B.Tech in Computer Science and Engineering

CSE 2004 PROJECT COMPONENT

e-Voting System

Faculty

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1. Introduction

Voting through election forms an important part of democracy and for democracy to be sustainable, every voter's participation is crucial. But unfortunately during the pandemic, people face a lot of issues in going to their assigned election booth and casting a vote. Others who are stranded in other countries also face difficulties. Also an election requires a lot of physical labour and money. With the whole globe being a village because of the internet and technologies, we have come up with an e-Voting System to connect people across the globe to cast their vote from the comfort of their homes.

2. Abstract

This project 'e-Voting System' ensures a secure and comfortable election with minimal expenses. Multiple elections can be created by the admin. New Parties can be created. Each party can register candidates and candidates participate in elections. A voter can register and cast their votes with ease. Hence making an election easier, safer and less expensive.

3. Social necessity of the project

1. Voters can vote from their convenience.
2. Reduces the workload in the process of conducting elections
3. It will serve to eliminate invalid votes,curb election violence as votes are counted immediately as they are cast.

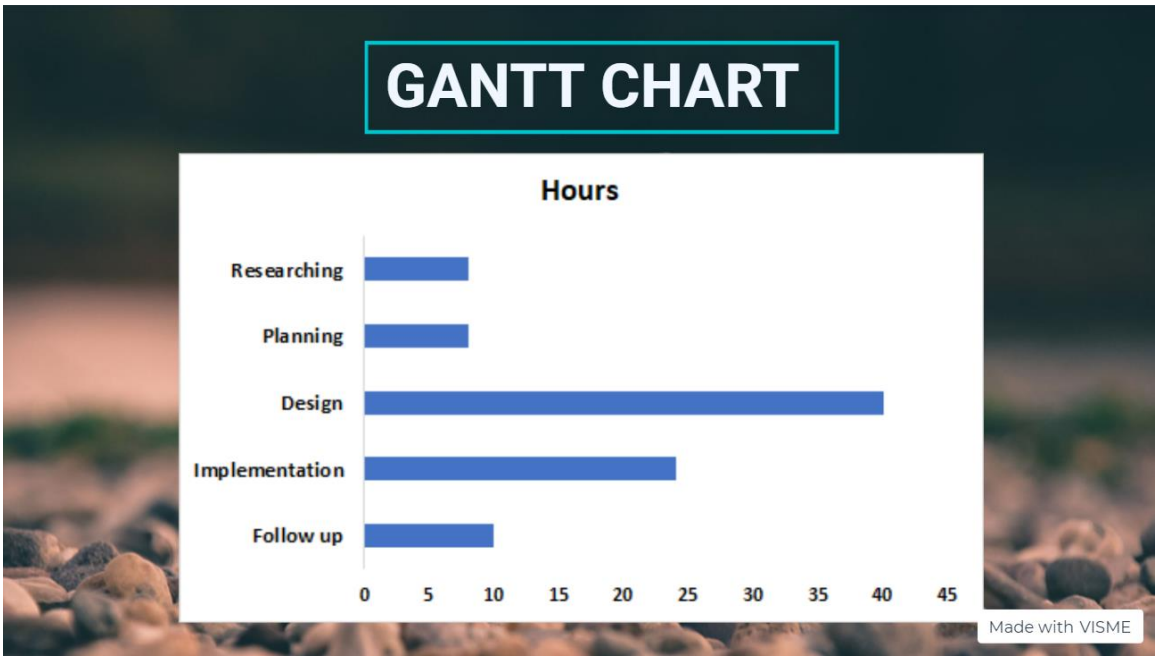
At present our government is spending more than 125 crores for conducting lok sabha election.This money is spent on issues such as security,voting machines and other stuff.Even then voting percentage is just 67.4%. Moreover voting fraud can be easily done in the present system.

With the e-Voting system ,the expenditure of conducting elections can be drastically reduced.And there isn’t manual labour required for conducting elections online.In the present system of election ,2 people can’t vote at the same time.But with e-Voting there are not any such limitations.

4. Workflow of the project

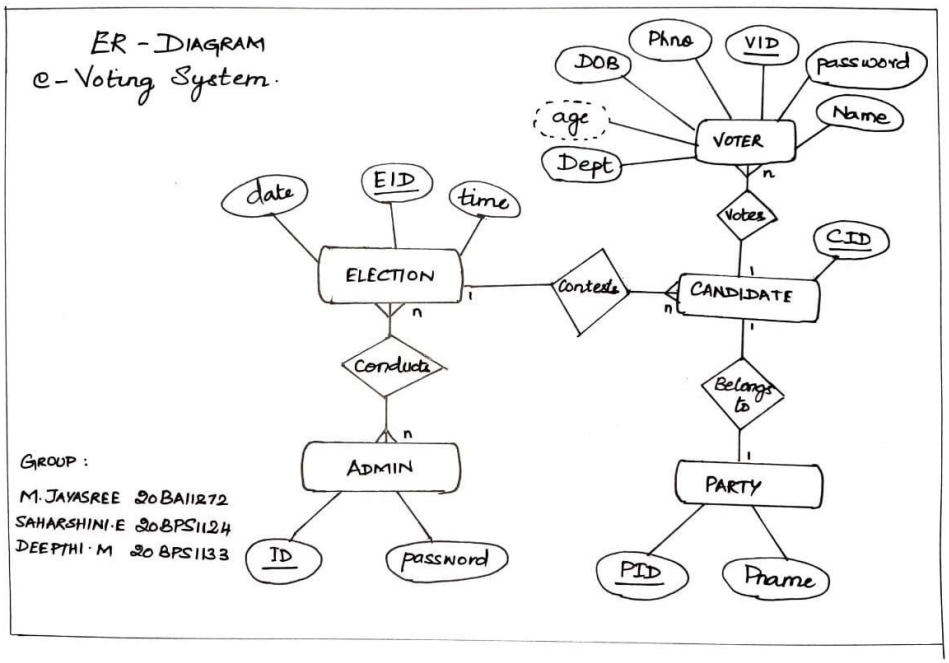
1. Initiation

The project topic was discussed. Different ways to approach the solution were tabulated. The timeline and Gantt Chart were also created.



2. Planning

The Physical, logical and view level of the project was determined in this stage. This includes the designing of the ER diagram.



ER Diagram

3. Implementation

The objects, tables and other database entities were created. Each attribute was assigned necessary constraints to ensure reliability and consistency.

Then Pages for the front end of the application were created. Forms and views were created.

4. Execution

The data is read in and the required functions are executed in all the modules stimulating results and displaying it to the user view.

5. List of modules / algorithm

Admin module

Admin can create ,edit ,update and delete the details of voters,candidates and parties and schedule the election.

Party module

It provides all the functionality related to parties.In this module parties will register with their symbol and name.

Candidate module

In this module candidates are asked to register themselves using their voter id and party name.

Voter module

This is the module where candidates register themselves using their aadhaar number.

Election creation module

This is the module where the admin creates polls and candidates and specifies the start period of voting.

Voter list module

In this module ,we display the list of voters registered along with their voter ID.

Candidate list module

In this module ,we display the list of candidates participating ,their candidate ID,the party they represent along with the election they are contesting for.

Election list module

In this module, we display the name of elections that are going on along with their election ID.

Voting conduction module

Here,the voter asked to vote by entering the election id and candidate id of the election and candidate they want to vote for.It is also necessary to enter their voter id.

Result module

In this module, we display the results in the form of tables where the columns are election id,candidate id and number of votes for each candidate. They are grouped under Election Id in increasing

order.

6. Working of MODULES /algorithm with snapshots and results

Admin Module:

The Admin basically is responsible for the smooth functioning of the election. The admin accepts voters, candidates and parties. Admins create elections. Admin can also delete elections, voters, parties and candidates.

Party module :

In the Party module, parties are registered. The module reads in Party name and party symbol and stores them under an auto-generated Party id, which acts as the primary key.

```
CREATE TABLE  "VOT_PARTY"
   (    "PARTY_ID" NUMBER(7,0) GENERATED BY DEFAULT AS IDENTITY MINVALUE 1 MAXVALUE 9999999999999999999999999999 INCREMENT BY 1 START WITH 1 CACHE 20 NOORDER  NOCYCLE  NOKEEP  NOSCALE  NOT NULL ENABLE,
        "PARTY_NAME" VARCHAR2(30) NOT NULL ENABLE,
        "PARTY_SYMBOL" BLOB NOT NULL ENABLE,
         CONSTRAINT "VOT_PARTY_PK" PRIMARY KEY ("PARTY_ID")
  USING INDEX  ENABLE
   )
/


CREATE OR REPLACE EDITIONABLE TRIGGER  "BI_VOT_PARTY"
  before insert on "VOT_PARTY"
  for each row
begin
  if :NEW."PARTY_ID" is null then
    select "VOT_PARTY_SEQ".nextval into :NEW."PARTY_ID" from sys.dual;
  end if;
end;

/
ALTER TRIGGER  "BI_VOT_PARTY" ENABLE
/
```

VOT_PARTY

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL | REST | Sample Queries

Add Column | Modify Column | Rename Column | Drop Column | Rename | Copy | Drop | Truncate | Create Lookup Table | Create App

Column Name	Data Type	Nullable	Default	Primary Key
PARTY_ID	NUMBER(7,0)	No	"WKSP_DEEPU"."ISEQ$$_113313373".nextval	1
PARTY_NAME	VARCHAR2(30)	No	-	-
PARTY_SYMBOL	BLOB	No	-	-

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Candidate Module:

In the Candidate module, each candidate is registered by their Voter ID, Election ID and Party ID. Each registered candidate gets assigned an auto-generated Candidate Id which acts as the primary key.

```
CREATE TABLE  "VOT_CANDIDATES"
   (    "CANDIDATE_ID" NUMBER(7,0) GENERATED BY DEFAULT AS IDENTITY MINVALUE 1 MAXVALUE 9999999999999999999999999999 INCREMENT BY 1 START WITH 1 CACHE 20 NOORDER  NOCYCLE  NOKEEP  NOSCALE  NOT NULL
ENABLE,
        "ELECTION_ID" NUMBER(8,0) NOT NULL ENABLE,
        "PARTY_ID" NUMBER(7,0) NOT NULL ENABLE,
        "VOTER_ID" NUMBER(10,0) NOT NULL ENABLE,
         CONSTRAINT "VOT_CANDIDATES_PK" PRIMARY KEY ("CANDIDATE_ID")
  USING INDEX  ENABLE
   )
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK" FOREIGN KEY ("ELECTION_ID")
          REFERENCES  "VOT_ELECTION" ("ELECTION_ID") ENABLE
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK2" FOREIGN KEY ("PARTY_ID")
          REFERENCES  "VOT_PARTY" ("PARTY_ID") ENABLE
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK4" FOREIGN KEY ("VOTER_ID")
          REFERENCES  "VOT_LOG_VOTE" ("VOTER_ID") ENABLE
/


CREATE OR REPLACE EDITIONABLE TRIGGER  "BI_VOT_CANDIDATES"
  before insert on "VOT_CANDIDATES"
  for each row
begin
  if :NEW."CANDIDATE_ID" is null then
    select "VOT_CANDIDATES_SEQ1".nextval into :NEW."CANDIDATE_ID" from sys.dual;
  end if;
end;
```

VOT_CANDIDATES

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL | REST | Sample Queries

Add Column | Modify Column | Rename Column | Drop Column | Rename | Copy | Drop | Truncate | Create Lookup Table | Create App

Column Name	Data Type	Nullable	Default	Primary Key
CANDIDATE_ID	NUMBER(7,0)	No	"WKSP_DEEPU"."ISEQ$$_113313685".nextval	1
ELECTION_ID	NUMBER(8,0)	No	-	-
PARTY_ID	NUMBER(7,0)	No	-	-
VOTER_ID	NUMBER(10,0)	No	-	-

Voter Module:

In this module, citizens/students (depending on the election type) are asked to register themselves using their aadhar number. This module reads in and stores voter details like Voter name, department and mail id.

Voters are able to view candidate, election and party public details.

```
CREATE TABLE  "VOT_CANDIDATES"
   (    "CANDIDATE_ID" NUMBER(7,0) GENERATED BY DEFAULT AS IDENTITY MINVALUE 1 MAXVALUE 9999999999999999999999999999 INCREMENT BY 1 START WITH 1 CACHE 20 NOORDER
NOCYCLE  NOKEEP  NOSCALE  NOT NULL ENABLE,
        "ELECTION_ID" NUMBER(8,0) NOT NULL ENABLE,
        "PARTY_ID" NUMBER(7,0) NOT NULL ENABLE,
        "VOTER_ID" NUMBER(10,0) NOT NULL ENABLE,
         CONSTRAINT "VOT_CANDIDATES_PK" PRIMARY KEY ("CANDIDATE_ID")
  USING INDEX  ENABLE
   )
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK" FOREIGN KEY ("ELECTION_ID")
          REFERENCES  "VOT_ELECTION" ("ELECTION_ID") ENABLE
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK2" FOREIGN KEY ("PARTY_ID")
          REFERENCES  "VOT_PARTY" ("PARTY_ID") ENABLE
/
ALTER TABLE  "VOT_CANDIDATES" ADD CONSTRAINT "VOT_CANDIDATE_FK4" FOREIGN KEY ("VOTER_ID")
          REFERENCES  "VOT_LOG_VOTE" ("VOTER_ID") ENABLE
/
```

VOT_LOG_VOTE

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL | REST | Sample Queries

Add Column | Modify Column | Rename Column | Drop Column | Rename | Copy | Drop | Truncate | Create Lookup Table | Create App

Column Name	Data Type	Nullable	Default	Primary Key
VOTER_ID	NUMBER(10,0)	No	"WKSP_DEEPU"."ISEQ$$_113319503".nextval	1
AADHAR_NO	NUMBER(12,0)	No	-	-
VOTER_NAME	VARCHAR2(50)	No	-	-
DEPARTMENT	VARCHAR2(50)	No	-	-
EMAIL	VARCHAR2(50)	No	-	-
PASSWORD	VARCHAR2(50)	No	-	-

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Election creation module:

In the ELection Creation module, elections are created by the Admin. The module reads in the Election name and the date of the election and stores them under an auto-generated Election id, which acts as the primary key.

VOT_ELECTION

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL | REST | Sample Queries

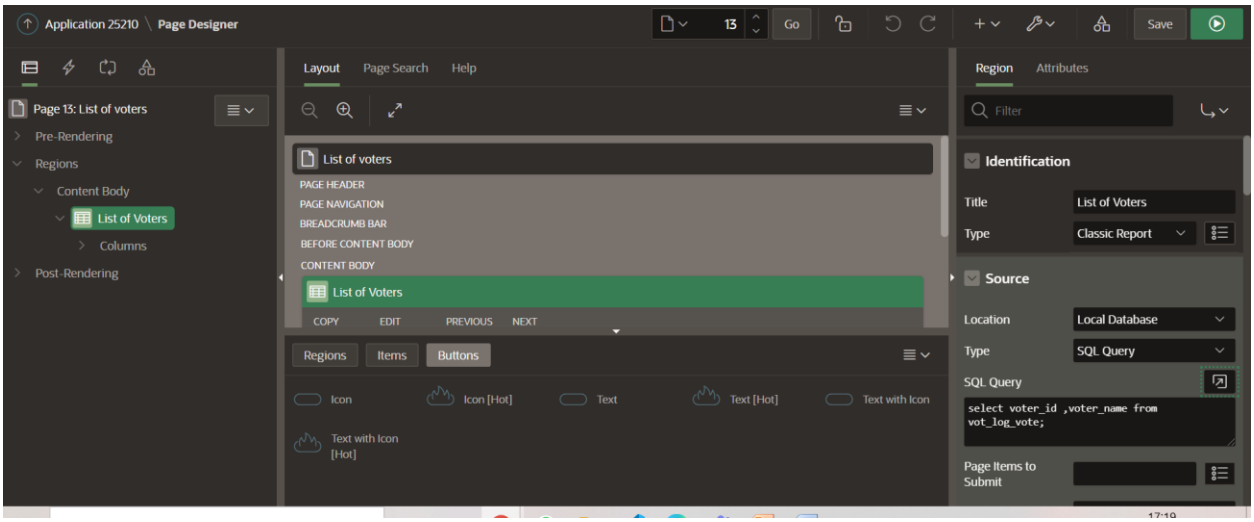
```
CREATE TABLE  "VOT_ELECTION"
   (    "ELECTION_ID" NUMBER(8,0) GENERATED BY DEFAULT AS IDENTITY MINVALUE 1 MAXVALUE 9999999999999999999999999999 INCREMENT BY 1 START WITH 1 CACHE 20 NOORDER  NOCYCLE  NOKEEP  NOSCALE  NOT NULL
ENABLE,
        "ELECTION_NAME" VARCHAR2(30) NOT NULL ENABLE,
        "ELECTION_DATE" DATE NOT NULL ENABLE,
         CONSTRAINT "VOT_ELECTION_PK" PRIMARY KEY ("ELECTION_ID")
  USING INDEX  ENABLE
   )
/


CREATE OR REPLACE EDITIONABLE TRIGGER  "BI_VOT_ELECTION"
  before insert on "VOT_ELECTION"
  for each row
begin
  if :NEW."ELECTION_ID" is null then
    select "VOT_ELECTION_SEQ".nextval into :NEW."ELECTION_ID" from sys.dual;
  end if;
end;

/
ALTER TRIGGER  "BI_VOT_ELECTION" ENABLE
/
```

Voter List Module

The Voter information --- Voter Name and Voter ID are displayed from the Voter's Table. The list is just the result of select functions. The list also can be ordered in increasing or decreasing order according to the user's wish.



VOT_LOG_VOTE

Table | Data | Indexes | Model | Constraints | Grants | Statistics | UI Defaults | Triggers | Dependencies | SQL | REST | Sample Queries

Query | Count Rows | Insert Row | Load Data

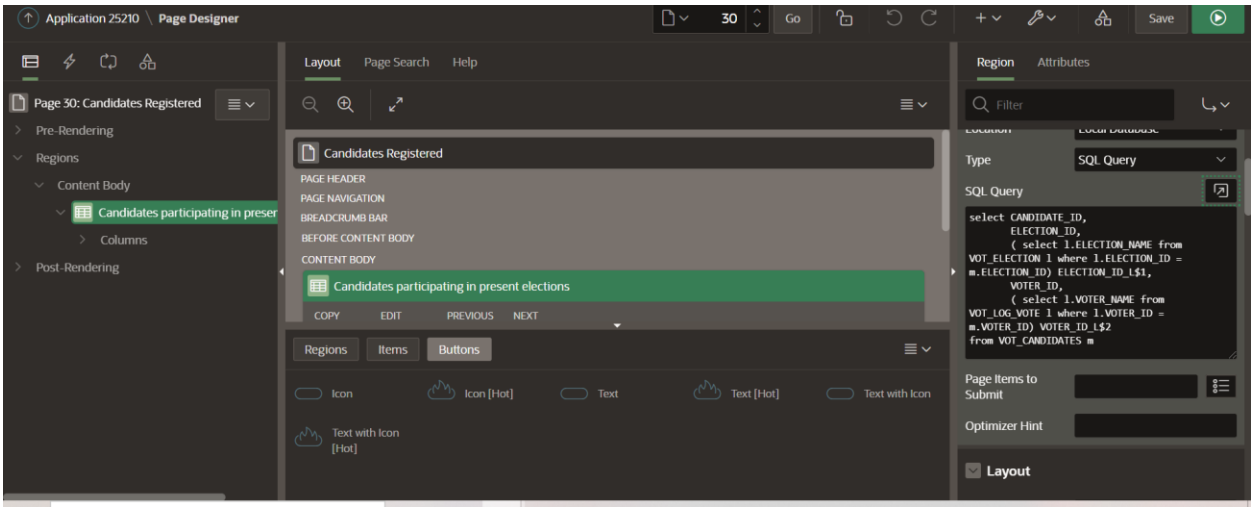
EDIT	AADHAR_NO	VOTER_NAME	VOTER_ID	DEPARTMENT	EMAIL	PASSWORD
	123434565678	Sangeetha	24	QQQ	WWW	EEE
	123423453456	Saharshini	3	wwwEE	eee	rrr
	12345678	Deepthi	1	CSE	deepthi04102002@gmail.com	123
	1238	Aarya	21	cse	aarya@gmail.com	12390
	90807070	Aashish	44	CS	sdfds@gmail.com	9080
	5689090	Bhumi	101	M	bhoomi@gmail.com	232432
	12345555	Disha	4	Electrical	gfgg@gmail.com	90908

Candidate List Module

The Candidate information --- Candidate Name, Candidate ID, Voter ID, Election Id and Election name in which the candidate is participating are displayed from the Candidate and Voter Table. The list also can be ordered in increasing or decreasing order according to the user's wish.

Code Editor - SQL Query

```
1  select CANDIDATE_ID,
2         ELECTION_ID,
3         ( select l.ELECTION_NAME from VOT_ELECTION l where l.ELECTION_ID = m.ELECTION_ID) ELECTION_ID_L$1,
4         VOTER_ID,
5         ( select l.VOTER_NAME from VOT_LOG_VOTE l where l.VOTER_ID = m.VOTER_ID) VOTER_ID_L$2
6  from VOT_CANDIDATES m
```



Party List Module:

The Party information --- Party Name and Party ID are displayed from the Party Table. The list is just the result of select functions. The list also can be ordered in increasing or decreasing order according to the user's wish.

Voting conduction module

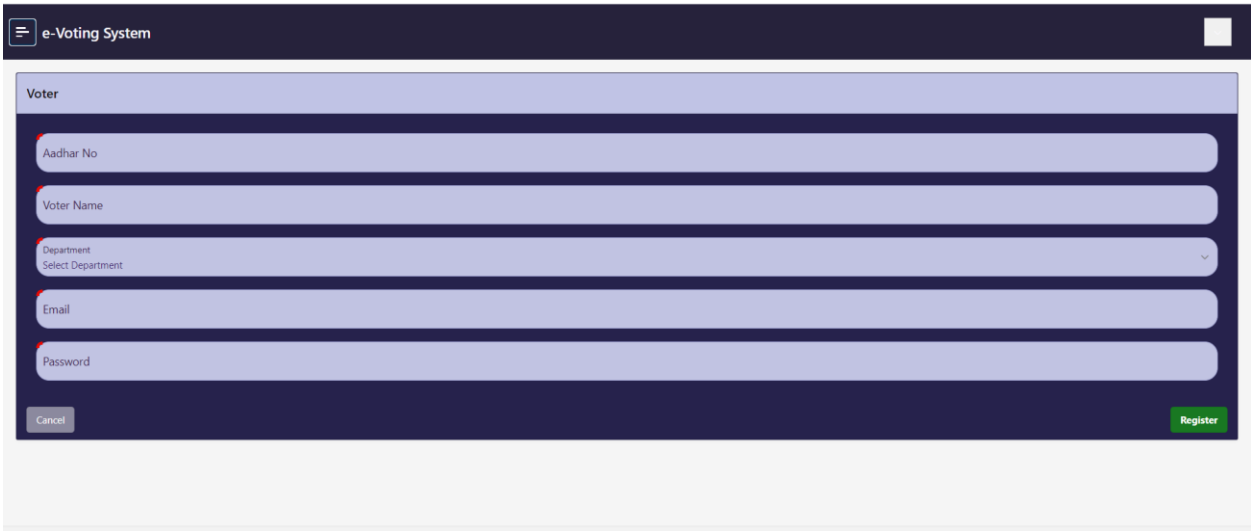
During the stipulated date and time, election is started.Voter can cast their vote within this stipulated time period.

Result module

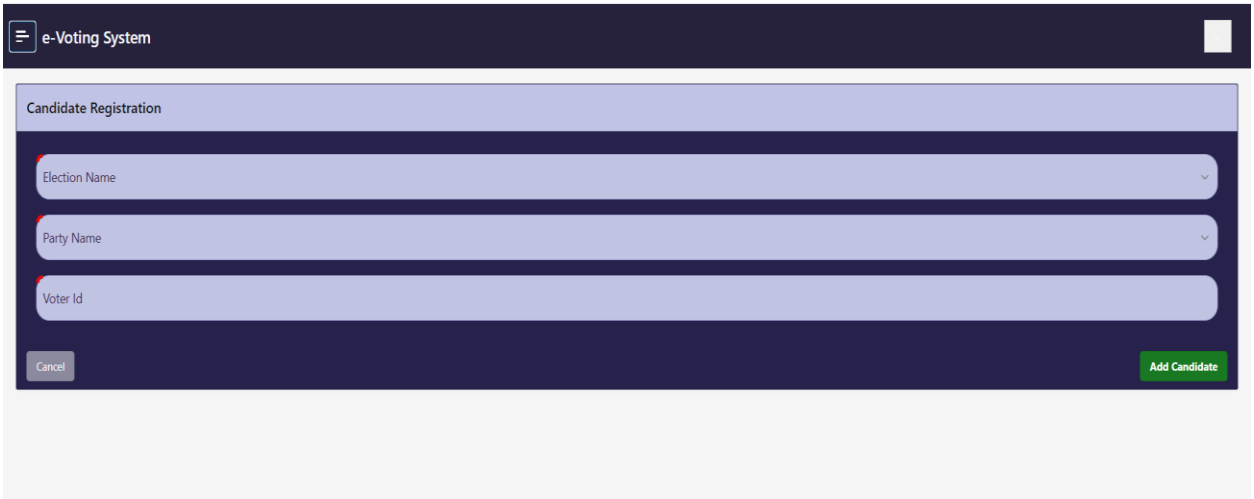
Here the result of the election is published.

7. Results:

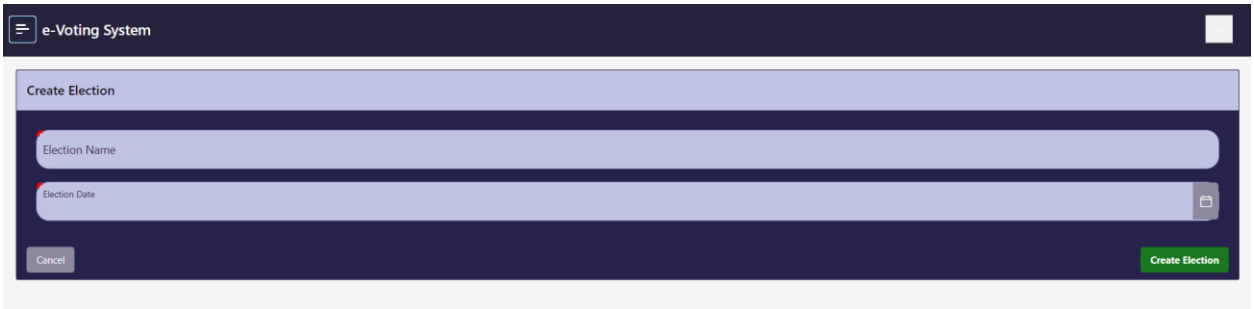
Voter registration:



Candidate registration:



Creating election:



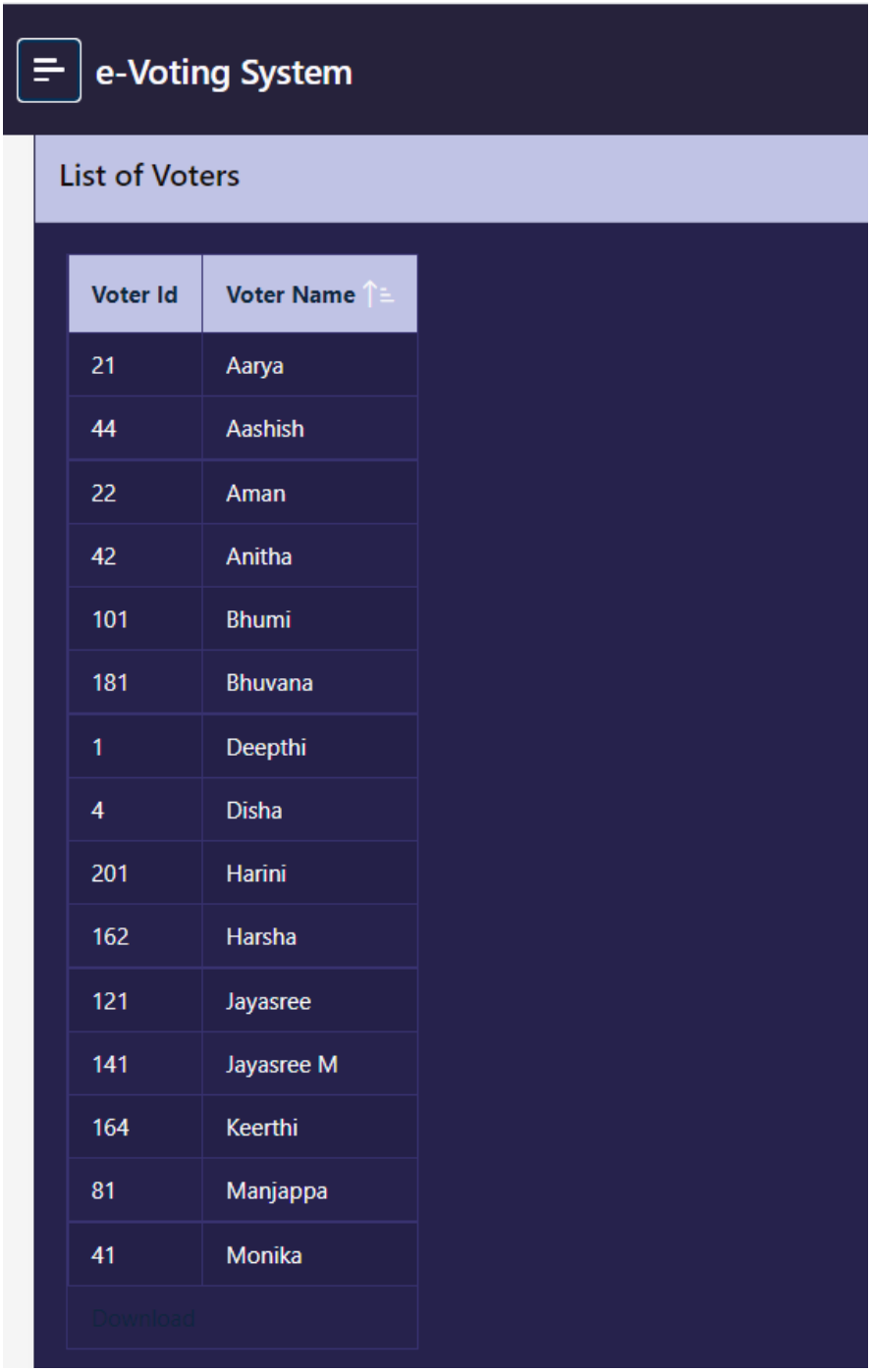
Candidate list:

e-Voting System

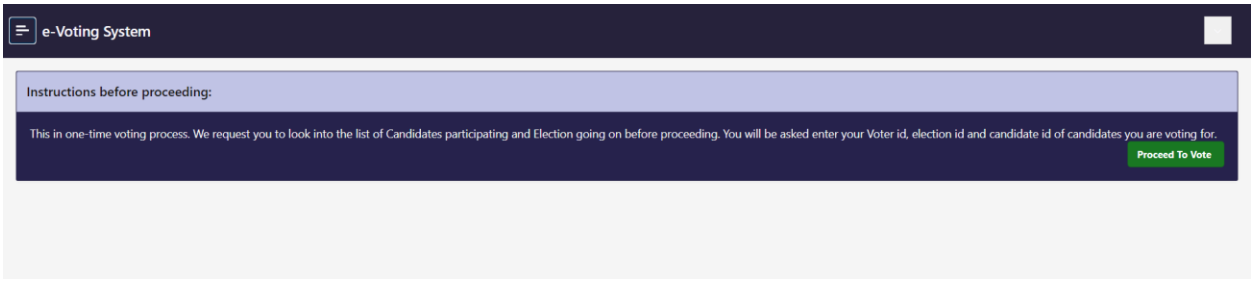
Candidates participating in present elections

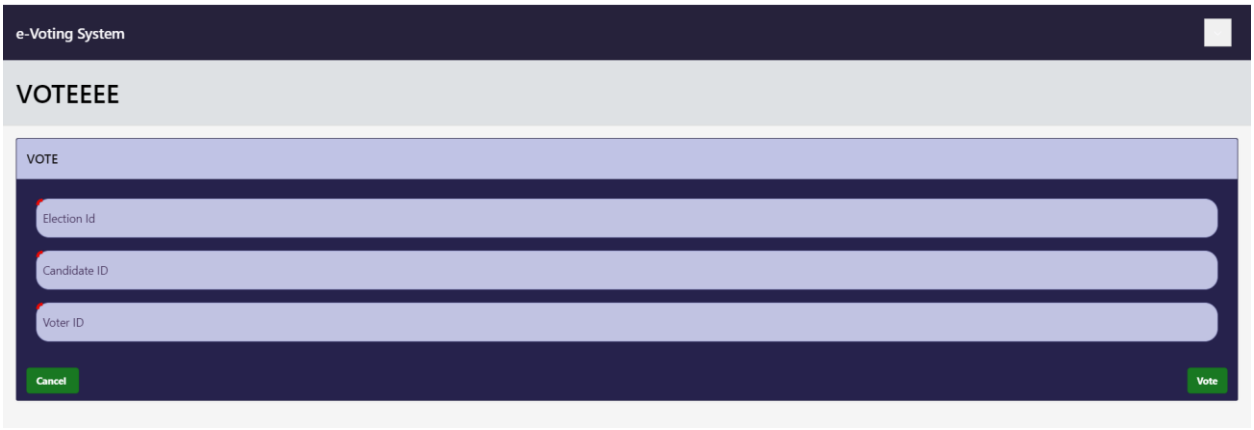
Candidate Id	Election Id	Election Name	Voter Id	Candidate Name
44	1	Art club	21	Aarya
64	1	Art club	21	Aarya
201	62	Student club-President	44	Aashish
221	2	Music club -Event manager	181	Bhuvana
241	81	Sample 1	181	Bhuvana
3	2	Music club -Event manager	1	Deepthi
24	41	Aeronautics club-co ordinator	1	Deepthi
41	1	Art club	1	Deepthi
142	21	Fast and Furious -President	1	Deepthi
42	2	Music club -Event manager	4	Disha
181	61	Team Aviators co ordinator	121	Jayasree
182	2	Music club -Event manager	141	Jayasree M
163	21	Fast and Furious -President	23	Parthav
165	41	Aeronautics club-co ordinator	23	Parthav
82	1	Art club	3	Saharshini

List of voters:



Voting:





Result Page:

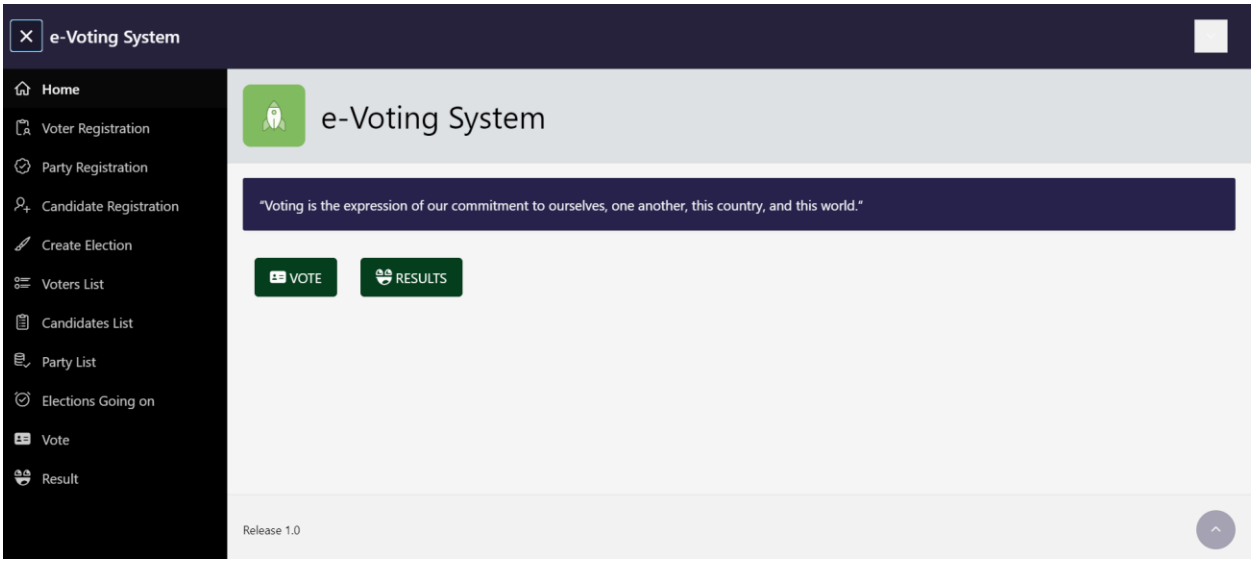
8. Database connectivity with front and back end

Oracle apex is used to connect the front end and back end. The SQL Workspace in Oracle Apex is the back end and the Application Builder and Page creation is the front end of the project. These two are connected by the inbuilt software programs in Oracle Apex.

9. Software required

Oracle apex

10. Conclusion



Hence we have successfully completed our project e-Voting System.

11. Future plans for Projects

We are planning on incorporating Finger Prints, Face Recognitions, Captchas, etc for further ensuring the security aspect of the project. Uploaded Aadhar cards would be used for Face recognition. Email notifications and count downs would be added.