

# Secured Online Voting System Using Unique Identification (UID) Number

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**1. Abstract—** *Online Voting System is a system to conduct voting online for the elections. The Online Voting System has been designed to computerize and automate voting operations performed during the elections and other operations relating to the voting process including viewing party and candidate details, downloading and reading party manifestos, getting latest political updates and getting to know how to go through the above software. It links the user with the help of their respective UID (Unique Identification) number provided by their government which contains the user necessary details including fingerprint and iris scanned details. Apart from this, the software also deals with providing users with the information about the various political parties, its candidates and latest political updates, and also calculates and displays the results of the elections which becomes is chaotic while handling manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Voting becomes much simple. This computerization of the voting process helps in many instances of its maintenance. It reduces the workload of Election Commission as most of the manual work done is reduced.*

**Key Words-** Internet Voting, e-voting, Online Voting, secured network, UID, fingerprint scanner, iris scanning

## 2. Introduction

The Internet is changing citizen expectations and demand around the clock with its speed and ease of convenience with which all government services and especially elections should be delivered. Since 2004, when Elections BC introduced North America's first fully integrated online voter registration service, British Columbians have also been using the Internet to register to vote. The present form of voting in general elections in countries like India is founded entirely manual voting procedures.

Since ages, Elections are being managed manually. It takes a lot of time and money to conduct them in an efficient manner, and human workforce like army and policemen, for conducting voting securely. The workmen who are supposed to

conduct it securely must perform their job very carefully, in order to prevent malpractices. Especially in some states of nation, the population being poverty stricken, citizens rarely bother to take a leave from their work and go to vote. To such people, this technology makes them a bit close to the computers and the current advancing technology. The voters are unable to attend the voting for many reasons. New technology with advanced online voting machines (computer terminals used for voting) for elections may entail several advantages. It may, enhance the voters' scope for participating in the election. It also creates scope for more rapid tallying of votes and distribution of seats. This also enables the electoral administration to promptly announce the election results with more precise and convenient results. The risk of error in vote-tallying can also be largely eliminated. The risk of fake or invalid votes can be reduced by identifying the person with fingerprint or iris scanner. The new technology also entails some disadvantages that must be considered. The disadvantage the cost involved in development, operation and proper management of the system.

Due to increase in demand of one stop services and online services, the launch of online voting system of registered voters will be boon to country's technology advancement and transparent services.

## 3. Problem Background

This paper addresses how Internet voting system can bring speed, convenience and accessibility to voting procedure rather than existing system. Our intent is not to propose a particular online voting solution, but rather to provide a technology to overcome existing and upcoming voting system.

The potential benefits and risks of Internet voting are discussed in terms of seven of the core democratic principles that shape modern electoral systems: accessibility, equal voting power, secrecy, security, auditability, transparency, precise and simplicity.

#### 4. Problem Statement

Internet voting is about making the act of voting as convenient as possible and it holds great promise to improve accessibility, particularly to those who are absent from the jurisdiction, live in a remote area, or who have mobility issues. However, this voting channel introduces risks to some of the fundamental principles of democratic systems. As policy makers consider a place for Internet voting, it is important that a balance is struck between competing principles, all of which are critical to electoral integrity, so that public confidence in election outcomes is maintained.

#### 5. Research Objective

The main objective of this work is to develop an interactive voting system application with which users can participate using their information stored prior in database. The purpose of this document is to present a detailed description of the Online Election Voting System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.

In this system people who have citizenship of country and whose age is above 18 years and of any sex can give their vote through online without going to any physical polling station. After registration each voter/user is assigned with the particular username and password generated by the Electoral Commission of Country. With every time logging into the system the user is validated with both of the ID. Through these development we can obtain a secured website comprises of all the voting methodologies in a single website.

#### 6. Existing System

The present most countries like India, Italy, Jamaica, Kenya, Japan, Liberia, Malaysia, Pakistan, Poland Russia, United States and so on have plurality voting system in which each voter is allowed to vote for only one candidate, and the candidate who polls more votes (plurality) than any other candidate is elected. The voters are unable to attend the voting for many reasons. Problems in the current manual Election System

(1) Sometimes people may not be in their own registration region and due to this fact they cannot fulfill their voting duties. In order to solve these problems there is a need of online election voting system in addition to manual voting system. After registering to system, the voters will use their votes at any field areas by using the system if they prefer online voting.

(2) The money spent for the security purposes during the manual election process i.e. on policemen, transportation, etc can be minimized.

(3) In fact the inconvenience caused regarding the transportation to the local passengers (traffic) during the manual voting can also be avoided.

(4) An inconvenience is also caused to the schools, colleges and university students, infrastructures of which are used by the people of Election Commission during the manual voting process.

Report generations of all the information is very tough task.

All the operations must be performed in perfect manner for conducting elections in country, without any degradation which may finally result in the failure of the entire system.

#### 7. Benefits of automation

Automation is procedure of converting a traditional system into a computer organization. To overcome the defects of the existing, manual voting system, automation was introduced by the computerization of organization we get many benefits.

#### 8. Proposed System

To solve the inconveniences as mentioned above, an Online Election Voting System is proposed by using UID (Unique identification) number which is provided by respective government to each citizen containing all the details of the citizen.

#### 9. Scope of Project:

The Election Voting System has been designed to computerize and automate all the operations performed during the country's elections relating to the voting process, viewing party and candidate details, downloading and reading party manifestos, getting latest political updates and getting to know how to go through the above software.

This computerization of the voting process helps in many instances of its maintenances. It reduces the workload of Election Commission as most of the manual work done is reduced.

We can improve the efficiency of the system, thus overcoming the drawbacks of the existing methods and achieve the following:

- Less human error
- Strength and strain of manual labor can be reduced
- High security
- Authentic information
- Data redundancy can be avoided to some extent
- Data consistency
- Easy to handle
- Easy data updating
- Easy record keeping
- Backup data can be easily generated
- Environment Friendly

#### 10. Overcome the existing system

The objective of this project is to achieve the following:

1. During the voting season, voters will be able to cast the vote to the party, they intend to vote for.

2. Individually each voter will have his/her own account, which gives the voter an access to the information he/she desire.

3. Party details like name, symbol, year of foundation of the party, party leaders, wins and losses of the party during the previous state election can be viewed and the party manifesto can also be downloaded and viewed by the voters after log-

ging into their account. All this information is made handy and all available at one click.

4. Candidate details like the name of the constituency, the candidate name, his previous deeds along with criminal records and charges can also be viewed efficiently by the voters ,by means of a letter head signed and sealed by the Election Commissioner of Country , in which the candidate's past records are mentioned( Letter head is handwritten by the candidate himself ) .

5. The results are calculated, and viewed by the voters as well as the Election Commission.

6. Election Commissioner or administrator can update the party details, candidate details, manage voter records, upload manifestos, attend to grievances of the voters and create results.

7. Software is less time consuming, gives accurate results, but reliability can be improved with the help of security.

### So we need a system that is quick, accurate, comforting and reliable:

1. This will be achieved by online election voting system which will cope up with the current issues and problems observed during voting process.

2. The system can validate voter, conduct casting of vote, viewing party and candidate details and latest political updates and editing of all of them by the admin module. This software is also bug free and secure.

## 11. Functional Requirements

### R1: Registration

#### R1.2: Registration as a Voter

**Description:** A user registers into the system as a voter in order to cast his/her votes

**Input:** Voter details such as UID number, name, age, registered email ID and contact number.

**Output:** Details Matched then user successfully registered or if not then user details not matched.

#### R2: Login

**Description:** Voters who are registered can Login using their username and password with fingerprint or iris scan after which they can perform their respective jobs.

#### R2.1: Login as Admin

**Description:** An admin calculates the results of which party wins, calculates and displays result, update or delete candidates and voters.

**Input:** Enter username and password

**Output:** Admin Control Panel

#### R2.1.1: Calculate Votes

**Description:** An Admin can check and display results.

**Input:** Result should be published

**Output:** New page added to the home screen with results.

#### R2.1.1.1 Add, Update or Delete Candidate

**Description:** An Admin can add, update and delete the candidates if required

**Input:** Candidate Id

**Output:** Searches the candidate ID, if it does not exist then we can add candidate, otherwise the Candidate basic Info page appears including candidate no, candidate name, candidate age, candidate email, Party name, highest qualifica-

tion, upload image and citizenship followed by update and delete buttons

#### R2.1.1.2 Add, Update or Delete voters

**Description:** An admin can add, update the voters and delete them if required

**Input:** UID number

**Output:** Searches the candidate ID, if it does not exists then the Update voters page followed by update the basic information including UID number, Voter age, Voter email followed by update and delete buttons

#### R2.2: Login as Voter

**Description:** A Voter, after registration can login from their uername, password and proper authentication.

**Input:** username and password

**Output:** Candidate profile with submit button

#### R2.2.1: Candidate profile

**Description:** A page showing the names and symbols of the candidates and their parties are shown where the voter can caste their votes.

**Input:** Selection of candidate name from a list of candidates

**Output:** If confirmed by the voter then Voting successful or voter is showed with the same candidate profile page

## 12. Non Functional Requirements

### Product Requirements

#### Efficiency Requirement

When the Online Election Voting system will be implemented, Election Commission and the voters will have an easy access to cast vote since they need not manually go to the Voting Booth during each Voting season.

#### Reliability Requirement

The system should accurately perform voter validation, vote casting, report generation, party and candidate information retrieval and search.

#### Usability Requirement

The system is designed for a user friendly environment so that voters and Election Commissioner can perform the various tasks easily and in an effective way.

### Organizational Requirements

#### Implementation Requirements

In implementing whole system it uses html in front end with PHP as server side language which will be used for database connectivity and the backend i.e. the database part is developed using MySql.

### DELIVERY REQUIREMENTS

The whole system is expected to be delivered in five months of time with a weekly evaluation by the project guide.

### USERS REQUIREMENTS

- 1 Accessibility has become an increasing requirement in services provided by service providers.
- 2 They have a high awareness level of various accessibility standards and guidelines

### 13. PREPARATORY STUDIES

3 Feasibility is the determination whether or not project is worth doing. The process followed in making the determination is called preparatory study. Since it may lead to commitment of large resources, it becomes necessary that it should be conducted competently. There are two important tests of project feasibility which are described below:

#### 13.1 Technical Feasibility:

Concerned with the specifying equipment and software that will successfully satisfy the user's requirement

1. It should produce output in a given time.
2. It should give response under certain condition.

3. The hardware should be able to process certain volume of transaction at faster speed. Since the project comes under the category of database management system so here MySQL server is used as database. PHP is used as the.

So it is technically feasible.

#### 13.2 Operational Feasibility:

The project has been designed in its working environment or operational structure or it can add some new skill that can be essential in near future. The system has been designed so efficiently that a person having little knowledge of computers can handle the system very well

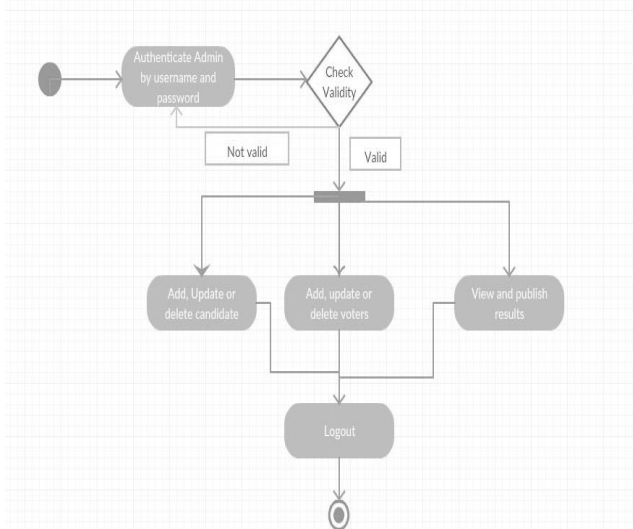
### 14. ACTIVITY DIAGRAM

An activity diagram shows the behavior of the system in terms of activities. Activities are the elements to represent the execution of set of operations.

#### 14.1 Activity diagram for admin:

Admin logs in using username, password and fingerprint or iris identification. Admin can perform activities like Add, Update or delete candidate or add, update, delete voters and can view the results. The admin can publish the result at the time of announcement, after this only the user can view the results

Fig 1- Activity Diagram for admin

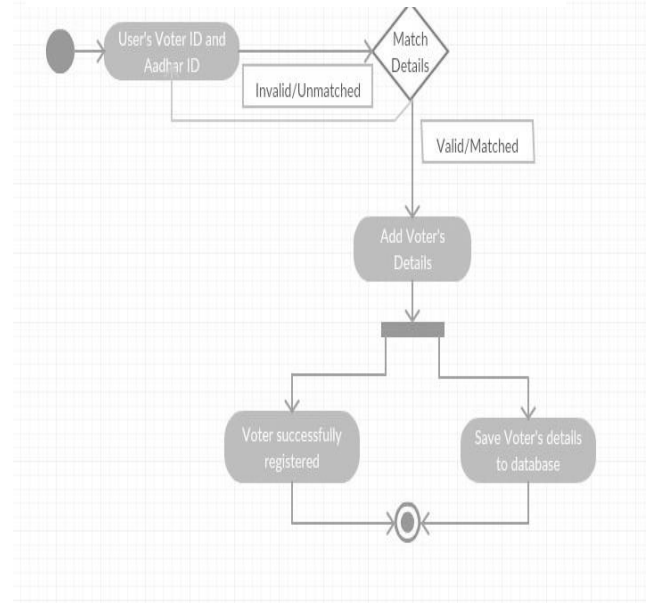


as the link will be made active by the admin.

#### 14.2 Activity diagram for what happens pre-voting:

Here the user provides his UID (Unique Identification) number and other details in the registration form and if the details are matched, then he/she is successfully registered and provided with username and password.

Fig 2- Activity Diagram for pre voting



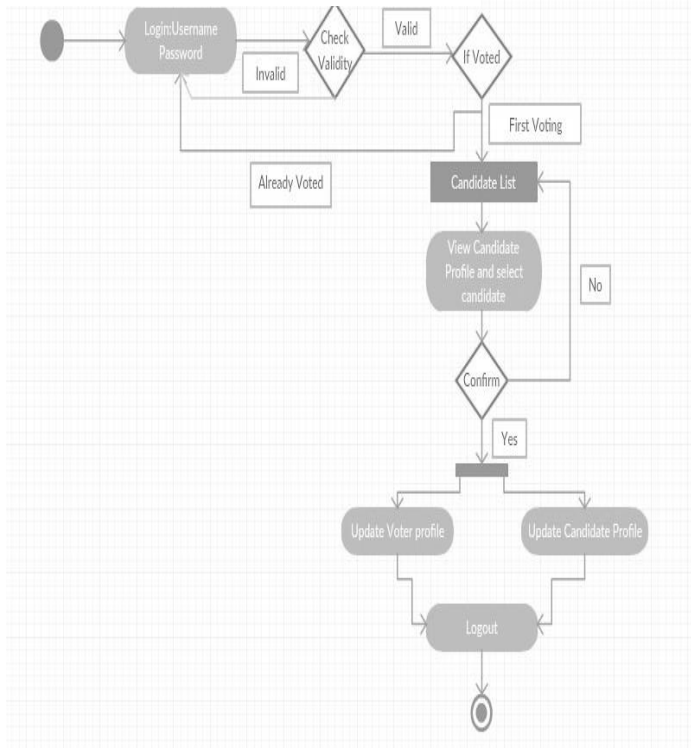
#### 14.3 Activity diagram during voting situation:

Here the voter which is the user of the system is provided with a username and password during time of registration with the help of his UID number. He/she logs in with user name, password. When the user is authenticated with the help of iris or fingerprint recognition data available in UID card he is lead to the voting portal.

The voter can vote for the from the available candidate list. As the voter selects an option, the user will be prompted to be sure with its deciion and then submit the vote. The voting portal will be available for ome spitulated time (2 mins) for the user to vote and after that time the user has to login again to vote. Once the voter votes he/she is irected to the home page.

If the voter has already voted he/she won't be able to login again

**Fig 3- Activity Diagram during voting**



The main components of ER models are entities and the relationships that can exist among them, and databases. An entity may be defined as a thing capable of an independent existence that can be uniquely identified.

An entity set is a collection of similar types of entities. Entities are represented by means of their properties, called attributes. The association among entities is called relationship. Relationship of similar type is called relationship set.

**16. COMPONENT DIAGRAM**

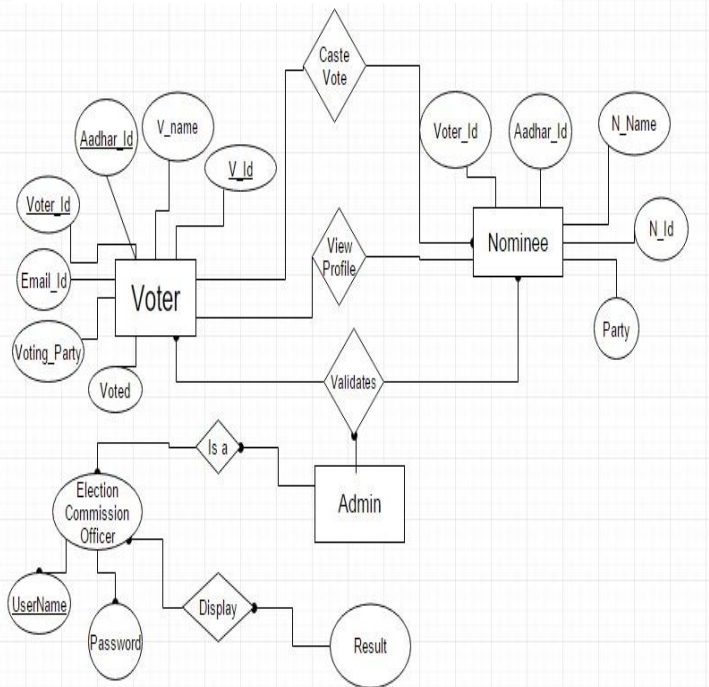
Component diagrams are used to describe the physical artifacts of a system. This artifact includes files, executables, libraries etc. It is used during the implementation phase of the application. But it is prepared well in advance to visualize the implementation details.

**15. DATABASE DESIGN**

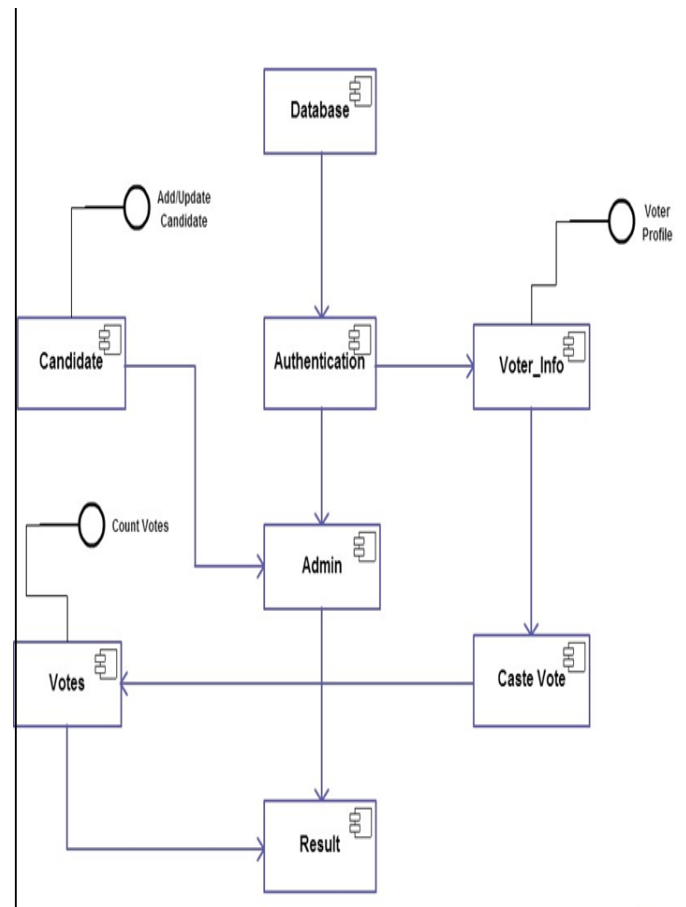
**ER DIAGRAM**

An Entity-Relationship diagram (ER diagram) is a data model for describing the data or information aspects of a business domain or its process requirements, in an abstract way that lends itself to ultimately being implemented in a database such as a relational database.

**Fig 4- ER Diagram**



**Fig 5- Component Diagram**



### 17. EXPERIMENTAL RESULT

Voting System needs the verification of the user through the username and password as in Figure 1 and the Figure 2 shows the home page along with the login panel.

Fig 1- Interface for user login

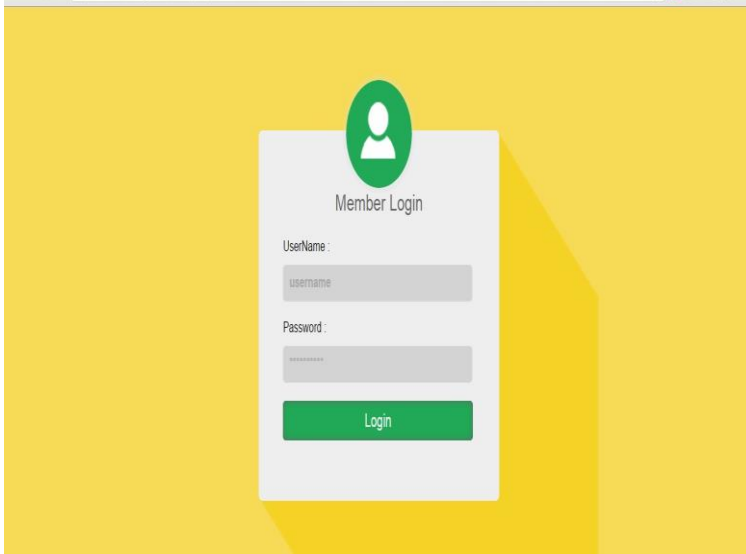


Fig 2- Home page



After proper authentication is made then the user can vote up for the desired candidate as the Figure 3 and after the admin proper decision the results are published as shown in Figure 4.

Fig 3- Voting Panel for voters



Fig 4- Result page



The admin can view votes, add, update and delete candidates and voters as well as publish the results as shown in Figure 5.

**Fig 5- Admin panel**



## 18. CONCLUSION

- Security
- 24 X 7 Availability
- Flexible Architecture
- Attract a younger generation of voters
- Would save money in the long run
- Faster and more accurate counting of votes
- Much more convenient for voters
- Will increase voter numbers

In this paper we have enforced a method for integrating Cryptography over network to present a highly secure Online Voting System. The security level of our system is greatly improved by the new idea of UID identification by using user's iris identification or face recognition. This system will preclude the illegal practices like rigging. Thus, the citizens can be sure that they alone can choose their leaders, thus exercising their right in the democracy. The usage of online voting has the capability to reduce or remove unwanted human errors. In addition to its reliability, online voting can handle multiple modalities, and provide better scalability for large elections. Online voting is also an excellent mechanism that does not require geographical proximity of the voters. For example, soldiers abroad can participate in elections by voting online. Hence, by this voting percentage will increase drastically. It will encourage the most populated and talented youth of the nation to choose their representative.

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