ABSTRACT

On-line Voting System is a web-based system that facilitates the running of elections. All user interaction is performed remotely through the user's web browser. Overall process of election would be maintaining by this project including Voters registration, Candidates Registration, Vote Casting facility and as well as Results counting and declaration. In this application, voters can give their votes to college from anywhere and at any time. The administrator can view all the details of the candidates and if necessary he can delete the details of the candidate. The SOV system provides online voters registration forms for students where students registers and are allowed to log in as either students or delegates or candidates. Each registered user has a password to log in. The system compute and gives the election results for all the posts and provides reports for the whole election process. The main objective of this system is to design, develop and implement an efficient, user friendly, interactive web-based student voting system.

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1. STUDY PHASE

1.1 INTRODUCTION

Online voting is an electronic way of choosing leaders via a web driven application. It provides a platform for simplifying the electoral process for all institutions that employ voting in decision-making. The Online Voting System contains a database which is maintained and in which all the names of students with some basic information are stored. The individual votes are submitted in the database which can be queried to find out which of the aspirants for a given post has the highest number of votes. However, not just anybody can vote. For one to participate in the elections, he/she must have the requirements. The Online Voting System calculates the results faster, reduces human efforts, and also enables voters to cast their votes from anywhere, anytime. Occurrences of vote miscounts was drastically reduced since at the backend of this system resides a well-developed database. It also provides for user-friendly graphical interfaces and tools which make voting easy and enjoyable.

1.2 OBJECTIVES

1.2.1 Main Objective

To design, develop and implement an efficient, user friendly, interactive web-based student voting system.

1.2.2 Specific Objectives

- To develop a system that will capture candidates and voters details
- To develop a system that will facilitate online voting.
- To develop a system that will generate reports for the election process.

1.3 TECHNOLOGIES, MATERIALS AND METHODS

1.3.1 DATABASE TOOLS

MySQL:

MySQL is a fast, easy to use relational database. It is currently the most popular open-source database. It is very commonly used in conjunction with PHP scripts to create powerful and dynamic server-side applications.

MySQL is used for many small and big businesses. It is developed, marketed and supported by MySQL AB, a Swedish company. It is written in C and C++.

1.3.2 PROGRAMMING TOOLS

PHP:

- PHP stands for Hypertext Pre-processor.
- PHP is an interpreted language, i.e., there is no need for compilation.
- PHP is a server-side scripting language.
- PHP is faster than other scripting languages, for example, ASP and JSP.
- **Performance**: Script written in PHP executes much faster than those scripts written in other languages such as JSP & ASP.
- **Open Source Software**: PHP source code is free available on the web, you can develop all the version of PHP according to your requirement without paying any cost.
- **Platform Independent**: PHP are available for WINDOWS, MAC, and LINUX & UNIX operating system. A PHP application developed in one OS can be easily executed in other OS also.
- **Compatibility**: PHP is compatible with almost all local servers used today like Apache, IIS etc.
- **Embedded**: PHP code can be easily embedded within HTML tags and script.

1.4 FEASIBILITY ANALYSIS

A feasibility study is an analysis that takes all of a project's relevant factors into account—including economic, technical, legal, and scheduling considerations—to ascertain the likelihood of completing the project successfully. Project managers use feasibility studies to discern the pros and cons of undertaking a project before they invest a lot of time and money into it.

Feasibility studies also can provide a company's management with crucial information that could prevent the company from entering blindly into risky businesses.

Understanding Feasibility Studies

A feasibility study is simply an assessment of the practicality of a proposed plan or project. As the name implies, these studies ask: Is this project feasible? Do we have the people, tools, technology, and resources necessary for this project to succeed? Will the project get us the return on investment (ROI) that we need and expect?

The goals of feasibility studies are as follows:

- To understand thoroughly all aspects of a project, concept, or plan
- To become aware of any potential problems that could occur while implementing the project
- To determine if, after considering all significant factors, the project is viable—that is, worth undertaking

The Importance of Feasibility Studies

Feasibility studies are important to business development. They can allow a business to address where and how it will operate. They can also identify potential obstacles that may impede its operations and recognize the amount of funding it will need to get the business up and running. Feasibility studies aim for marketing strategies that could help convince investors or banks that investing in a particular project or business is a wise choice.

1.4.1 TECHNICAL FEASIBILITY

Technical feasibility concerns whether a project can meet its performance objectives.
A study of resource availability that may affect the ability to achieve an acceptable system. This evaluation determines whether the technology needed for the proposed system is available or not.

- Can the work for the project be done with current equipment existing software technology & available personal?
- Can the system be upgraded if developed?
- If new technology is needed then what can be developed?
- his is concerned with specifying equipment and software that will successfully satisfy the user requirement. The technical needs of the system may include:

Front-end and back-end selection

An important issue for the development of a project is the selection of suitable front-end and back-end. When we decided to develop the project we went through an extensive study to determine the most suitable platform that suits the needs of the organization as well as helps in development of the project. The aspects of our study included the following factors.

Front-end selection:

1. It must have a GUI that assists employees that are not from IT background.
2. Scalability and extensibility.
3. Flexibility.
4. Robustness.
5. According to the organization requirement and the culture.
6. Must provide excellent reporting features with good printing support.
7. Platform independent.
8. Easy to debug and maintain.
9. Event driven programming facility.
10. Front end must support some popular back end like Ms Access.

According to the above stated features we selected PHP as the front-end for developing our project.

Back-end Selection:

1. Multiple user support.
2. Efficient data handling.

3. Provide inherent features for security.
4. Efficient data retrieval and maintenance.
5. Stored procedures.
6. Popularity.
7. Operating System compatible.
8. Easy to install.
9. Various drivers must be available.
10. Easy to implant with the Front-end.

According to above stated features we selected MY SQL as the backend. The technical feasibility is frequently the most difficult area encountered at this stage. It is essential that the process of analysis and definition be conducted in parallel with an assessment to technical feasibility. It centers on the existing computer system and to what extent it can support the proposed system.

1.4.2 ECONOMIC FEASIBILITY

Economic feasibility is a kind of cost-benefit analysis of the examined project, which assesses whether it is possible to implement it. This term means the assessment and analysis of a project's potential to support the decision-making process by objectively and rationally identifying its strengths, weaknesses, opportunities and risks associated with it, the resources that will be needed to implement the project, and an assessment of its chances of success. It consists of market analysis, economic analysis, technical and strategic analysis.

1.4.3 OPERATIONAL FEASIBILITY

Operational feasibility is the measure of how well a proposed system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development.[10]

The operational feasibility assessment focuses on the degree to which the proposed development project fits in with the existing business environment and objectives with regard to development schedule, delivery date, corporate culture and existing business processes.

To ensure success, desired operational outcomes must be imparted during design and development. These include such design-dependent parameters as reliability, maintainability, supportability, usability, reducibility, disposability, sustainability, affordability and others.

These parameters are required to be considered at the early stages of design if desired operational behaviours are to be realised. A system design and development requires appropriate and timely application of engineering and management efforts to meet the previously mentioned parameters. A system may serve its intended purpose most effectively when its technical and operating characteristics are engineered into the design. Therefore, operational feasibility is a critical aspect of systems engineering that needs to be an integral part of the early design phases.

1.5 SYSTEM ANALYSIS

System analysis is the detailed study of various operations and their relationship within and outside the system. It is the first step in developing and managing systems. System analysis is concerned with becoming aware of the problem, identifying the relevant and most decisional variables, analysing and synthesizing the various factors and determining an optimal or at least a satisfactory solution or program of action.

Since the current project (College Election Management System) is aimed to provide an easy and simple way to both administrator and voters in the collect election process, much importance was given to system analysis part. A preliminary study was conducted in detail and several fact-finding techniques like interviewing, record searching; observation, comparison etc. were used to reach a better decision. The current system for this each activity was deeply studied and analysed. All the forms and other printed or non-printed formats for data collection were checked accurately and findings were compared. Observation was done to a great extent to see the difficulties of the process and time delay in finding results. Accurate study was conducted to know the system in a much better manner.

The objectives of the system analysis are:

- Identifying the need.

- Analysing the existing and proposed system.

- Evaluating the feasibility study.

- Perform economic and technical analysis.

• Identifying the hardware and software requirements.

• Allocating functions to the hardware and software.

• Create a system definition

The existing is manual system and is very difficult to handle and it is not so accurate. So the proposed system is a computerized system, which is a menu driven system. We include a number of special features to the project for the proper functioning of the system. We have designed the system user friendly. Security is an important feature of the system. We have provided enough measures to prevent unauthorized data handling.

The proposed system is a computerized Election management system. The main objective of the system is to overcome the draw backs of the existing system. We can achieve these objectives by computerizing the whole activities that are carried out manually. In the proposed system there are provisions to store all details in different tables. Speed and accuracy are the main benefits of the proposed system. The new system has been proposed to handle the existing functions in more efficient manner.

1.5.1 EXISTING SYSTEM

Before going to design of the proposed system, it is necessary to study the existing system. The Current Election system is running manually. The Voter has to Visit to polling stations to cast their Vote. The registration process of Voters into Voter List is manual. Also Vote counting has to be done by hands manually which consume a lot of time as well as possibility of mistakes. Voters must be present at the day of election in the college to cast his/her Vote. All the details of the election are stored in records. Take much time and effort to analysis, calculate and finalize the result. No proper information is available.

1.5.2 LIMITATIONS

The study of the existing system helps to determine what the problems are:

- Counting process is slow
- Errors during the counting process
- Absenteeism

- High cost
- Chances of fraud and cheating
- Inaccurate results

1.5.3 PROPOSED SYSTEM

Description

The proposed system all the data related to elections in the college is done online from anywhere and at any time. No physical effort and paperwork are needed. There is no chance of displacement of the data. Analyzing and calculating the results is made very easy and accurate. All the information about voters can be viewed by the administrator and can be accessed easily whenever needed.

1.5.4 ADVANTAGES

- Only eligible voters are allowed to vote.
- Every voter shall cast only one vote
- It must be impossible to change anybody’s vote
- The complete voting procedure must be so transparent
- User friendly
- Robustness; it functions no matter any failure
- Hacker secure
- Transparency; users can check the system integrity without any trouble.

1.6 SYSTEM REQUIREMENT SPECIFICATION

PURPOSE

This paper describes an online voting system that was designed to meet the electoral needs of universities and colleges, and also tackles the inherent problems of the present manual voting system. This current system—manual voting—is characterized by absenteeism, inconvenience, long queues, stress, a lot of paper work, error-prone human effort involved in vote computation, omissions, delays and other election irregularities which plague the system and defeat the whole aim of voting. In view of the rapid development of computer technology in virtually all fields of operations and its use in relation to information management, it has become pertinent to look into the development of an Online Voting System that can achieve the following:

- Conduct free and fair elections.
- Safeguard data and information in the system.
- Reduce workload in the process of conducting elections.
- Keep accurate record of votes.
- Reduce time wasted in announcing election results.
- Eliminate disenfranchising electorates.

The objectives of the proposed Online Voting System for Colleges and Universities is to use computer technology or information technology to simplify the electoral process and to

- Review the existing/current voting process or approach in colleges/universities;
- Design an automated voting system that should be able to handle extremely large volumes of data;
- Implement an automated/online voting system that should support multi-user environment;

SCOPE

Regarding the above literature research and taking in to consideration its drawbacks and limitations .The existing Election Management System is a manual system and it is very difficult to handle and it is not so accurate. So the proposed system is a computerized system, which is a menu driven system. We include a number of special features to my project for the proper functioning of the system. We have designed the system as user friendly. Security is an important feature of the system. We have provided enough measures to prevent unauthorized data handling.

The proposed system is a computerized Student Evaluation System. The main objective of the system is to overcome the draw backs of the existing system.. In the proposed system there are provisions to store all details in different tables. Speed and accuracy are the main benefits of the proposed system. The new system has been proposed to handle the existing functions in more efficient manner.

2. DESIGN PHASE

2.1 INTRODUCTION TO DATA FLOW DIAGRAM

A Data Flow Diagram is a network that describes the flow of data and processes that change, or transform, data throughout the system. This network is constructed by use a set of symbols that do not imply a physical implementation. It is a graphical tool for structured analysis of the system requirements. DFD models a system by using external entities from which data flows to a process, which transforms the data and creates, output-data-flows which go to other processes or external entities or files. Data in files may also flow to processes as inputs.

There are various symbols used in a DFD. Bubbles represent the processes. Named arrows indicate the data flow. External entities are represented by rectangles. Entities supplying data are known as sources and those that consume data are called sinks. Data are stored in a data store by a process in the system. Each component in a

DFD is labelled with a descriptive name. Process names are further identified with a number.

The Data Flow Diagram shows the logical flow of a system and defines the boundaries of the system. For a candidate system, it describes the

Input (source), outputs (destination), database (files) and procedures (data Flow), all in a format that meet the user's requirements.

The main merit of DFD is that it can provide an overview of system requirements, what data a system would process, what transformations of data are done, what files are used, and where the results flow.

Rules for constructing a Data Flow Diagram

1. Arrows should not cross each other

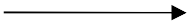
2. Squares, circles and files must bear names.

3. Decomposed data flow squares and circles can have same time.

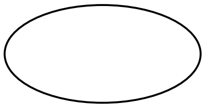
4. Choose meaningful names for data flow

5. Draw all data flows around the outside of the diagram

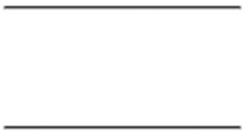
Basic Data Flow Diagram Symbols



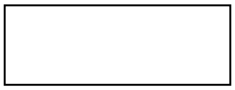
A **data flow** is a route, which enables packets of data to travel from one point to another. Data may flow from a source to a process and from data store or process. An arrow line depicts the flow, with arrow head pointing in the direction of the flow.



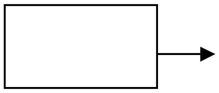
Circles stands for process that converts data in to information. A process represents transformation where incoming data flows are changed into outgoing data flows.



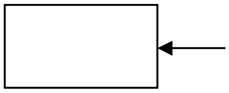
A **data store** is a repository of data that is to be stored for use by a one or more process may be as simple as buffer or queue or sophisticated as relational database. They should have clear names. If a process merely uses the content of store and does not alter it, the arrowhead goes only from the store to the process. If a process alters the details in the store then a double headed arrow is used.



A **source or sin**k is a person or part of an organization, which enters or receives information from the system, but is considered to be outside the contest of data flow model.



Request



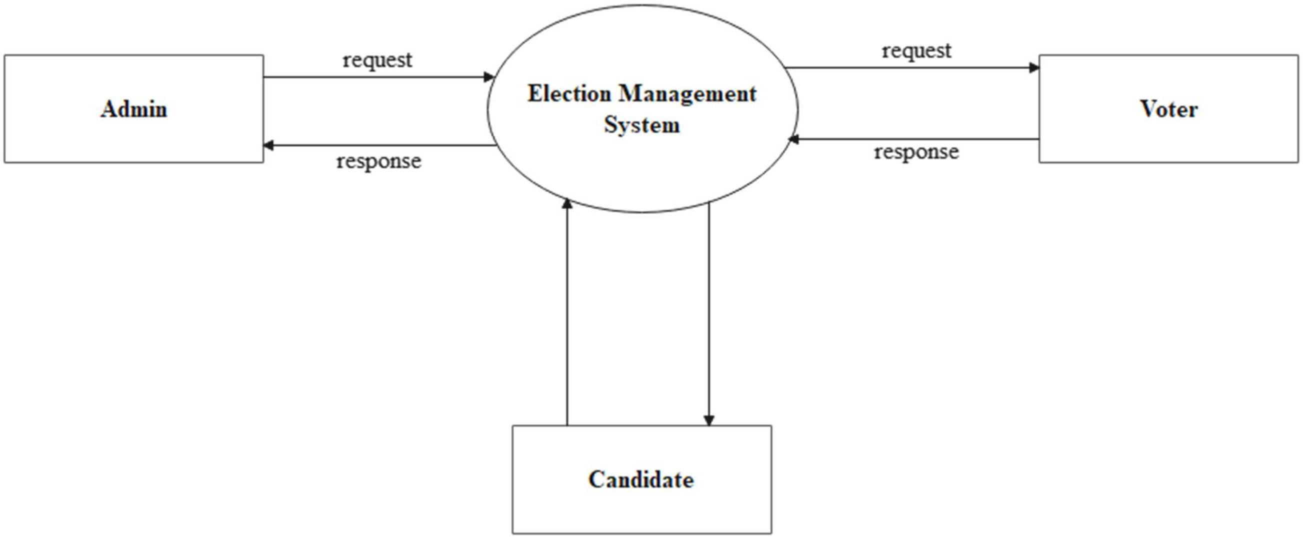
Response

2.2 DATA FLOW DIAGRAMS

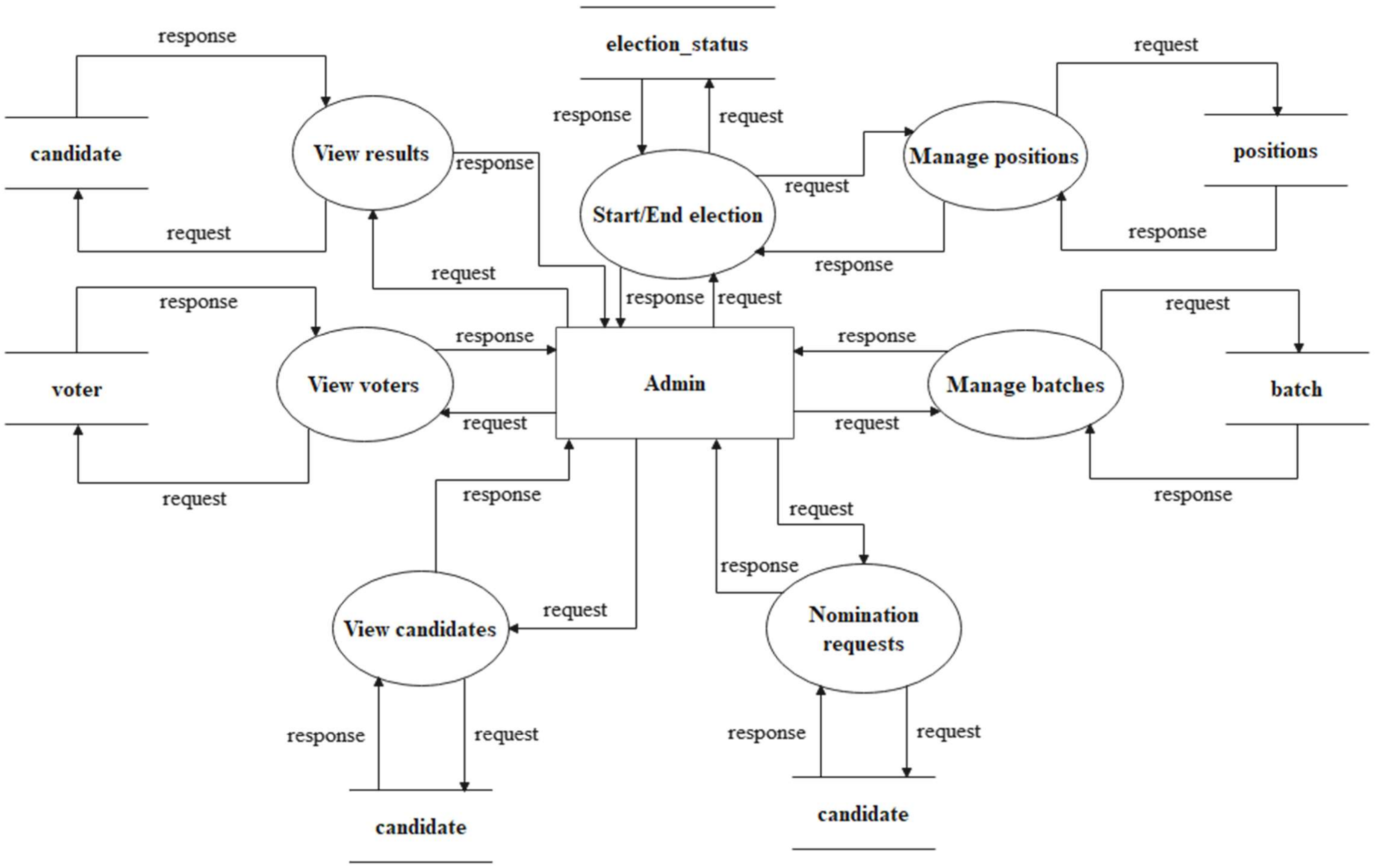
Each component in a DFD is labelled with a descriptive name. Process name are further identified with number. Context level DFD is draw first. Then the process is decomposed into several elementary levels and is represented in the order of importance. A DFD describes what data flow (logical) rather than how they are processed, so it does not depend on hardware, software, and data structure or file organization.

A DFD methodology is quite effective; especially when the required design is clear and the analyst need a notation language for communication.

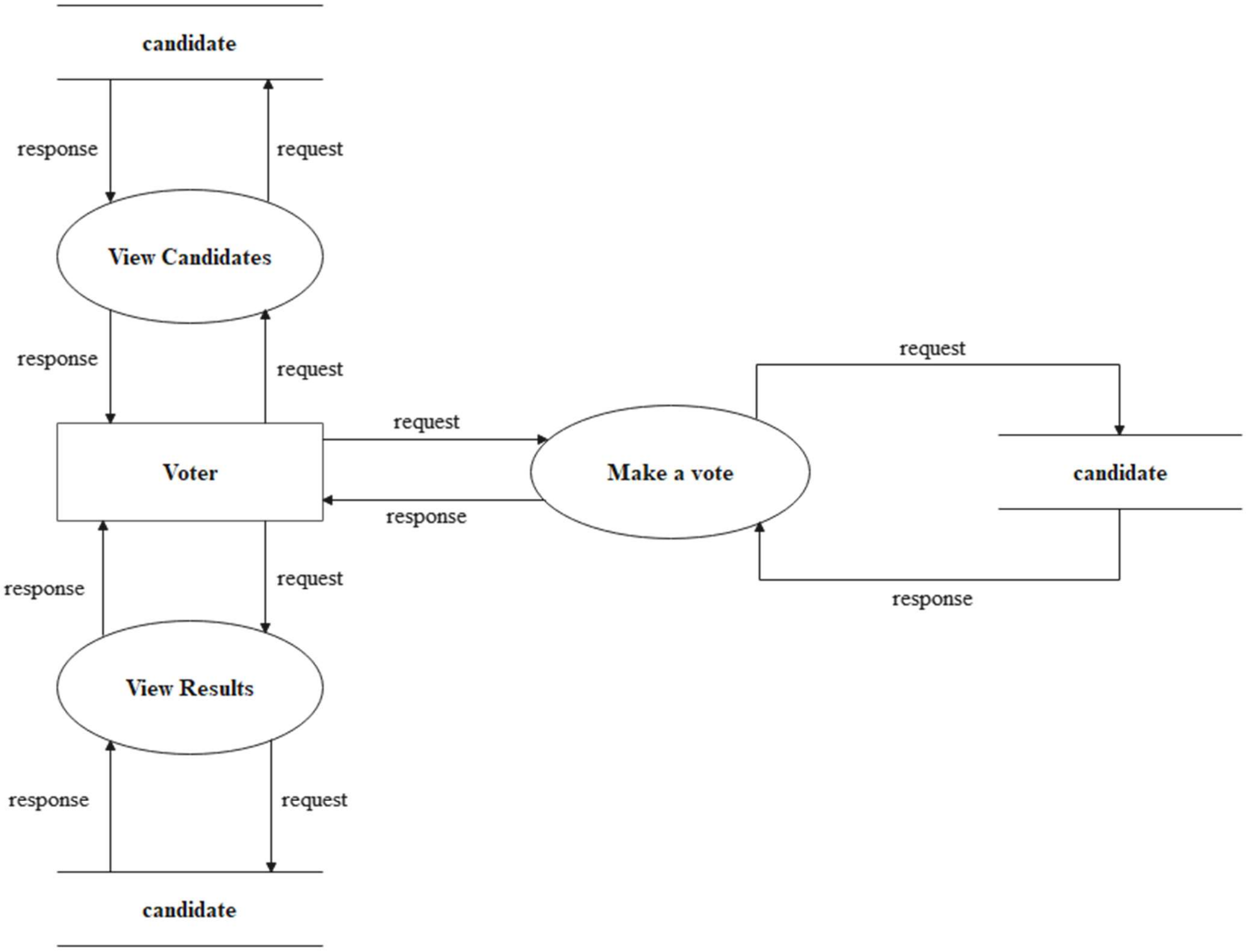
2.2.1 LEVEL 0 DFD: CONTEXT DIAGRAM



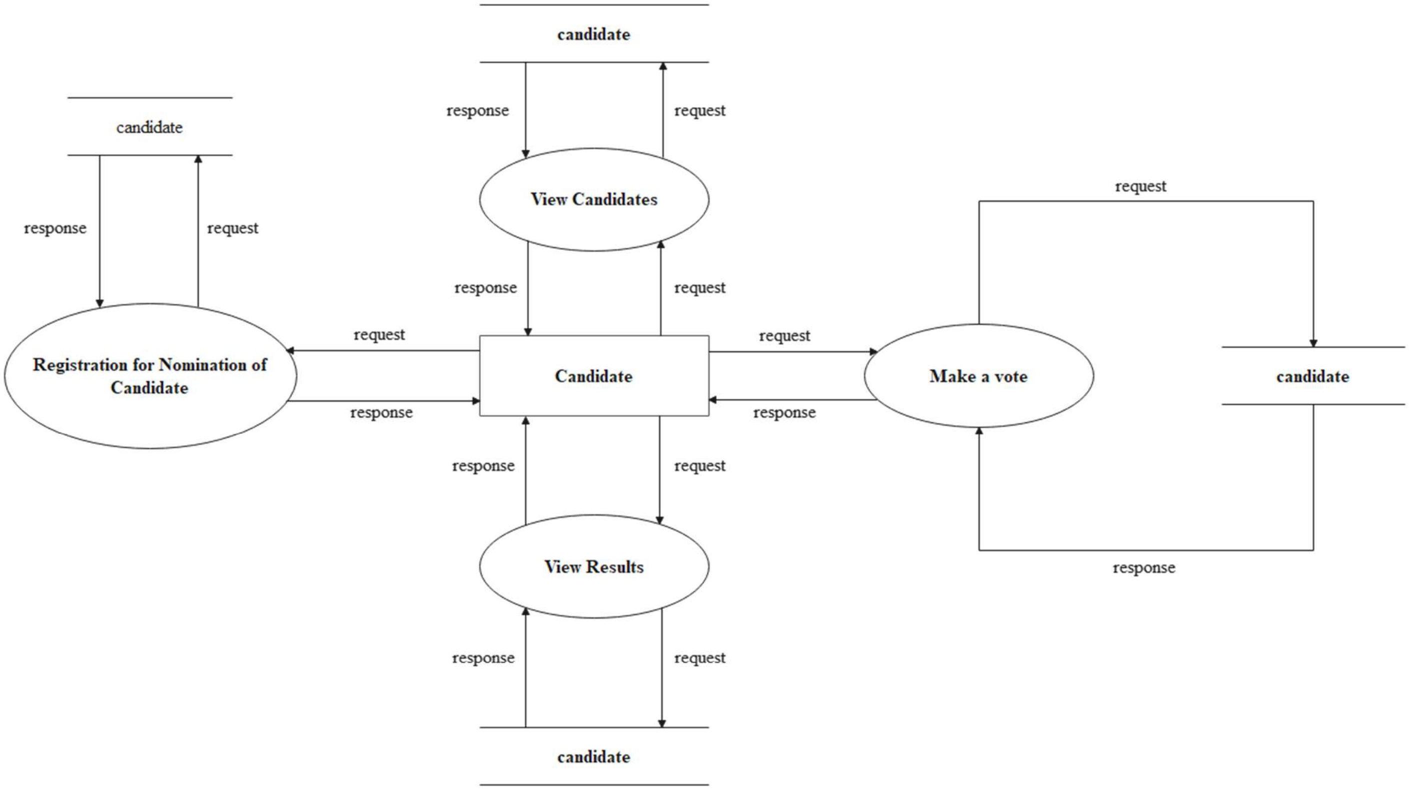
2.2.2 LEVEL 1 DFD FOR ADMIN



2.2.3 LEVEL 1 DFD FOR VOTER



2.2.4 LEVEL 1 DFD FOR CANDIDATE

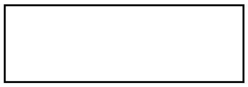


2.3 INTRODUCTION TO ER DIAGRAM

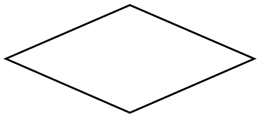
An entity relationship diagram (ERD) is a data modelling technique that graphically illustrates an information system’s entities and the relationships between those entities. An ERD is a conceptual and representational model of data used to represent the entity framework infrastructure.

The elements of an ERD are:

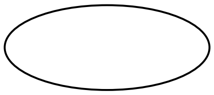
- Entities



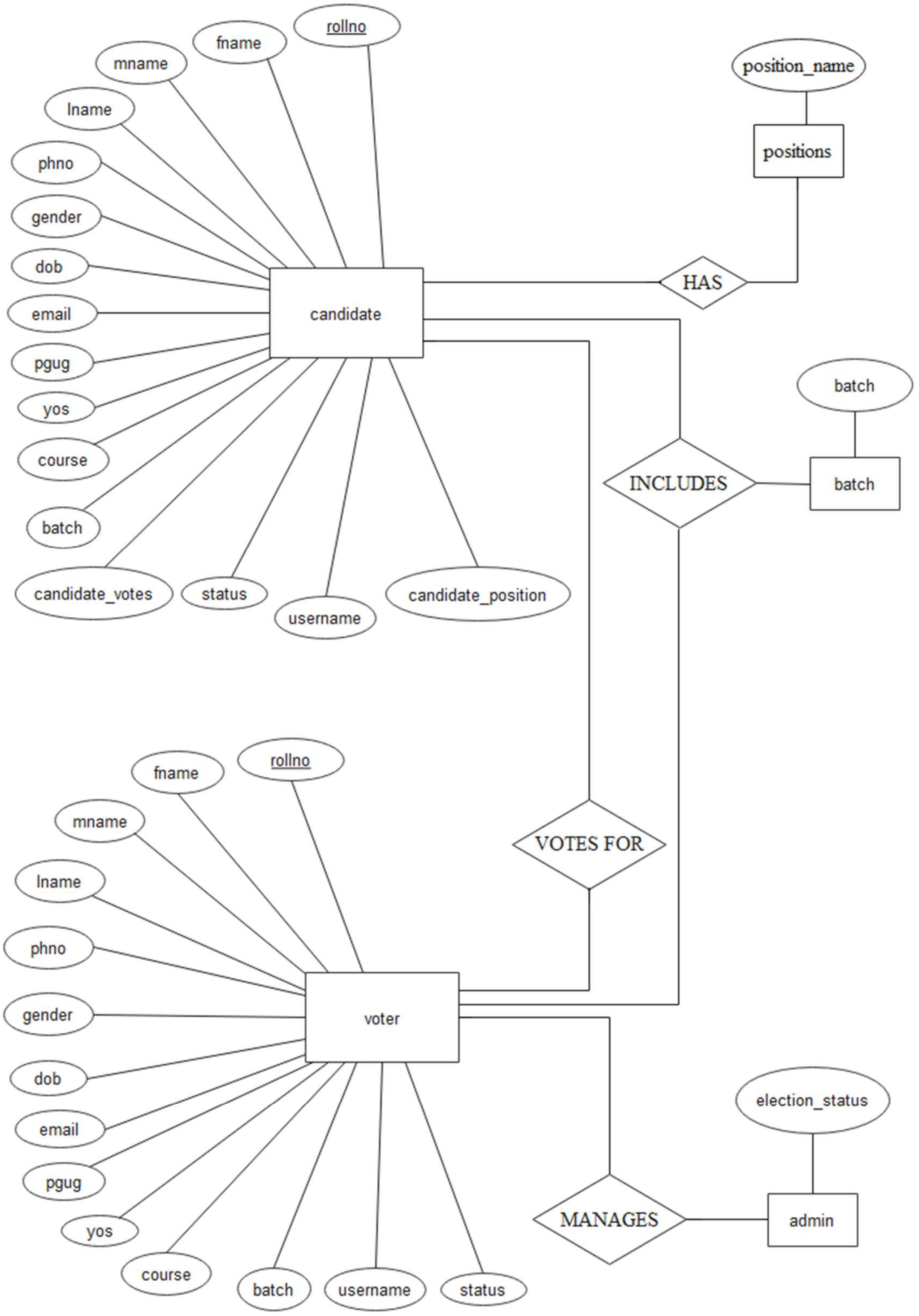
- Relationships



- Attributes

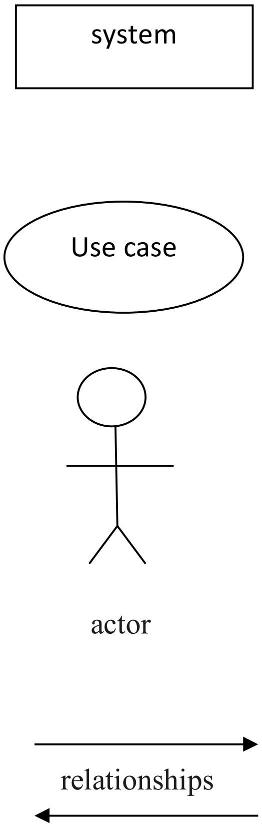


2.3.1 ER diagram

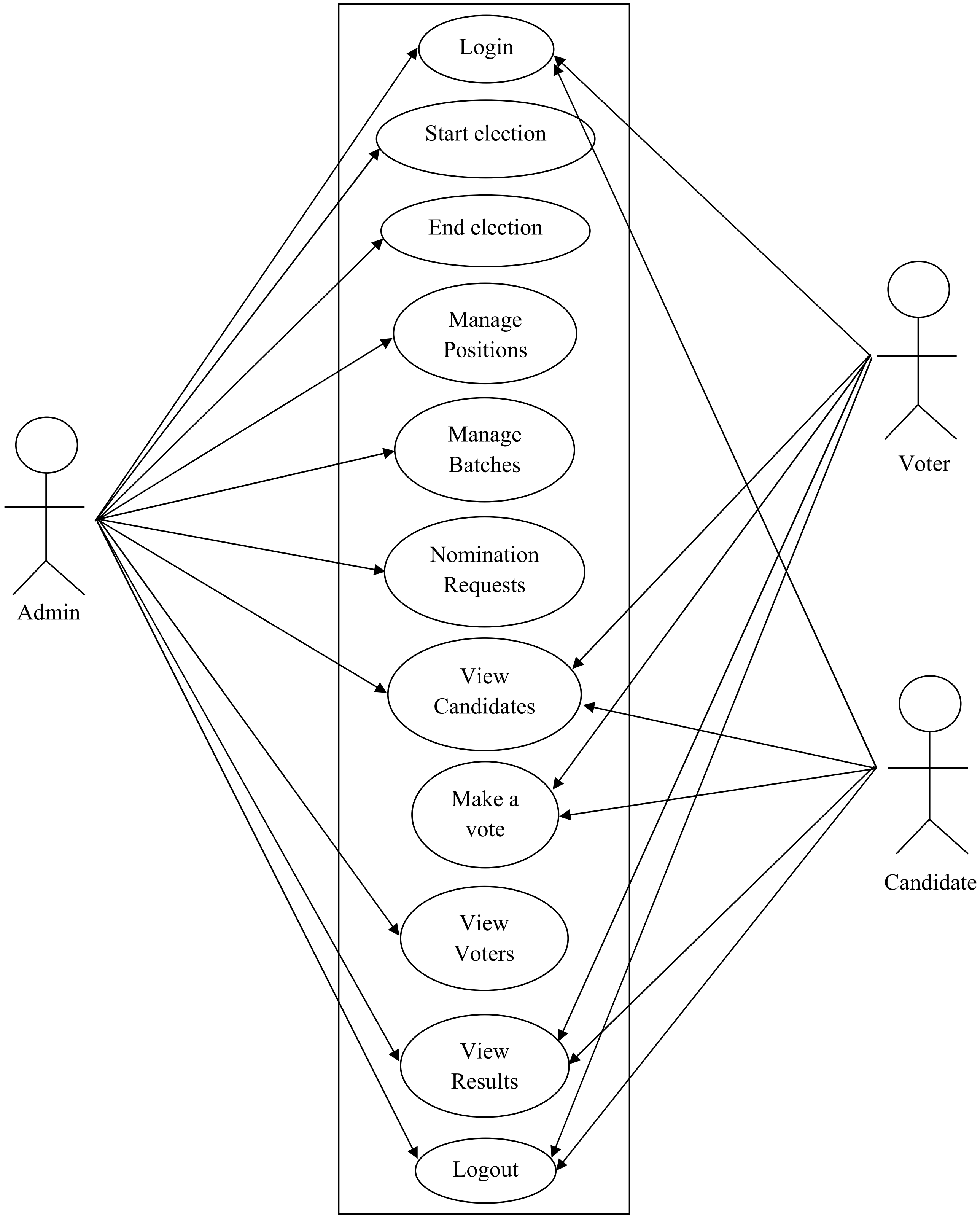


2.4 USECASE DIAGRAM

A Use case diagram is a dynamic or behaviour diagram in UML. Use case diagram model the functionality of a system using actors and use cases. Use cases are set of actions, services, and functions that the system needs to perform. In this context, a "system" is something being developed or operated, such as web site. The "actors" are people or entities operating under defined roles within the system.
system.



2.4.1 USE CASE DIAGRAM FOR ADMIN, VOTER & CANDIDATE



2.5 DATABASE DESIGN

A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make information access easy, quick, inexpensive and flexible for the users. The general theme behind a database is to integrate all information. Database design is recognized as a standard of management information system and is available virtually for every computer system. In database design several specific objectives are considered:

- Ease of learning and use
- Controlled redundancy
- Data independence
- Accuracy and integrity
- Recovery from failure

A database is an integrated collection of data and provides centralized access to the data. Usually the centralized data managing the software is called RDBMS. The main significant difference between RDBMS and other DBMS is the separation of data as seen by the program and data has in direct access to stores device. This is the difference between logical and physical data.

2.5.1: NORMALIZATION

Designing a database is complete task and the normalization theory is a useful aid in the design process. The process of normalization is concerned with transformation of conceptual schema into computer representation form. There will be need for most databases to grow by adding new attributes and new relations. The data will be used in new ways. Tuples will be added and deleted. Information stored may undergo updating also. New association may also be added. In such situations the performance of a database is entirely depend upon its design.

A bad database design may lead to certain undesirable things like:

1. Repetition of information

2. Inability to represent certain information

3. Loss of information

To minimize these anomalies, Normalization may be used. If the database is in a normalized form, the data can be growing without, in most cases, forcing the rewriting application programs. This is important because of the excessive and growing cost of maintaining an organization's application programs and its data from the disrupting effects of database growth. As the quality of application programs increases, the cost of maintaining the without normalization will rise to prohibitive levels. A normalized database can also encompass many related activities of an organization thereby minimizing the need for rewriting the applications of programs.

Thus, normalization helps one attain a good database design and there by ensures continued efficiency of database. Normalization theory is built around the concept of normal forms. A relation is said to be in normal form if it satisfies a certain specified set of constraints. For example, a relation is said to be in first normal form (1NF) if it satisfies the constraint that it contains atomic values only. Thus every normalized relation is in 1NF.Numerous normal forms have been defined. Code defined the first three normal forms.

All normalized relations are in 1NF, some 1NF relations are also in 2NF and some 2NF relations are also in 3NF.2NF relations are more desirable than 1Nf and 3NF are more desirable than 2NF. That is, the database designer should prefer 3NF than 1NF or 2NF.Normalization procedure states that a relation that is in some given normal form can be converted into a set of relations in a more desirable form. I can define this procedure as the successive reduction of a given collection of relations to some more desirable form. This procedure is reversible. That is, it is always possible to take the output from the procedure and convert them back into input. In this process, no information is lost. So it is also called "no loss decomposition".

First Normal Form

A relation is in first normal form (1NF) if and all its attributes are based on single domain. The objective of normalizing a table is to remove its repeating groups and ensure that all entries of the resulting table have at most single value.

Second Normal Form

A table is said to be second Normal Form (2NF), when it is in 1NF and every attribute in the record is functionally dependent upon the whole key, and not just a part of the key.

Third Normal Form

A table is in third Normal Form (3NF), when it is in 2NF and every non-key attribute is functionally dependent on just the primary key.

2.6 TABLE STRUCTURE

Table is a collection of complete details about a particular subject. These data are saved in rows and Columns. The data of each Row are different units. Hence, rows are called RECORDS and Columns of each row are called FIELDS.

Data is stored in tables, which is available in the backend. The items and data, which are entered in the input, form id directly stored in this table using linking of database. I can link more than one table to input forms. I can collect the details from the different tables to display on the output.

There are mainly 7 tables in my project. They are,

1. admin

2. batch

3. candidate

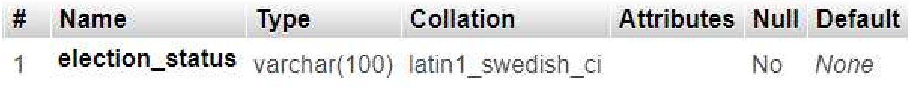
4. login

5. positions

6. voter

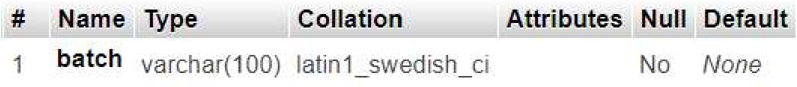
7. votes

2.6.1 : admin



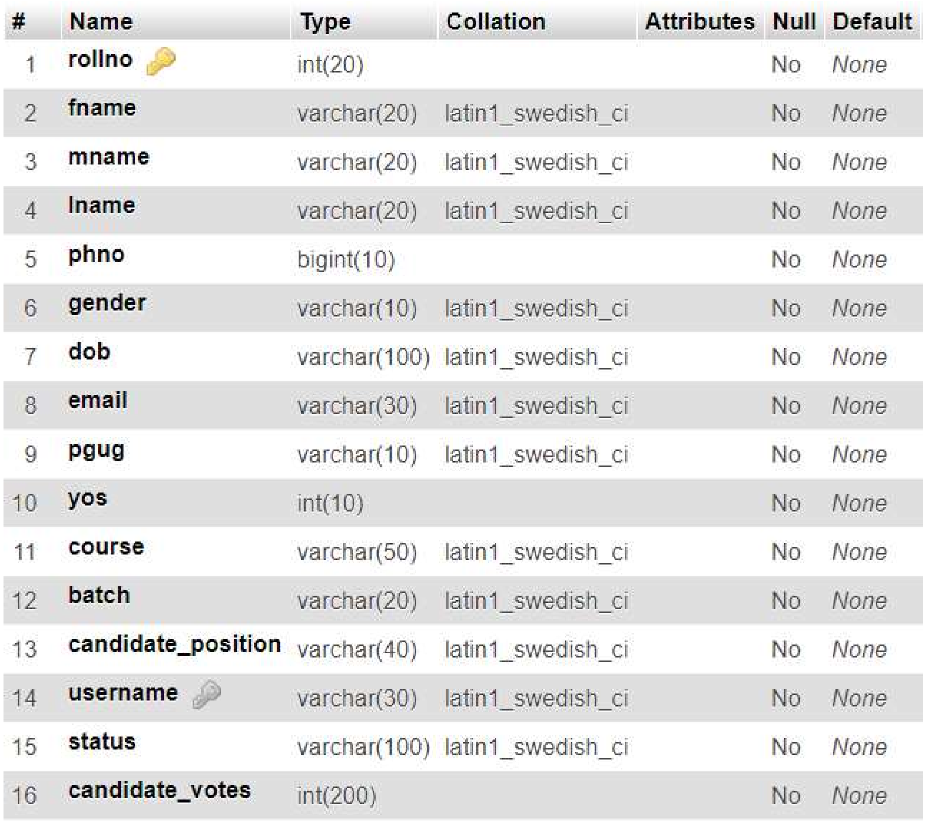
#	Name	Type	Collation	Attributes	Null	Default
1	**election_status**	varchar(100)	latin1_swedish_ci		No	*None*

2.6.2: batch



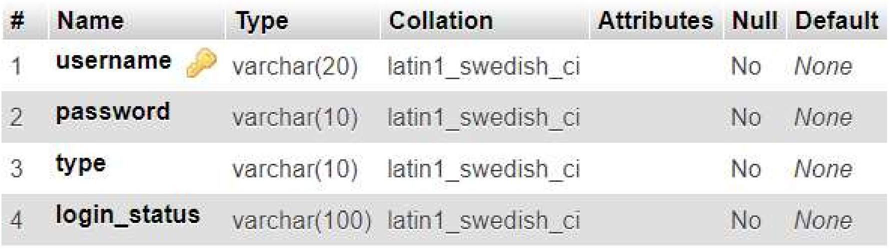
#	Name	Type	Collation	Attributes	Null	Default
1	**batch**	varchar(100)	latin1_swedish_ci		No	*None*

2.6.3: candidate



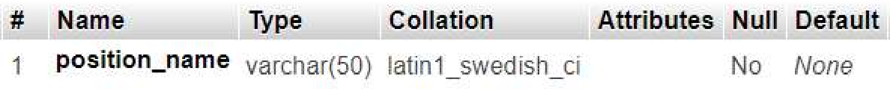
#	Name	Type	Collation	Attributes	Null	Default
1	rollno 🔑	int(20)			No	*None*
2	fname	varchar(20)	latin1_swedish_ci		No	*None*
3	mname	varchar(20)	latin1_swedish_ci		No	*None*
4	lname	varchar(20)	latin1_swedish_ci		No	*None*
5	phno	bigint(10)			No	*None*
6	gender	varchar(10)	latin1_swedish_ci		No	*None*
7	dob	varchar(100)	latin1_swedish_ci		No	*None*
8	email	varchar(30)	latin1_swedish_ci		No	*None*
9	pgug	varchar(10)	latin1_swedish_ci		No	*None*
10	yos	int(10)			No	*None*
11	course	varchar(50)	latin1_swedish_ci		No	*None*
12	batch	varchar(20)	latin1_swedish_ci		No	*None*
13	candidate_position	varchar(40)	latin1_swedish_ci		No	*None*
14	username 🔑	varchar(30)	latin1_swedish_ci		No	*None*
15	status	varchar(100)	latin1_swedish_ci		No	*None*
16	candidate_votes	int(200)			No	*None*

2.6.4: login



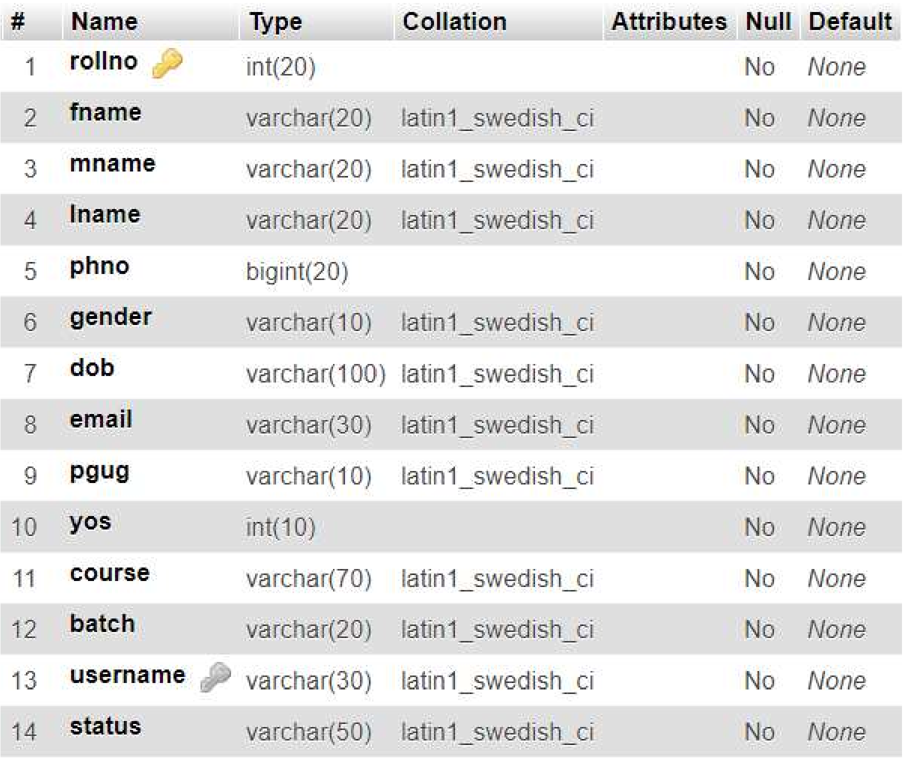
#	Name	Type	Collation	Attributes	Null	Default
1	username 🔑	varchar(20)	latin1_swedish_ci		No	*None*
2	password	varchar(10)	latin1_swedish_ci		No	*None*
3	type	varchar(10)	latin1_swedish_ci		No	*None*
4	login_status	varchar(100)	latin1_swedish_ci		No	*None*

2.6.5: positions



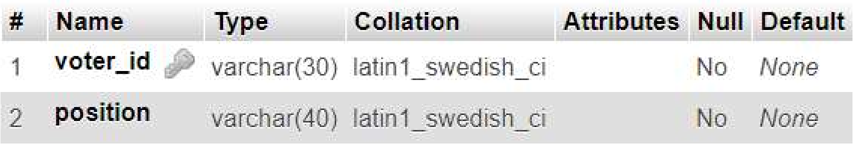
#	Name	Type	Collation	Attributes	Null	Default
1	position_name	varchar(50)	latin1_swedish_ci		No	*None*

2.6.6: voter



#	Name	Type	Collation	Attributes	Null	Default
1	rollno 🔑	int(20)			No	*None*
2	fname	varchar(20)	latin1_swedish_ci		No	*None*
3	mname	varchar(20)	latin1_swedish_ci		No	*None*
4	lname	varchar(20)	latin1_swedish_ci		No	*None*
5	phno	bigint(20)			No	*None*
6	gender	varchar(10)	latin1_swedish_ci		No	*None*
7	dob	varchar(100)	latin1_swedish_ci		No	*None*
8	email	varchar(30)	latin1_swedish_ci		No	*None*
9	pgug	varchar(10)	latin1_swedish_ci		No	*None*
10	yos	int(10)			No	*None*
11	course	varchar(70)	latin1_swedish_ci		No	*None*
12	batch	varchar(20)	latin1_swedish_ci		No	*None*
13	username 🔑	varchar(30)	latin1_swedish_ci		No	*None*
14	status	varchar(50)	latin1_swedish_ci		No	*None*

2.6.7: votes



#	Name	Type	Collation	Attributes	Null	Default
1	voter_id 🔑	varchar(30)	latin1_swedish_ci		No	*None*
2	position	varchar(40)	latin1_swedish_ci		No	*None*

2.7 SYSTEM DESIGN

INTRODUCTION TO SYSTEM DESIGN

The system design is the most creative and challenging phase of system development life cycle. It is an approach for the creation of proposed system, in which the logic and details structure of the proposed system is designed, which will help the system coding. The most creative and challenging phase of the system development process is design phase it is a solution, how to approach to the creation of the proposed system. Design is the first step in the development of the engineered product is initiated only after a clear exposition of expected product is available. System Design is vital for efficient database management. It provides the understanding of procedural details necessary for implementing the system .A number of sub-systems is to be identified which constitute the whole system

2.7.1 SYSTEM ARCHITECTURE

A system architecture or systems architecture is the conceptual model that defines the structure, behaviour, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures of the system, System architecture can comprise system components, the externally visible properties of those components, the relationships (e.g. the behaviour) between them. It can provide a plan from which products can be procured, and systems developed, that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture; collectively these are called architecture description languages (ADLs).

The system architecture can best be thought of as a set of representations of an existing (or to be created) system. It is used to convey the informational content of the elements comprising a system, the relationships among those elements, and the rules governing those relationships. The architectural components and set of relationships between these components that architecture describes may consist of hardware, software, documentation, facilities, manual procedures, or roles played by organizations or people.

2.7.2 MODULE DESIGN

Modular programming is a software design technique that emphasizes separating the functionality of a program into independent, interchangeable modules, such that each contains everything necessary to execute only one aspect of the desired functionality. Conceptually, modules represent a separation of concerns, and improve maintainability by enforcing logical boundaries between components. Two types of modular programming techniques. Top down and Bottom up Approaches

TOP DOWN APPROACH

Top down programming means I start at the top and work towards down. In this I first consider the entire program and it is then sub divided in to less complex, smaller and easily manageable form until a stage is reach when further break down will serve no useful purpose. That is, to cut all the program in to a number of independent task and then cut task in to smaller sub task and so on. Until they are small enough to code easily. These task and sub task form the basic functions in the program. In top down programming the programmers write the main () first. That means all the major functions it will need. Later the programmers look at the requirements of each of these

BOTTOM UP APPROACH

Bottom up programming is exactly opposite top down programming. In this I start at bottom work towards top. That is the programmers write the lower level function first and then using this lower level functions they write the next higher level and so on.

In this basic elements are specified first, these elements are link together to form large programs and this is repeated until the complete program is formed.

Advantages :-

- Reusability of code

Disadvantages :-

- Less easier to implement compared to top down

3. DEVELOPMENT PHASE

3.1 SYSTEM ENVIRONMENT

3.1.1 SOFTWARE SPECIFICATION

Operating System	:	Windows 7,8,10
Front End	:	Php
Back End	:	MySQL

3.1.2 HARDWARE SPECIFICATION

The selection of hardware configuring is a very task related to the software development, particularly inefficient RAM may affect adversely on the speed and corresponding on the efficiency of the entire system. The processor should be powerful to handle all the operations. The hard disk should be sufficient to solve the database and the application.

Processor : Intel Pentium
RAM : 512 Mb
Harddisk : 20 Gb

3.2 CODING

Coding is a list of step-by-step instructions that get computers to do what you want them to do. This step is also called programming phase. The performance of software design starts by using program code with appropriate programming language and developing error free executable programs in efficient manner. Coding is undertaken once the design phase is complete and the design documents have been successfully reviewed .Computer Coding is term used for writing codes & executing it for getting desired output. In this phase, every module identified and specified in the design document is independently coded and unit tested.

- The input to the coding phase is the design document.
- During the coding phase, various modules identified in the design document are coded according to the respective module specifications. In this phase, each module identified and specified in the design document is independently coded and unit tested.
- A coding standard gives a regular form to the codes written by different engineers.

- It provides sound understanding of the code
- It encourages good programming practice.

5.1.1 Selection of Programming Language, Operating System

Coding is an important part of programming paradigm for software development. It is mainly used to develop apps, websites and software. The programming language contains project planning, analysis, design, coding, testing and maintenance. All the above requirements are considered the programming language for “Database Development for Spice Compounds”. It is developed using tools such as Python within the Ubuntu 14.04 platform, Flask Framework for python (Web development). And the MySQL is used as the back end.

Ubuntu Linux is a computer operating system based on the Debian GNU/Linux distribution. It is a free and open source operating system for PC. It is powered by Linux and strong technology operates millions of servers worldwide. Ubuntu 14.04 is faster, more stable and overall much better than 12.04.

In high-level programming languages, python provide strong priority on readability and efficiency, and is mainly compared to other languages like Java, PHP, or C++.Python can be used to build server-side web applications. It is designed to be highly readable. In web programming python working with multiple types of servers, databases and web frameworks for the development of web applications.

Flask is a micro-framework and is suitable for small-scale applications. Flask has contained more features than other frameworks. It consists of features like unit testing and built-in development server that allow to create reliable and efficient web applications.

5.1.2 : Code of Login

```
<html>

<head>

        <title>LOGIN</title>

        <style type="text/css">

    body {

   background: #c91515d9;
```

```
    display: flex;
    justify-content: center;
    align-items: center;
    height: 100vh;
    flex-direction: column;
}
*{
    font-family: sans-serif;
    box-sizing: border-box;
}
form {
    width: 500px;
    border: 2px solid #ccc;
    padding: 30px;
    background: #fff;
    border-radius: 15px;
}
h2 {
    text-align: center;
    margin-bottom: 40px;


    font-family: 'Georgia', serif
}
input {
    display: block;
    border: 2px solid #ccc;

    width: 95%;

    padding: 10px;

    margin: 10px auto;

    border-radius: 5px;

}

select {

  display: block;

  border: 2px solid #ccc;

  width: 95%;

  padding: 10px;

  margin: 10px auto;

  border-radius: 5px;

}

label {

    color: black;

    font-family: 'Georgia', serif;

    font-size: 18px;

    padding: 10px;

}

.button {

    float: right;

    background: #4CAF50;

    padding: 10px 15px;

    color: #fff;
    border-radius: 5px;
    margin-right: 10px;
    border: none;
    cursor: pointer;
}
.error {
  background: #F2DEDE;
  color: #A94442;
  padding: 10px;
  width: 95%;
  border-radius: 5px;
  margin: 20px auto;
}
h1 {
    text-align: center;
    color: #fff;
}
a{
    font-size: 13px;
    margin-left: 11;
    font-family: serif;
    color: #0b79c7;
}
.previous {
  background-color: #f1f1f1;
  color: #d13737;
}
.round {
  border-radius: 50%;
}
     </style>
</head>
<body>
   <a STYLE="text-decoration: none;display: inline-block;padding: 8px 16px;margin-top:-90;margin-left:-1450;:hover {background-color: #ddd;color: #d13737;}" href="index.php" class="previous round">&#8249;</a><br><br><br><br>
     <form action="connection.php" method="post">
            <h2>LOGIN</h2>
            <label>Username</label>
            <input type="text" name="username" placeholder="Username" required><br>
            <label>Password</label>
            <input type="password" name="password" placeholder="Password" required><br>
          <label>I'm </label>
          <select name="type" required>
               <option disabled selected hidden>-Select your usertype-</option>
               <option name="type" value="admin">Admin</option>
               <option name="type" value="voter">Voter</option>
               <option name="type" value="candidate">Candidate</option>
          </select><br><br>
          <b><a href="index.php">Don't have an account? Create one!</a></b>
```

```
        <button type="submit" name="submit" class="button">Login</button>
   </form>
</body>
</html>
```

5.1.2 : Code of Make a vote

```
<?php
require('db_conn.php');
session_start();
if (!(isset($_SESSION['username']))) {
   header("location:newlogin.php");
} else {
   $username = $_SESSION['username'];
   }
?>
<html>
<head>
<title>Voting</title>
<style>
* {
  box-sizing: border-box;
}
body {
  font-family: Arial, Helvetica, sans-serif;
  margin: 0;
  background-color: #F8F8FF;
}
h3{
  font-size: 50px;
  text-align: center;
  font-family: "Lucida Console", monospace;
  padding: 9%;
  color: white;
}
.header {
  padding: 30px;
  text-align: center;
  background: #1abc9c;
  color: white;
}
.header h1 {
  font-size: 55px;
  font-family: 'Brush Script MT', cursive;
  text-shadow: -1px 0 black, 0 2px black, 2px 0 black, 0 2px black;
}
.navbar {
  overflow: hidden;
  background-color: #333;
}
.navbar a {
  float: right;
  display: block;
  color: white;
  text-align: center;
  padding: 14px 25px;
  text-decoration: none;
}
.navbar a.left {
  float: left;
}
.navbar a:hover {
  background-color: #ddd;
  color: black;
  border-radius: 5px;
}
.navbar h1 {
  float: left;
  color: white;
  font-size: 25;
  text-align: center;
  text-decoration: none;
  font-family: 'Brush Script MT', cursive;
  text-shadow: -1px 0 black, 0 2px black, 2px 0 black, 0 2px black;
}
select {
  display: block;
  border: 2px solid #ccc;
  width: 250;
  padding: 10px;
  border-radius: 5px;
}
 .button1 {
  background-color: #4CAF50;
  border: none;
  color: white;
  padding: 10px 15px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  border-radius: 3px;
  font-size: 16px;
}
.button2 {
  background-color: #008CBA;
  border: none;
  color: white;
  padding: 8px 20px;
  text-align: center;
  text-decoration: none;
  display: inline-block;
  border-radius: 3px;
  font-size: 16px;
}
label {
  font-family: serif;
  color: black;
  font-size: 20px;
  padding: 450;
}
table {
  border-collapse: collapse;
  width: 600;
  border: 1px solid #282828;
}
th, td {
  text-align: left;
  padding: 8px;
  border: 1px solid #303030;
}
tr {background-color: #f2f2f2}
th {
  background-color: #282828;
  color: white;
}
marquee{color: red;}
```

```
</style>
</head>
<body>
<div class="navbar">
  <a href="voter.php"  class="left"><h1>Online Voting System</h1></a>
  <a href="logout.php">Logout</a>
  <a href="viewrslts_voter.php">View Results</a>
  <a href="makevote_voter.php">Make a vote</a>
  <a href="viewcand_voter.php">View candidates</a>
</div>
<marquee><h4><i>NB: Click a circle under a respective candidate to cast your vote. You can't vote more than once in a respective position. This process cannot be undone so think wisely before casting your vote.</i></h4></marquee>
<form method="post" action="makevote_voter.php">
 <center>Choose position:</center><br>
   <center><SELECT name="position">
     <option disabled selected hidden>-Select the position-</option>
   <?php
   include "db_conn.php";
   if (mysqli_connect())
   {
   $sql = "SELECT * FROM positions";
   $result = mysqli_query($conn,$sql);
   while ($row=mysqli_fetch_array($result)) {
     $positions=$row['position_name'];
```

```
      echo "<OPTION value='$positions'>$positions</OPTION>";
    }
  }
    ?>
    </SELECT></center><br>
    <center><input type="submit" name="Submit" value="See Candidates" class="button1" /></center>
    <?php
    session_start();
if (isset($_POST['Submit']))
{
  $positions= $_POST['position'];
  $q1 = "select * from candidate where candidate_position='$positions'";
  $res=mysqli_query($conn,$q1);
  $rty = mysqli_num_rows($res);
  if($rty==0){
      echo  "<table align='center'>
<CAPTION><h4>Candidates:</h4></CAPTION>
<tr>
<th>Sl. No.</th>
<th>Candidate name</th>
<th></th>
</tr></table>";
 echo '<td><br><center><i>No candidates to display</i></center></td>';
  }
```

```
else
  {
    echo  "<table align='center'>
<CAPTION><h4>Candidates:</h4></CAPTION>
<tr>
<th>Sl. No.</th>
<th>Candidate name</th>
<th></th>
</tr>";
$no=1;
while ($row=mysqli_fetch_array($res)){
echo "<tr>";
echo "<td>" . $no . "</td>";
echo "<td>" . $row['fname'] . " " . $row['mname'] . " " . $row['lname'] . "</td>";
$fn=$row['fname'];
echo "<td><input type='radio' name='vote' value='$fn'/></td>";
echo "</tr>"; $no++;
}
 echo "</table>";
 echo '<td><input type="hidden" name="pos" value="'.$positions.'"></td>';
 echo '<br>';
 echo '<td><center><input type="submit" name="vote_submit" class="button2"></center></td>';
}}
include 'db_conn.php';
```

```
if(isset($_POST['vote_submit'])) {
  $vote=$_POST['vote'];
//echo $vote;
$user_id=$_SESSION['username'];
$pos=$_POST['pos'];
//echo $user_id;
//echo $pos;
    $sql=mysqli_query($conn,"SELECT position,voter_id FROM votes where position='$pos' and voter_id='$user_id'");
    $q=mysqli_num_rows($sql);
if($q>0)
{
    echo "<center><h4 style='color:red'>You have already done your vote for this Position</h4></center>";
}
else
{
  $vote=$_POST['vote'];
  $username=$_SESSION['username'];
    $ins=mysqli_query($conn,"INSERT INTO votes VALUES ('$username','$pos')") or die($conn);
    mysqli_query($conn, "UPDATE candidate SET candidate_votes=candidate_votes+1 WHERE fname='$vote'");
    mysqli_close($conn);
echo "<center><h4 style='color:red'>Congrats, You have submitted your vote for canditate ".$vote."</h4></center>";
}
}
?>
</form>
</body>
</html>
```

4. TESTING AND IMPLEMENTATION

4.1 TESTING

It is the process of evaluating a system or its components with the intent to find that whether it satisfies the related requirements. In computer hardware and software development, testing is used at key checkpoints in it's done with executing the software overall process to identify whether objectives are being met. The process or method of finding errors in a software application or program so that the application functions according to the end user's requirement is called software testing.

Software testing is used to assess the feature of a software item. Testing process ensures the quality of the product. Testing is the process that should be done during the development of software. In other words software testing is a verification and validation process.

4.1.1 BLACK BOX TESTING

Black box testing is also called functional testing. It is a software testing method and is used to test the software without knowing the internal structure of code or program. Internal system design is not considered in this type of testing. This type of testing is mainly focus on the software requirements and specifications. In the proposed work black box testing is used for the following requirements:

- Login
- New User Registration
- Edit Details

Advantages of Black Box Testing are:

- The designer and the tester are independent of each other because testing is unbalanced.
- The tester does not need knowledge of any specific programming languages like java ,c++...
- Test is done from the point of view of the user.
- Code access not required

Disadvantages of Black Box Testing are:

- The test can be redundant if the software designer has already run a test case
- Test cases are difficult to design, without having clear functional specifications
- It is difficult to identify all possible inputs in limited testing time. So writing test cases are difficult to design.

4.1.2 WHITE BOX TESTING

White box testing is also known as structural testing and glass box testing. This testing is related to the knowledge of the internal logic of an application's code. It is also called open box testing. Internal software and code working must be known for this type of testing. Tests are related to the coverage of code statements, branches, paths, conditions. In proposed work white box testing is used for the following requirements:

- Programming code
- Database Accessing

Advantages of White box testing are:

- The testing of the software no need to wait for the GUI
- It helps in optimizing the code
- Beneficent side-effects
- Provide stability and usability of the test cases.
- It helps in removing the extra lines of code, which can bring in hidden defects.
- Is done with executing the software

Disadvantages of white box testing are:

- Expensive
- It takes more time for the tester to develop the test cases.
- Test cases are a waste if changes in the implementation code are done frequently.

4.1.3 UNIT TESTING

Unit is the smallest testable part of software. Unit testing is used to validate that individual units of source code are working properly. In object-oriented programming, the smallest unit is a method and it contain a base/super class, abstract class or derived/child class but in procedural programming language a unit may be an individual program, function, procedure, etc., while The main advantage of the unit testing is used to improve the quality of code and save the tester's time and effort.

4.1.4 SYSTEM TESTING

System testing is the testing and is used to ensure that by putting the software in different environments it still works. It is done with executing the software system testing the application is working correctly from the point of view of a user. The main purpose of this system testing is to evaluate the system’s compliance with the specified requirements. Whole system is tested as per the requirements. Black-box type testing that is related to overall requirements specifications, covers all combined parts of a system.

4.1.5 USER ACCEPTANCE TESTING

Acceptance testing is to ensure that the delivered product meets the expectations of the user. It is belongs to the class of black box testing. The goal of acceptance testing is to verify that the software is done with executing the software ready and can be used by the end-users to perform those functions and tasks for the software development. This type of testing is done to verify if system meets the customer specified requirements. User or customers do this testing to determine whether to accept application.

4.1.6 VALIDATION TESTING

Validation is the process of evaluating the final software product that correctly identifies the customer expectations and requirements. Validation Testing checks that the product correctly meets the customer needs. This testing can also be defined as to demonstrate that the product fulfils its intended use when deployed on suitable environment. This testing is done with executing the software.

4.2 TEST CASES

Test Case Id : TC1

Tests Used : Black Box Testing/White Box Testing

Correct Data : First Name : Alan
Last Name : Shijo
Email : alanshijo06@gmail.com
Password : alan00

Function : New user registration

Sl. No:	Step	Test Data	Expected Result	Actual Result	Status
1	Enter correct registration Details And submit	Registration Information	Registered Successfully	Registered Successfully	Success
2	Enter registration Details And press cancel button	Registration Information	Cancel all details and staying on the same registration page	Cancel all details and staying on the same registration page	Success
3	Enter email without @ symbol	Email: alan.com	Invalid email id	Invalid email id	Success
5	Enter an already existing username	Username: alan	Username already exists	Username already exists	Success
6	Enter phone number with less than or greater than 10 number	Ph no: 8281187831	Phone number must be 10 digits long	Phone number must be 10 digits long	Success

Table 8: Test Case1

Test Case Id : TC2

Tests Used : Black Box Testing/White Box Testing

Correct Data : Username: alenshaju2451
Password: alen1234

Function : Login

Sl. No:	Step	Test Data	Expected Result	Actual Result	Status
1	Enter Username only then click sign in button	Username: alenshaju2451	Please Enter Username and Password Correctly	Please Enter Username and Password Correctly	Success
2	Enter incorrect Username or Password	Username: melbinjoseph7 Password:1234	Wrong Username or password	Wrong Username or password	Success
3	Enter Username and Password correctly	Username: alenshaju2451 Password: alen1234	Valid username and password, go to home page of user	Valid username and password, go to main page of user	Success
4	Enter Username and Password correctly	Username: admin Password: admin	Valid username and password, go to main page of Admin	Valid username and password, go to main page of Admin	Success

Table 9: Test Case2

Test Case No : TC3

Tests Used : Whitebox Testing/Blackbox Testing

Function : Edit Details

Sl. No:	Step	Test Data	Expected Result	Actual Result	Status
1	Click Start/End election	Election status	Election is Started/Ended	Election is Started/Ended	Success
2	Click Add/Delete positions	Add/Delete Positions	Success and return to Manage positions page	Success and return to Manage positions page	Success
3	Click Add/Delete batches	Add/Delete Batches	Success and return to Manage batches page	Success and return to Manage batches page	Success
4	Approve/Reject nomination requests	Approve/Reject status	Nomination requests approved/rejected	Nomination requests approved/rejected	Success
5	Delete candidate	Candidate details	Candidate deleted	Candidate deleted	Success
6	Delete voter	Voter details	Voter deleted	Voter deleted	Success
7	Click Print results	Election results	Print election results	Print election results	Success

Table 10: Test Case3

Test Case No : TC4

Tests Used : **Whitebox Testing/Blackbox Testing**

Function : Cast vote

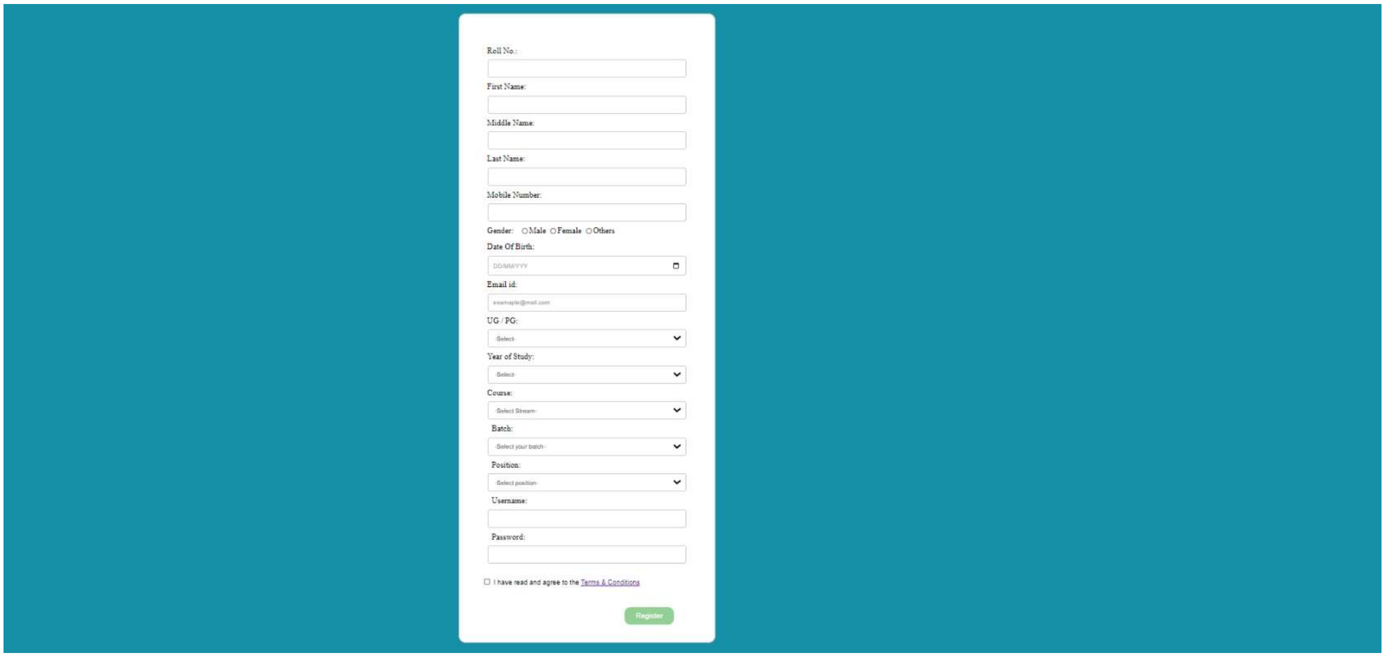
Sl. No:	Step	Test Data	Expected Result	Actual Result	Status
1	Login and click make a vote	User votes	Successfully voted	Successfully voted	Success
2	Submit vote to the same candidate	User votes	Message "You have done your vote for this position"	Message "You have done your vote for this position"	Success

Table 11: Test Case4

5. SCREEN LAYOUTS

5.1 FORM DESIGN

5.1.1 REGISTRATION PAGE



Roll No.:

First Name:

Middle Name:

Last Name:

Mobile Number:

Gender: ○Male ○Female ○Others

Date Of Birth: DD/MM/YYY

Email id: example@mail.com

UG / PG: -Select-

Year of Study: -Select-

Course: -Select Stream-

Batch: -Select your batch-

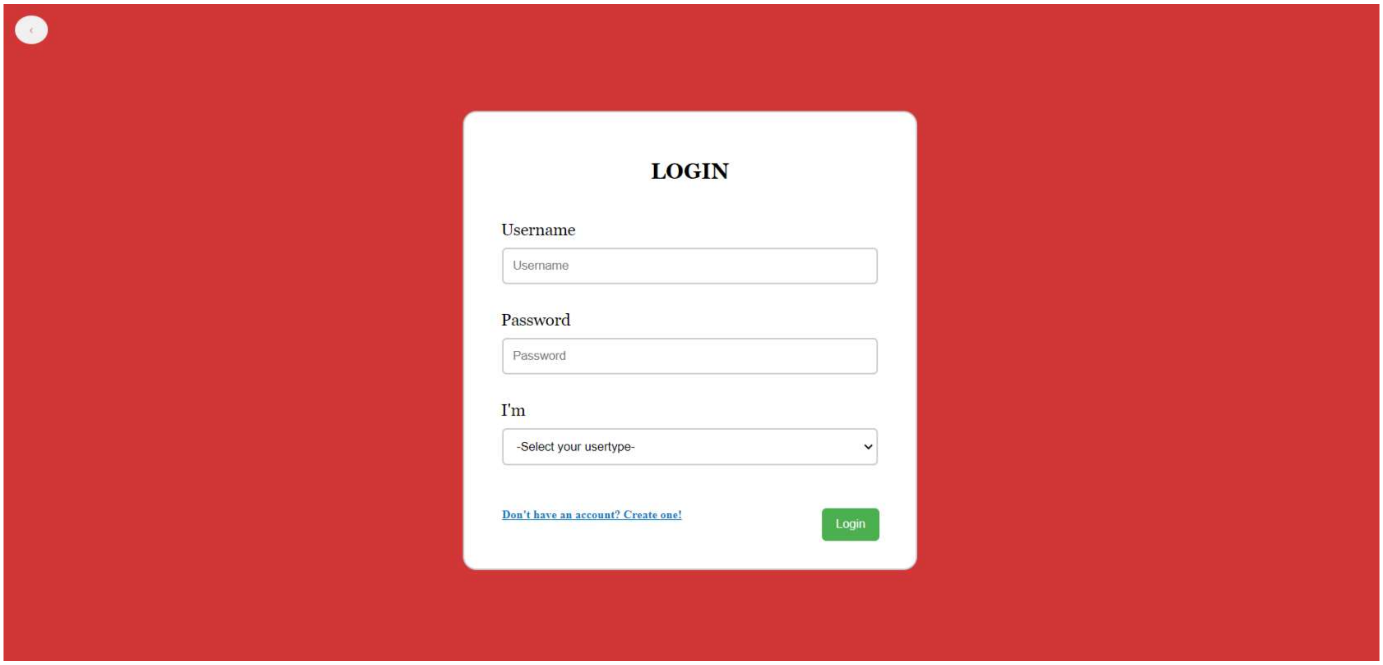
Position: -Select position-

Username:

Password:

□ I have read and agree to the Terms & Conditions

5.1.2 : Login



LOGIN

Username

Username

Password

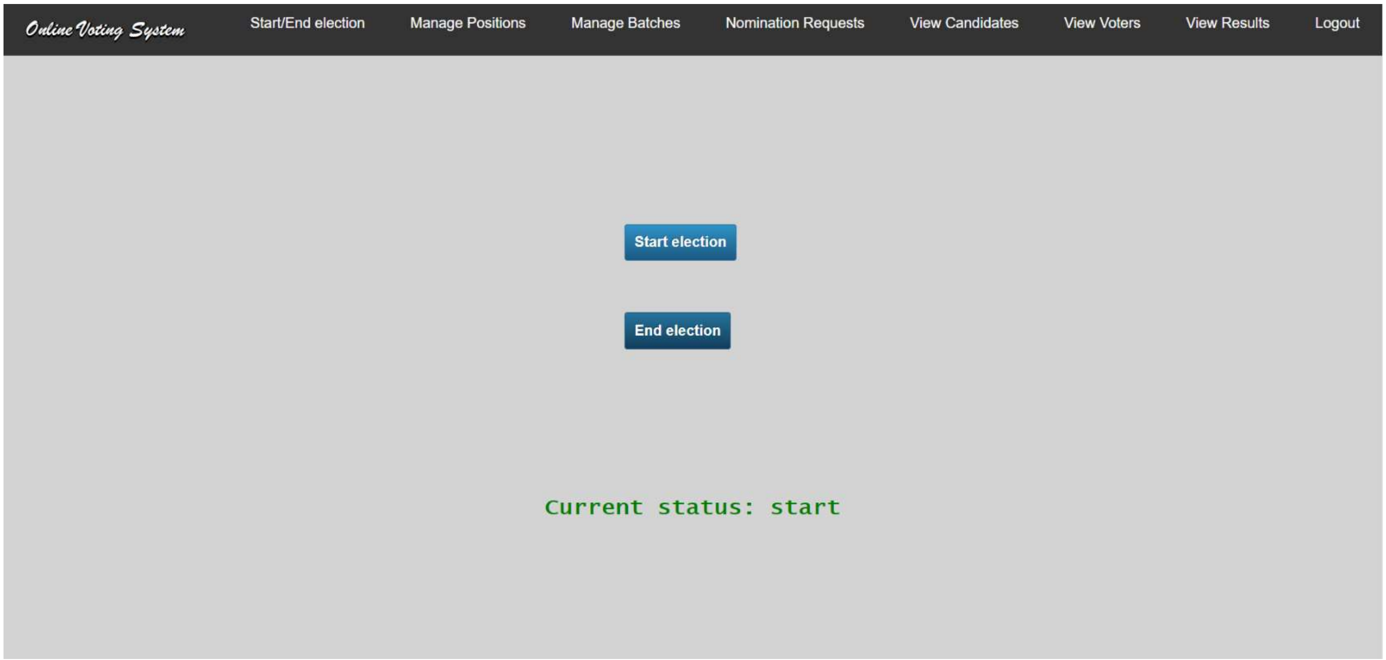
Password

I'm

-Select your usertype-

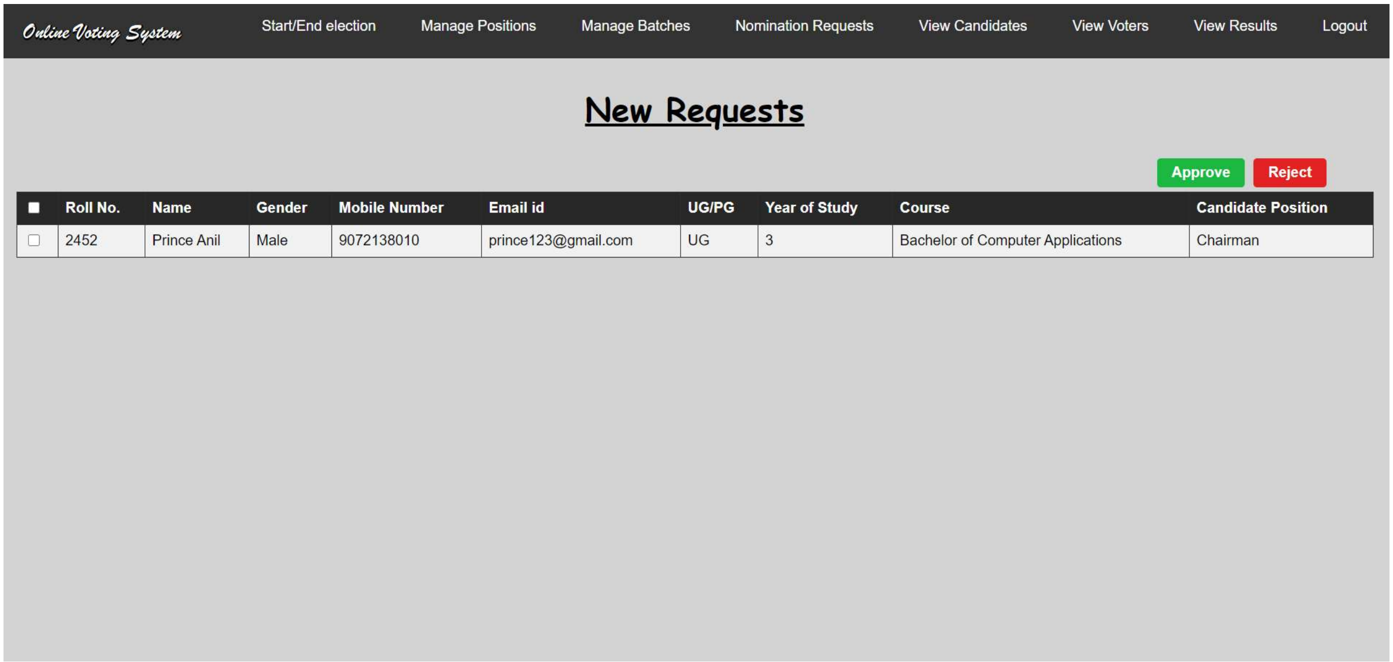
Don't have an account? Create one!

5.1.3 : Start/End election



Current status: start

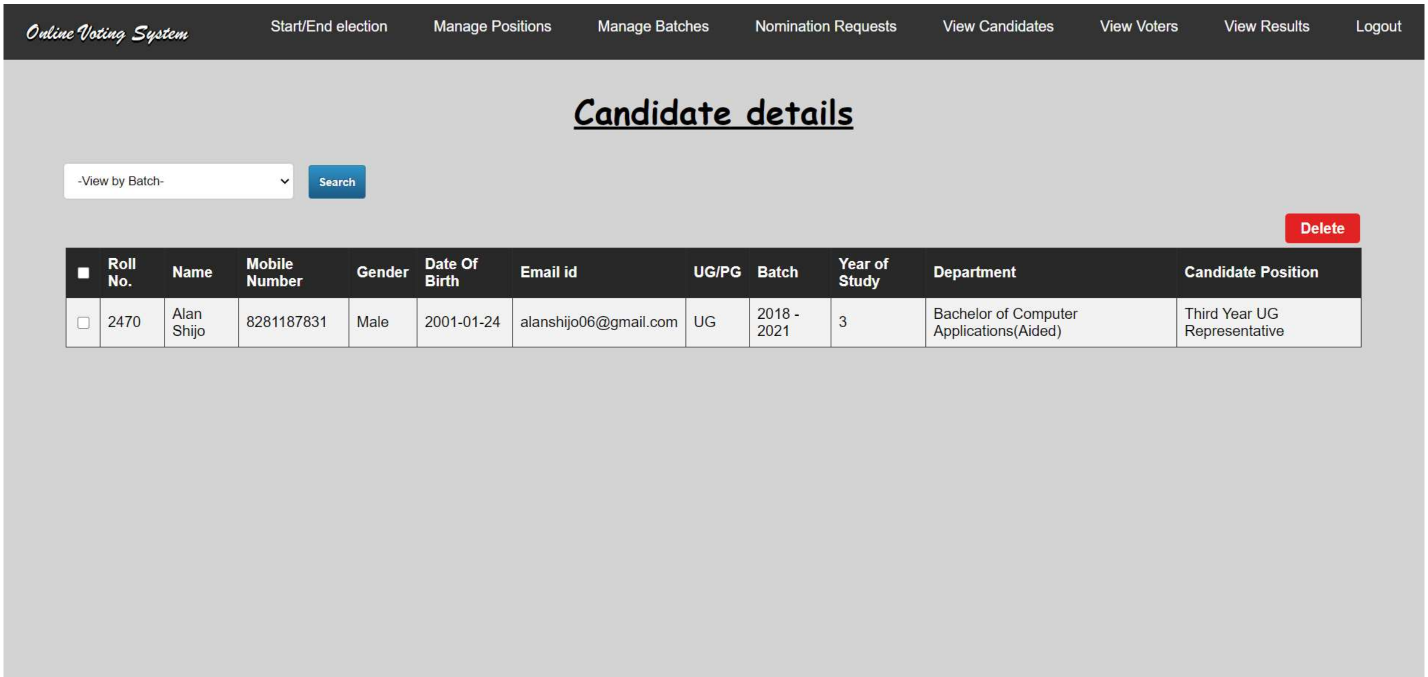
5.1.4 : Nomination Requests



New Requests

■	Roll No.	Name	Gender	Mobile Number	Email id	UG/PG	Year of Study	Course	Candidate Position
□	2452	Prince Anil	Male	9072138010	prince123@gmail.com	UG	3	Bachelor of Computer Applications	Chairman

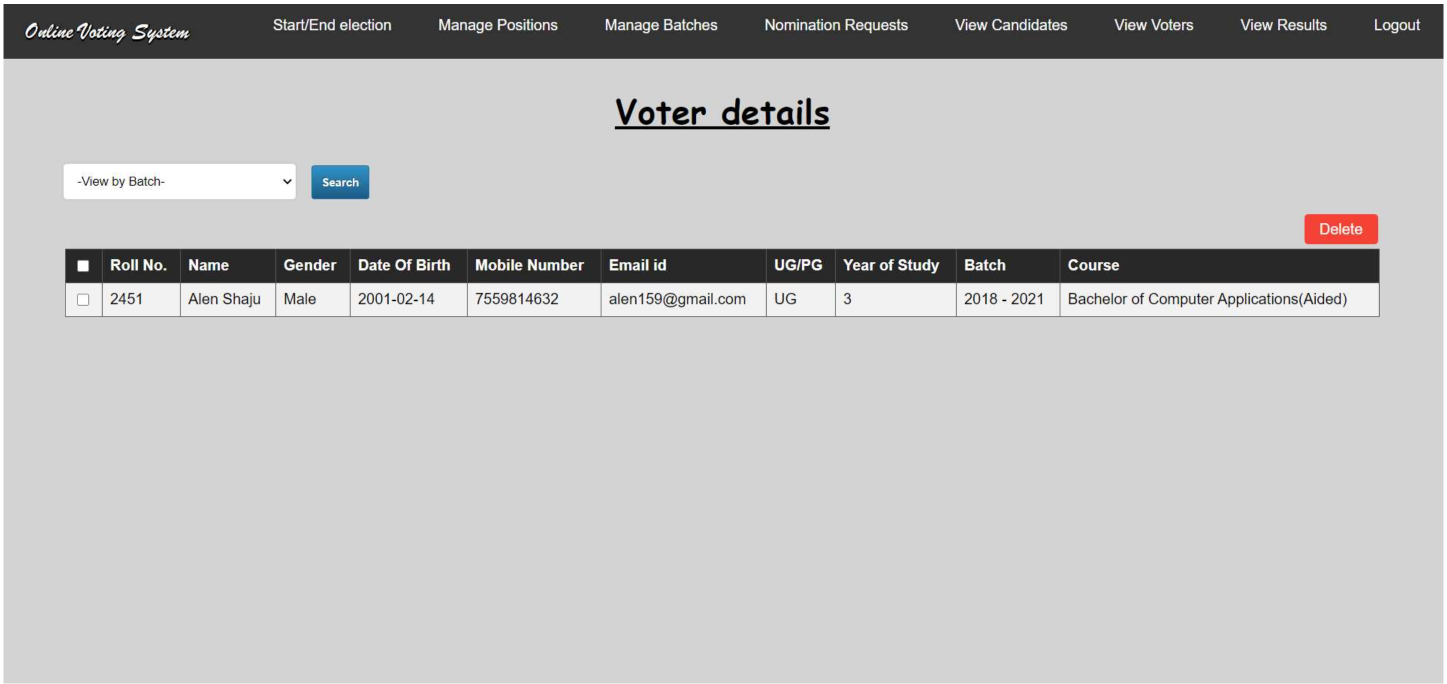
5.1.5 : View Candidates



Candidate details

■	Roll No.	Name	Mobile Number	Gender	Date Of Birth	Email id	UG/PG	Batch	Year of Study	Department	Candidate Position
□	2470	Alan Shijo	8281187831	Male	2001-01-24	alanshijo06@gmail.com	UG	2018 - 2021	3	Bachelor of Computer Applications(Aided)	Third Year UG Representative

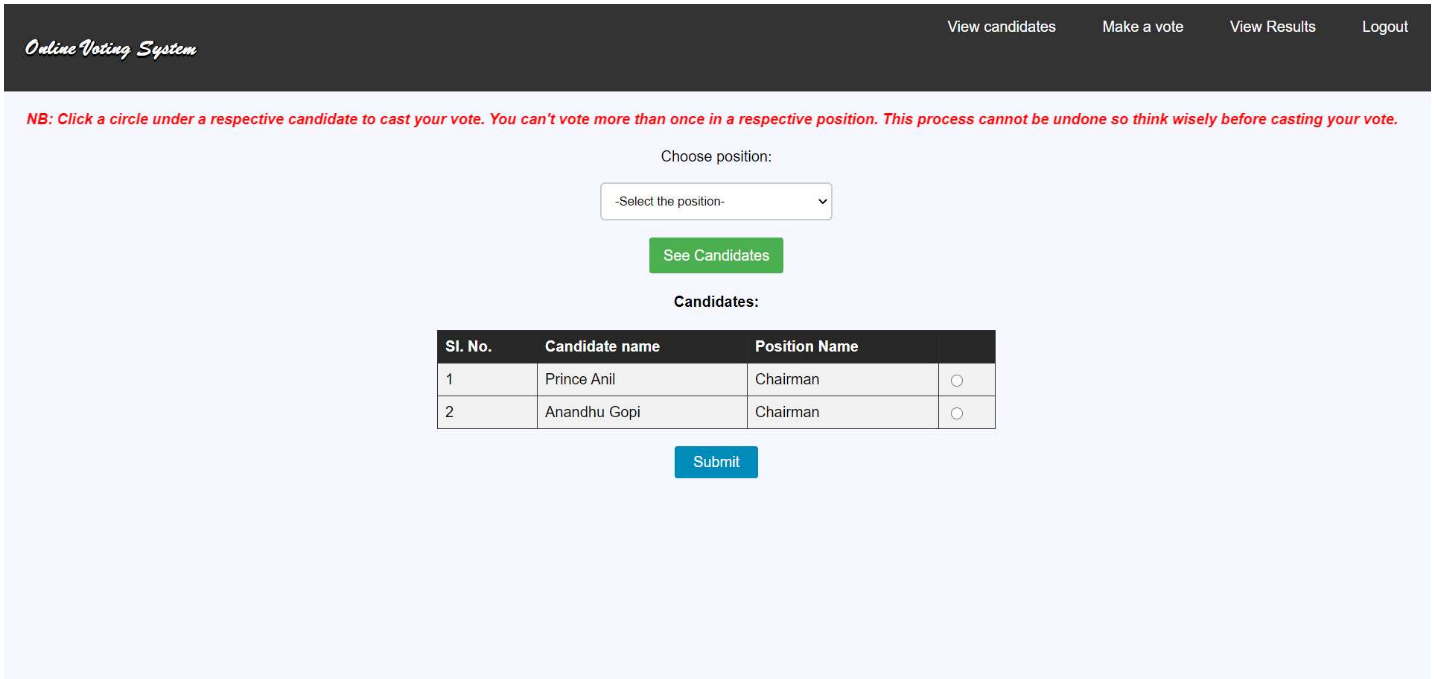
5.1.6 : View Voters



Voter details

■	Roll No.	Name	Gender	Date Of Birth	Mobile Number	Email id	UG/PG	Year of Study	Batch	Course
□	2451	Alen Shaju	Male	2001-02-14	7559814632	alen159@gmail.com	UG	3	2018 - 2021	Bachelor of Computer Applications(Aided)

5.1.7 : Make a vote



NB: Click a circle under a respective candidate to cast your vote. You can't vote more than once in a respective position. This process cannot be undone so think wisely before casting your vote.

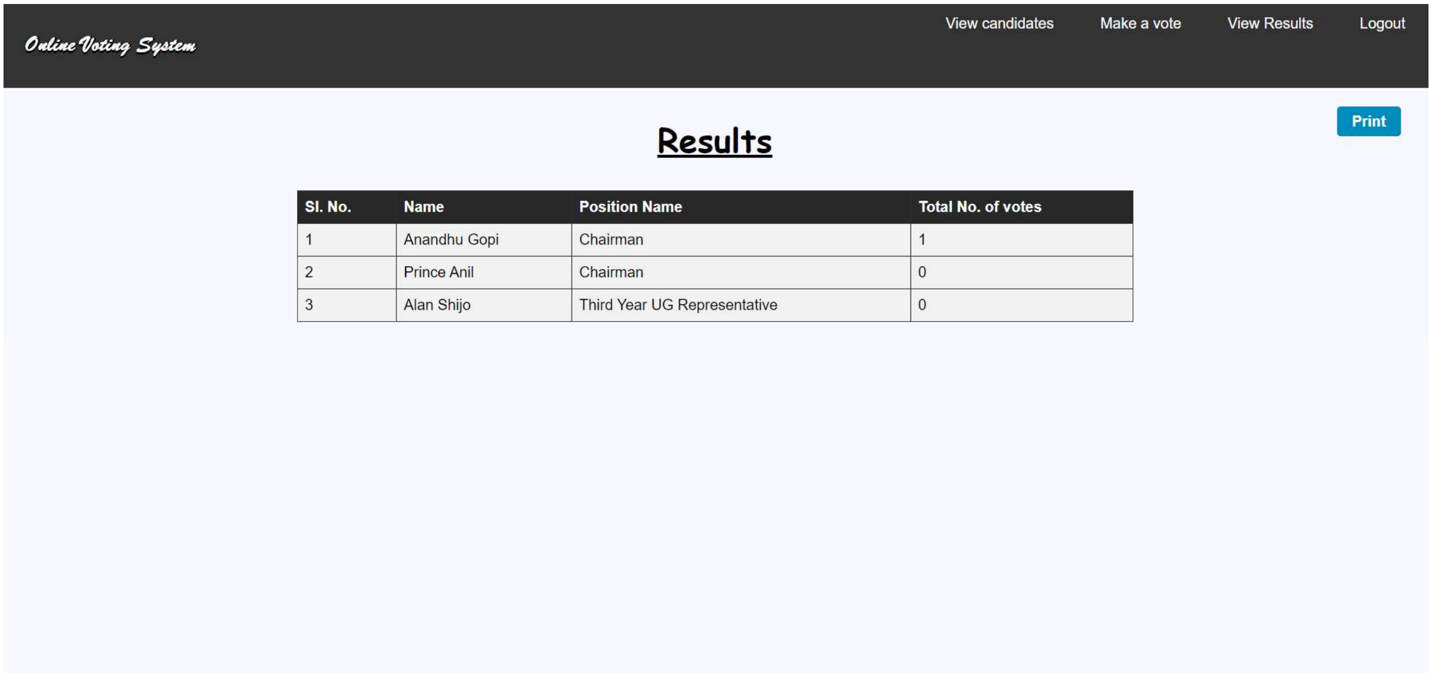
Choose position:

-Select the position-

Candidates:

Sl. No.	Candidate name	Position Name	
1	Prince Anil	Chairman	○
2	Anandhu Gopi	Chairman	○

5.1.8 : View Results



Results

Sl. No.	Name	Position Name	Total No. of votes
1	Anandhu Gopi	Chairman	1
2	Prince Anil	Chairman	0
3	Alan Shijo	Third Year UG Representative	0

6. CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

The project was successfully completed within the time span allotted. All the modules are tested separately and put together to form the main system. Finally the modules are tested with the real data and it worked successfully. Thus the system has fulfilled the entire objective defined.

This project will come across the various steps of managing online assignment system in a user friendly approach. Our goal of developing this **"COLLEGE ELECTION MANAGEMENT SYSTEM"** has come to a good result without many defects. The project successfully provides accurate votes given by users without any loss of time. Provides an easy way to voters to give their votes from anywhere and at anytime without any physical effort.

6.2 ADVANTAGES OF PROJECT

- It provides better and efficient approach
- Greater accuracy
- Increased reliability

6.3 FUTURE WORK

- Further research and implementation should be conducted to include functionalities or features to enable visually impaired individuals vote with no or minimal assistance.
- Furthermore, a countdown timer can be introduced to set the starting and ending time of the election.
- Alongside, the users are informed of the starting time through a message and can start voting.
- Implementation the system for other platforms like Java, C# and using data base like SqlServer, MySql, Oracle.

7. REFERENCES

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