ONLINE VOTING SYSTEM FOR COLLEGE ELECTIONS

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Submitted

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INTRODUCTION

"ONLINE VOTING SYSTEM FOR COLLEGE ELECTIONS" is an online voting technique. In which student can give his\her vote online without going to the college on the day of elections. This will surely consume less time as whole day is being consumed on the day of elections.

There is a DATABASE which is maintained in which all the names of students with complete information are stored. Each student is provided a "User ID" and "Password" and by using them he\she can use his\her vote. The scope of this project will be that it will surely increase the voting percentage in university and college elections. Online Voting System will be fast enough to calculate the results and reduce the human efforts, as all the things will be automated.

PROBLEM DEFINITION

In our country, manual voting system has been deployed for many year. However, manual voting process has caused some difficulties for voting process and also it has some disadvantages for the public. We can list some of these problems as follows:

- After so many preparations, during elections the workers or even candidates are indulged in fights, so there is a security requirement of voter who votes.
- Sometimes people may not be in the city where voting is to be held and because of that reason they don't fulfill their voting duties.
- Lots of time and problems are occurring on vote counting process since this activity is done manually.
- Due to manual voting process there is lots of paper waste during election times.

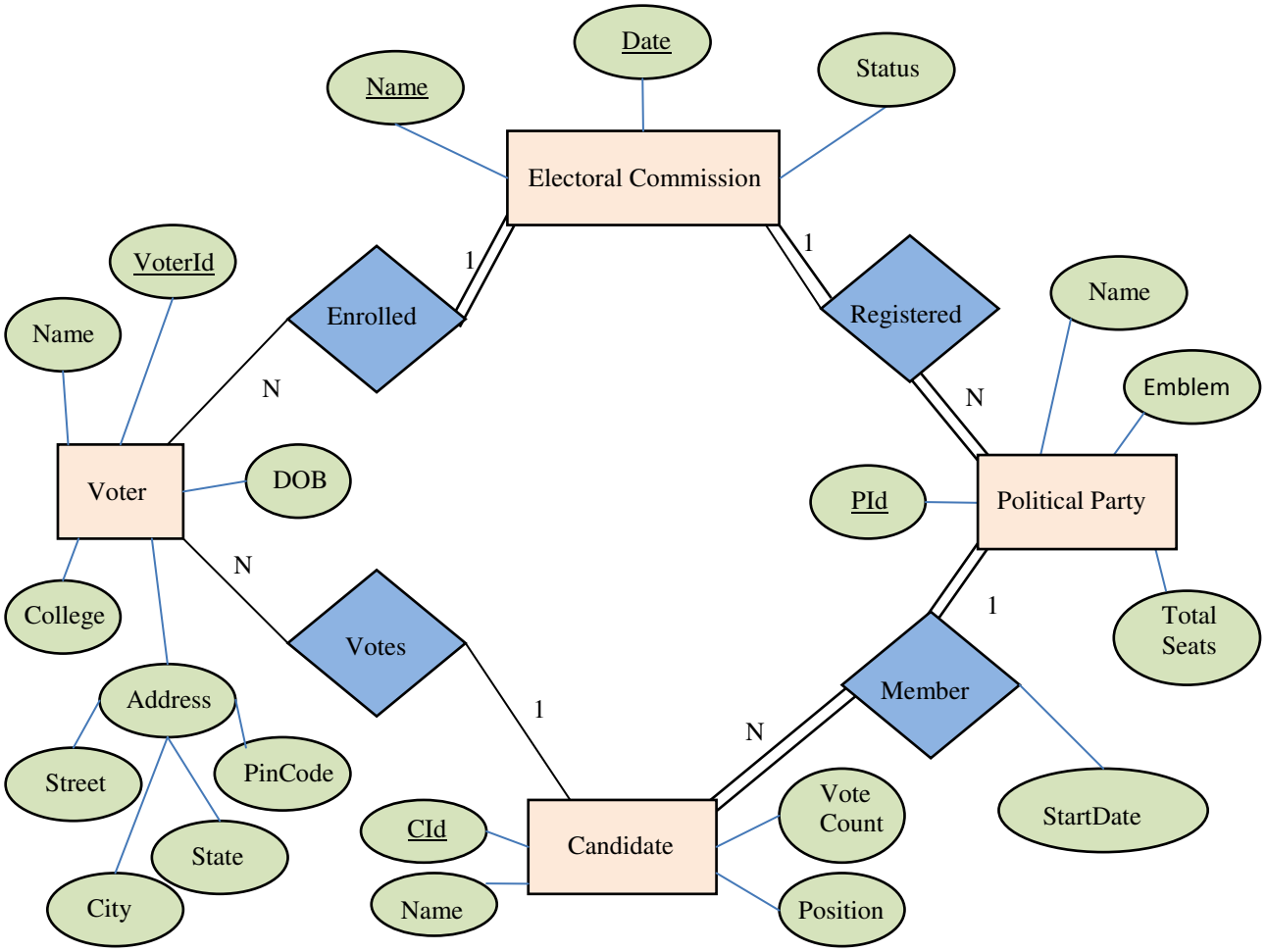
So in order to overcome these problems there is a need for a contemporary electronic voting system in addition to manual voting.

ASSUMPTIONS

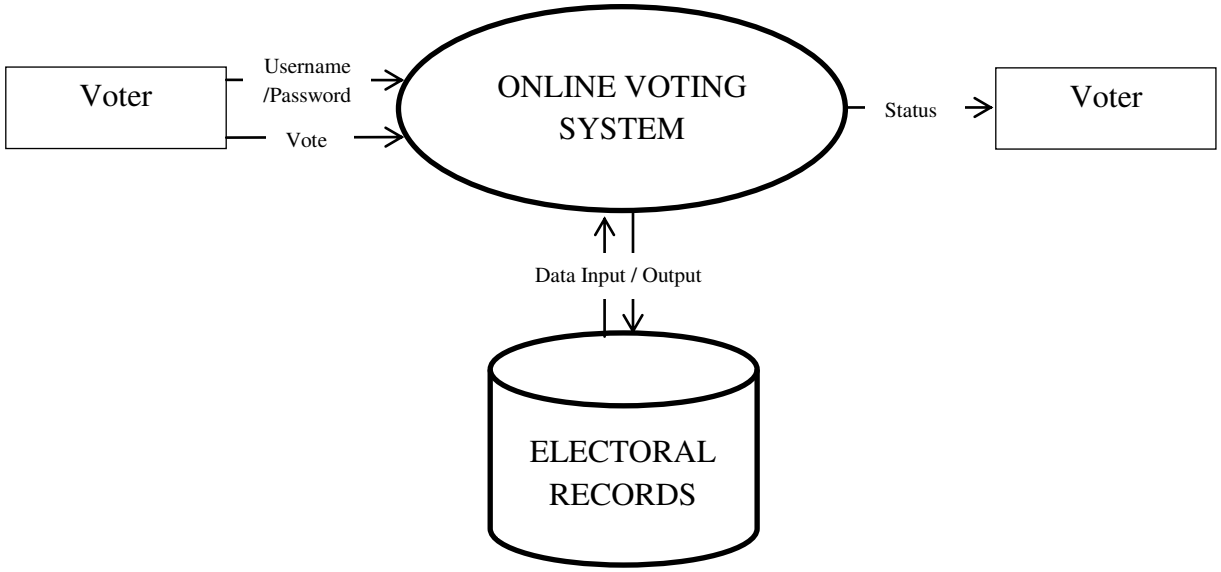
- All voters and Political parties and their candidates are already registered by the election commission.
- Addion/Deletion of any user (voters, political parties, candidates) is also done by the election commission.
- A candidate cannot fight in elections without any political party.
- Two different type of elections cannot be held on the same day.

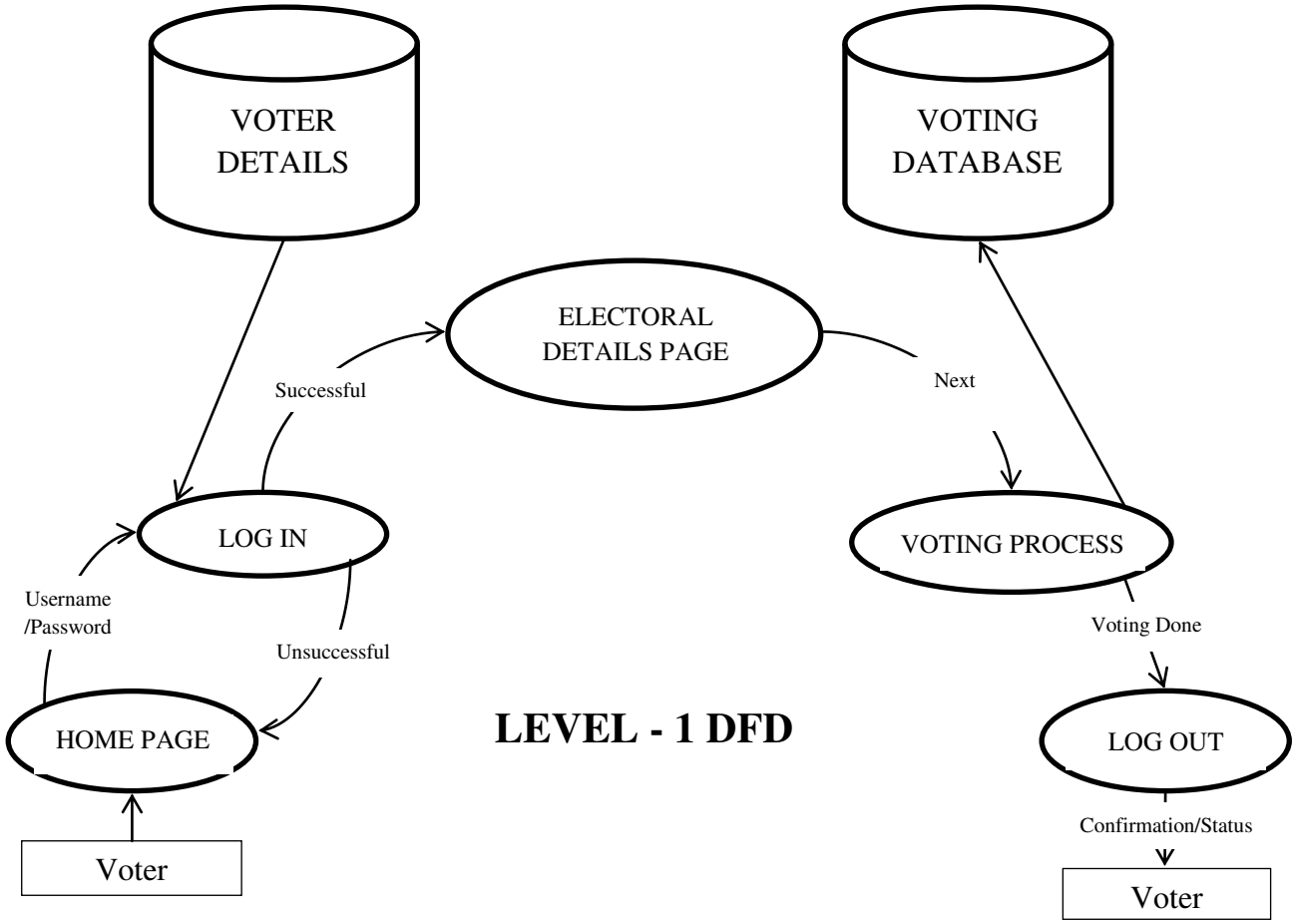
E-R DIAGRAM

In the design of our application database, we want to capture requirements such as voter details, each voter has a Voter ID (unique identifier), name, DOB, address which we're storing as a composite attribute and the college in which he/she is enrolled. Election entity has 4 attributes – Name, Date on which elections are appointed to take place, Status of elections which can be on or off and after elections it stores the result, and a unique election ID which returns the results of previous elections. Elections can't take place without a political party and hence we're storing Political party name, Emblem, Total seats for which they are fighting in elections and a unique party ID. Each party has candidates, so we're storing his\her name, Position, a unique candidate ID, a Vote count to show his\her performance and Joining date, to distinguish between senior members and junior members of the party.



LEVEL – 0 DFD





LEVEL - 1 DFD

CONCLUSION

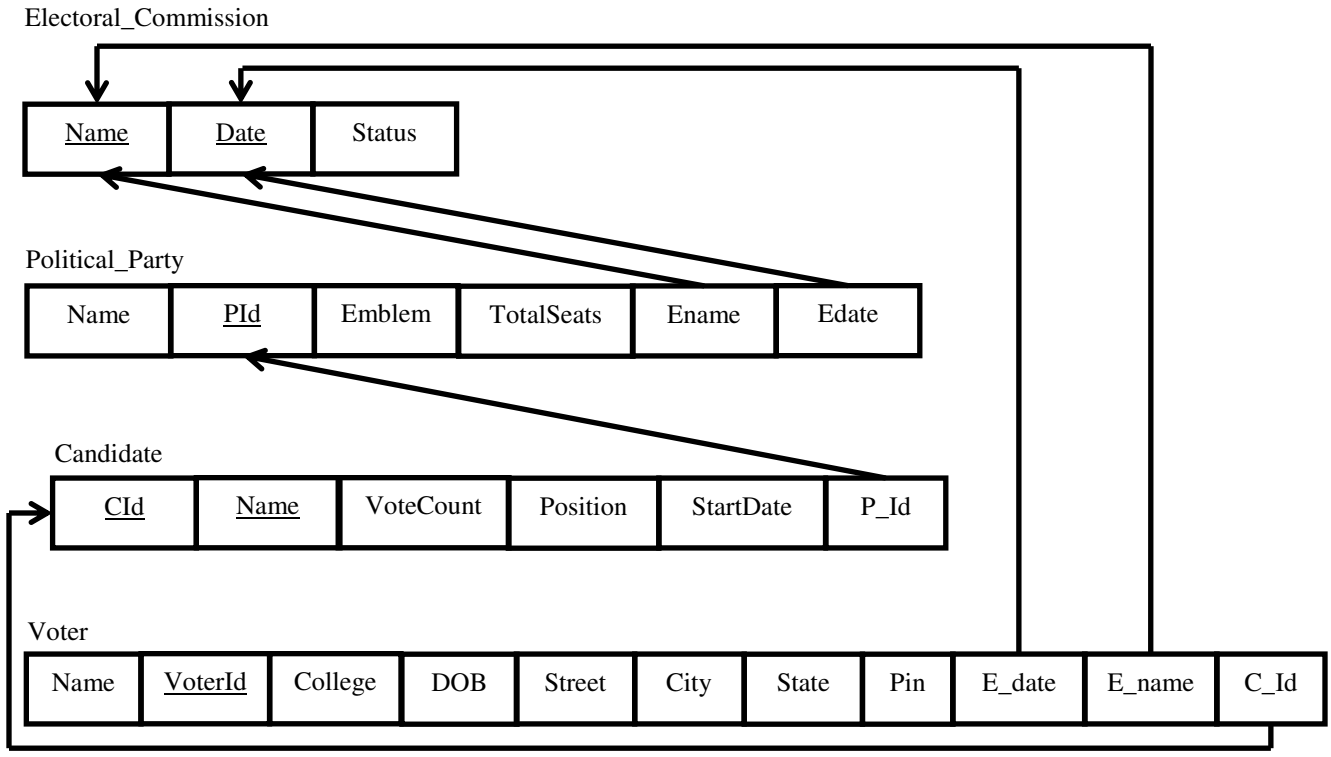
The ONLINE VOTING SYSTEM shall reduce the time spend making long queues at the polling stations during voting. It shall also enable the voters to vote from any part of the globe as explained since this is an online application available on the internet. Cases of vote miscounts shall also be solved since at the backend of this system resides a well-developed database using MYSQL that can provide the correct data once it's correctly queried. Since the voting process shall be open as early as possible, the voters shall have ample time to decide when and whom to vote for.

It is focused on studying the existing system of voting in Institutions and to make sure that the peoples (students) vote is counted, for fairness in the elective positions. This will also produce:

- Less effort and less labor intensive, as the primary cost and focus primary on creating, managing, and running a secure web voting portal.
- Increasing number of voters as individuals will find it easier and more convenient to vote, especially those abroad.
- Manual vote counting process and result declaration took days, however, our online voting application would convert these days into minutes.

This process can also be implemented in National Elections and various elective procedures.

ER-TO-RELATIONAL MAPPING



NORMALIZATION USING FUNCTIONAL DEPENDENCIES

Database Normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eliminate data redundancy and undesirable characteristics like **Insertion**, **Update** and **Deletion Anamolies**. It is a multi-step process that puts data into tabular form by removing duplicated data from the relation tables.
Normalization is used for mainly two purpose,

- Eliminating reduntant(useless) data.
- Ensuring data dependencies make sense i.e. data is logically stored.

Normalization rule are divided into following normal form.
1.First Normal Form (1NF) – No Multivalued attribute
2.Second Normal Form (2NF) – No Partial functional dependencies
3.Third Normal Form (3NF) – No Transitive functional dependencies
4.Boyce-Codd Normal Form (BCNF) – Table must be in 3NF and, for each functional dependency (X -> Y), X should be aCandidate Key.
A functional dependency (FD) has the form of X → Y (reads: X implies Y), where X and Y are sets of attributes. It means that whenever two tuples are identical on all the attributes in X, they must also be identical on all the attributes in Y .

Electoral Commission

Name	Date	Status
(A)	(B)	(C)

Electoral Commission Relation :R(Name, Date, Status).

Functional Dependency :(Name, Date) → Status

Candidate Key :$(Name, Date)^{+}$ = { Name, Date, Status }

Relation R is already in 1NF, because there is no multivalued FD.

For 2NF : Are there any Partial FD's ?

Prime Attributes = { Name, Date}Non PrimeAttributes={ Status }

Possible partial FD's = { Name→Status, Date →Status } both are not here.

So, the relation is in 2NF (since there is only one FD, so the relation R is Lossless decomposition and also dependency preserving).

Relation R is in 3NFas there is no transitive FD.

Now, the left side of the FD ,i.e., { Name, Date} is also a candidate key.

Therefore, relation R is in BCNF.

Political Party

Name	PId	Emblem	Total Seats	EName	EDate
(A)	(B)	(C)	(D)	(E)	(F)

Political Party Relation : R(A,B,C,D,E,F)

Functional Dependencies, F:{B → ACDEF, A → E, C →D}

Candidate Key :$(B)^+$ ={B,A,C,D,E,F}

Relation R is already in 1NF, because there is no multivalued attribute.

For 2NF : Are there any Partial FD's ?

Prime Attribute = {B} NonPrimeAttributes ={A,C,D,E,F}

There is no Partial Functional Dependency possible and hence the relation R is in 2NF.

For 3NF : Are there any Transitive FD's ?

A →E
C →D
} Transitive FD's

So, R is Not in 3NF, therefore decompose the Relation R.

Closures:

$(A)^+$ ={A,E}

$(C)^+$ ={C,D}

R_1=(AE)

R_2=(CD)

R_3 =(ABCF)

$R_1 \cap R_3$= A -» R_{13} =(ABCEF)

A is candidate key for R_1.

$R_{13} \cap R_2$= C -» R_{123} =(ABCDEF)

C is candidate key for R_2.

So, R_{123} is lossless Decomposition.

R_1(AE)	R_2(CD)	R_3(ACBF)
A →E	C →D	B →ACF
A^+={AE}	C^+={CD}	B^+={ABCF}

F1= A →E

F2= C →D

F3= B →ACF

B^+={ABCDEF} and F1 and F2 are already FD's of F.

Hence, F1∪F2∪F3=F

Therefore, Dependency is Preserved and relations R_1,R_2,R_3 are in 3NF.

For BCNF : Left side of all FD's should be a candidate key.

Since, A,C,B are candidate Keys.

Now we can say that relations R_1,R_2,R_3 are in BCNF.

Candidate

CId	Name	VoteCount	Position	StartDate	P_ID
(A)	(B)	(C)	(D)	(E)	(F)

Candidate Relation : R(A B C D E F)

Functional Dependency : { A → BCDEF }

Candidate Key : A^+= {A,B,C,D,E,F}

Relation R is already in 1NF, because there is no multivalued attribute.

For 2NF : Are there any Partial FD's ?

Prime Attribute = {A} NonPrimeAttributes ={B,C,D,E,F}

There is no Partial Functional Dependency possible and hence the relation R is in 2NF.

Again, there is no transitive Functional Dependency in relation R, so it is 3NF.

Now, the left side of Functional Dependency A →BCDEF contains a candidate key ,i.e., A.

Therefore, Relation R is in BCNF.

Voter

Name	Voter_ID	College	DOB	Street	City	State	Pin	E_Name	E_Date	C_ID
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)

Voter Relation : R(A,B,C,D,E,F,G,H,I,J,K)

Functional Dependency :{B → ACDEFGHIJK}

Candidate Key : B^+ = {A,B,C,D,E,F,G,H,I,J,K}

Relation R is already in 1NF, as there is no multivalued attribute.

Prime Attributes = {B} Non PrimeAttributes ={A,C,D,E,F,G,H,I,J,K}

There is no Partial Functional Dependency possible and hence the relation R is in 2NF.

Again, there is no transitive Functional Dependency in relation R, so it is 3NF.

Now, the left side of Functional Dependency B→ACDEFGHIJK contains a candidate key ,i.e., B.

Therefore, Relation R is in BCNF.

SQL

1) **TABLE :: ELECTORAL_COMMISSION**

```
CREATE TABLE Electoral_commission(
Name VARCHAR(20) NOT NULL,
EDate DATE NOT NULL,
Status INT DEFAULT 0  NOT NULL,
PRIMARY KEY(Name,EDate));

INSERT INTO Electoral_commission VALUES('DUSU','16-Aug-2016',0);
```

2) **TABLE :: POLITICAL PARTY**

```
CREATE TABLE Political_Party(
P_ID  VARCHAR(6) NOT NULL,
Name VARCHAR(20) NOT NULL,
Emblem VARCHAR(20),
Total_Seats INT DEFAULT 0,
EName VARCHAR(20) NOT NULL,
EDate DATE NOT NULL,
PRIMARY KEY(P_ID),
FOREIGN KEY(EName,EDate) REFERENCES Electoral_commission(Name,EDate));
```

```
INSERT INTO Political_Party VALUES('ABVP','Akhil Bhartiya Vidyarthi
Parishad',' ',4,'DUSU','16-Aug-2016');
```

3) **TABLE :: CANDIDATE**

```
CREATE TABLE Candidate(
C_ID  VARCHAR(6) NOT NULL,
Name VARCHAR(20) NOT NULL, Vote_Count  INT,
Position VARCHAR(20) NOT NULL,
Start_Date DATE NOT NULL,
P_ID  VARCHAR(6) NOT NULL,
PRIMARY KEY(C_ID),
FOREIGN KEY(P_ID) REFERENCES Political_Party(P_ID));
INSERT INTO Candidate VALUES('AB-P',' Satender Awana',20,'President','22-
JUN-2014','ABVP');
```

4) TABLE :: VOTER

```
CREATE TABLE Voter(
Voter_ID  VARCHAR(6) NOT NULL,
Name VARCHAR(20) NOT NULL,
College VARCHAR(20),
DOB DATE ,
Street  VARCHAR(20),
City  VARCHAR(20),
State VARCHAR(20),
Pin INT,
EName VARCHAR(20) NOT NULL,
EDate DATE NOT NULL,
C_ID  VARCHAR(6) NOT NULL,
PRIMARY KEY(Voter_ID),
FOREIGN KEY(EName,EDate) REFERENCES Electoral_commission(Name,EDate),
FOREIGN KEY(C_ID) REFERENCES Candidate(C_ID));
```

```
INSERT INTO Voter VALUES('IJ-01','IJKL','ARSD','05-Nov-1994','pqyz','Delhi'
,'Delhi',110001,'DUSU','16-Aug-2016','NOTA');
```

NAME	EDATE	STATUS
DUSU	16-AUG-16	0
DUTA	01-AUG-15	1

P_ID	NAME	EMBLEM	TOTAL_SEATS	ENAME	EDATE
ABVP	Akhil Bhartiya Vidyarthi Parishad		5	DUSU	16-AUG-16
CYSS	Chhatra Yuva Sangharsh Samiti		2	DUSU	16-AUG-16
INSO	Indian National Students Organisation		3	DUSU	16-AUG-16

P_ID	NAME	EMBLEM	TOTAL_SEATS	ENAME	EDATE
AISA	All India Students Association		3	DUSU	16-AUG-16
NOTA	NONE OF THE AVAILABE	NONE	0	DUSU	16-AUG-16

SQL> select * from candidate;

C_ID	NAME	VOTE_COUNT	POSITION	START_DAT	P_ID
AB-P	Satender Awana	20	President	22-JUN-14	ABVP
AB-VP	Sunny Dedha	16	Vice President	22-JUN-14	ABVP
AB-S	Anjali Rana	16	Secretary	22-JUN-15	ABVP
AB-JS	Chatterpal Yadav	18	Joint Secretary	22-JUN-14	ABVP
CY-P	Kuldeep Bidhuri	10	President	22-JUN-14	CYSS
CY-VP	GARIMA RANA	15	Vice President	22-JUN-14	CYSS
CY-S	Rahul Raj	20	Secretary	22-JUN-14	CYSS
CY-JS	Hitanshi Chauhan	20	Joint Secretary	22-JUN-14	CYSS
AI-JS	Abhinav Kumar	19	Joint Secretary	22-JUN-15	AISA
AI-S	Ravi Kumar	19	Secretary	22-JUN-15	AISA
AI-VP	Sudhanshu Shekhar	24	Vice President	22-JUN-14	AISA

C_ID	NAME	VOTE_COUNT	POSITION	START_DAT	P_ID
AI-P	Sheetal Bhopal	20	President	22-JUN-14	AISA
NOTA	NONE OF THE AVAILABE	0	NONE	01-JUN-50	NOTA

```
SQL> select * from Voter;

VOTER_ NAME      COLLEGE    DOB       STREET   CITY     STATE         PIN
------ ---------- ---------- --------- -------- -------- -------- ----------
ENAME  EDATE     C_ID
------ --------- ------
AB-01  ABCD      KESHAV     16-JAN-94 xyz      Delhi    Delhi        110009
DUSU   16-AUG-16 NOTA

CD-01  CDEF      KESHAV     16-JUN-94 xyz      Delhi    Delhi        110009
DUSU   16-AUG-16 NOTA

EF-01  EFGH      KESHAV     16-JAN-94 pqr      Anandpur HP           173219
DUSU   16-AUG-16 NOTA


VOTER_ NAME      COLLEGE    DOB       STREET   CITY     STATE         PIN
------ ---------- ---------- --------- -------- -------- -------- ----------
ENAME  EDATE     C_ID
------ --------- ------
AB-02  ABGH      KESHAV     10-DEC-93 rst      Mandi    HP           175001
DUSU   16-AUG-16 NOTA

IJ-01  IJKL      ARSD       05-NOV-94 pqyz     Delhi    Delhi        110001
DUSU   16-AUG-16 NOTA
```