

Republic of the Philippines

**Polytechnic University of the Philippines**

**Department of Information Technology**

Santa Maria, Bulacan campus

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**Web-Based Voting System for Student Council and Organization Elections of Mater Dei Academy**

**Bachelor of Science in Information Technology**

Program

Instructor

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Proponents

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BSIT 4-2

1. **Project Title**

**WEB-BASED VOTING SYSTEM FOR STUDENT GOVERNMENT**

**AND ORGANIZATION ELECTIONS OF MATER DEI ACADEMY**

1. **Project Overview**

Over the years, part of the Mater Dei Academy’s curriculum in developing its students into well-rounded individuals is involving them in extra-curricular activities such as Student Government and other academic as well as non-academic clubs and organizations. This aims to develop the potential and skills of students as leaders in different organizations, who in turn, may become future leaders in the different aspects of society.

This project intends to solve the project beneficiary’s problems in their current system of voting, which is done manually by using paper ballots and manual counting of votes. However, having a voting system done in a manual fashion has its disadvantages. First, the method is quite costly because the school needs to print ballots every year since the names of the candidates in the yearly elections are dynamic. Secondly, the results are prone to fraud because the ballots can be tampered, and the vote counts can be manipulated. And lastly, counting the votes tend take a lot of time because they are counted manually, as compared to the proposed system, which can display the results way faster than the manual method.

Here, the proponents are suggesting the use of a web-based voting system as a replacement for the manual voting system which has been the method that the school has been employing ever since they started conducted elections. A web-based application/system, as defined by Wikipedia, is a type of client-server computer program that runs through a browser, either from a mobile phone, laptop or a desktop PC.

By applying the use of modern technology, the proponents believe that it will greatly ease up the school’s election process. Since the students will not be required anymore vote inside a classroom and have their classes interrupted as well as helping them to secure their rights to privacy when they are voting, because this proposed system will enable them to vote anywhere using a smartphone or PC that has an internet access. Furthermore, it will make their voting more secure from any fraudulent activities pertinent to the election (i.e. tampering of ballots, vote count manipulation etc.)

1. **High-level System Components**

The proposed voting system has two sides which will also define the type of its users, the Admin side and the Client side. The Admin side contains the modules that are necessary for the creation, monitoring, and management of the election(s), as well as management the records of voters and accounts of administrators. On the other hand, the Client side is the one that will be utilized by the voters. They will be able to vote, manage their password as well see the results and generate reports about the election when the canvassing is done.

* 1. ADMIN-SIDE APPLICATION

3.1.a Login Module – to access the system internally as an admin, the user must provide certain credentials which will be verified by the system if it is correct or not. If the credentials are correct, then the user will be able to gain access in the system as an admin, otherwise he will not be able to access it.

3.1.b Election Module – this is a collection of submodules that are pertinent to the Creation, Management and Closing of an Election event. The module allows the admin user to create an election, produce a list of candidates, management of the ongoing election events

* 1. CLIENT-SIDE APPLICATION

3.2.a Login Module – to access the system internally as a voter, the user must provide certain credentials which will be verified by the system if it is correct or not. If the credentials are correct, then the user will be able to gain access in the system as a voter, otherwise he will not be able to access it.

**3.2.b Voting Module** – This is the part of the system which enables the voter to vote for his/her desired candidates in for every position. After choosing his/her desired candidates, the system lets the voter his/her choices before finalizing it, which then counts as a vote afterwards.

**3.2.c Password Settings** – the user can change his/her password which must meet the system’s requirements for a valid password.

**3.2.d Logout Module** – if there is a Login module, the user must also be able to Logout of the system.

1. **Application Architecture**

The project is using the Enterprise Web Based Architecture as defined by the Woodger Computing Inc., which utilizes the following logical layers: Client Layer, Presentation Layer, Business Logic Layer and the Data Layer. The Client layer of a web application is implemented as a web browser running on the user's client machine.  Its job in a web-based application is to display data and let the user enter/update data. In this project, the semi-intelligent client approach is being used because there are validations and, also, it is generally easier-to-use and requires fewer communications back-and-forth from the server.

The Presentation layer generates webpages and it includes dynamic content in the webpage.  The dynamic content typically originates from a database (e.g. a list of matching products, a list of transaction conducted over the last month, etc.)  The other major job of the presentation layer is to "decode" the webpages coming back from the client (e.g. find the user-entered data and pass that information onto the business logic layer). As for the Business logic, its job is to perform all required calculations and validations, manage workflow (including keeping track of session data), and manage all data access for the presentation tier.

The Data layer is responsible for managing the data.  In the simple case, a data layer may simply be a modern relational database.  However, it may include data access procedures to other data sources like hierarchical databases, legacy flat files, etc. The job of the data layer is to provide the business logic layer with required data when needed and to store data when requested.  Generally-speaking, the architect should aim to have little or no validation/business logic in the data layer since that logic belongs in the business logic layer. However, eradicating all business logic from the data tier is not always the best approach. Not null constraints and foreign key constraints can be considered "business rules" which should only be known to the business logic layer. Most would agree that it is safer/better to include such simple constraints in the database (and to change them, as the business rules evolve).

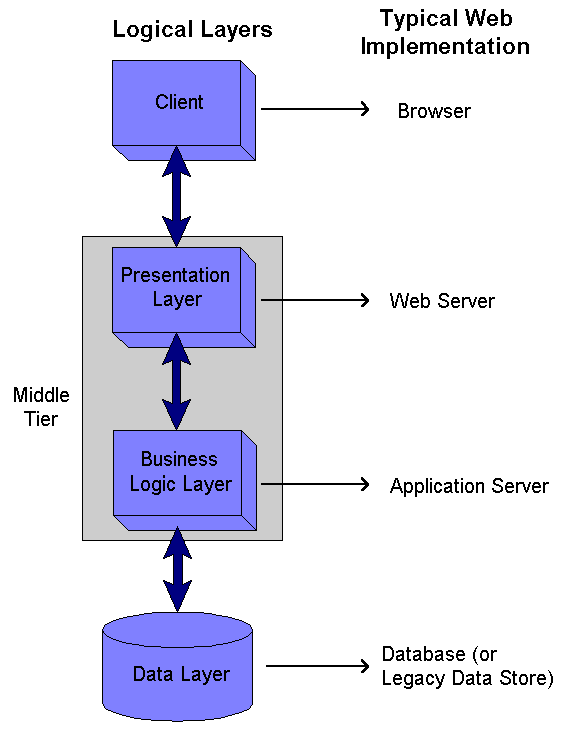


Figure 4.1 Architecture for an Enterprise Web Based Application

1. **Hardware and Software Specifications**
2. **Tools and Technologies Used**

The application tools, which are to be used on front and back end of the system to be developed, should be listed. The reasons for these tools should also be enlisted including the host (or development) platform(s), target platform(s), and programming language(s) to be used.