Online Voting System using System generated One Time Password [OTP]

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Abstract
The One Time Password concept is the main security implementation we will be using, such that every time a password is generated when each user's login to the system. OTP is sent to his or her mobile phone which basically consists of random digital numbers that changes over the period of time whenever user logs on to perform the operation. The robotized polling forms decisions are known as web-based voting using One Time Password. To provide the security implementation a protocol to this software is developed for the user-based voting system. The implementation has two main parts: The voter section and the administrator section. In these protocol voter section can be found at home or working place or through a device through which they can perform to access the data and grant data authentication. The administrator section executes or permits the functions of voter based on the candidate registration, validation of voter ID, authentication and database the result.

1. Introduction

India is a consecrated greater part rule government which is the organization of supreme legislative power & the center of the organization is an assurance to reach standard, complimentary& sensible cast of voting. The cast of voting can be chosen the synthesis of organization, the enrollment of both spots of parliament & state can be affiliation district definitive assemblies, and the organization & negative behavior pattern organization. Choices are driven by the set-up election plans, improved by laws made by Parliament.

The main view of the paper is to make and manage polling & elections summary. This system helps us to all the people of our country to give their vote online. Using this system help us to increase the voting percentage across the nation these will the biggest aim of our paper. In present status the citizen of our country visit to the polling booth to cast their votes. This web based online system help the citizens of our country who are far from home to cast their vote online. The main aim of the web based online voting system is to cast their vote using the mobile application and using the website. All the database of the eligible candidates & people of our country are uploaded on the online voting system.

Online voting system gathers its own significance since the NRI voting Rights billed have been passed by the parliament on Feb 11,2011. The new law has passed to allow the citizens of our country to cast their vote from abroad in case he or she went for the purpose of the employment, education, etc. In present case the people should present within constituency on the day of polling for exercising his right to vote.

Thus, our paper, online voting system should enhance the opportunities of voters outside the country to vote for their nation on implementation.

To accomplish the necessary security, we are utilizing OTP (once secret key) approach, which is most usually online to separate between a human using an online organization & an automated bot therefore devising the website increasingly protected against spam-bot attacks.

The OTP rule underlines that each time the client attempts to sign on, the calculation produces irregular yield in this way improving the security. The outcome

shows that the proposed calculation fit for finding over 90% of the appearances in database and permits their voter to cast a ballot in roughly 58 seconds. decisions in regards to correct issues, bits of rule, resident activities, sacred alterations, reviews or potentially to choose their legislature and political agents.

2. Literature Survey

A. RSA Algorithms

In this paper, many algorithms used for the forecasting purpose were studied & analyzed. Reference [1] using Aadhar's as the Smart Voting System. For the purpose of database using fingerprint as a biometric should be highly protected & trusted will increment the cast of voting rate. Reference [2] using biometric as a voting system. In this system DNA & Iris as a unique identifier as compared to biometric. In this system IOT Technology are used for updating & several activities can be done. The main view of the system is to using biometric confirmation to improve the security & casting a vote safely process to stay away from the electoral cheats.

B. Message Digest Algorithm's (MD5)

Reference [3] using smartphone basis face identification utilization one-time password (OTP) confirmation for the cast of voting procedure. Therefore, smartphone using face identification needs to make the database.

- Registration is done by the voters.
- Voters should to register their details like Name, DOB, facial recognition, etc.
- On election day the people who has above 18+ visit on the website to login using the login ID and secret key(password)offered by the election team authorities & validation for the same day &secret key(password)offered by same authorities using message digest encryption algorithms (MD5).
- Using application to capture the voters face. If it matched with the uploaded data then it's correct and send OTP to the voter's smartphone& voter's needs

to entered the password (OTP) and then gives voters for given candidates.

C. Biometric and Multimodal Biometric

In this paper we use the biometric modules, its applications, Techniques and the challenges. Reference [4] describes the usage of Biometric system. It uses two or more biometric traits. Sensors are used to acquire the data which captures multiple samples of a single biometric trait. They use RSA and AES cryptographic techniques to encrypt the data. But due to limitations the decrypted key has to be kept secretly.

- We can view the number of fake voters immigrates
- Helps in avoidance of electrical frauds.
- Uses multiple sensors to access the data.
- Used in commercial and government purposes like Credit cards, Network login, ATM, border security,

forensic application, national identity cards, passport control etc.

D. Arduino

Reference [5] describes voting system through the finger prints. The main advantage is its electronic prototyping platform and its open source. In this system ATmega328 is used. It has a central database which controls all the database for all the citizens. This finger print voting system of Arduino is an offline version. In which voters can verify their finger print with the already stored database.

After the voting process the result is announced by clicking the result button. This result button can be accessed only by the admins as for the security purpose of a device.

The Arduino system prevents transparency, avoids permitting access to invalid voters and provides integrity which is easy to maintain.

E. Homomorphic Encryption

Reference [6] this system is based on Homomorphic encryption. Each ballot is encrypted using the public key of distributed E1Gamal crypto system. They are proposed for the private authorities. During the initialization of elections, the common encryption key has to be generated by the authorities i.e., the private key (PK) which can be used to encrypt each and every cast ballot before submission.

F. RFIDD [Radio Frequency Identification]

In the reference [7] the system deals with the usage of Microcontrollers, GSM technology and RFID to ensure reliability, safety, security and transparency. It uses electromagnetic fields to track and identify RFID tags which are attached to the objects.

GSM Module SIM900A is used in the system. Built-in RS-232 is an added advantage as it provides user to insert SIM. RFID Tag is implemented on voter id which operates at a frequency of 125 KHZ. After the verification the GSM module ensures onetime password to voter via mobile, then the user can cast his vote which makes voting process easy and safe to cast voting.

G. Viola-Jones, PCA, Adaptive thresholding

In reference [8] it describes about the usage of Finger Print, Iris and face verification. FM220 Starttek scanner is used for fingerprint scanning. Viola-Jones algorithm is used for face detection. The Adaptive thresholding algorithm and Principal Component Analysis (PCA) are used for iris matching and feature extraction. To compare and verify the input data and trained data the software MatLab is used which compares with already stored or existing database system.

3. Exıstıng System

In these current frameworks it does not contain any application stage framework arranged for nation to complete the web-based voting system and method as a whole. Therefore, in the current system, there is no such application being used for automatic system for casting a web-based voting indicated by the voting structure existing in the nation. All the bits technique is done by the approved authorities according to people who are allocated by the ECI.

4. Proposed System

The implementing protocol of the voting system has two main parts: The voter and the administrator. The voter section can be found at home or in working place or they can event get to perform through the device which can access and grant the data authentication. The administrator executes or permits the functions of the voter based on the candidate registration, validation of voter id, authentication counting and database the result.
The advantages of the protocol are:

Administrators Public transparency. Technical trouble inures interruption of access and complex recovery. Different voting Configuration is possible through greater performance and actions.

Similarly, the trustworthy administrators are available. The voting results can be monitored as the casting of vote will be a secret matter of course.

The online voting system consists of:

•   Should be able to display all the database of the registered voters according to their privileges and access rights.
•   Should be user friendly interface and user guides which can be utilized by the people who even has minimum computer skills.
•   It should handle multiple users simultaneously and provide same efficiency to the users.

OTP One Time Password concept is the main security implementation of this software where every time a password is generated when each user's login to the system. The OTP is sent to his/her mobile phone with the registered mobile number. OTP is basically random digital number that changes every time over the period of time whenever user logs on to perform the operation.

5. Methodology of System Design

The main objectives of system design is to identify the modules which is should be in the system means it direct says how we did our work on steps. Means how all entities are connected with each other or how they will interact with each other to generate the required results. At the end of system design all the main file formats, data structures and the main modules of system and their assignments or represents are decided. In the methodology of system design, we have using three

design phase or levels to the establishment of the proposed system design, as we can see on level 1 **"Election master"** use case diagram-Election master can see the number of candidate and vote for every party and also see the vote results after the declaration of ending election date.
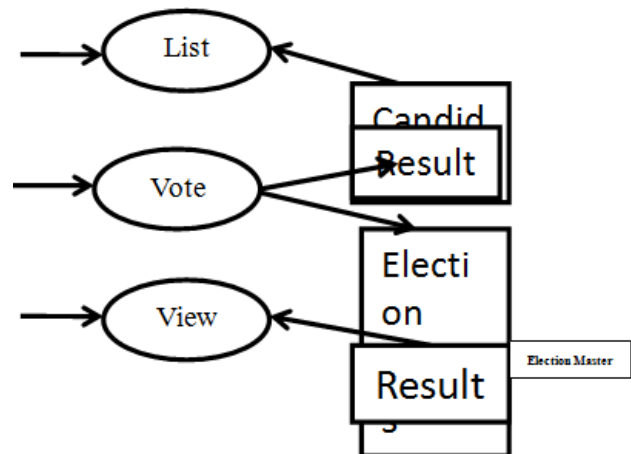

Figure 1: Election Master

Level 2- It is providing the candidate details, where the candidate is elected and from which party.
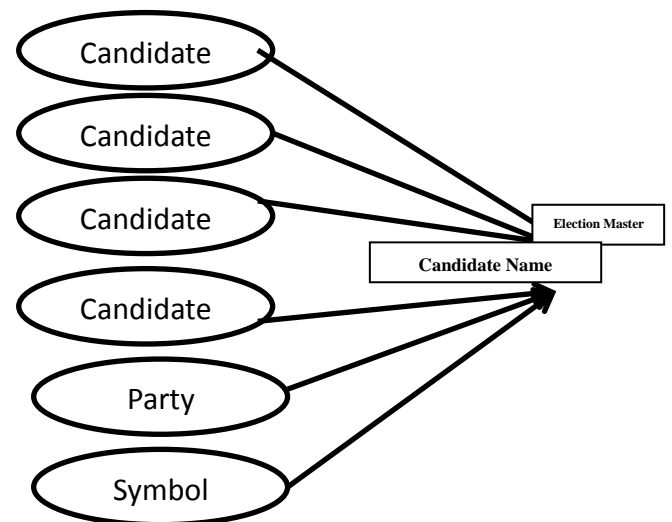

Figure 2: Candidate Details

Level 3 -The voter information is available there; he can choose a candidate for vote he want.
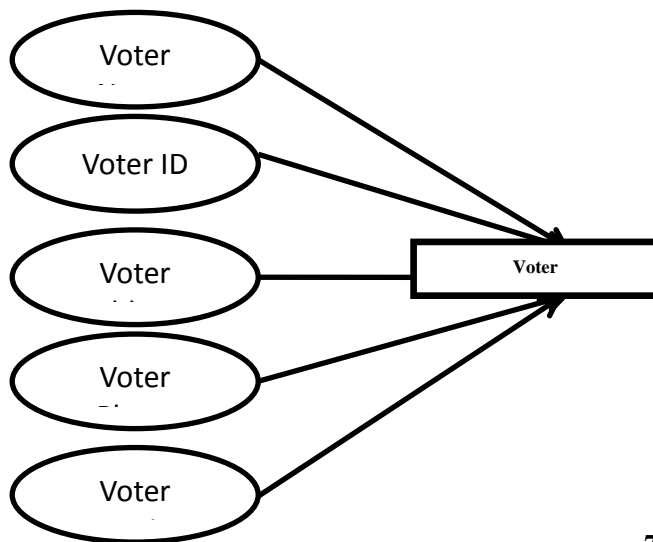
Figure 3: Voter's Information

Admin

Figure 2: Election Master

In methodology, there are two stages to proceed design phase
i. General phase
ii. Detailed design

6. Data Flow Dıagram

A data flow diagram (DFD) is a graphical representation which support the flow of data through an information system. A data flow diagram can be used for visualization and data processing. i.e., structured design.

The creators will draw a context-level DFD first which shows the connection which is between the system and outside entities. The circumstances level DFD is then "exploded" so that it can view more information of the system which are being modeled.

The Data Flow Diagrams were originated by Larry Constantine who was the original developer of the structured design, which is found on Martin and Estrin's "data flow graphs" model of figuring.

Data Flow Diagram's (DFD's) are one of the crucial outcomes of Structured System Analysis and Design Method i.e., SSADM.

The old system's data flow diagrams can be built up, to compared it with new system's data flow diagrams to draw the comparisons to implement a more well-organized system.
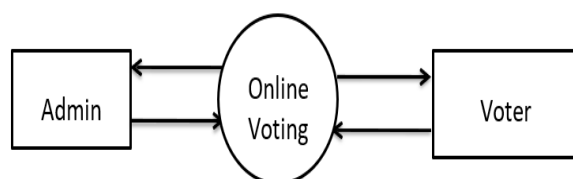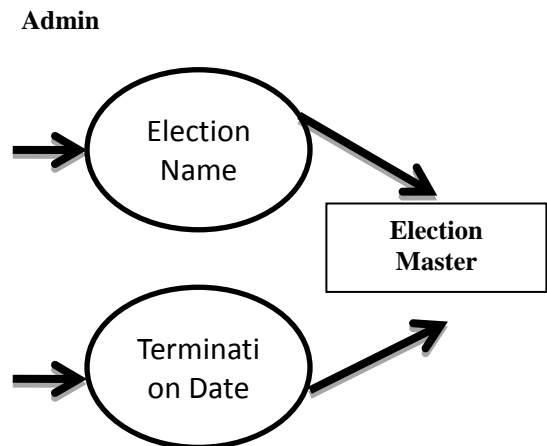
Level-0

Figure 1: Admin-DFD

7. Conclusion

By this software platform we will be able to bring a new system of online national voting for our country. With arrival of technology and Internet in our daily life, we will be able to offer advanced voting system to voters, both in the country and outside through Online voting system. As it provides easy and efficient way to access the data to perform the function.

The reasons why we should adapt Online voting platform is that it provides efficient and cost-effective benefits over paper election system and there is no need to double check as this platform assures intelligent checklist features, vote tallying after analyzing the whole database of the system. This system reduces time consumption and resources which benefits both the organization as well as the voters to summarize the data.

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