VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELAGAVI – 590018

A Mini Project Report on

Online Voting Management System

Submitted in partial fulfillment of the requirements as a part of the DBMS Lab for the award of degree of

Bachelor of Engineering
in
Information Science and Engineering

Submitted by

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2018 – 2019

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CERTIFICATE

This is to certify that the Mini Project report entitled ***ONLINE VOTING MANAGEMENT SYSTEM*** has been successfully completed by **KETAKI VINOD PATIL** bearing USN **1RN16IS042**, presently V semester student of **RNS Institute of Technology** in partial fulfillment of the requirements as a part of the DBMS Laboratory for the award of the degree ***Bachelor of Engineering in Information Science and Engineering*** under **Visvesvaraya Technological University, Belagavi** during academic year 2018 – 2019. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The mini project report has been approved as it satisfies the academic requirements as a part of DBMS Laboratory for the said degree.

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Name of the Examiners	**Signature with date**
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ABSTRACT

Voting is a method or a activity for a group, such as, a meeting or an electorate to make a collective decision or express an opinion, usually following discussions, debates or election campaigns. It is the activity of choosing someone or something in the election. "**Online voting"** (also known as **e-voting**) refers to voting using electronic means to either aid or take care of the chores of casting and counting votes.

Online voting System has been developed to override the problems prevailing in the practicing manual system. Online Voting System would have Voter's registration, User ID and Password for each Voter. The Admin Login which will be handled by Election Commission. Candidate Registration and Management which will be handled By Admin, Voters will have a Unique Email ID and Password, using which they can vote for a Candidate only once per Election. The project is beneficial for Election Commission, Voters as they can get to know the candidate background and choose wisely, and even for the Candidates.

The software system allows the Voters to login in to their profiles and update all their details in the database. The admin can check each Candidate details and verify the documents which removes the invalid information regarding the Candidates. The software system allows Voters to view a list of Candidates in any party taking part in the elections. The admin has overall rights over the system and can moderate and delete any details not pertaining to Election Rules.

ACKNOWLEDGMENT

The fulfillment and rapture that go with the fruitful finishing of any assignment would be inadequate without the specifying the people who made it conceivable, whose steady direction and support delegated the endeavors with success.

I would like to profoundly thank **Management** of **RNS Institute of Technology** for providing such a healthy environment to carry out this Mini Project work.

I would like to thank our beloved Director **Dr. H N Shivashankar** for his confidence feeling words and support for providing facilities throughout the course.

I would like to express my thanks to our Principal **Dr. M K Venkatesha** for his support and inspired me towards the attainment of knowledge.

I wish to place on record my words of gratitude to **Dr. M V Sudhamani,** Professor and Head of the Department, Information Science and Engineering, for being the enzyme and master mind behind my Mini Project work.

I would like to express my profound and cordial gratitude to my Faculty in charge **Mr. R Rajkumar**, Assistant Professor, Department of Information Science and Engineering for their valuable guidance, constructive comments and continuous encouragement throughout the Mini Project work.

I would like to express my profound and cordial gratitude to my guide **Mrs. Sudha V**, Assistant Professor, Department of Information Science and Engineering for their valuable guidance in preparing Mini Project report.

I would like to thank all other teaching and non-teaching staff of Information Science & Engineering who have directly or indirectly helped me to carry out the Mini Project work.

And lastly, I would hereby acknowledge and thank my parents who have been a source of inspiration and also instrumental in carrying out this Mini Project work.

KETAKI VINOD PATIL

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ABBREVIATIONS

Acc no.	Assembly Constituency Number
CSS	Cascading Style Sheets
ECI	Election Commission Of India
F_name	First Name
HTML	Hyper Text Markup Language
HCL	Hardware Compatibility List
L_name	Last Name
PHP	Hypertext Preprocessor

Chapter 1

INTRODUCTION

Electronic voting (also known as **e-voting**) refers to voting using electronic means to either aid or take care of the chores of casting and counting votes.

1.1 Background

This gives a detailed information regarding the purpose and scope of the voting system followed in India. This frames an essential element to the elucidation of voting management system.

1.1.1 Purpose

The Project is named as Online Voting System which is an application-based site. The aim of this project is to provide help to the people of different location. The main purpose of voting (in a scenario involving the citizens of a given state) is to come up with leaders of the people's choice. Most countries, India not an exception have problems when it comes to voting. Some of the problems involved include ridging votes during elections, insecure or inaccessible polling stations, inadequate polling materials and also inexperienced personnel. This online voting/polling system seeks to address the above issues. It should be noted that with this system in place, the users, citizens in this case shall be given ample time during the voting period. They shall also be trained on how to vote online before the election time.

1.1.2 Scope

Project is related to Election commission of India. Main facilities provided by this project are Online Vote Casting, Online Polling and Online registration of Voters and Candidates. In this project collection of data from different wards will be automatic. Data captured by employees during survey will be automatically updated.

ADMIN (handled by the Election Commission) can create an admin profile, update and manage the admin profile, include the candidates details that is add, remove and update the candidate profiles and view the polling results. VOTER can view their profile, update the details, view the list of all possible candidates taking part in elections and cast a vote to the deserving candidates.

1.2 Introduction To Online Voting Management System

The word “vote” means to choose from a list, to elect or to determine. The main goal of voting (in a scenario involving the citizens of a given country) is to come up with leaders of the people’s choice. “ONLINE VOTING SYSTEM” is an online voting technique. In “ONLINE VOTING SYSTEM” a voter can use user’s voting right online without any difficulty. The Users should register themselves first to vote.

ONLINE VOTING SYSTEM also known as e-voting is a term encompassing several different types of voting embracing both electronic means of counting votes. The individual votes are submitted in a database which can be queried to find out who of the aspirants for a given party has the highest number of votes.

The ONLINE VOTING SYSTEM-INDIA shall reduce the time spend making long queues at the polling stations during voting. It shall also enable the voters to vote from any part of the globe as explained since this is an online application available on the internet. It will require being very precise or cost cutting to produce an effective election management system.

Online Voting system emphasizes on improved voting services to the voters through fast, timely and convenient voting, Reduction of the costs incurred by the Electoral Commission during voting time in paying the very many clerks employed for the sake of the success of the manual system hence Require less number of staff during the election 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.

ER DIAGRAM

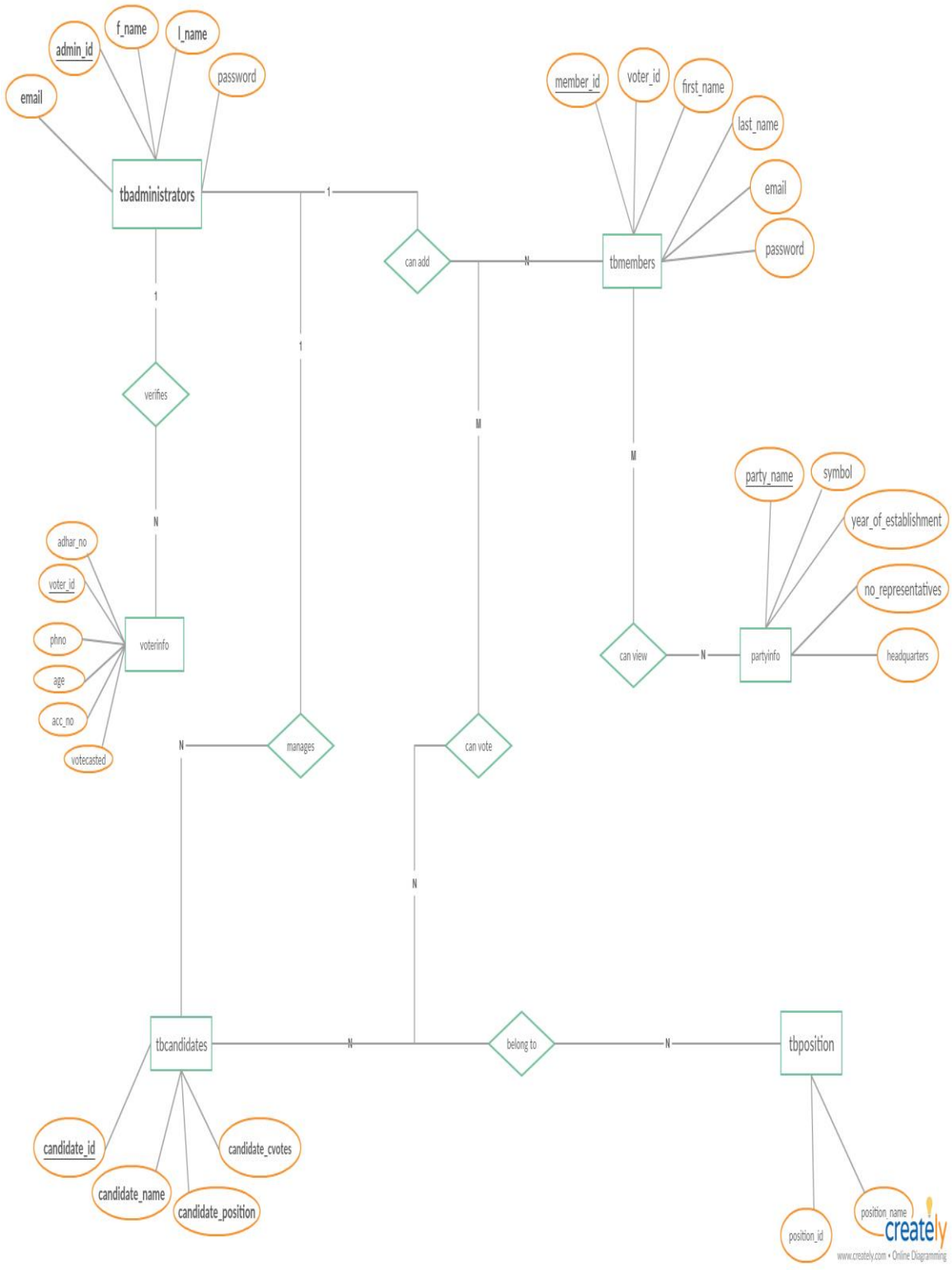

Fig 2.3 ER Diagram for Online Voting Management System

RELATIONAL SCHEMA

Description

A database schema is the skeleton structure that represents the logical view of the entire database. It defines how the data is organized and how the relations among them are associated. It formulates all the constraints that are to be applied on the data.

A database schema defines its entities and the relationship among them. It contains a descriptive detail of the database, which can be depicted by means of schema diagrams. It's the database designers who design the schema to help programmers understand the database and make it useful.

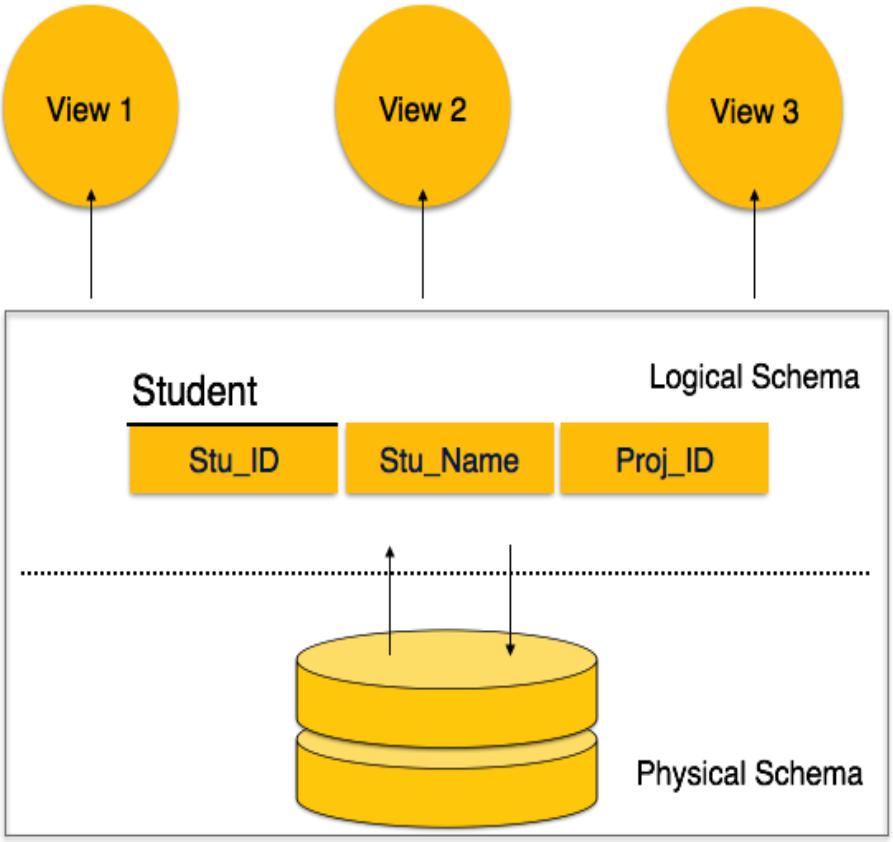

Fig 2.4 Different Categories Of Schema

A database schema can be divided broadly into two categories −

- **Physical Database Schema** − This schema pertains to the actual storage of data and its form of storage like files, indices, etc. It defines how the data will be stored in a secondary storage.
- **Logical Database Schema** − This schema defines all the logical constraints that need to be applied on the data stored. It defines tables, views, and integrity constraints.

SCHEMA DIAGRAM

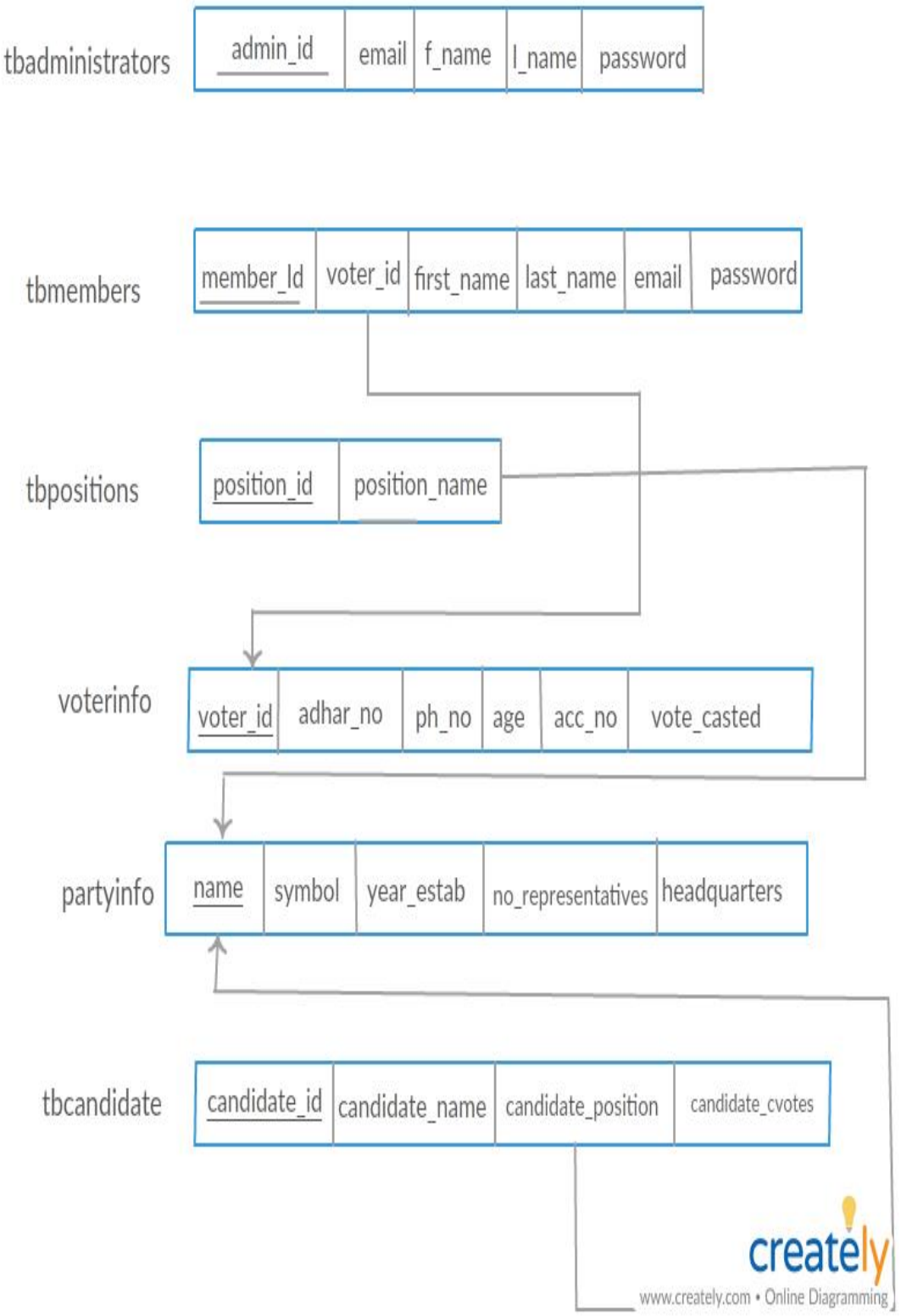

Fig 2.2 Schema Diagram For Online Voting Management System

3.2 Tables

The tables considered in the backend database of this project are:

Administrator table (tbadministrators)

Field	Type	Collation	Attributes	Null	Default
admin_id	int(5)			No	None
first_name	varchar(45)	latin1_swedish_ci		No	None
last_name	varchar(45)	latin1_swedish_ci		No	None
email	varchar(45)	latin1_swedish_ci		No	None
password	varchar(45)	latin1_swedish_ci		No	None

Fig 3.1 Admin Table for Online Voting Management System

The above fig 3.1 shows the admin table which is to be handled by the Election Commission consists of 5 attributes where only the attribute named “admin_id” storing the unique administrator id number acts as a primary key to identify each tuple. The first_name, last_name stores the name of the Admin. The email and password of the admin are the credentials used to login to the system as an Admin.

An Admin once logged into the system can add a new tuple into this table or even update the above table. The datatypes used in this table are varchar and integer. An Admin can add a new Admin to the system or update his own profile.

This Admin Table cannot be accessed by anyone other than the Admin himself that no voter or no candidate can view or modify the data in this table. Hence, we say that the security is well maintained in such kind of applications.

Candidate table (tbcandidates)

Field	Type	Collation	Attributes	Null	Default
candidate_id	int(5)			No	None
candidate_name	varchar(45)	latin1_swedish_ci		No	None
candidate_position	varchar(45)	latin1_swedish_ci		No	None
candidate_cvotes	int(11)			No	None

Fig 3.2 Candidate Table To Store Candidate Information

The above Fig 3.2 stores the information of all the candidates taking part in the elections. Every candidate is given a unique id called the "Candidate_id" using which we can determine all the other attributes present in the table hence the Candidate_id is a primary key. The Candidate's name is specified in the candidate_name attribute. The candidate_position holds the party name to which the candidate belongs. The total number of votes acquired by the candidate are stored in candidate_cvotes. This attribute is accessed during computation of the final polling results. The datatypes used are varchar and integer.

Party table (tbpositions)

Field	Type	Collation	Attributes	Null	Default
position_id	int(5)			No	None
position_name	varchar(45)	latin1_swedish_ci		No	None

Fig 3.3 Party Table For Storing The Contesting Parties

The above Fig 3.3 party table consists of two attributes where Position_id is the unique id given to each party and hence forms the Primary key. It is used to identify each Party with their name which is stored in Position_name attribute of the table. The table uses only two datatypes integer and varchar.

Voters table (tbmembers)

Field	Type	Collation	Attributes	Null	Default
member_id	int(5)			No	None
voterid	varchar(12)	latin1_swedish_ci		No	None
first_name	varchar(45)	latin1_swedish_ci		No	None
last_name	varchar(45)	latin1_swedish_ci		No	None
email	varchar(45)	latin1_swedish_ci		No	None
password	varchar(45)	latin1_swedish_ci		No	None

Fig 3.4 Voters Table For Storing The User Information

The above Fig 3.4 is used to store the information of the users or Voters where each member who registers themselves is provided with a unique member_id (Primary key). The voter must add all the details such as the voter id, first_name, last_name, email and their password. In order to vote, one must enter their email and password as the credentials.

This table can be modified either by the Voter or by the Admin. The admin is given access to this table where he can add a voter not just that he can also check for the validity of the data to prevent false voting.

The Admin has complete control over this table. The user can add, delete and modify the data present in this table. The admin has special privileges to monitor error or malfunctioning in the online voting system and can rectify it immediately for smooth flow control. The datatypes used are integer and varchar.

Party information table (partyinfo)

Field	Type	Collation	Attributes	Null	Default
party_name	varchar(20)	latin1_swedish_ci		No	None
symbol	varchar(20)	latin1_swedish_ci		No	None
year_eastablishment	int(4)			No	None
no_representatives	int(3)			No	None
headquarters	varchar(15)	latin1_swedish_ci		No	None

Fig 3.5 Party Information To Be Stored In This Table

The table stores the party name which is unique and acts as the Primary key. It stores the symbol of each party, the year of establishment, number of representatives taking part in the elections from that particular party and the address of the Head Quarters present. The Admin can enter and modify the details in this table which can only be viewed by the Voters. The datatypes used in the table are varchar and integer.

Voters information (voterinfo)

Field	Type	Collation	Attributes	Null	Default
voter_id	int(10)			No	None
adhar_no	int(16)			No	None
phno	int(10)			No	None
age	int(2)			No	None
accno	int(5)			No	None
vote_casted	varchar(5)	latin1_swedish_ci		No	None

Fig 3.6 Voter Information Will Be Stored In The Voterinfo Table

The Voters information table has 6 attributes all together consisting of voter_id as the Primary key since every voter is given a unique Voter id, Adhaar number, 10-digit phone number, the age of the voter, assembly constituency number stored in accno which is provided by the Election Commission of India. The vote_casted attribute stores if the voter has casted a vote in the form of a 'YES' or a 'NO'. Using this information, the Election Commission can find out the total voter turnouts for the particular year. The Admin (here the Election Commission Of India) can view all the details of the user and also manage it. The Admin can also delete the entries of any fake entries to prevent faulty Voting. The datatypes used in this table are integer and varchar.

4.2 Hardware requirements

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware, A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems. An HCL lists tested, compatible, and sometimes incompatible hardware devices for a particular operating system or application.

Processing power

The power of the central processing unit (CPU) is a fundamental system requirement for any software. Most software running on x86 architecture define processing power as the model and the clock speed of the CPU. Many other features of a CPU that influence its speed and power, like bus speed, cache, and MIPS are often ignored. Intel Pentium CPUs have enjoyed a considerable degree of popularity, and are often mentioned in this category.

Memory

All software, when run, resides in the random access memory (RAM) of a computer. Memory requirements are defined after considering demands of the application, operating system, supporting software and files, and other running processes.

Table 4.1 Hardware Requirements

MINIMUM HARDWARE REQUIREMENT		
	Processor	Pentium Processor @ 1-GHz or higher
	RAM	512MB or Higher
	Disk Space	60GB or higher
	Input Devices	Mouse and Keyboard or Touch Screen
	Output Devices	LCD monitors or Surface Screen, No printer
	Graphics Hardware	VGA

4.3 Software requirements

These are the software resource requirements and prerequisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or prerequisites are generally not included in the software installation package and need to be installed separately before the software is installed.

4.3.1 Front End

The components used in Front End are

HTML 5

HTML5 is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and current major version of the HTML standard, and subsumes XHTML. HTML 5 includes detailed processing models to encourage more interoperable implementations; it extends, improves and rationalizes the markup available for documents, and introduces markup and application programming interfaces (APIs) for complex web applications. For the same reasons, HTML 5 is also a candidate for cross-platform mobile applications, because it includes features designed with low-powered devices in mind.

Its goals are to improve the language with support for the latest multimedia and other new features, to keep the language both easily readable by humans and consistently understood by computers and devices such as Web browsers, parsers, etc., without XHTML's rigidity; and to remain backward-compatible with older software. HTML 5 introduces elements and attributes that reflect typical usage on modern websites. HTML 5 cannot provide animation within web pages. Additional JavaScript or CSS3 is necessary for animating HTML elements.

CSS

Cascading Style Sheets (**CSS**) is a style sheet language used for describing the presentation of a document written in a markup language like HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts.

This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate CSS file.

It reduces complexity and repetition in the structural content. Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods. CSS has a simple syntax and uses a number of English keywords to specify the names of various style properties. A style sheet consists of a list of rules. Each rule or rule-set consists of one or more selectors, and a declaration block.

Before CSS, nearly all presentational attributes of HTML documents were contained within the HTML markup. All font colors, background styles, element alignments, borders and sizes had to be explicitly described, often repeatedly, within the HTML. CSS lets authors move much of that information to another file, the style sheet, resulting in considerably simpler HTML.

4.3.2 Back End

PHP

Originally stood for Personal Home Page but now **Hypertext Preprocessor** (or simply **PHP**) is a server-side scripting language designed for Web development, and also used as a general-purpose programming language. PHP code may be embedded into HTML code, or it can be used in combination with various web template systems. PHP code may also be executed with a command-line interface (CLI) and can be used to implement standalone graphical applications.

The PHP interpreter only executes PHP code within its delimiters. Anything outside its delimiters is not processed by PHP, although non-PHP text is still subject to control structures described in PHP code. The most common delimiters are <?php to open and ?> to close PHP sections. In terms of keywords and language syntax, PHP is similar to the C style syntax.

PHP is a general-purpose scripting language that is especially suited to server-side web development, in which case PHP generally runs on a web server. Any PHP code in a requested file is executed by the PHP runtime, usually to create dynamic web

page content or dynamic images used on websites or elsewhere. It can also be used for command-line scripting and client-side graphical user interface (GUI) applications.

PHP can be deployed on most web servers, many operating systems and platforms, and can be used with many relational database management systems (RDBMS). Most web hosting providers support PHP for use by their clients.

MYSQL

Is an open-source relational database management system (RDBMS).
Is a free and open source tool written in PHP intended to handle the administration of MySQL with the use of a web browser. MySQL is written in C and C++. It can perform various tasks such as creating, modifying or deleting databases, tables, fields or rows; executing SQL statements; or managing users and permissions.

The software, which is available in 78 languages, is maintained by the phpMyAdmin Project. MySQL is a central component of the LAMP open-source web application software stack (and other "AMP" stacks). LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python".

It can import data from CSV and SQL, and transform stored data into any format using a set of predefined functions, like displaying BLOB-data as images or download-links.

4.4 Discussion of the code segments

This section discusses the explanation of code segments used in this project like Login, Updation, Insertion and Deletion.

4.4.1 Pseudo code for Login

1. Set the table to “tbmembers”.

2. Allow the voter to enter username and the password in encrypted format.

3. Compare the entered voter credentials to the backend database with prestored values in the table “tbmembers”.

4. If the voter entered values are correct, then redirect the page to the index page i.e the homepage of the voters

5. If the voter entered values are incorrect, then output the error message and redisplay the login page.

6. Login query is successfully processed.

4.4.2 Pseudo code for Updation

1. Set the table to “tbmembers”.

2. Allow the voter to login with successful credentials.

3. Allow the voter to enter the new values of first name, last name, voter id, email id and new password in “manage my profile page”. This allows the voter to change the values which the voter had entered during the registration.

4. With member_id as the reference update the newly entered values in the database for the table “tbmembers”.

5. The voter values are successfully updated in the back end.

4.4.2 Pseudo code for Insertion of Party names

1. Set the table to “tbpositions”.

2. Allow the admin to add new party name in “Manage parties” page.

3. The newly entered party name is now inserted in the “tbpositions” table in the backend.

4. The value is now inserted successfully.

4.4.2 Pseudo code for Deletion of Contesting members

1. Set the table to “tbcandidates”.

2. This is the privileges available to the admin of election to delete the contesting candidate’s voting nomination.

3. With the reference of the candidate_id the value in the database can be deleted using the deletion command.

4. The candidate’s information is now deleted successfully in the database.

4.5 Application Of Project Work

Voting is a man-made ideology which resolves conflict of choices between two or more entities in real life. Meanwhile voting is often done by manually selecting a contender due to certain characteristics that he or she may possess. But voting manually has posed so many challenges ranging from missing votes, voting malpractices, election ridging, the use of ballot papers which in a way slows down the voting process hence we shift to Online Voting System also known as e-voting, which resolves the above-mentioned drawbacks.

- Online voting maximizes homeowner participation: Easy and efficient —takes less than a minute to vote
- Convenient— people can vote online when it suits them- there's no ballot to mail or meeting to attend
- Private— homeowners voting details are kept private by request

Most of the recently invented online voting systems are actually vendor specific; vendor specific in the sense that, they are purposely designed to cater for special needs, most of which provide a single or two categories of voting. Meaning, they only handle one or two types of voting. Possibly, group elections, or school union elections or maybe both.

- Online Voting System can be applied for the legislative elections of a country that is for General Elections, Upper House Elections, State Assembly Elections and Local Body Elections.
- It can also be used on a smaller scale in elections for a School or College Unions or Managements.

4.6 Discussion Of The Results

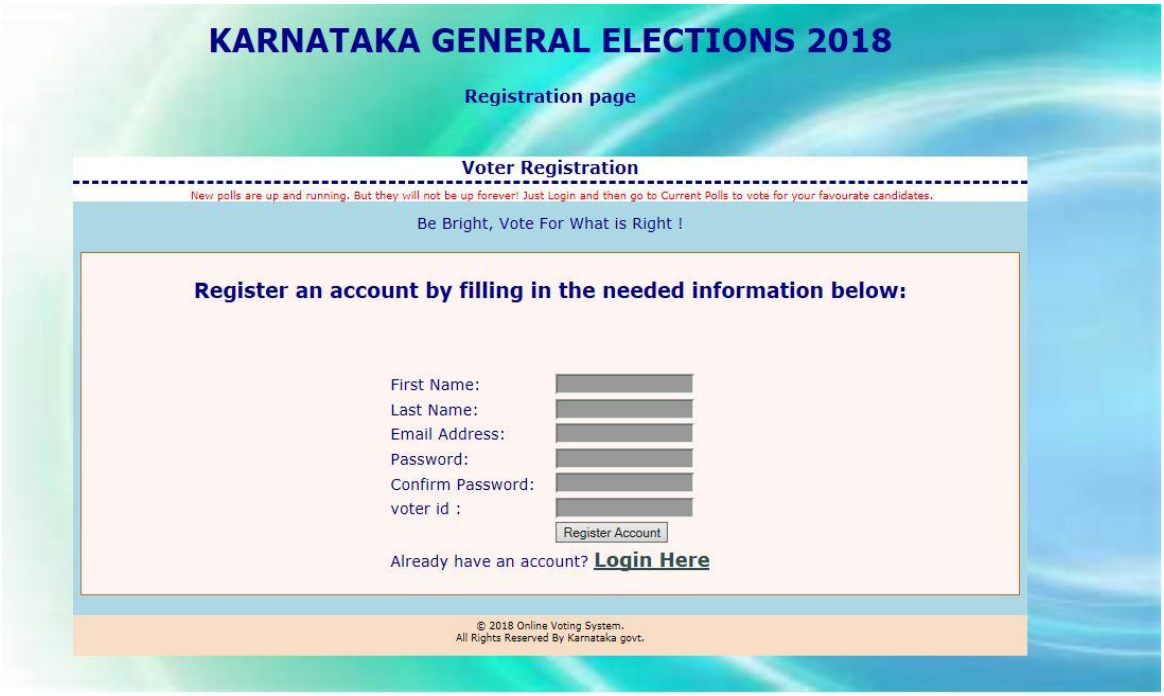

Fig 4.1 Voter Registration Page

The Fig 4.1 shown above is the voter registration page which allows a new voter to register himself or herself before they can cast a vote. The voter must provide the details such as his first name, last name, email id, password and the voter id. Once the registration is done, the voter can login his account.

Fig 4.2 Voter Login Page

Once the voter has registered with an account, the voter may use the online voting services by logging into his account by entering his valid credentials that is his email address and

the password. The login page is as seen in fig 4.2. Once the credentials are matched, the voter is redirected to the voter home page as shown below.

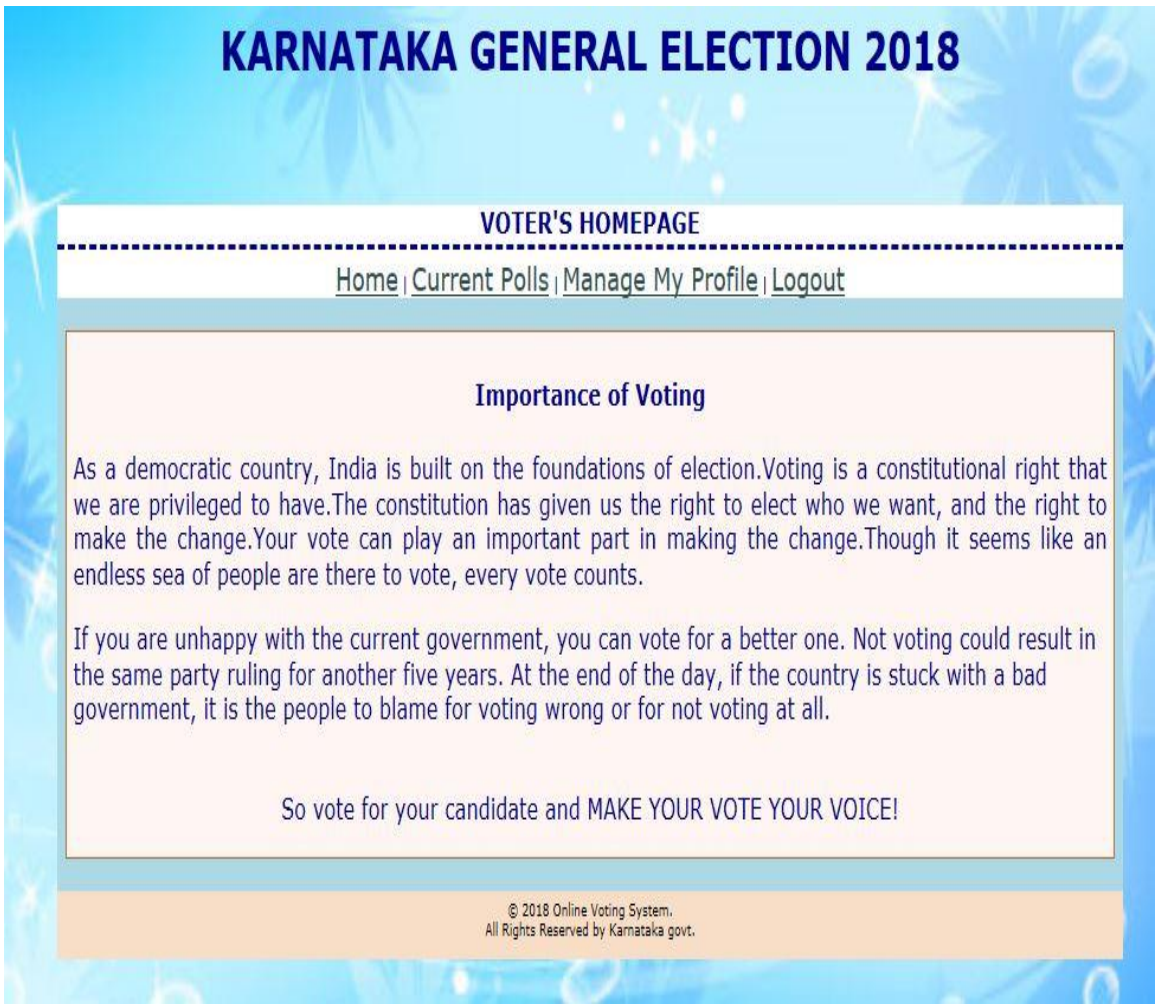

Fig 4.3 Voter Home Page

This page is the Voter's homepage which consists of links which allows the voter to perform various operations while logged in. A voter can manage his profile that is view his details and also update or alter those details by clicking the "Manage My Profile" link. A voter can cast his vote by choosing the "Current Polls" link. In case the user enters invalid credentials during login, the following page is displayed to show the error.

A voter may return to the home page from any other page by just clicking the "Home" link. Once the voter has utilized the services provided by the Online Voting Site, he may logout of his account. All the page views are as discussed further.

Fig 4.4 Current Polls To Help Voters Vote

The above Fig 4.4 appears when a voter chose to cast his vote by selecting the “Current Polls”. The voter must choose the party name from the drop-down menu provided and see the candidates taking part in the election belonging to that particular party. The voter may then select one among these candidates. To view and update the profile, a new page appears

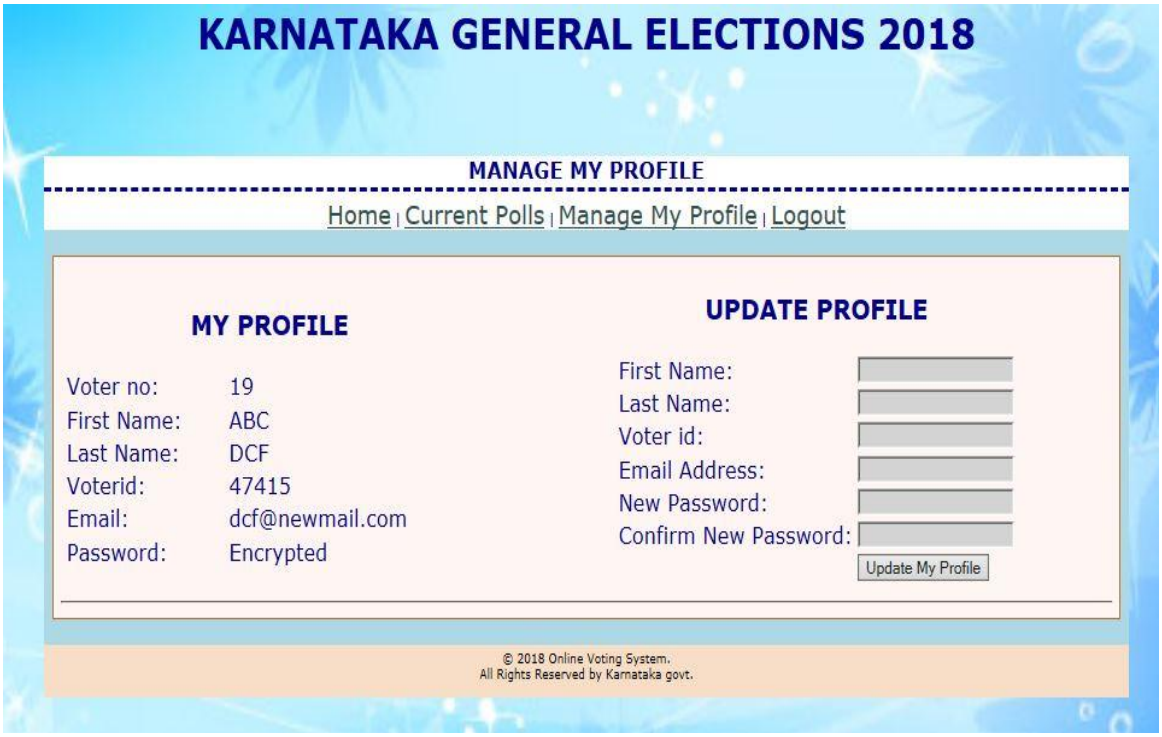

Fig 4.5 Update Voters Profile Page

The voter then logs out of the system and is redirected as shown in the Fig 4.6.

Fig 4.6 Logout Page

In case of any invalid credentials provided by the user during the login, the following page appears.

Fig 4.7 Invalid Credentials Page To Check If The Voter Has Registered

The Election Commission acting as the Admin will also have a similar login like the voter where the admin will use his email and password to login to the system. The admin id directed to the Admin control Panel.

Fig 4.8 Admin Control Panel Page

The above Fig 4.8 is the admin control panel where he can add or update the Admin profiles, Manage the parties (add or delete), Manage candidates, Add voters and Check the results. The Manage Administrator page is as seen below in the Fig 4.9.

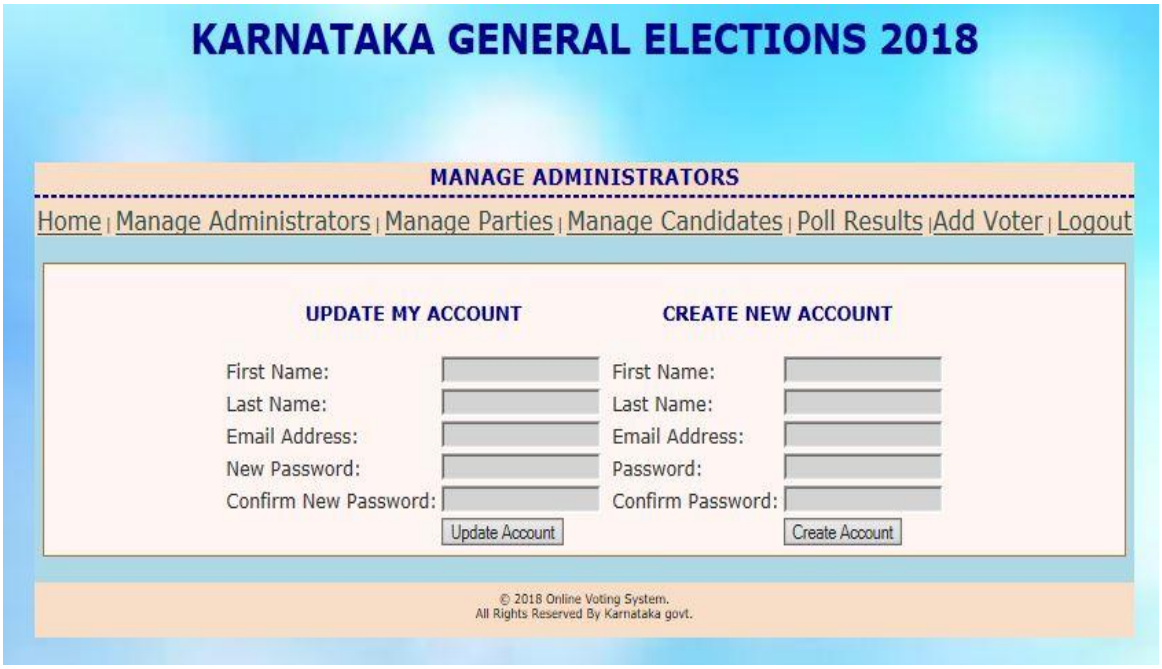

Fig 4.9 Manage Admin Page

Here the admin can update his account details and also create a new admin entry by filling in the details in the simple form provided as shown in the Fig 4.9.

Fig 4.10 Manage Parties Page For The Admin

The Administrator can add any new party taking part in the election or also delete an existing party as shown in the Fig 4.11 .

Fig 4.11Manage Candidate Page For Admin

In the previous Fig 4.11 the admin can add a Candidate standing for election by filling in the name and the party to which he belongs to. The Admin also has permission to remove a candidate from the list of candidates.

The Administrator can add any new party taking part in the election or also delete an existing party.

Fig 4.12 Addition Of New Candidate

In the above Fig 4.12 the admin can add a Candidate standing for election by filling in the name and the party to which he belongs to. The Admin also has permission to remove a candidate from the list of candidates that are already present and can be seen in the available list of candidates as seen the table above. Here the table displays the candidate id, candidate name and candidate party, hence it becomes easy to delete a candidate seeing the candidate id or candidate name.

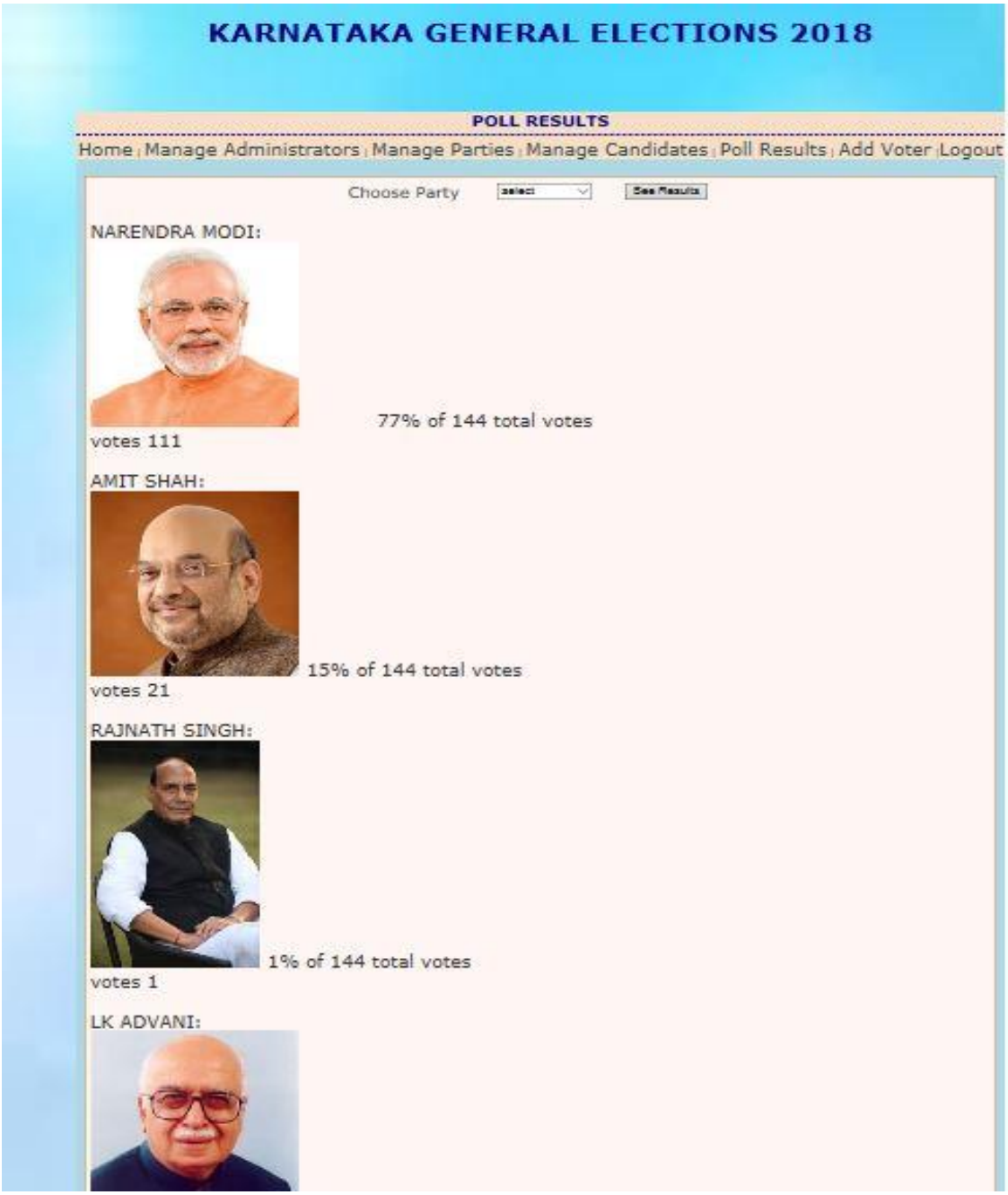

Fig 4.12 Result Page

The above page can only be viewed by the administrator where he can choose a particular party and check the results. Depending on the choice of the party, the images of all the candidates taking part are displayed along with their votes, and percentage of votes they have gained all together.

5.2 Future Enhancements

Well, the future of this project lies in the hand of our users. Although we also have a part to play. This is through enhancing the features of this system by introducing concepts and functionalities which are trending with other systems. However, maintenance is the most important thing that determines the future of a software. By constant maintenance, debugging and providing security checks we hope the system should be able to survive those future challenges.

One most important thing is that if this project is able to be adopted by the government and private sectors for election purpose, then it is going to be a remarkable achievement for the system as well as the team. This is why we hope to re-introduce the idea of using online voting system through campaign and promos to enlighten the general public on the importance of digitalizing elections and all forms of voting for the betterment of the people, security, and fairness. The Online Voting System can be converted into an Android application where any user can use their smart devices to exploit the Online Voting Services.

In the Online Voting System the enhancements can be made in such a way that, if the voter who have registered themselves, do not turn up to cast their vote, the application or system can send the reminder or an e-mail to the respective voter's mobile number. This will help the users (voters) and also increase the voting turn out.

Furthermore, the login of the user can be made easier by including the fingerprint recognition from their respective and dedicated smart devices where the user is not required to remember the credentials to enter into the system. By doing so we will be making the application user friendly and handy to use.

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