

Online Voting System

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ABSTRACT

This paper deals with study and design of an online voting system that enables voter, candidate and Election Commission to participate in online voting. The problem of voting is still critical in term of safety and security. The proposed system is highly secured, and with a very good and simple GUI ease of use. Online Voting System is a web based application in which it allows the voters to use his voting right through internet. The voters have to register themselves with the election commission and get their user ID and password, and on the Election Day they can vote from anywhere they want. The proposed software should be developed and tested to work online. It allows the voters to authenticate using ID card number which is then matched with an already saved database that is retrieved from the government database. The user will be logging in using his/her user-ID and password which is received after successful registration. The online voting system increases the voting percentage in Afghanistan, reduce the cost and avoid fraud detection.

Keywords: Online Voting System, web application, Data Flow Diagram.

1. INTRODUCTION

In today's world there are multiple ways of voting in different countries. Some countries' people go to the pooling center

and vote using biometric machine and a ballot paper, some only use paper, some countries follow email voting, but all of these methods have their pros and cons. For instance, most of the time we can see that people willing to vote, aren't able to vote, so what could be a better method that should be followed?

We study here and suggest a better way of voting.

After the research we suggest that a country should have multiple way of voting to maximize the number of voters and no one should feel that they cannot use their voting right. As of now I suggest that Online Voting System should be used by all or people interested.

Online Voting is a way of voting in which a voter can use his personal electronic device to use his voting right. Online Voting System or internet voting is a web-based application in which it allows the citizens to use their vote rights from anywhere in the world. There are multiple ways and methods using which it can happen.

1.1 Problem Background

The world has become very small, if we put an eye to the world we can see that millions of people are living in different countries and this issue is becoming more and more. In the

future also it is expected that people will travel a lot and tourism business become more and more. So can we call all our citizens to our country for voting in one day? How should they vote? People have gone for all other essential work like study and job, what they should do? Do they have the voting rights or not?

1.2 Problem Statement

To design a system:

- To allow the voters to register themselves with the election commission.
- The voters will receive a user-ID and password to login to the system.
- The voter can vote in the Election Day using his/her user-ID and Password. This increases the voting percentage, provides enough security and avoids false votes.

1.3 Research Objectives

The aim of the research is to analyze the current election system and suggest an online voting system which allows people to vote in more convenient way.

The main objective behind this research is:

1. To provide voting rights for citizens outside the country
2. Physically challenged people
3. Equal suffrage for all citizens
4. Voting rights for militaries

There are multiple advantages for this portal:

- Transparency.
- Time saving

- No need of Police /Army in the election duty.
- Normal Transportation facility during elections
- Fraud Detection

We encourage all other citizens also to use this system to reduce the cost, no waiting time and to avoid false vote.

2. LITERATURE REVIEW

2.1 Drawbacks in Existing System

The problems of the existing system include the following:

Expensive and time consuming:In the existing system the election commission needs lots of people, resources, electronic machine, ballot papers which make the process expensive. And also the process of data collection, entering data into database, is time consuming and expensive.

Waiting time: Voters have to wait long time in queues for voting.

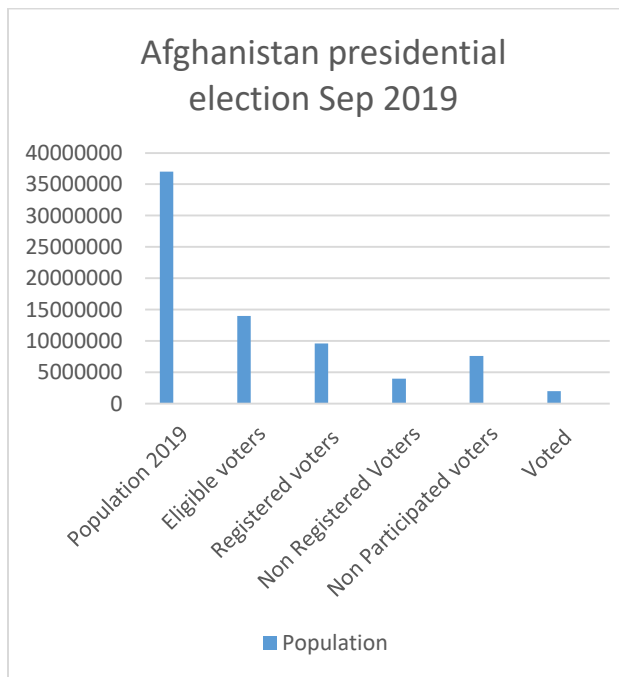
Errors during data entry:while entering the data into database they face human mistake and the data goes wrong, in some situations the registration form can be lost, burned or etc.

Time limitation for registration:with the existing system we have limited time for voting but in online voting we can make it more convenient.

A Brief Analysis of Latest Afghan Presidential Election 2019

The latest Afghanistan presidential election was held on 28 September 2019. And after a long delay, The Afghanistan Election Commission announced the result on 18 February 2020. However most of the candidates rejected the result as they claim that the election commission has not separated fake votes from the real votes. As a result, all these problems rise because of having a weak voting system which needs to be updated in the next election.

Here is a brief analysis of voters in the latest afghan presidential election.



As we can see in the graphical representation out of 14000000 only 2000000 people were able to vote. So by having an Online Voting System despite of people living outside the country even people inside the country who were not able to attend the election, can attend the election online by online voting system.

Population in 2019	37000000
Voting age	18
Eligible voters	14000000
Registered voter	9600000
Participated voters in the election	2000000
Non participated Voters in the election	7500000
Non registered voters	4000000

2.2 Proposed System

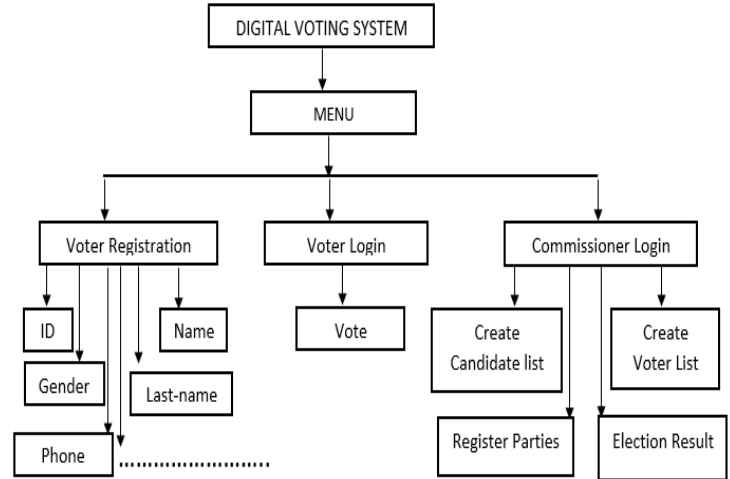
The proposed system is the online voting system which authenticates the voters while registering using their NIC (National Identity Card) number. In this method the voters have to do a registration process in the website before the election day, then the system matches the provided voter’s data with data in the database of election commission which is retrieved from the database of the government. After providing the essential details, the voter will receive a user-ID and password to use their voting rights in the Election Day.

The Online Voting System is a very friendly, web-based application where it is managed by the Election Commission. Before the election this system should be launched and all the citizens of the country should be able to register themselves for voting from anywhere in the world. Thus everyone who wants to vote online via internet from their living places and register themselves with the election commission. Online Voting System will be administrated

by the Election Commission and it will be accessible from anywhere in the world.

The system contains:

1. Voters information
2. Voters user-ID and password
3. Voters vote in database
4. Candidate detail
5. Parties details
6. Total number of votes used



3. THE SYSTEM DESIGN

3.1 Design and Implementation

To implement this paper, we should develop a web application to fulfil all these requirements. So that the voters should be able to vote from anywhere using this web application. They have to register themselves in the election commission at least one week before the election so that the election commission will verify their ID and they will be approved to vote. This web application will be running on the election commission server and connected to the main database of election commission. The election commission is responsible to manage and maintain this application.

3.2 Modules

3.2.1 Voter Module

Home Page: It is a welcome page of the website, and provides some general information for the people who visit the website.

Registration: This is the registration page where the voters and candidates can register themselves with the election commission before the election. The voter has to provide all the required details asked by the election commission and also they will define a user-ID and Password for them to login to the system after successful registration. The voter details are matched with the Election Commission database (which is derived from the government database) to verify the voter details.

Voting: The voter will login to the account with the given user-ID and Password and will use his/her voting right in the system.

3.2 .2 The Election Commission Module

Election Commission login: The Election Commission should have full rights in the system. Independent Commissioners can use their user-ID and Password to login to the system and will have the following rights.

Create Candidate List: The election Commissioner can create the list of candidates who have participated in the election. This list will be used in the Election Day by the voters to give his/her vote.

Create Voter List: The election commissioner also has the right to create the voter list. If they wish to do for any voter.

Register Parties: Election Commission also registers the parties in the system.

Voting result: After the Election Day, the Election Commission will take care of everything and announces the results.

3.3 Data Flow Diagrams


Data flow diagrams are used to graphically represent the flow of data in a business information system. And it is a way of representing flow of data, a process or a system. The DFD also provides information about the outputs and inputs of each entity and the process itself. The DFD can be up to several levels. The 0 level DFD states the flow of data in the system as seen from the outward in each module. The first level DFD


shows more details about the single process of the 0 level DFD. The second level DFD can show even more details and so on.

The Data Flow Diagram shows the flow of data using some graphical symbols. It is generally made of symbols given below:

1) A **square** shows the Entity: - 

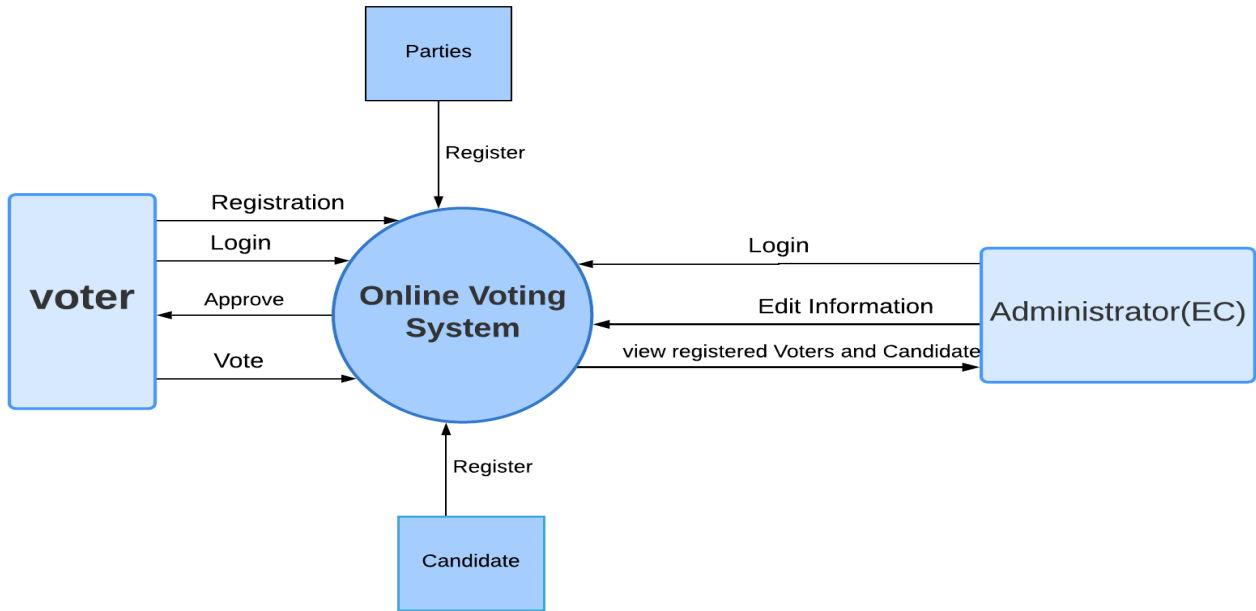
2) A **Circle** shows the Process: - 

3) An **open Ended Rectangle** shows the data store: - 

4) An **arrow** shows the data flow: - 

Data Flow Diagram Level-0

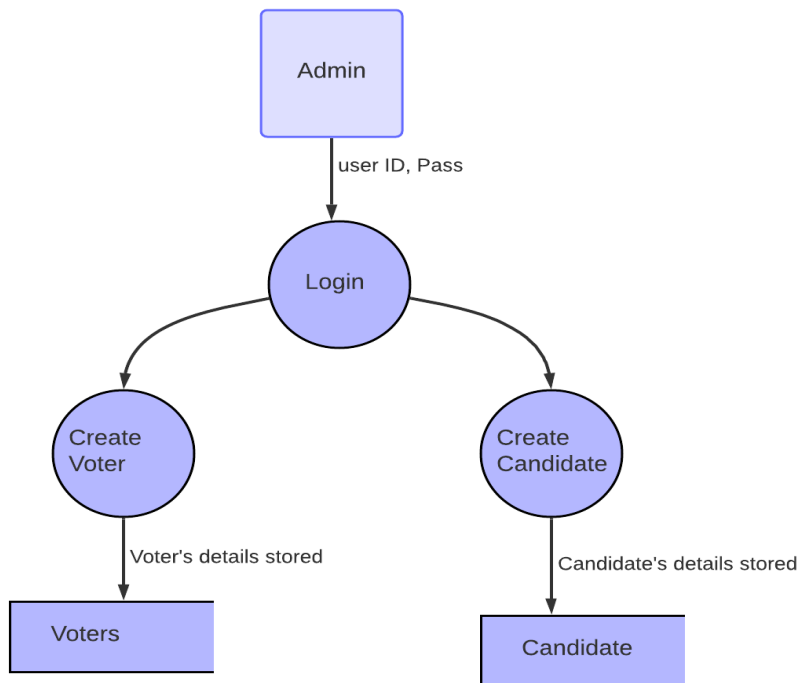
DFD level-0 is designed to show the system as a single process with its relationship to external entities. It represents the entire system as a single bubble with input and output data indicated by incoming/outgoing arrows. The below diagram shows the level-0 of DFD for our proposed Online Voting System.



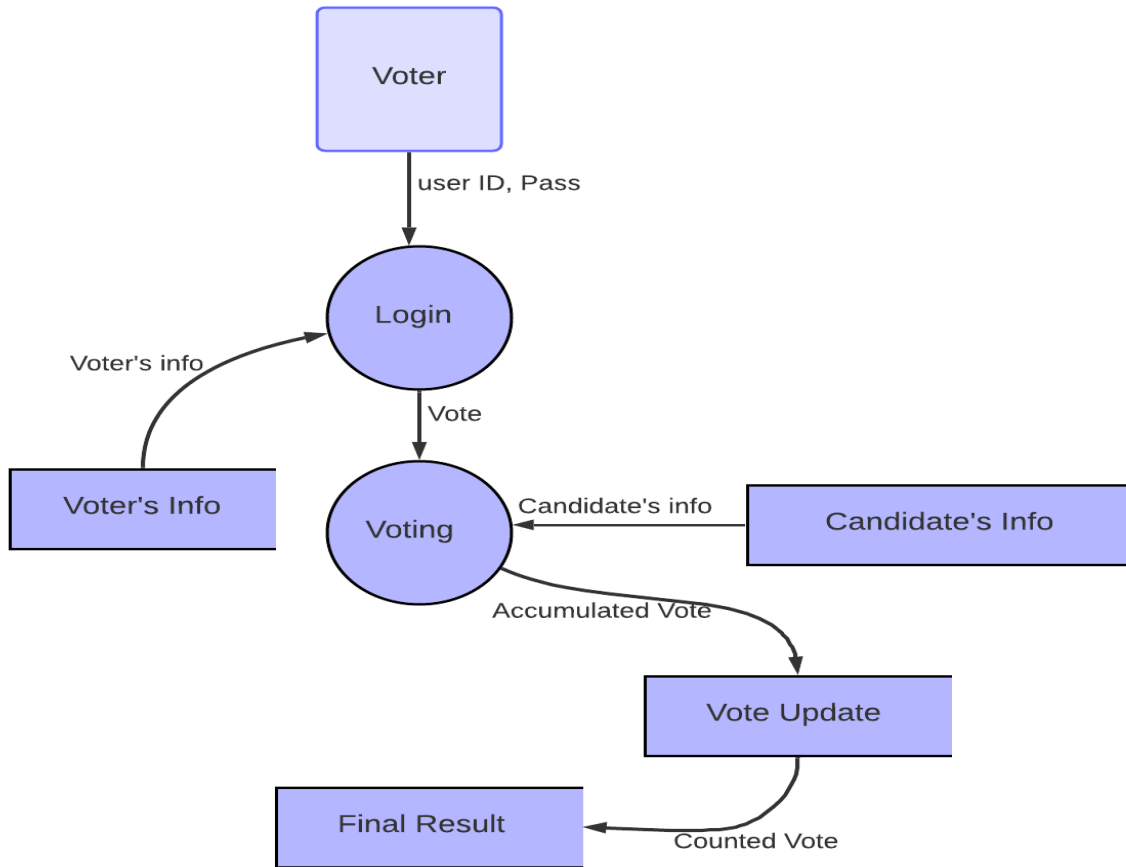
Data Flow Diagram Level-1

In DFD level-1 context diagram is decomposed into multiple processes. In this level we try to highlight the main functions of the system and breakdown the high level process of DFD level-0 into sub processes.

Data Flow Diagram Level-1 for Admin



Data Flow Diagram Level-1 For Voter



3.4 Database Table

We have designed the following database and tables for our proposed system which stores the voters', candidates' and vote details.

Voter Table

Field Name	Data Type	Size	Description
Voter ID	Varchar	15	ID of National Identity Card
Name	Varchar	50	Voter's name
Last Name	Varchar	50	Voter's last name
Father name	Varchar	50	Voter's father name
Gender	Varchar	10	Voter's gender
DOB	Varchar	15	Date of birth
Age	Integer	3	Voter's age
User ID	Varchar	10	ID to login
Pass	Varchar	20	Password to login
Email	Varchar	50	Voter's email id
Contact	Integer	15	Voter's mobile number
Province	Varchar	30	Voter's province
Photo	Varchar	MAX	Voter's photo

Candidate Table

Field Name	Data Type	Size	Description
ID	Varchar	15	ID assigned by EC
Name	Varchar	50	Candidate's name
Last Name	Varchar	50	Candidate's last name
Gender	Varchar	10	Candidate's gender
party	Varchar	50	Party candidate is belong
Photo	Varchar	MAX	Candidates' photo
Elective sign	Varchar	MAX	Elective sign assigned by EC

Vote Table

Field Name	Data Type	Size	Description
Voter ID	Varchar	15	ID assigned by EC
Candidate Name	Varchar	50	Candidate's name

4. CONCLUSION

After a deep study it is found and suggested an online voting system to Afghanistan Election commission apart from the existing system. An online voting system can help the people a lot to vote from anywhere, it increases the number of votes and avoids frauds. After implementing the proposed system, we will be able to bring an online voting system to the country. With the advanced technology and cloud computing we will be able to update the system and ensure a very secure and safe election without too much of false votes.

5. FUTURE ENHANCEMENTS

As of now we need to develop the proposed system, and in the future we can work more on the security of system to ensure the integrity of votes.

6. REFERENCES

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