Design and Implementation of Online Voting System

by

Yeasin AlFaruk
ID: CSE1903018054

Supervised by
Arifur Rahaman

Submitted in partial fulfillment of the requirements for the degree of
Bachelor of Science in Computer Science and Engineering



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SONARGAON UNIVERSITY (SU)
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APPROVAL

The project titled "**Design and Implementation of Online Voting System**" submitted by Md.Yeasin AlFaruk (CSE1903018054) to the Department of Computer Science and Engineering, Sonargaon University (SU), has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Engineering and approved as to its style and contents.

Board of Examiners

Supervisor

Arifur Rahaman
Assistant Proferssor
Department of Computer Science and Engineering
Sonargaon University (SU)

Examiner 1

(Examiner Name and Signature)
Department of Computer Science and Engineering
Sonargaon University (SU)

Examiner 2

(Examiner Name and Signature)
Department of Computer Science and Engineering
Sonargaon University (SU)

Examiner 3

(Examiner Name and Signature)
Department of Computer Science and Engineering
Sonargaon University (SU)

DECLARATION

We, hereby, declare that the work presented in this report is the outcome of the investigation performed by us under the supervision of **Arifur Rahaman, Assistant professor,** Department of Computer Science and Engineering, Sonargaon University, Dhaka, Bangladesh. We reaffirm that no part of this project has been or is being submitted elsewhere for the award of any degree or diploma.

Countersigned	Signature
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(Arifur Rahaman)	Yeasin Alfaruk
Supervisor	ID: CSE1903018054

ABSTRACT

Our project titled Online Voting System is a web-based application. The project "Online Voting System" aims at making the voting process easy in any type of elections. Presently Voting is performed using ballot paper and counting is done manually, hence it consumes a lot of time. They can be possibility of invalid votes. All these make election a tedious task. In our proposed system voting and counting is done with the help of computer in online. The system has a centralized database to keep records of all the Voters and Candidates and final result. The web-based system is time saving, work load reduced information available at time and it provide security for the data. It makes the process easy. The election commission will maintain this website. This is a simple, safe and secure method that takes minimum of time.

ACKNOWLEDGMENT

At the very beginning, we would like to express my deepest gratitude to the Almighty Allah for giving us the ability and the strength to finish the task successfully within the schedule time.

We are auspicious that we had the kind association as well as supervision of **Arifur Rahaman**, Assistant Professor and Head, Department of Computer Science and Engineering, Sonargaon University whose hearted and valuable support with best concern and direction acted as necessary recourse to carry out our project.

We are also thankful to all our teachers during our whole education, for exposing us to the beauty of learning.

Finally, our deepest gratitude and love to my parents for their support, encouragement, and endless love.

LIST OF ABBREVIATIONS

CSS	Cascading Style Sheet
DBMS	Database Management System
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
PERT	Program Evaluation and Review Technique
PHP	Hypertext Preprocessor

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CHAPTER 1

INTRODUCTION

1.1 Introduction

ONLINE VOTING SYSTEM is an online voting technique. In this system people who have citizenship of Bangladesh and whose age is above 18 years of age and sex can give his\her vote online without going to any physical polling station. There is a database which is maintained in which all the names of voters with complete information stored.

In "ONLINE VOTING SYSTEM" a voter can use his\her voting right online without any difficulty. He\She has to be registered first for him/her to vote. Registration is mainly done by the system administrator for security reasons. The system Administrator registers the voters on a special site of the system visited by him only by simply filling a registration form to register voter. Employees seeking registration are expected to contact the system administrator to submit their details. After the validity of them being employees of organization has been confirmed by the system administrator by comparing their details submitted with those in existing databases such as those as the Registrar of Persons, the citizen is then registered as a voter.

After registration, the voter is assigned a secret Voter ID with which he/she can use to log into the system and enjoy services provided by the system such as voting. If invalid/wrong details are submitted, then the citizen is not registered to vote.

1.2 Objectives of the Project

- The specific objectives of the project include:
- Reviewing the existing/current voting process or approach in Organization.
- Coming up with an automated voting system in Organization.
- Implementing a an automated/online voting system.
- Validating the system to ensure that only legible voters are allowed to vote

1.3 Background

The Online voting system (OVS) also known as e-voting is a term encompassing several different types of voting embracing both electronic means of counting votes. Electronic voting technology can include punched cards, optical scan voting systems and specialized voting. It can also involve transmission of ballots and votes via telephones, private computer networks, or the internet. Online voting is an electronic way of choosing leaders via a web driven application. The advantage of online voting over the common "queue method" is that the voters have the choice of voting at their own free time and there is reduced congestion. It also minimizes on errors of vote counting. The individual votes are submitted in a database

which can be queried to find out who of the aspirants for a given post has the highest number of votes. This system is geared towards increasing the voting percentage in Nepal since it has been noted that with the old voting method {the Queue System}, the voter turnout has been a wanting case. With system in place also, if high security is applied, cases of false votes shall be reduced. With the "ONLINE VOTING SYSTEM", a voter can use his\her voting right online without any difficulty. He\She has to register as a voter first before being authorized to vote. The registration should be done prior to the voting date to enable data update in the database. However, not just anybody can vote. For one to participate in the elections, he/she must have the requirements. For instance, he/she must be a registered citizen i.e. must be 18 and above years old. As already stated, the project 'Online Voting' provides means for fast and convenient voting and access to this system is limited only to registered voters. Internet voting systems are appealing for several reasons which include; People are getting more used to work with computers to do all sorts of things, namely sensitive operations such as shopping and home banking and they allow people to vote far from where they usually live, helping to reduce absenteeism rate.

1.4 Security Issues of Online Voting

Foreign experience revealed that they are often confronted by security issues while the online voting system is running. The origin of the security issues was due to not only outsider (such as voters and attackers) but also insider (such as system developers and administrators), even just because the inheritance of some objects in the source code are unsuitable. These errors caused the voting system to crash.

The proposed solutions were correspondingly outlined to hold back these attacks. For example, to avoid hacker making incursion into the voting system via network, we can design our system to transmit data without network. Another example is to limit voter to input particular data, so that we can prevent the command injection from running

1.5 Scope of the Project

It is focused on studying the existing system of voting in and to make sure that the peoples vote is counts, for fairness in the elective positions. This is also will produce:

- Less effort and less labor intensive, as the primary cost and focus primary on creating, managing, and running a secure web voting portal.
- Increasing number of voters as individuals will find it easier and more convenient to vote, especially those who are abroad having name on voter list.

1.6 Features

- This system is a lot easier to independently moderate the elections and subsequently reinforce its transparency and fairness.
- Less capital, less effort, and less labor intensive, as the primary cost and effort will focus primarily on creating, managing, and running a secure online portal.
- Increased number of voters as individual will find it easier and more convenient to vote, especially those abroad.

CHAPTER 2

TASK AND ACTIVITIES PERFORMED

System Analysis

System Analysis is a detailed study of the various operations performed by a system and their relationships within and outside of the system. Here the key question is- why all problems exist in the present system? What must be done to solve the problem? Analysis begins when a user or manager begins a study of the program using existing system. During analysis, data collected on the various files, decision points and transactions handled by the present system. The commonly used tools in the system are Data Flow Diagram etc. Training, experience and common sense are required for collection of relevant information needed to develop the system. The success of the system depends largely on how clearly the problem is defined, thoroughly investigated and properly carried out through the choice of solution. A good analysis model should provide not only the mechanisms of problem understanding but also the frame work of the solution. It should be studied thoroughly by collecting data about the system. Then the proposed system should be analyzed thoroughly in accordance with the needs.

- System planning and initial investigation
- Information Gathering
- Applying analysis tool for structured analysis
- Feasibility study
- Cost/ Benefit analysis

In our existing system the recording of user's information is done manually, so taking more time for searching the information of the users. Another major disadvantage is that preparing the list of members that viewed any user's information takes more time. So, after conducting the feasibility study I decided to make the manual Online Voting System to be computerized.

preliminary Analysis

In the analysis the scope of project and risk associated with it was investigated and found out that Online voting System is one of the most demanding software in the field of politics. It was learnt that rather than using flexible and user-friendly computerized system, they are maintaining all their activities manually with wastage of valuable time. I tried to figured out that some employees were using excel to enter their data. So, through research it was found that the development will surely overcome the overall problems related with the cost and time.

Problem Analysis

It is related with the accessing the detailed information of a user and a candidate. So, I have initiated this project with simple requirements regarding the user and candidate information. Some of the problems for designing and developing this project are discussed below: Some of the problems for designing and developing this project are discussed below:

Design and Development Problem

- Problem in running XAMPP.
- To debug the error during the development.
- To show a relationship between entity.
- Minor error with database table.

Feasibility Analysis

A feasibility analysis is conducted once the problem is clearly understood. The purpose of the study is to determine whether the problem is worth solving. It is an analysis and evaluation of a proposed project to determine if it is technically feasible, feasible with the estimated cost and profitable.

Economical Analysis

The economic feasibility of a system is used to evaluate the benefits achieved from and the costs incurred for the project or system. This is done by a process called cost benefit analysis. It provides tangible and intangible benefits like reduction in cost, more flexibility, faster activities, proper database management, etc.

The application is medium scale application and is economically feasible for us to accomplish it. This involves cost benefits analysis. There is no problem of high cost and cost benefits analysis.

Software Analysis

- Consumes a long-time for development of web application.
- Research and analysis cost to determine the actual need in real world.

- Implementation of application in the server and cost associated with the space in server.

Data Conversion

Another cost associated while implementing this web application is the data conversion. The previously used software database must be stored and backup such that there will be no loss in implementing a new web application which consumes time as well as money.

Operational Feasibility

The system is operational feasible as the system can be operate by normal users with basic computer skills without any additional trainings. We have developed this system with the willingness and ability to create, manage and operate the system which is easy for the end users to operate it.

CHAPTER 3

SYSTEM REQUIREMENTS

Hardware Requirements

- Processor: Intel
- RAM: 4GB
- Hard Disk: 1TB
- Speed: 1.1GHz

Software Requirements

- Operating System: Windows
- Scripting Language: PHP
- Back-End: MYSQL
- Front-End: HTML5 and CSS
- Supporting Tolls: JS
- Type: Web Application
- Server: XAMPP 3.3.0(Apache, MYSQL, PHP)

CHAPTER 4

TOOLS AND TECHNOLOGIES USED

4.1 Introduction to PHP

PHP is Hypertext preprocessor. It was abbreviated previously as Personal Home Page. It is a programming language widely used to build web application or websites. PHP a server-side scripting language embedded in HTML in its simplest form. PHP allows web developers to create dynamic content and flexibility feature that have made it a cornerstone in the web development world.

- PHP files can contain text, HTML, CSS, JavaScript, and PHP
- PHP code is executed on the server, and the result is returned to the browser as plain HTML
- PHP files have extension ".php"
- PHP can generate dynamic page content
- PHP can create, open, read, write, delete, and close files on the server
- PHP can collect form data
- PHP can add, delete, modify data in your database
- PHP can be used to control user-access
- PHP can encrypt data

4.2 Introduction to HTML

HTML refers to the Hypertext Markup Language. HTML is not a programming language. It's a markup language. HTML is used to create webpages. It uses many tags to make a webpage. It is a tag-based language. The tags of HTML are surrounded by angular bracket. It can use wide ranges of colors, objects and layouts.

- First advantage it is widely used
- Every browser supports HTML language
- Easy to learn and use
- HTML elements tell the browser how to display the content
- HTML elements label pieces of content such as "this is heading", "this is a paragraph".
- HTML document itself begins with <html> and ends with </html>
- The visible part of the HTML document is between <body> and </body>
- It is by default in every window so don't need to purchase extra software

4.3 Introduction to CSS

CSS (Cascading Style Sheet) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML. CSS is used to style and layout web pages for example, to alter the font, color, size, and spacing of content, split it into multiple columns, or add animations and other decorative features. The language can be applied to any kind of XML document. One of the favored features is its ability to allow the sorting of document content written in markup language (HTML) from document presentation written in CSS. Here are advantages of CSS in website design.

- Search engine optimization and app appearance
- Maintainability and browser compatibility

4.4 Introduction to JS

JS (JavaScript) is a cross platform, object-oriented programming language used by developers to make web pages interactive. It allows developers to create dynamically updating content, use animations, popup menus, clickable buttons, control multimedia. JS is a dynamic programming language that is used for web development, in web application, for game development, and more. JS helps us to execute complex actions and also enables the interaction of websites with visitors. Using JavaScript, it is also possible to load the content in a document without reloading the webpage. The most important feature of JavaScript is that functions are objects. That's is. Understanding this will open up a whole new understanding of the JavaScript language. In JavaScript, functions are objects.

4.5 What is XAMPP

XAMPP is a free and open-source cross-platform web server solution stack built by Apache friends, which consists mostly of the Apache HTTP server. MySQL database, and interpreters for PHP. It is used for testing the projects and modifications offline before launching it on the global web. One such very important functionality provided by XAMPP is the creation of the MySQL database. This is done by using phpMyAdmin.

.

Apache Web Server

It is an HTTP a cross-platform web server. It is used worldwide for delivering web content. The server application has made free for installation and used for the community of developers under the aegis of Apache Software Foundation. The remote server of Apache delivers the requested files, images, and other documents to the user.

PHP

It is the backend scripting language primarily used for web development. PHP allows users to create dynamic websites and applications. It can be installed on every platform and supports a variety of database management systems

CHAPTER 5

MODULES PROPOSED SYSTEM

5.1 Administrative Module

Online Voting is a voting system by which any voter can use his\her voting rights from anywhere in Bangladesh. Online voting for association contains-:

- Voter's information in database
- Voter's Name with ID
- Voters vote in database
- Calculation of total number of votes

Various operational works that are done is system are:

- Recording information of the voter in voter database
- Checking of information filled by voter
- Discard the false information
- Each information is maintained by admin

5.2 User/Voter module

The user after registration only can login for voting. The user will view nominee details with their image before they can vote. After knowing the nominee details the user can login for voting. They should vote for board of director and the manager in the association. The count will take for each voting. After voting the particular person/user cannot login to vote again.

CHAPTER 6

SYSTEM DIAGRAM

6.1 Data Flow Diagram

The data flow diagram (DFD) is a graphical tool used for expressing system requirement in a graphical form. The DFD also knows the bubble chart as the purpose of clarification system requirements and identification major transformation that will become program in system design. The DFD can be stated as the starting point of the design phase that functionality decomposes the requirements specification down to the lowest level of details. The DFD consists of series of bubble joined by lines. The bubble joined by lines. The bubble represents data flow is does not to construct a Data Flow Diagram, we use

- **Arrow**: An arrow identifies the data flow in motion. It is a pipeline through which information is flow like the rectangle in flowchart.
- **Circle**: A circle stands for process that converts data into information.
- **Open End Box**: Open ended box represents a data store, data at rest or a temporary repository of data.
- **Squares**: Square defines a source or destination of system.

Level 0

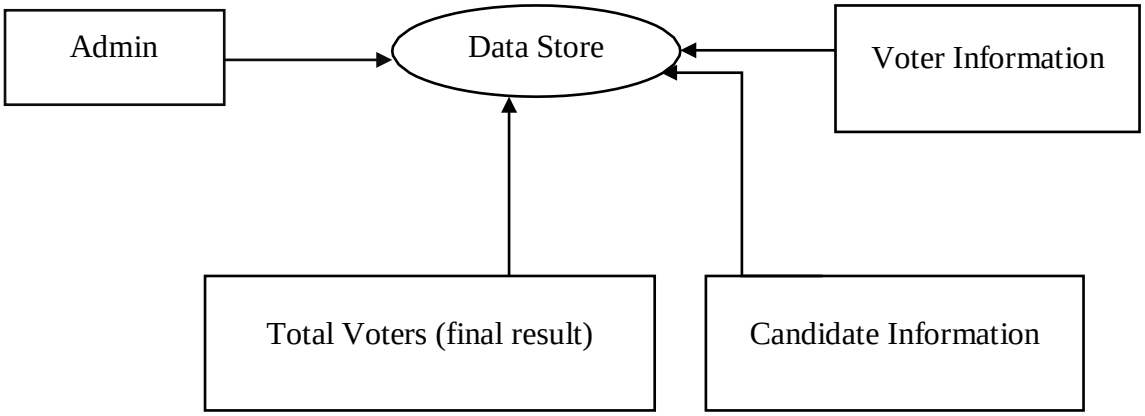


Figure 6.1: Data Flow Diagram

Level 1

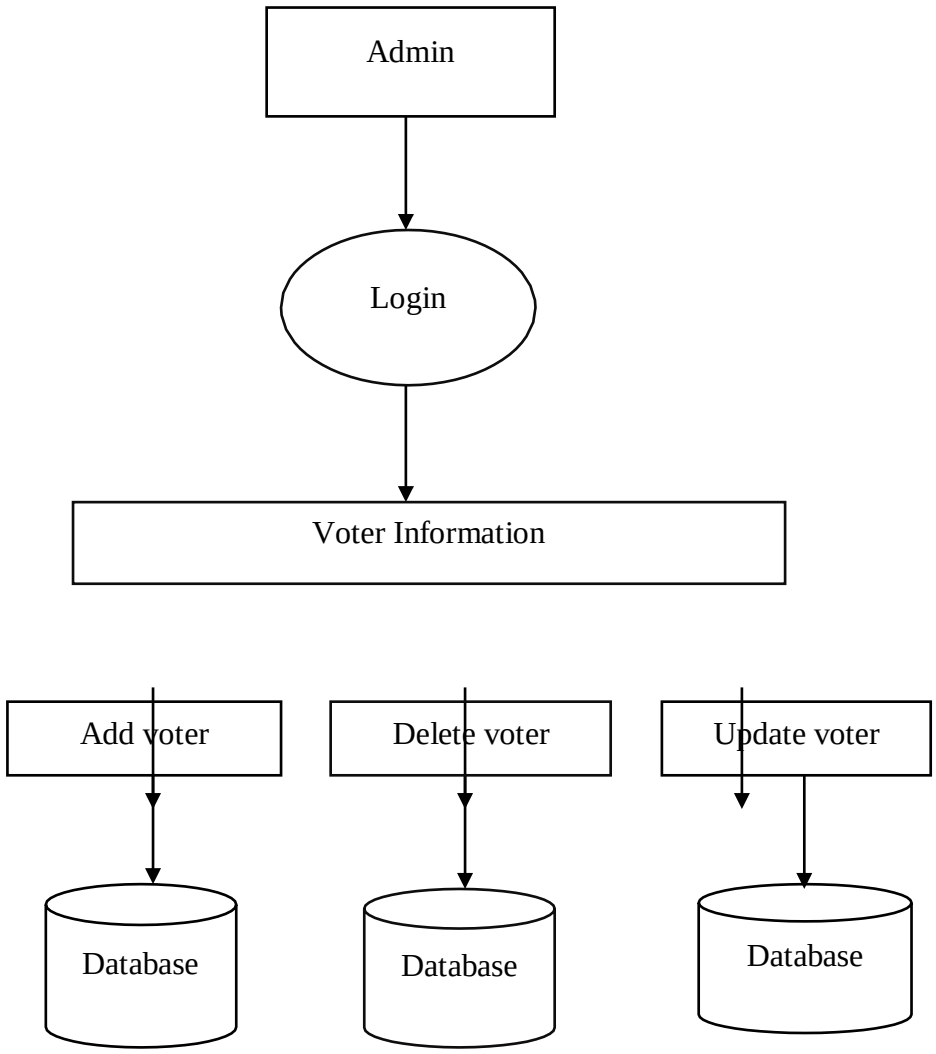


Figure 6.2: Admin Data Flow Diagram

6.2 E-R Diagram

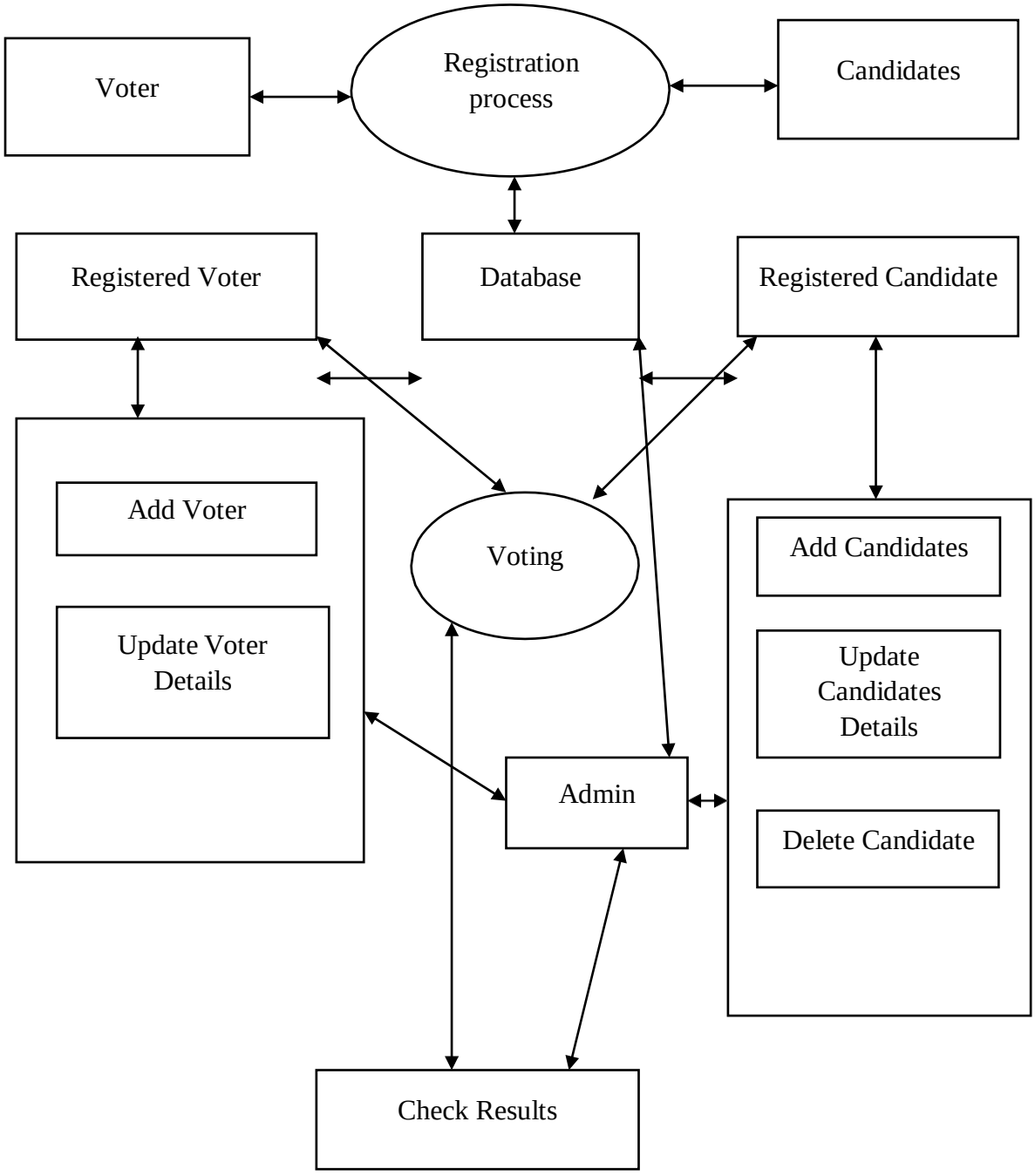


Figure 6.3: E-R Diagram

CHAPTER 7

DATABASE TABLE

7.1 Admin Table

Name	Type	Key	Description
admin	varchar(100)	Primary Key	Login id for Admin
password	varchar(100)	Foreign Key	Password for Login

Table 7.1: Admin Table

7.2 Voter Table

Name	Type	Key	Description
VoterID	Int(11)	Primary key	VoterID
FirstName	varchar(150)	Foreign key	Frist of Name
LastName	varchar(150)	Foreign key	LastName
MiddleName	varchar(100)	Foreign key	MiddleName
Username	varchar(100)	Foreign key	Username
Password	varchar(100)	Foreign key	password
Year	varchar(100)	Foreign key	year
Status	varchar(20)	Foreign key	Status

Table 7.2: Voter Table

7.3 Candidate Table

Name	Type	Key	Description
CandidateID	int(11)	Primary key	CandidateID
abc	varchar(1)	Foreign key	Abc
Position	varchar(200)	Foreign key	Year Representativ
Party	varchar(100)	Foreign key	Party
FirstName	varchar(200)	Foreign key	FirstName
LastName	varchar(200)	Foreign key	LastName
MiddleName	varchar(100)	Foreign key	MiddleName
Gender	varchar(6)	Foreign key	Gender
Year	varchar(100)	Foreign key	Year
Photo	varchar(200)	Foreign key	Partysymbol

Table 7.3: Candidate Table

7.4 Vote Count Table

Name	Type	Key	Description
ID	Int(11)	Primary Key	Candidate Serial no
CandidateID	Int(11)	Foreign key	Voter id of thecandiadte
votes	Int(11)	Foreign key	Count of vote

Table 7.4: Voter Count Table

CHAPTER 8

TESTING

8.1Testing

Testing is evaluation of the software against requirements gathered from users and system specifications. Testing identifies important defects, flaws, or an error in the application code that must be fixed. It also assessment the feature of a system. Testing assesses the quality of the product.

8.1.1 Unit Testing

Unit testing refers to the testing certain functions and areas of the code. It gives the ability to verify that all the functions work as expected. Eventually, it helps to identify failures in the algorithms as well as logic to help improve the quality of the code that composes a certain function.

8.1.2 Integration Testing

Integration testing is basically a logical extension of unit testing. In simple words, two tested units are combined into a component and the interface between them is tested. It identifies problems that occur when different units are combined the different modules of this project have undergone integration testing while being merged.

8.1.3 System Testing

System testing tests the behavior of whole system as defined by the scope of the development project. It might include tests based on risks as well as requirement specifications, business process, use cases or high-level description of system behavior, interactions with the operating systems and system resources. It is most often the final test performed to verify that the system meets the specification and its objectives. System testing has been performed at the completion of each feature and is still taking place to make improvements on the existing system.

CHAPTER 9

SHAP SHOTS OF OUR APPLICATION

9.1 Admin Login Page

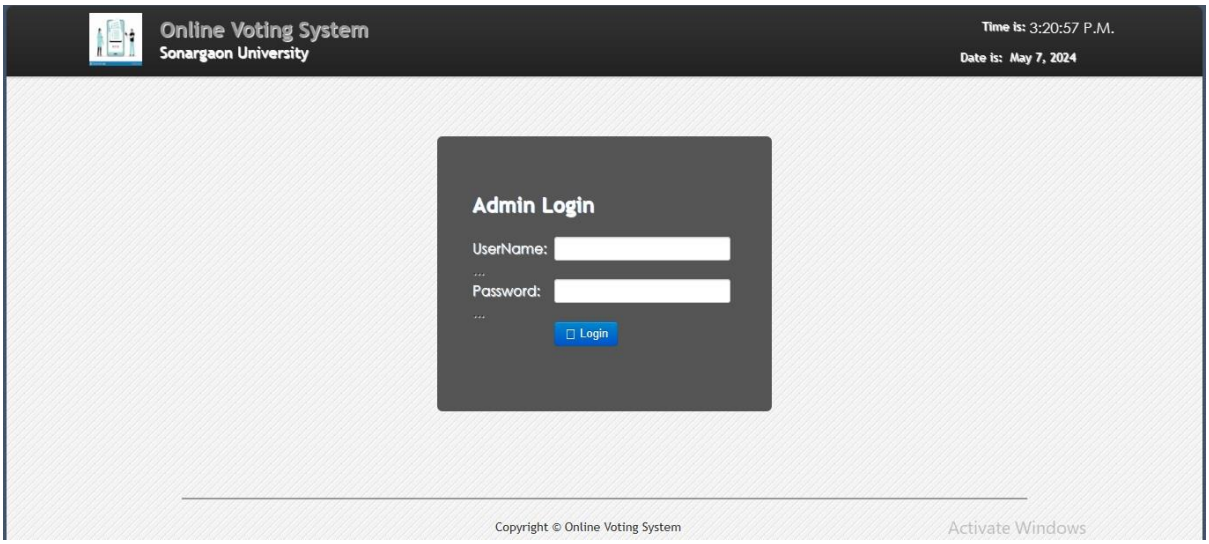


Figure 9.1: Admin Login Page

9.2 Admin Home Page

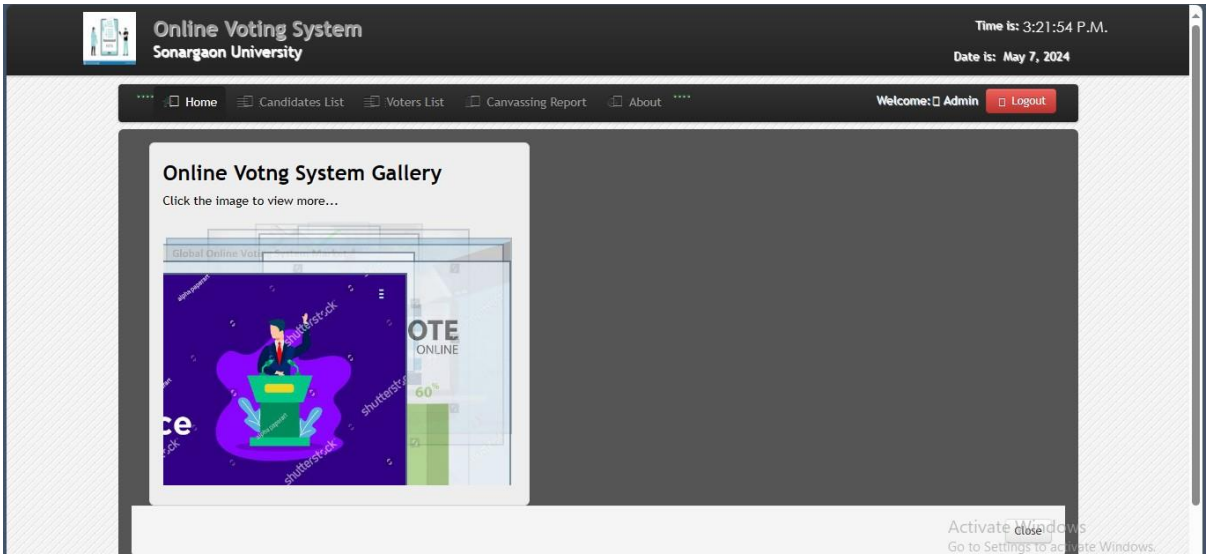


Figure 9.2: Admin Home Page

9.3 Candidate Registration page

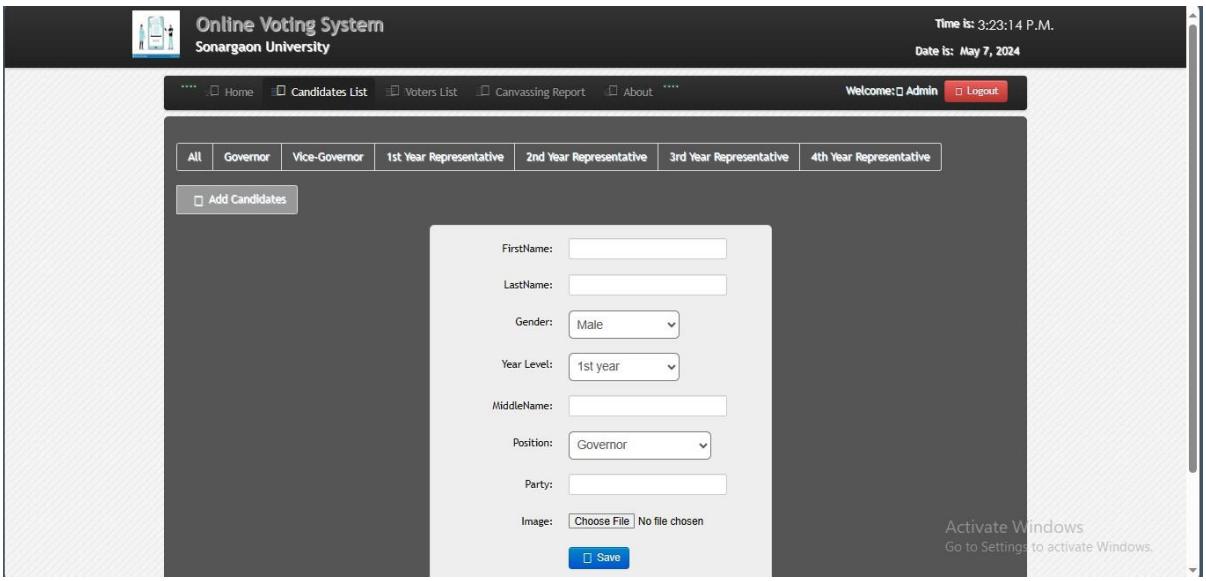


Figure 9.3: Candidate Registration Page

9.4 Voter Login Page

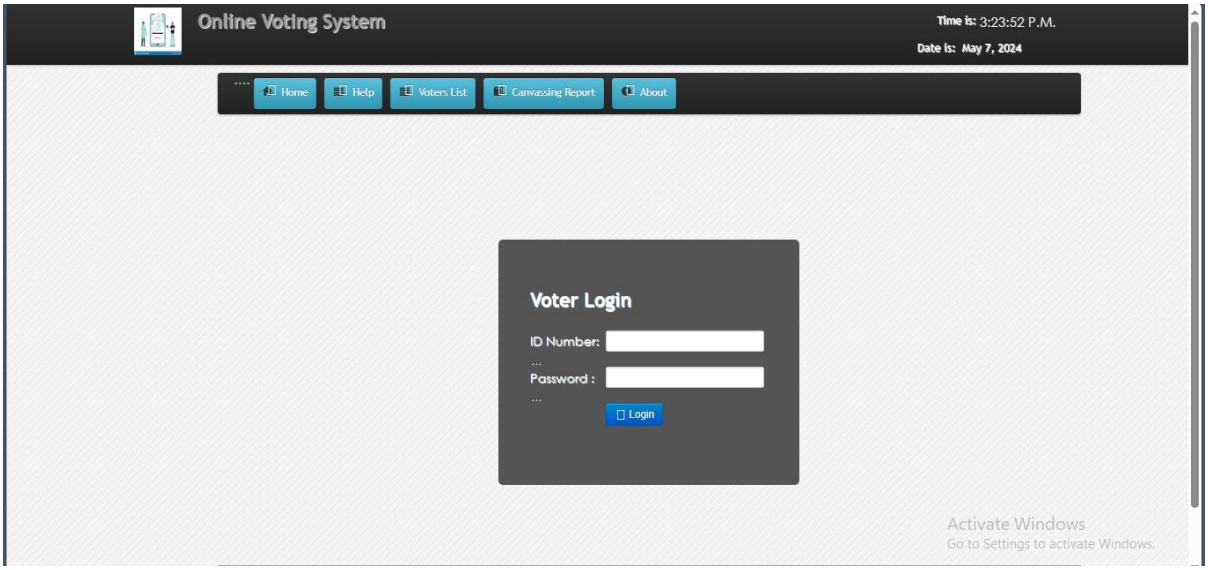


Figure 9.4: Voter Login Page

CHAPTER 10

CONCLUSION AND FUTURE WORKS

10.1 Conclusion

This Online Voting system will manage the Voter's information by which voter can login and use his voting rights. The system will incorporate all features of voting system. It provides the tools for maintaining voter's vote to every party and it count total no. of votes of every party. There is a database which is maintained by the in which all the names of voter with complete information stored.

In this member who had registered his/her information on the database and when he/she want to vote he/she has to login by his email and password and can vote to any candidate only single time. Voting detail store in database and the result is displayed by calculation. By online voting system percentage of voting is increases. It decreases the cost and time of voting process. It is very easy to use and it is less time consuming. It is very easy to debug.

10.2 Future Works

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

10.3 Limitation

Foreign experience revealed that they are often confronted by security issues while the online voting system is running. The origin of the security issues was due to not only outsider (such as voters and attackers) but also insider (such as system developers and administrators), even just because the inheritance of some objects in the source code are unsuitable. These errors caused the voting system to crash.

The proposed solutions were correspondingly outlined to hold back these attacks. For example, to avoid hacker making incursion into the voting system via network, we can design our system to transmit data without network. Another example is to limit voter to input particular data, so that we can prevent the command injection from running. It is not yet ready to operate at the national level.

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