourth year. With this, the payback period is 3.32 years; it shows a good payback period. On the third year, the organization would have earned an amount of PHP 16,550.98.

Economic Benefits:

- **Paper Reduction:**
  - Voting Paper (DRP- Brown papers)

    Cost of paper/piece = 1.00

    1.00 * 3323 (CITE Students) = PHP3, 323.00/yr.
  - Manila Paper (36 x 48in)

    Cost of paper/piece= 7.00

    7.00 * 15 (pieces) = PHP 105.00/yr.
  - Registration papers (for signature of students)

    Cost of paper/piece= 2.00

2.00 * 60 (pieces) = PHP 120.00/yr.

- Pull-out Forms

  Cost of paper per piece = 1.00

  1.00 * 100 (volunteers and officers) = PHP 100.00/yr.

- Long Brown paper envelopes

  Cost of paper per piece = 13.25

  13.25 * 12 (pieces) = PHP 159.00/yr.

- CKR, CLQ, DRP, SRQ Forms

  Cost of paper per piece = 1.00

  1.00 * 50 (all in all) = PHP 50.00/yr.

- Letters, reports and other confidential documents

  Cost of paper per piece = 2.00

  2.00 * 100 (all in all) = PHP 200.00/yr.

TOTAL = PHP 4,137.00/yr.

Paper, in whatever form and size it may be, is the ultimate resource behind any manual election in the institution. It would be very beneficial for this resource to be reduced. Aside from saving money, being paperless means it will be environmentally friendly. The CITE students can now cast their votes through the system, therefore, the duplo, as they call it, or the brown paper DRP, copies provided in the past elections will not be indispensable anymore. These brown bond papers divided into four for each individual to vote will turn obsolete.

Through the system, the election proper including the tallying of votes and generation of the results or winners, will be all be online so manila papers will be rendered outdated. On the other hand, the most confidential documents such as POA, concept paper, letters, pulled-out forms of official candidates and volunteers, narrative report and etc. will still be provided through hard copies and some of it will be printed.

- **Reduced Volunteers**

  Budget for food per person Php 80

  PHP 80 (food) * 80 (number of volunteers and officers) * 5 (working days)

  = PHP 32,000.00/yr.

  The COMELEC officers and volunteers during election are provided with a budget for their food, whether they had their duty in the morning, or in the afternoon. The system works faster than the manual process, and due to this kind of process, the volunteers' and students' workload are significantly reduced. Thus, volunteers need not to be pulled-out from their classes anymore and can just access the system in their free time; they do not need to facilitate and organize election processes as much anymore.

- **More Timely Reports**

  Rate/Hour = PHP 20.00

80 (rate) / 4 (hours a day) = 20 (hourly rate) * 4 (hours a day) * 17 (days of election and voting)

= PHP 1, 360/yr

- **Fewer Processing Errors**

  Rate/Hour = PHP 20.00

  80 (rate) / 4 (hours a day) = 20 (hourly rate) * 4 (hours a day) * 17 (days of election and voting)

  = PHP 1, 360/yr.

- **More Accurate Results**

  Rate/Hour = PHP 20.00

  80 (rate)/ 4 (hours a day) = 20 (hourly rate) * 4(hours a day)*17 (days of election and voting)

  = PHP 1, 360/yr.

- **Faster Record Retrieval**

  Rate/Hour = PHP 20.00

  80 (rate)/ 4 (hours a day) = 20 (hourly rate) * 4(hours a day) *17 (days of election and voting)

  = PHP 1,360/yr.

- **Reduced Data Loss**

  Rate/Hour = PHP 20.00

  80 (rate)/ 4 (hours a day) = 20 (hourly rate) * 4(hours a day) *17 (days of election and voting)

  = PHP 1,360/yr.

- **Higher Quality Service**

  = PHP 5,000/yr.

One Time Cost:

The system cost, which is PHP 100,000, is included in the one time cost. One time cost is inclusive of the price for the developed system and the monetary equivalent for the labor of the workers that developed the system. It also includes the training of the users (PHP 3,000) involved for them to be able to use the system with ease. Lastly, it includes web hosting (PHP 2,694) payable to the company that will host the website. This is the tabular form or the Development, Web Hosting and Training cost of the new system.

System Cost Particulars	Cost
Development Cost	100,000.00
Admin & Student's Training	3,000.00

Web Hosting	2,694 (224.50/month)
TOTAL	**105,694.00**

Table 4: System Cost

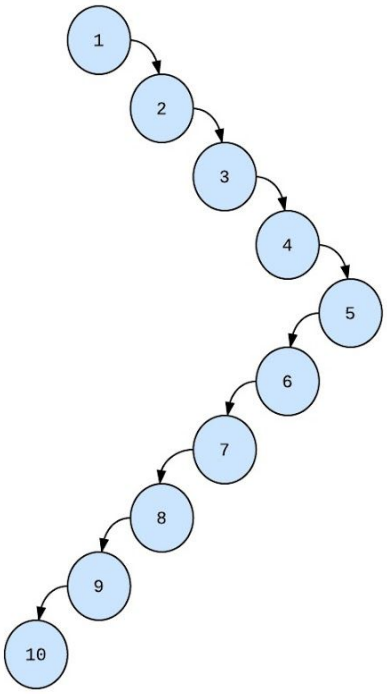
Recurring Cost:

The recurring cost will consist of the maintenance cost and web hosting. The maintenance will cost about PHP 2,500/year, wherein it will be used in maintaining the system codes and checking of system errors or bugs. The web hosting, on the other hand, will cost PHP 2,694 for the system to be up and running on the internet.

4.4. Schedule Feasibility

4.4.1. Gantt Chart

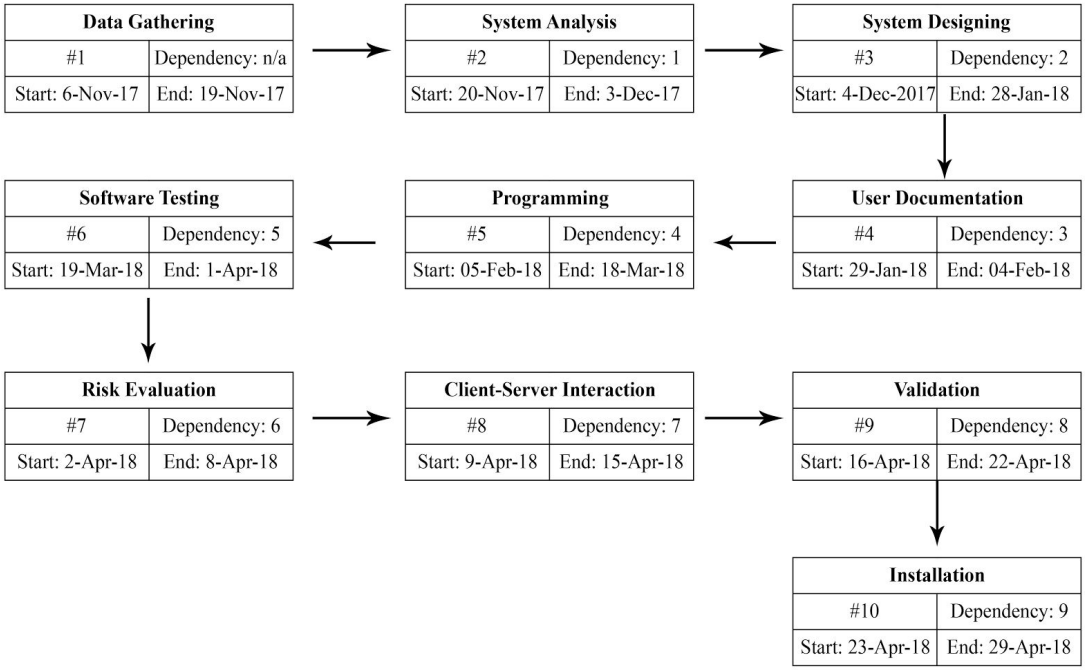
4.4.2. PERT/CPM



Planning	Duration (days)	Description
1	14	Planning
2	14	System Analysis
3	56	System Designing
4	7	User Documentation
5	35	Programming
6	14	Software Testing
7	7	Risk Evaluation
8	7	Client Server Interaction
9	7	Validation
10	7	Installation

This PERT Chart depicts that the maximum time it took to accomplish the data gathering, system analysis and designing is 84 days (12 weeks). The user documentation finished a week after. It took 35 days for the developers to program and begin with the development of the system. In line with the waterfall system development model, every activity and task were done right after another. When the previous tasks were finished, testing and risk evaluation followed. There was also a client-server interaction, validation and, finally, the installation, which all took seven days or exactly three weeks to be accomplished.

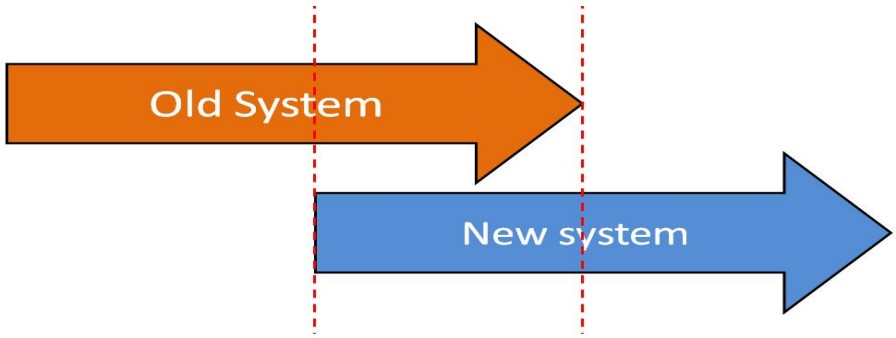
4.4.3. Network Diagram



5. Implementation Strategy

5.1. Implementation Technique To Be Used

The parallel implementation was chosen by the proponents as the implementation technique to be used in the system. In this implementation, the new system will run alongside with the existing system. The manual voting system will materialize together with the online voting system. Once the users are fully supported by the new system it will be officially used in the forthcoming elections.



5.2. Training Plan

Expected Output	Activity	Software Model Feature	People Involved	Objective
Teaching the students on how to vote in the system.	A formal teaching on how to use the voting module and cast a vote or abstain.	Voting module	Students Admin COMELEC (voters)	To allow the votes mainly the students to cast their vote in the most convenient and easiest way possible.
Efficiency of the admin to use system in order to make the students enjoy the website.	A detailed description on how to post or update in the website.	Home and gallery, news and organization module	Administrator	To keep the website users updated on what is happening in their department or organizations.
Promoting on how efficient the website is to the users	Familiarizing the students to the website	Navigation	Students	To obtain more users in the website
Accuracy to enter data in computerized system	Entering the votes in the system.	Voting module	COMELEC	To familiarize access and transact using database system. To observe the voting system orderly.
To let the users know what the website is about and to contact the Admin and/or COMELEC if they have any concerns.	A detailed description of what the CITE website is.	About, contact us module	Students	To let the students know what the website is capable of and have their issues addressed ASAP.

Table 6: Training Plan

B. Technical Requirements Specification

1. Software Paradigm/Model

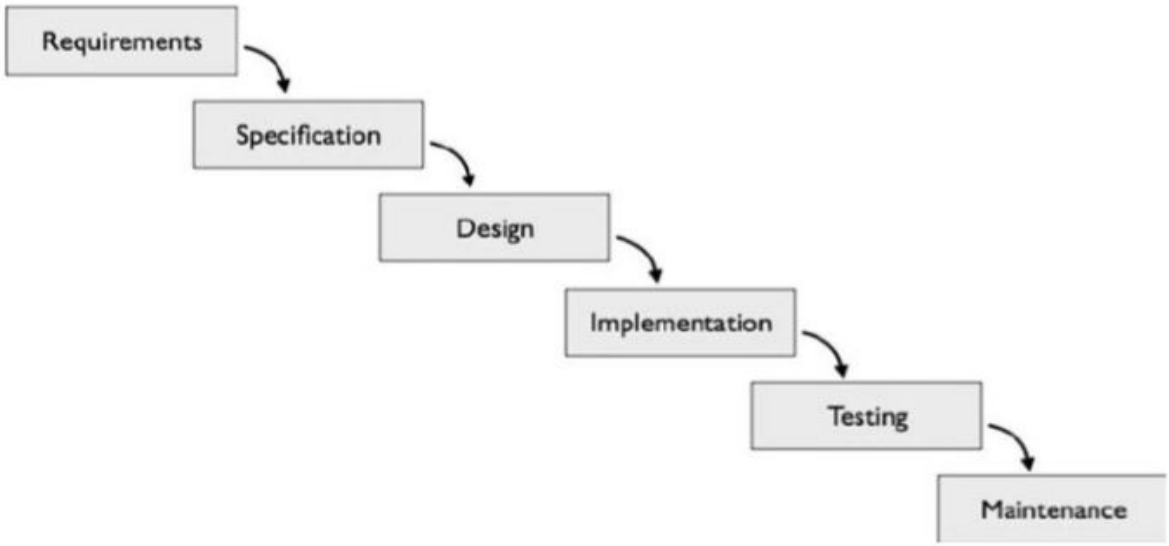


Figure 2: Waterfall SDLC Model

In developing the online voting system, the team opt for the waterfall model wherein each phase must be completed before the next phase can begin. Note that there is no overlapping in the phases.

The sequential phases in Waterfall model are:

1. **Requirement Gathering and Analysis** − In this phase, the team will gather all the possible data and requirements of the system. Through the interview, the team will gather the data regarding the manual processes of voting and election. The solutions on the existing problems of the system will be addressed through plans that will be made.
2. **System Design** − After gathering the requirement specifications, it were all studied and analyzed. The project team prepared the system design such as hardware and software interface. In this phase, the Data Flow Diagram, Database Schema, and other requirements specification were formed.
3. **Implementation** − The prepared system design were used to develop small unit programs. These unit programs were tested for its functionality and integrated into the whole system afterwards. Backend components were added in this stage such as database and addition of functionalities. This phase also includes the developers coordinating with the clients in order to verify if the proposed system is exactly how they want it to be.
4. **Integration and Testing** − After testing the small unit programs, the project team tested the entire system for any faults and failures in the post integration. Here, the developers found bugs, did some minor code changes and system refinement, had been any problems faced. Unit acceptance test was a huge part of the testing because it validated if the proposed system is ready for widespread use or not. Volume testing was also done to determine if the system could handle internet traffic and stress.

5. **Deployment of system** − In this phase, the project team had deployed the software to the clients such as the COMELEC and SG CITE officers. The developers only arrived in this stage because of the client's 'go signal' to send the system to the internet for official use.
6. **Maintenance** − Once the previous phases are accomplished, maintenance will be needed to deliver the changes in the customer environment. Some enhanced features and better versions are also released during this phase. In this part, constant checking of how the system is doing is vital. Check if there is any security breaches, bugs or even the addition of other functionalities.

2. Analysis Model (Existing and Proposed DFD)

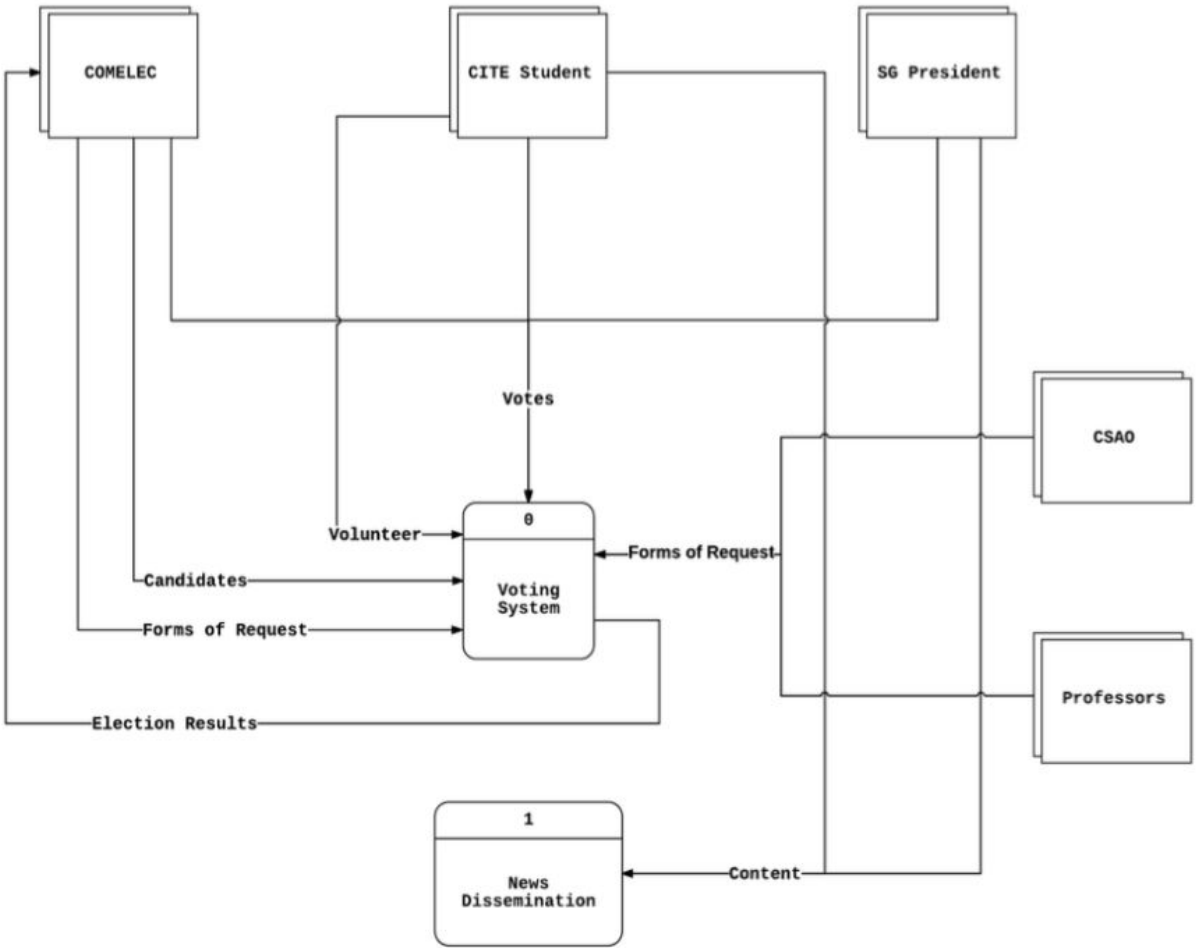


Figure 3: Context Diagram of Existing System

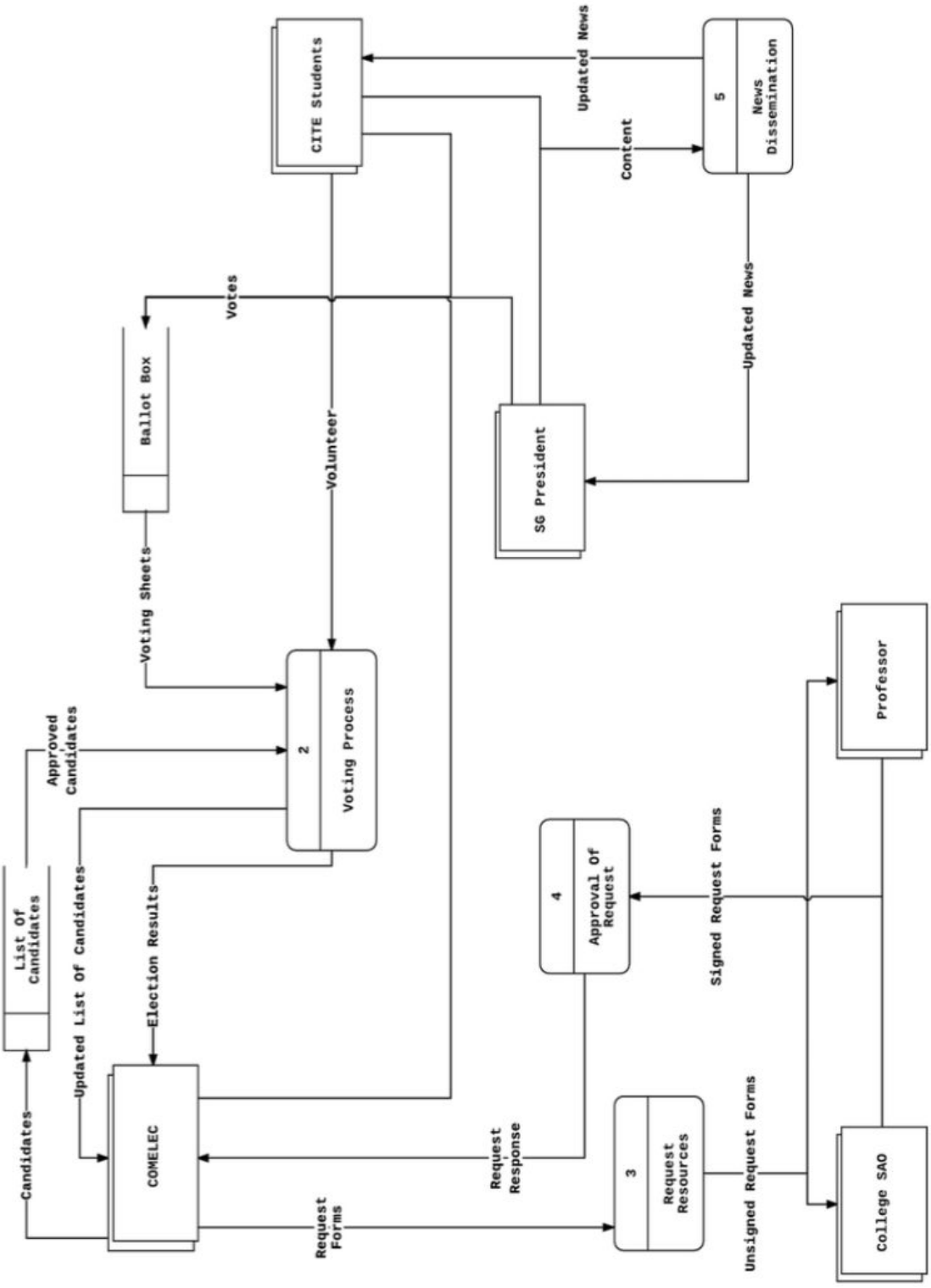


Figure 4: Level 1 Data Flow Diagram of Existing System

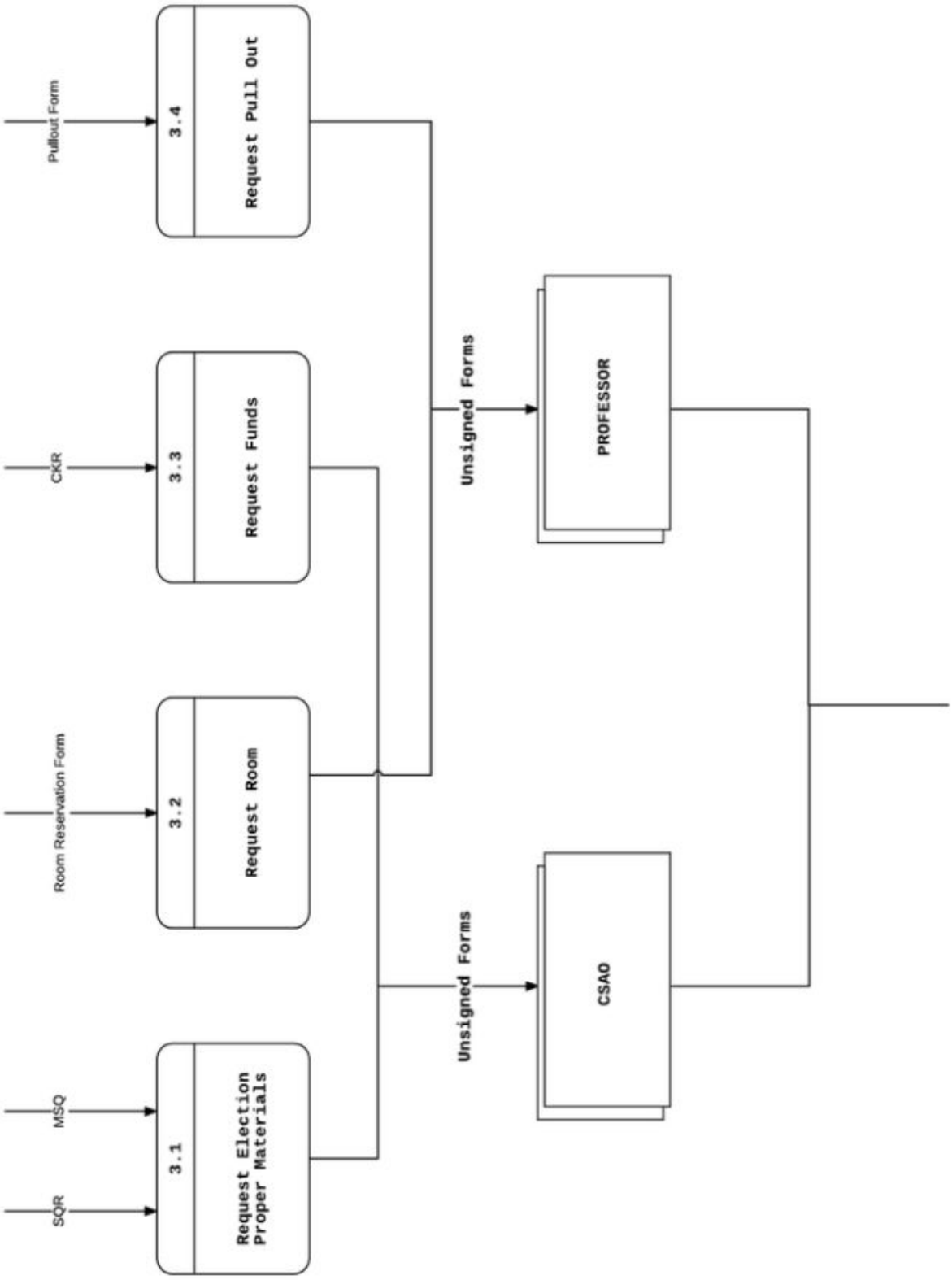


Figure 5: Level 2 Data Flow Diagram of Existing System

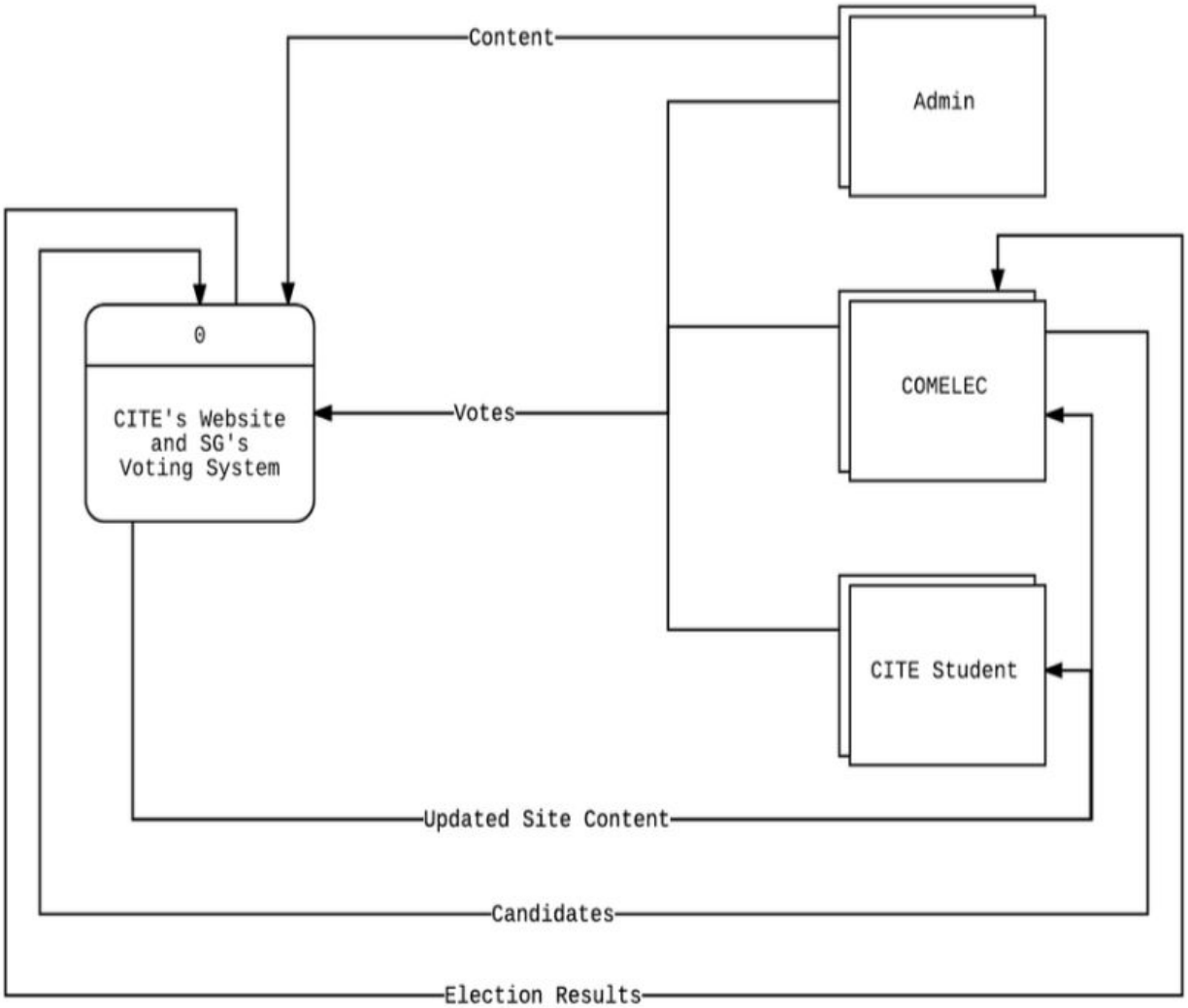


Figure 6: Context Diagram of the Proposed System

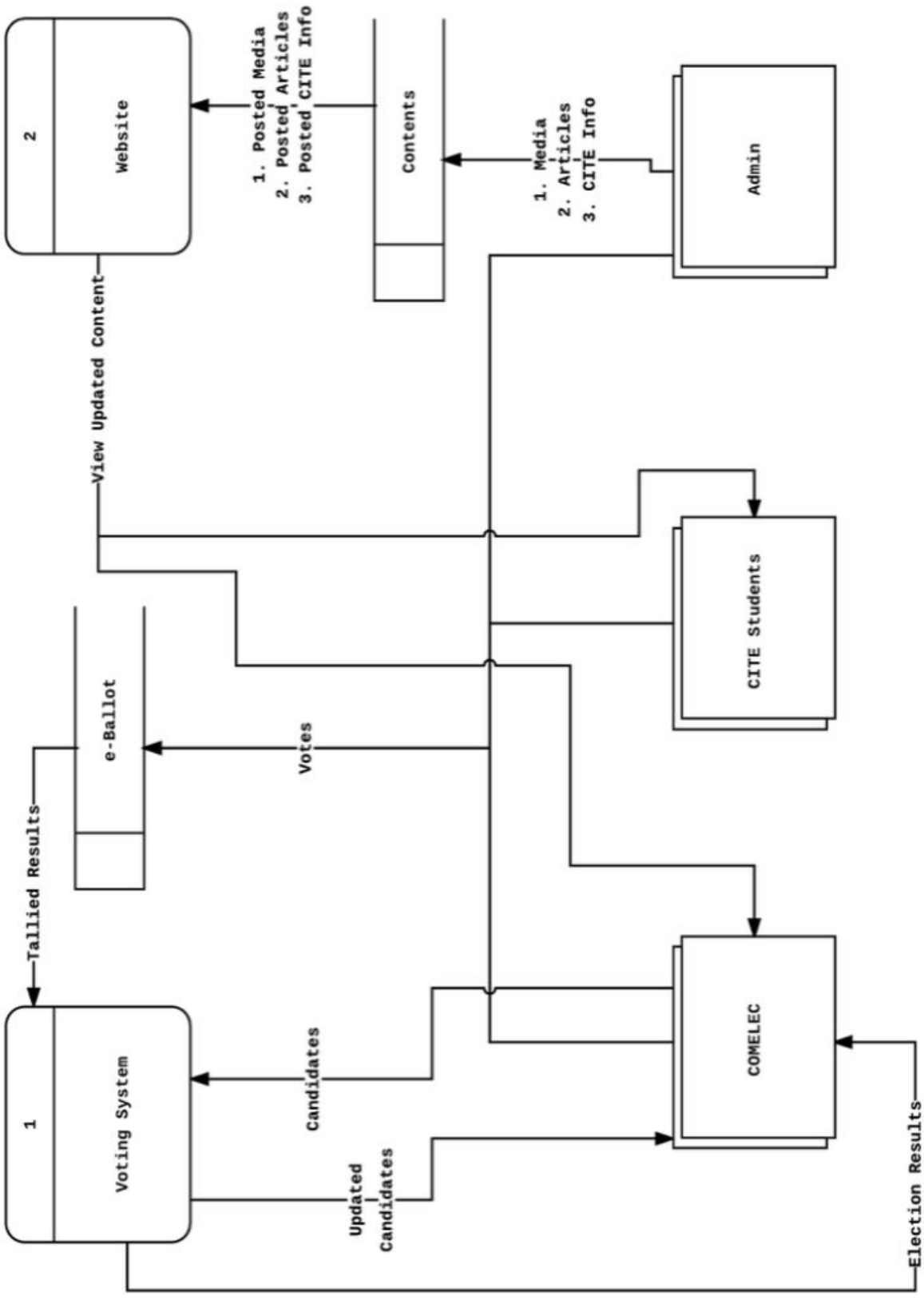


Figure 7: Level 1 Data Flow Diagram of the Proposed System

3. Database Schema of the Proposed System

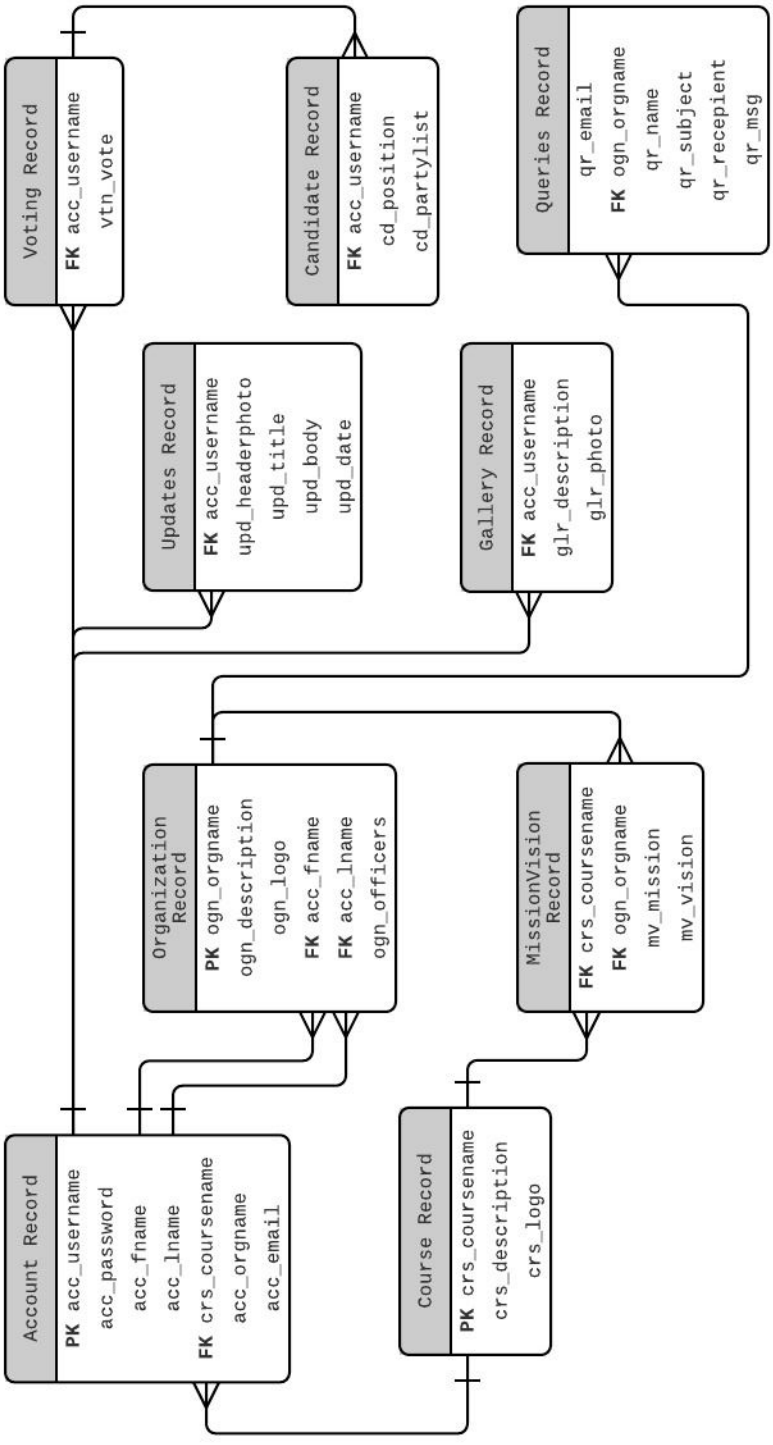


Figure 8: Database Schema

4. **Screen Layout (google drive)**

Figure 9: Homepage

Figure 10: Voting Module

Figure 11: Login Module

Figure 12: News & Updates Section

C. Appendices:

TRANSCRIPT OF THE INTERVIEW

Leo: Gumagamit po ba kayo ng internet, kuryente?

TK: Electricity pag dating sa sariling HQ. Yung duration whole day tas pinapatay din pag lunch break

Leo: Bakit po sa tingin nyo bakit mas efficient ang Online voting

TK: Less manpower,walang masyadong volunteers(students) na maeexcuse sa klase. Malelessen din yung time ng pagboto, yung votation kase na sanay tayo it consumes almost 10 minutes nung prof tuwing ieexcuse sa class.

TK:Since na magiging OL voting na hindi na mangyayare yon kase accesible naman sya kahit sa bahay e

Leo: Yung room po ba na ginagamit dati or pinapasukan e free? –

TK: Chinechek po sya and ieexcuse namin minsan sa prof tas minsan kase sa CITE merong mga prof na mahirap pasukan

Leo: Ilang yung volunteers per election

Tk: Average during SG elections 60-80, They spent half day volunteering.

Leo: Ilang days sila nag vovolunteer?

Tk: minsan kase may bumabalik tas yung iba yung mismong day lang na yon

Leo: Ano ano yung mga hard ware na ginagamit sa existing procedure?

Tk: Computer sa encoding lang tas kaya namang matapos ng 1day. Tas yung counting yun yung matagal, umaabot sya ng mga 3days. Minsan kase pa recount ng pa recount yung iba

Tk: Since online system na sya mababawasan na yung human error

Leo: Pano pala yung rule kung pano mananalo kapag walang kalaban or failed yung election? - Dapat makaabot yung candidate ng 50% +1 para manalo.

Leo: Madalas bang nangyayare ang failed election?

Tk: This year pinakamadami kase madami talagang hindi nakaboto.

Leo: Pano po para maiwasan ang dalawang boto ng isang botante?

Tk: Meron po kaming Attendace sheet dun tas dun na lang sila pipirma. Tas hindi namin pinapaalis yung botante hanggang hindi sila pumipirma

Leo: May cases pa ba in the past na vote buying?

Tk: Wala naman

Leo: Ienencourage nyo ba yung pag file ng candidacy dun sa gagawin naming system or

stick pa din tayo dun sa face to face na physical ba?

Tk: Through form pa din, pag may nagpapasa ng candidacy kami mag rereview non tas papasa pa namin sa SAO. Kelangan pa din kase dun yung grade, iaaverage pa yung grade.(hand us the form of candidacy)

Leo: Pano ba maiiwasan yung failed election tsaka pano kung ayaw talaga nung mga estyudanteng bumoto?

Tk: Actually nag aannounce naman kami lagi pero nasa estyudante pa din kung bakit hindi sila bumoto or kung tinatamad ba sila. Tas nag eextend din naman kami ng election

Leo: Gano katagal yung preparation nyo para sa elections

Tk: 2weeks

Leo:Ano nga pala schedule ng voting?

Tk: March, april pa din kung hindi na babaguhin.

Leo:Gano katagal yung tinatagal ng elections kasama na yung mga extensions?

Tk:- 2weeks po ang max, hindi pa kasama yung bilangan and announcement

Leo: Yung sa appointment pala po?

Tk: bago nag aappoint mag memeeting muna kami. Ako(comelec pres), Sg governor titingnan kung okay lang iappoint yung hindi nanalo or pipili na lang ng iba.

Leo:Gano katagal yung pag aappoint?

Tk: 1week pagkatapos ng announcement pero depende pa din sa SAO and SG

Tinanong namin yung SG kung bakit laging failed yung election nila sabi konti lang daw ang naboto.

Leo: Ano daw magiging effect netong system natin kung baka failed din naman ang mga elections?

Tk: Since OL voting yan madami naman sigurong mag tatry nyan or maeeng ganyo na gamitin kase mas madali.

Leo: Yung budget po ba nato para lang dun sa mga volunteers?

Tk: Oo good for the whole election na yan

Leo:Pano po yung computer na ginagamit nyo?

Tk: Sariling dala lang

Leo: Ang printer po?

Tk:Printing less than 200 pesos, kase yung pagpapaphoto copy naman nung mga form e duplo po yun nasa DRD po yun provided by the school pati po yung ballot DRD na din

Leo:Yung sa candidacy po ba bawal po bang sa system na lang?

Tk: Pwede naman po basta po may forms na ganto tas ipapasa nyo po samin then kami na po ang magpapasa sa SAO. Hindi na naman kase namin iniinterview, inoorient lang namin sila about elections.

Leo: Average na hours po ba ng per day sa voting venue?

Tk: 7:30-12, 1:00-5:00 po

Leo: Okay lang po ban a accessible to sa bahay or wherever?

Tk:.- Ang gusto po kasi ng mga ka officers ko e dito lang sa school tas merong reserve na room tas may mga laptop tas dun na lang boboto lahat

Leo: Hindi po ba mas magtatagal pag dito sa school tas madaming pipilia?

Tk: Kaya naman namin gawan ng paraan yon hindi lang naman siguro isang room ang magagamit namin e. Pwede din naman sa mga complab.

Leo: Sa tingin nyo po ba safe or mas efficient ang OL voting?

Tk: Wala talagang safe na botohan, malelessen lang yung errors tas mapapabilis lang ang election.

Leo: Pano po ba malalaman ng mga estyudante kung voting na?

Tk: nag aannounce naman agad kami 1 month before tuloy tuloy hanggang election, tsaka may posters naman po kaming piniprint.

Leo: Yung dun sa voting po pala, gusto nyo po na nakikita ng mga estyudante ang summary ng mga naboto and okay lang po ba na live na nakikita ang pagdagdag ng boto ng mga tumakbong officer

Tk: Hindi po gusto po namin e pagtapos na lang po ng voting tas kami na po ang mag aannounce. Bawal po kasi yun kaya po kase may ballot tayo dun po ilalagay yung mga binoto tas hanggat hindi na tatapos ang botohan hindi yun bubuksan.

Leo: Tas pag boboto po pala gusto okay lang po ba na kita ng estudyante na makita ang summary ng mga naboto nila?

Tk: Para samin as COMELEC ayaw po namin, Confidential po kase yun. Then sana pagkatapos ng election sana ma store yung naboto ng mga estudyante para po masabing walang nabago.

Leo: Kapag po ba binigay nyo ang resulta sa CITE una pa po ba yung mga executive?

Tk: Hindi pinag sasabay sabay po namin, pag po kaasi may hindi nanalo inaatay pa po namin yung appoinment. Dun sa pag aappoint mo dun po yun sa SG, SAO nag babackground check pa po sila. Ang deliveration po nun ay 1 day lang

Leo: Pwede bang iset na araw na to CITE lang ang boboto pag naging panglahatan na po yung system namin?

Tk: Pwede naman po since nag roroom to room po kami nahihirapan po kameng hanapin yung iba since sa mga major subjects lang naman po nag kakasama sama

DE LA SALLE LIPA
COMMITTEE ON ELECTIONS
STUDENT GOVERNMENT ELECTION 2017 RESULTS
CITE COUNCIL

GOVERNOR	NUMBER OF VOTES	RESULT
CHRIS WARREN MANALO	461	FAILED ELECTION
ABSTAIN	65	
VICE GOVERNOR FOR INTERNAL AFFAIRS		
JAN MARINIE LAYGO	462	FAILED ELECTION
ABSTAIN	64	
VICE GOVERNOR FOR EXTERNAL AFFAIRS		
MICHAELA CAPRICE ROSALES	453	FAILED ELCTION
ABSTAIN	73	
SECRETARY		
AIRA SHAYNE LINGAO	457	FAILED ELECTION
ABSTAIN	69	
TREASURER		
RALPH LAURENCE PASCUA	472	FAILED ELECTION
ABSTAIN	54	
AUDITOR		
GERARD CHRISTIAN BAGUIOS	421	FAILED ELECTION
ABSTAIN	105	
PROGRAM COORDINATOR BSEE		
EMMANUEL JOSE CONCORDIA	50	FAILED ELECTION
ABSTAIN	3	
PROGRAM COORDINATOR BSCS		
ALLISON ROSS ROXAS	31	FAILED ELECTION
ABSTAIN	1	

PROGRAM COORDINATOR BSECE	NUMBER OF VOTES	RESULT
DANICA MARLYN MARZAN	112	FAILED ELECTION
ABSTAIN	7	
PROGRAM COORDINATOR BSIS		
CAROL IRIS GUTIERREZ	13	FAILED ELECTION
ABSTAIN	0	
PROGRAM COORDINATOR BSCPE		
MAHARANEE ARIANE BORLASA	56	FAILED ELECTION
ABSTAIN	0	
PROGRAM COORDINATOR BSIT		
JESSIE JAMES LLANES	91	FAILED ELCTION
ABSTAIN	8	

ANNOUNCEMENT

FROM THE COMELEC:

Student Government Election will be extended until **May 3, 2017 (Wednesday)**. The counting of votes will be rescheduled from **May 2-6, 2017 to May 4-8, 2017**. There will be a remote voting precinct at the following areas at the Student Center, 2nd floor, North Wing:

CBEAM, CITE and CEAS: Working Area
CIHTM and CON: Meeting Room 2

The remote voting precinct will be opened **from 9:00 am to 5:00 pm, no noon break**. Election guidelines will be strictly observed.

MARY JOYCE PLATA
Chairperson, COMELEC

Noted by:

DR. ALDIN GONZALES
Adviser, COMELEC