

102003164 Abhijot Singh
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Candidate's Election Expenditure Model

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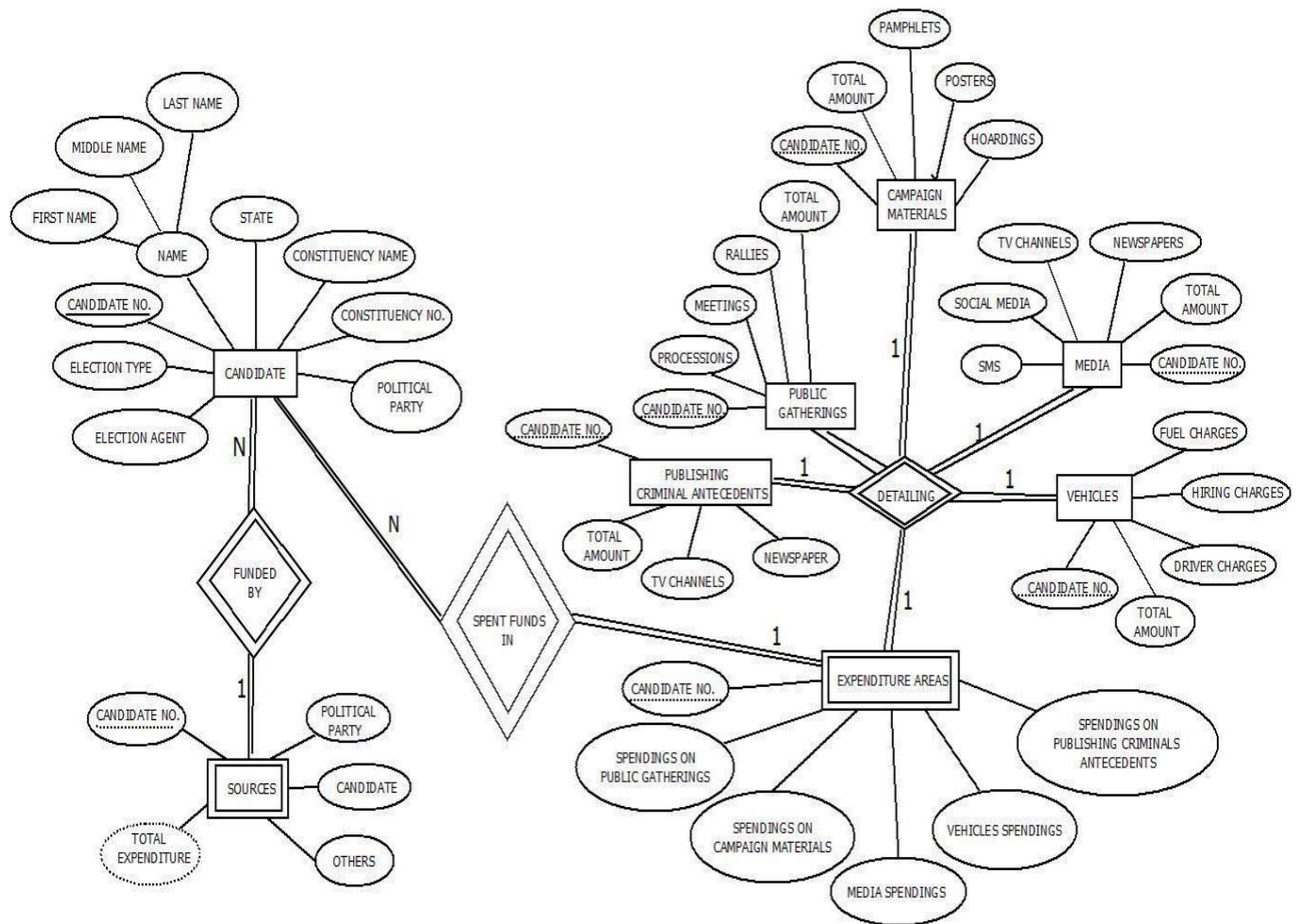
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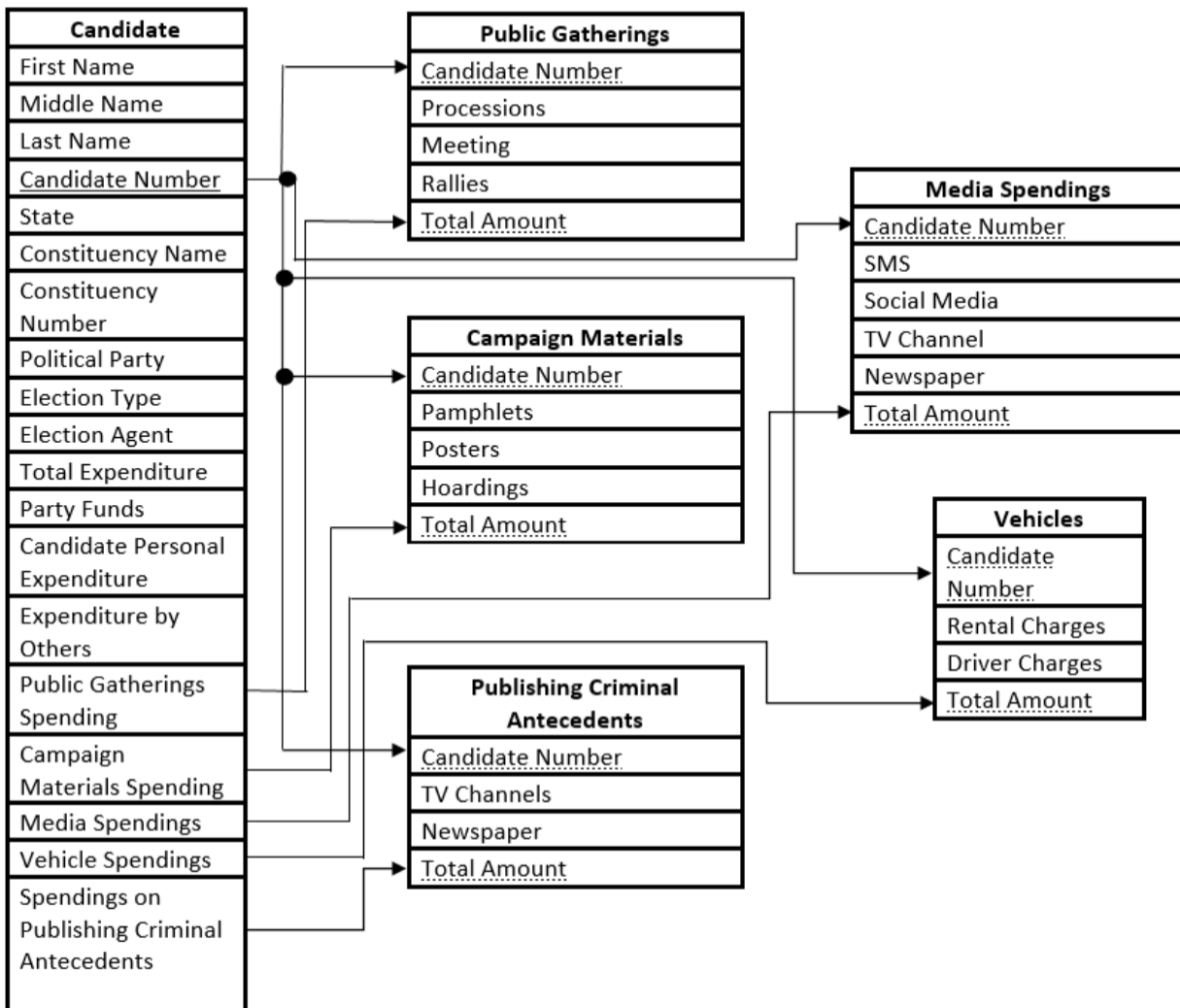
Problem Statement

We have designed an ER project based on a candidate's credentials and his various Expenditure areas during an Election. The Credentials include various information collected from him such as his full name, his constituency, his Political Party and his Funding sources along with total expenditure from various areas during the period of pre-election. The Funding is done only by his Party, Self and other sources while expenditure is done for promoting himself through various mediums and publishing his Legal antecedents.

ER DIAGRAM



ER Diagram to Table



Normalization Applied on Tables

1. **First Normal Form:** - A table is considered to be in 1NF if all the fields contain only scalar values.

All the 6 relations: -

- A. Candidate
- B. Public Gathering
- C. Campaign Materials
- D. Publishing Criminal Antecedents
- E. Media Spendings
- F. Vehicle Spendings

are already in the first Normal Form since all the fields in every relation contain only scalar values.

2. **Second Normal Form:** - For a table to be in 2NF, there are two requirements:-

- The database is in its first normal form.
- All non-key/non-prime attributes in the table must be functionally Dependent on the entire primary key

Relation 1:- **Candidate** has all Candidate No as its primary key and all other attributes are functionally dependent on it, i.e.

{Candidate Materials} —————> {First Name, Middle Name, Last Name, Constituency Number, Constituency Name, Political Party, Election type, Election Agent, Total Expenditure, Party Candidate Personal Expenditure, Expenditure by Other sources, Public gathering spendings, Campaign Material Spendings, Media Spendings, Vehicle Spendings, Spendings on publishing criminal antecedents}

Relation 2: - **Public Gathering** has Candidate No. as Primary Key & all other attributes are functionally dependent on it, i.e.
{Candidate Number} \longrightarrow {Processions, Meetings, Rallies, Total Amount}

Relation 3:- **Campaign Materials** has Candidate No. as Primary Key & all other attributes are functionally dependent on it, i.e.
{Candidate Number} \longrightarrow {Pamphlets, Posters, Hoardings, Total Amount}

Relation 4:- **Publishing Criminal Antecedents** has Candidate No. as Primary Key & all other attributes are functionally dependent on it, i.e. {Candidate Number } \longrightarrow {TV Channels, Newspaper, Total Amount}

Relation 5: - **Media Spendings** has Candidate No. as Primary Key & all other attributes are functionally dependent on it, i.e.
{Candidate Number} \longrightarrow {SMS, Social Media, TV Channels, total Amount}

Relation 6: - **Vehicle Spendings** has Candidate No. as Primary Key & all other attributes are functionally dependent on it, i.e.
{Candidate Number} \longrightarrow {Rental Charges, Driver Charges, total Amount}

3. Third Normal Form(3NF): This form dictates that all non-key attributes of a table must be functionally dependent on a candidate key i.e., there can be no interdependencies among non-key attributes.

For a table to be in 3NF, there are two requirements

- The table should be second normal form.
- No attribute is transitively dependent on the primary key.

Relation 1:- **Candidate** has Some attributes which are transitively dependent on the primary key(Candidate No). Following are the Functional Dependencies :-

FDs	
1 st	{Candidate Number} \longrightarrow {First Name, Middle Name, Last Name, Constituency Number, Political Party, Election Agent, Party Funds, Candidate Personal Expenditure, Expenditure by Other sources}
2 nd	{Constituency Number} \longrightarrow {Constituency Name, State, Election type}
3 rd	{Party Funds, Candidate Personal Expenditure, Expenditure by others} \longrightarrow {Total Expenditure}
4 th	{Total Expenditure} \longrightarrow {Public gathering spendings, Campaign Material Spendings, Media Spendings, Vehicle Spendings, Spendings on publishing criminal antecedents}

These 3 functional Dependencies show that some attributes are transitively dependent on the primary key(Candidate Number). Therefore, we need to decompose the relation.

For FD2:-

{Constituency Number} \longrightarrow {Constituency Name, Election Type}

Relation 1a(**Constituency**):-

<u>Constituency Number</u>
Constituency Name
State
Election Type

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For FD3 :-

Relation 1b(Total Expenditure):-

<u>Candidate Number</u>
Party Funds
Candidate Personal Expenditure
Expenditure by Others
Total Expenditure

For FD4:- Relation

1c(Spendings):- Candidate Number
Total Expenditure
Public Gathering Spendings
Campaign Material Spendings
Media Spendings
Vehicle Spendings
Spendings on Publishing Criminal Antecedents

and Relation 1(**Candidate**)

<u>Candidate Number</u>
First Name
Middle Name
Last Name
Constituency Number
Political Party
Election Agent
Party Funds
Expenditure By others

Relation 2:- Public Gatherings has the Functional Dependencies as:-

- 1) {Candidate Number} \longrightarrow {Processions, Meetings, Rallies}
- 2) {Processions, Meetings, Rallies} \longrightarrow {Total Amount}

These 3NF will remain same as the original relation. Since transitive dependency is fully functionally depend on the closure of primary key, i.e., (Candidate Number⁺)-(Candidate Number)

Relation 3:- Campaign Materials has the Functional Dependencies as:-

- 3) {Candidate Number} \longrightarrow { Pamphlets, Posters, Hoardings}
- 4) { Pamphlets, Posters, Hoardings} \longrightarrow {Total Amount}

These 3NF will remain same as the original relation. Since transitive dependency is fully functionally depend on the closure of primary key, i.e., (Candidate Number⁺)-(Candidate Number)

Relation 4:- Publishing Criminal Antecedents has the Functional Dependencies as:-

- 5) {Candidate Number} \longrightarrow {TV Channels, Newspaper}
- 6) {TV Channels, Newspaper} \longrightarrow {Total Amount}

These 3NF will remain same as the original relation. Since transitive dependency is fully functionally depend on the closure of primary key, i.e., (Candidate Number⁺)-(Candidate Number)

Relation 5:- Media Spendings has the Functional Dependencies as:-

7) {Candidate Number} \longrightarrow { SMS, Social Media, TV Channels }

8) { SMS, Social Media, TV Channels } \longrightarrow {Total Amount }

These 3NF will remain same as the original relation. Since transitive dependency is fully functionally depend on the closure of primary key, i.e., (Candidate Number⁺)-(Candidate Number)

Relation 6:- Vehicle Spendings has the Functional Dependencies as:-

9) {Candidate Number} \longrightarrow { Rental Charges, Driver Charges }

10) { Rental Charges, Driver Charges } \longrightarrow {Total Amount }

These 3NF will remain same as the original relation. Since transitive dependency is fully functionally depend on the closure of primary key, i.e., (Candidate Number⁺)-(Candidate Number)

So, after 3NF normalization ,we have got 9 relations in total.

4. BOYCE-CODD NORMAL FORM(BCNF):-

BCNF does not allow dependencies between attributes that belong to candidate keys. BCNF is a refinement of the third normal form in which it drops the restriction of a non-key attribute from the 3rd normal form.

Third normal form and BCNF are not same if the following conditions are true:

- The table has two or more candidate keys.
- At least two of the candidate keys are composed of more than one attribute.

- Keys are not disjoint i.e. The composite candidate keys share some attributes.

All the 9 relations obtained so far :-

- 1.Candidate**
- 2.Constituency**
- 3.Total Expenditure**
- 4.Spendings**
- 5.Public Gathering
Spendings**
- 6.Campaign Material
spendings**
- 7.Publishing Criminal
Antecedents spendings**
- 8.Media Spendings**
- 9.Vehicle Spendings**

Are already satisfying the BCNF form. This is so because each of these relations, there is only one candidate key. Therefore, there never can be any dependencies existing b/w the candidate keys of the respective tables.

5. Fourth Normal Form(4NF):-

- Fourth normal form eliminates independent many-to-one relationships between columns.
- To be in Fourth Normal Form, a relation must be in Boyce-Codd Normal Form.
- A given relation may not contain more than one multi-valued attribute.

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In case of 4NF all the relations:-

- 1.Candidate**
- 2.Constituency**
- 3.Total Expenditure**
- 4.Spendings**
- 5.Public Gathering
Spendings**
- 6.Campaign Material
spendings**
- 7.Publishing Criminal
Antecedents spendings**
- 8.Media Spendings**
- 9.Vehicle Spendings**

Do not have multiple independent many to one relationships between their respective columns. Therefore all these relations satisfy Fourth Normal Form.

FINAL (REFINED) RELATIONAL TABLES

CANDIDATE
<u>Candidate Number</u>
First Name
Middle Name
Last Name
Constituency Number
Political Party
Election Agent
Party Funds
Candidate Personal Expenditure
Expenditure By others

CONSTITUENCY
<u>Constituency Number</u>
Constituency Name
State
Election Type

TOTAL_EXPENDITURE
<u>Candidate Number</u>
Party Funds
Candidate Personal Expenditure
Expenditure by Others
Total Expenditure

SPENDINGS
<u>Candidate Number</u>
Total Expenditure
Public Gathering Spendings
Campaign Material Spendings
Media Spendings
Vehicle Spendings
Spendings on Publishing Criminal Antecedents

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Public Gatherings
<u>Candidate Number</u>
Processions
Meeting
Rallies
<u>Total Amount</u>

Publishing Criminal Antecedents
<u>Candidate Number</u>
TV Channels
Newspaper
<u>Total Amount</u>

Vehicles
<u>Candidate Number</u>
Rental Charges
Driver Charges
<u>Total Amount</u>

Campaign Materials
<u>Candidate Number</u>
Pamphlets
Posters
Hoardings
<u>Total Amount</u>

Media Spendings
<u>Candidate Number</u>
SMS
Social Media
TV Channel
Newspaper
<u>Total Amount</u>

SQL/PLSQL code to Implement project Functionality

1.CREATING THE TABLES USING “**CREATE TABLE**” COMMAND:

```
create table constituency(constituency_no int PRIMARY  
KEY,constituency_name varchar(15) not null,State  
VARCHAR(20),Election_type varchar(15) not null);
```

```
create table candidate(Candidate_no int PRIMARY KEY,first_name  
varchar(10) not null,middle_name varchar(10),last_name varchar(10)  
not null,constituency_no int not null,Political_party varchar(15) not null,  
Election_Agent varchar(15) not null,Party_funds float  
not null,Candidate_personal_expenditure float not  
null,Expenditure_by_others float not null,  
constraint f_key FOREIGN KEY(constituency_no)  
REFERENCES constituency(constituency_no),  
constraint u_key1 unique(Candidate_no,Party_funds),  
constraint u_key2  
unique(Candidate_no,Candidate_personal_expenditure), constraint  
u_key3 unique(Candidate_no,Expenditure_by_others));
```


create table **total_expenditure**(Candidate_no int PRIMARY KEY,Party_funds float not null,Candidate_personal_expenditure float not null,Expenditure_by_others float not null>Total_expenditure float not null,

constraint un unique(Candidate_no>Total_expenditure),

constraint f_key2 foreign key(Candidate_no,Party_funds) references candidate(Candidate_no,Party_funds),

constraint f_key3 foreign key(Candidate_no,Candidate_personal_expenditure) references candidate(Candidate_no,Candidate_personal_expenditure),

constraint f_key4 foreign key(Candidate_no,Expenditure_by_others) references candidate(Candidate_no,Expenditure_by_others));

create table **spendings**(Candidate_no int PRIMARY KEY>Total_expenditure float not null,Public_gathering_spendings float not null,Campaign_materials_spendings float not null,Media_spendings float not null,Vehicle_spendings float not null, Spendings_on_publishing_criminal_antecedents float not null,

constraint f_key5 foreign key(Candidate_no>Total_expenditure) references total_expenditure(Candidate_no>Total_expenditure),

constraint ch check(Public_gathering_spendings+Campaign_materials_spendings+Media_spendings+Vehicle_spendings+

Spendings_on_publishing_criminal_antecedents=Total_expenditure),

constraint u_key4 unique(Candidate_no,Public_gathering_spendings),

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```
constraint u_key5  
unique(Candidate_no,Campaign_materials_spendings),  
constraint u_key6 unique(Candidate_no,Media_spendings),  
constraint u_key7 unique(Candidate_no,Vehicle_spendings),  
constraint u_key8  
unique(Candidate_no,Spendings_on_publishing_criminal_antecedents));
```

```
create table public_gatherings(Candidate_no int,Processions float  
not null,Meetings float not null,Rallies float not null>Total_amount float  
not null,  
  
constraint f_key6 foreign key(Candidate_no>Total_amount) references  
spendings(Candidate_no,Public_gathering_spendings),  
  
constraint p_key1 primary key(Candidate_no));
```

```
create table campaign_materials(Candidate_no int,Pamphlets  
float not null,Posters float not null,Hoardings float not  
null>Total_amount float not null,  
  
constraint f_key7 foreign key(Candidate_no>Total_amount)references  
spendings(Candidate_no,Campaign_materials_spendings),  
  
constraint p_key2 primary key(Candidate_no));
```

```
create table publishing_criminal_antecedants(Candidate_no  
int,TV_channels float not null,Newspaper float not  
null>Total_amount float not null,
```

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constraint f_key8 foreign key(Candidate_no,Total_amount)references
spendings(Candidate_no,Spending_on_publishing_criminal_antecedent
s),

constraint p_key3 primary key(Candidate_no));

create table **media_spendings**(Candidate_no int,SMS float not
null,Social_media float not null,TV_channel float not
null,Newspaper float not null,Total_amount float not null,

constraint f_key9 foreign key(Candidate_no,Total_amount)references
spendings(Candidate_no,Media_spendings),

constraint p_key4 primary key(Candidate_no));

create table **vehicles_spendings**(Candidate_no int,Rental_charges
float not null,Driver_charges float not null,Total_amount float not null,

constraint f_key10 foreign key(Candidate_no,Total_amount)references
spendings(Candidate_no,Vehicle_spendings),

constraint p_key5 primary key(Candidate_no));

2. INSERTION OF VALUES IN THE TABLES USING “INSERT INTO” COMMAND:

A. CONSTITUENCY TABLE

insert into constituency values(87,'Pathankot Cantt','Punjab','Vidhan
Sabha');

insert into constituency values(61,'Patiala Rural','Punjab','Vidhan
Sabha');

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```
insert into constituency values(19,'Mansa','Punjab','Vidhan Sabha');  
insert into constituency values(29,'Amargarh','Punjab','Vidhan Sabha');  
insert into constituency values(110,'Sunam','Punjab','Vidhan Sabha');  
insert into constituency values(90,'Patti','Punjab','Vidhan Sabha');  
insert into constituency values(47,'Ferozpur','Punjab','Vidhan Sabha');
```

B. FIRST CANDIDATE

```
insert into candidate  
values(1001,'Manoj','Sajjan','Kumar',87,'SP','Pramod',1500000,1200000,  
300000);  
  
insert into total_expenditure  
values(1001,1500000,1200000,300000,3000000);  
  
insert into spendings  
values(1001,3000000,1200000,600000,800000,200000,200000);  
  
insert into public_gatherings  
values(1001,400000,300000,500000,1200000);  
  
insert into campaign_materials  
values(1001,100000,250000,250000,600000);  
  
insert into publishing_criminal_antecedants  
values(1001,125000,75000,200000);  
  
insert into media_spendings  
values(1001,60000,275000,325000,140000,800000);  
  
insert into vehicles_spendings values(1001,150000,50000,200000);
```

C. SECOND CANDIDATE

insert into candidate
values(1002,'Kulwant','Singh','Dhillon',61,'SAD','Zorawar',2000000,1800000,200000);

insert into total_expenditure
values(1002,2000000,1800000,200000,4000000);

insert into spendings
values(1002,4000000,1500000,900000,1350000,150000,100000);

insert into public_gatherings
values(1002,525000,350000,625000,1500000);

insert into campaign_materials
values(1002,125000,275000,500000,900000);

insert into publishing_criminal_antecedents
values(1002,65000,35000,100000);

insert into media_spendings
values(1002,50000,500000,600000,200000,1350000);

insert into vehicles_spendings values(1002,105000,45000,150000);

D. THIRD CANDIDATE

insert into candidate
values(1003,'Shubhdeep','Singh','Sidhu',19,'INC','Sukhvir',2000000,150000,500000);

insert into total_expenditure
values(1003,2000000,1500000,500000,4000000);

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insert into spendings

values(1003,4000000,1400000,900000,900000,500000,300000);

insert into public_gatherings

values(1003,350000,4500000,600000,1400000);

insert into campaign_materials

values(1003,125000,300000,475000,900000);

insert into publishing_criminal_antecedants

values(1003,175000,125000,300000);

insert into media_spendings

values(1003,65000,355000,345000,135000,900000);

insert into vehicles_spendings values(1003,400000,100000,500000);

E. FOURTH CANDIDATE

insert into candidate

values(1004,'Simranjit','Singh','Maan',29,'SAD(A)','Arjan',800000,120000,1300000);

insert into total_expenditure

values(1004,800000,1200000,1300000,3300000);

insert into spendings

values(1004,3300000,1350000,750000,825000,175000,200000);

insert into public_gatherings

values(1004,400000,400000,550000,1350000);

insert into campaign_materials

values(1004,150000,250000,350000,750000);

insert into publishing_criminal_antecedants

values(1004,125000,75000,200000);

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```
insert into media_spending  
values(1004,20000,300000,325000,180000,825000);  
  
insert into vehicles_spending values(1004,140000,35000,175000);
```

F. FIFTH CANDIDATE

```
insert into candidate  
values(1005,'Vijay','Inder','Singla',110,'AAP','Rana',1900000,1100000,6  
00000);  
  
insert into total_expenditure  
values(1005,1900000,1100000,600000,3600000);  
  
insert into spending  
values(1005,3600000,1400000,800000,800000,350000,250000);  
  
insert into public_gatherings  
values(1005,500000,355000,545000,1400000);  
  
insert into campaign_materials  
values(1005,150000,300000,350000,800000);  
  
insert into publishing_criminal_antecedents  
values(1005,150000,100000,250000);  
  
insert into media_spending  
values(1005,70000,245000,385000,100000,800000);  
  
insert into vehicles_spending values(1005,270000,80000,350000);
```

G. SIXTH CANDIDATE

```
insert into candidate  
values(1006,'Sehaj','Singh','Pannu',90,'PPP','Abhijot',1000000,1800000,6  
00000);
```

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```
insert into total_expenditure
values(1006,1000000,1800000,600000,3400000);

insert into spendings
values(1006,3400000,1300000,700000,800000,400000,200000);

insert into public_gatherings
values(1006,450000,300000,550000,1300000);

insert into campaign_materials
values(1006,100000,250000,350000,700000);

insert into publishing_criminal_antecedants
values(1006,125000,75000,200000);

insert into media_spendings
values(1006,50000,250000,350000,150000,800000);

insert into vehicles_spendings values(1006,140000,260000,400000);
```

RETRIEVING DATA FROM THE TABLES USING “**NATURAL JOIN**” COMMAND:

```
select * from
candidate natural join constituency natural join total_expenditure
natural join spendings;
```

```
select * from
candidate natural join constituency natural join total_expenditure
natural join spendings
where Candidate_no=1001;

select * from
```


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candidate natural join public_gatherings;

select * from
candidate natural join campaign_materials;

select * from
candidate natural join media_spendings;

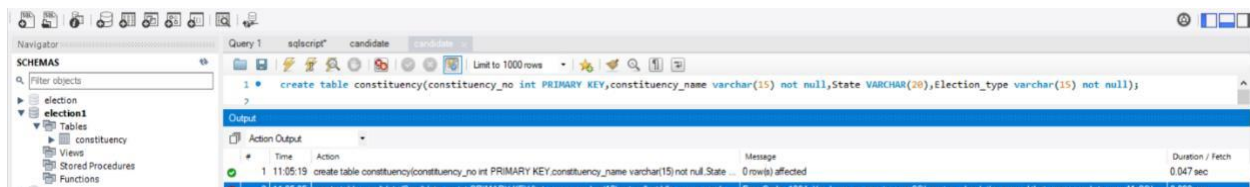
select * from
candidate natural join vehicles_spendings;

select * from
candidate natural join publishing_criminal_antecedants;

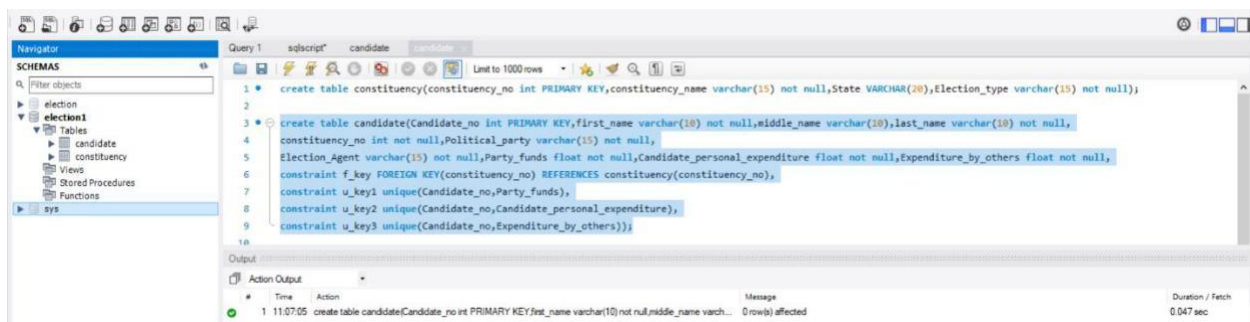
OUTPUT SCREENSHOTS

1. CREATION OF TABLES:

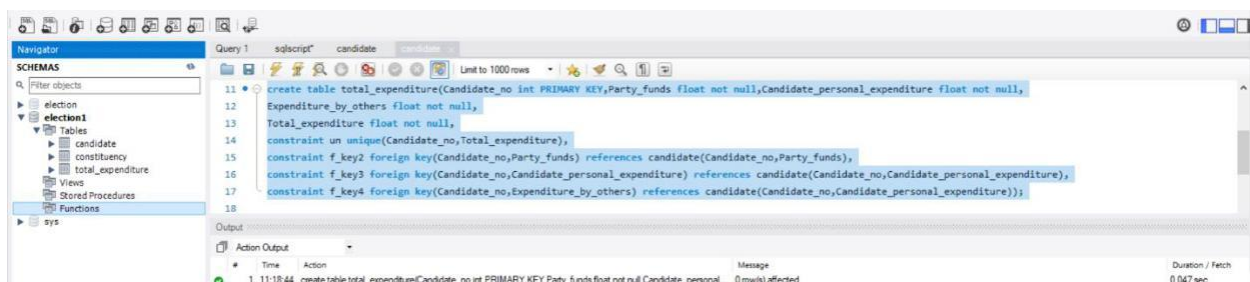
CONSTITUENCY TABLE IS CREATED



CANDIDATE TABLE IS CREATED



TOTAL EXPENDITURE TABLE IS CREATED

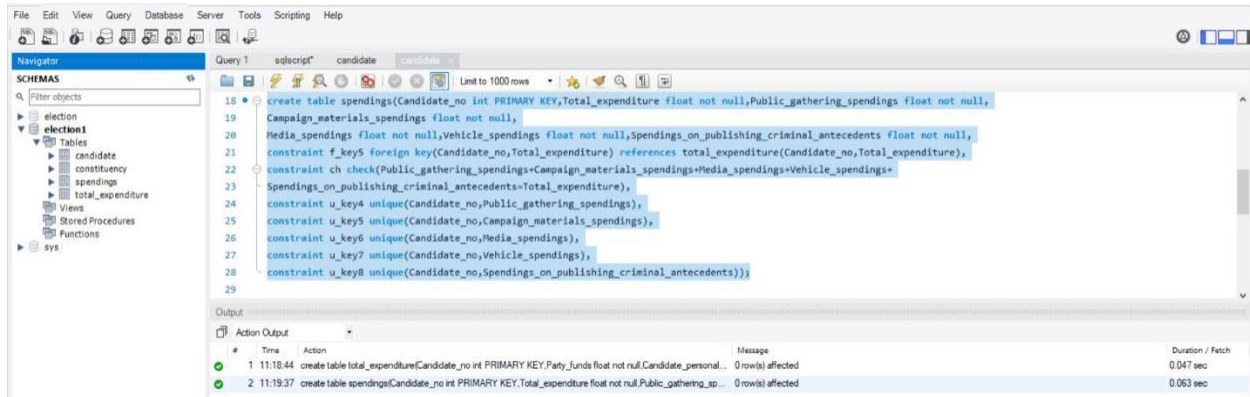


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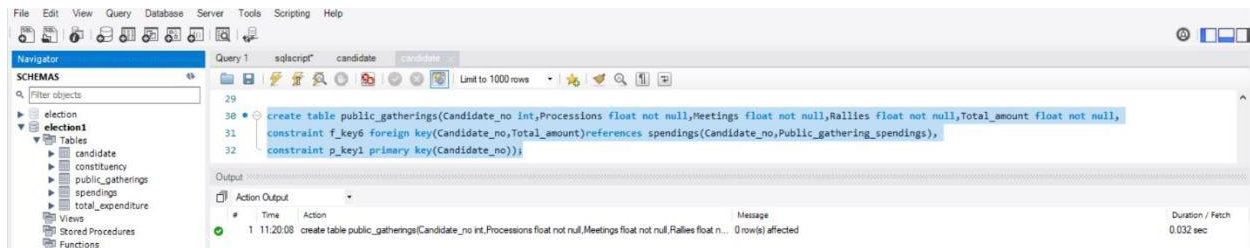
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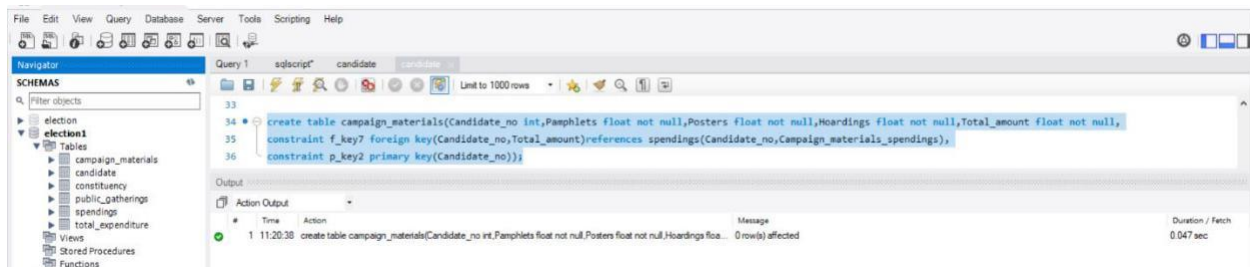
SPENDINGS TABLE IS CREATED



PUBLIC GATHERINGS TABLE IS CREATED

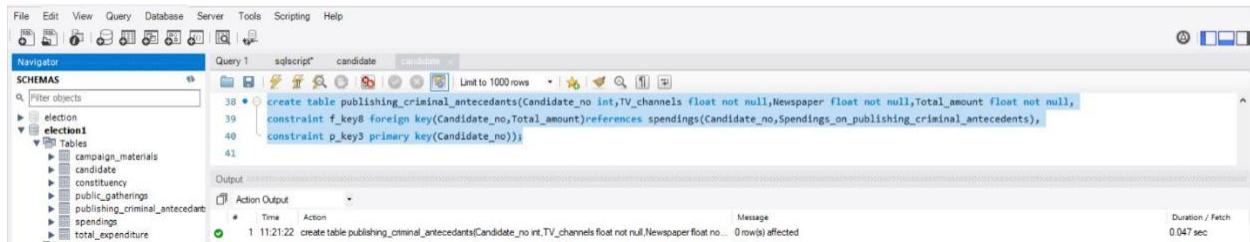


CAMPAIGN MATERIALS TABLE IS CREATED

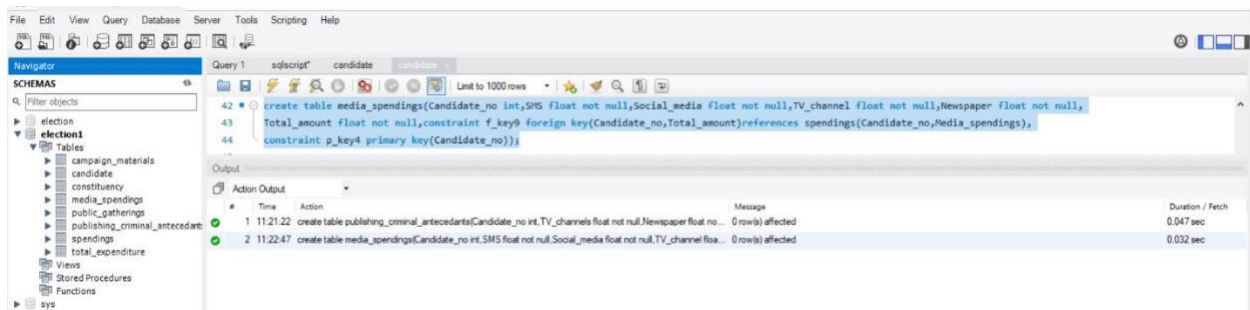


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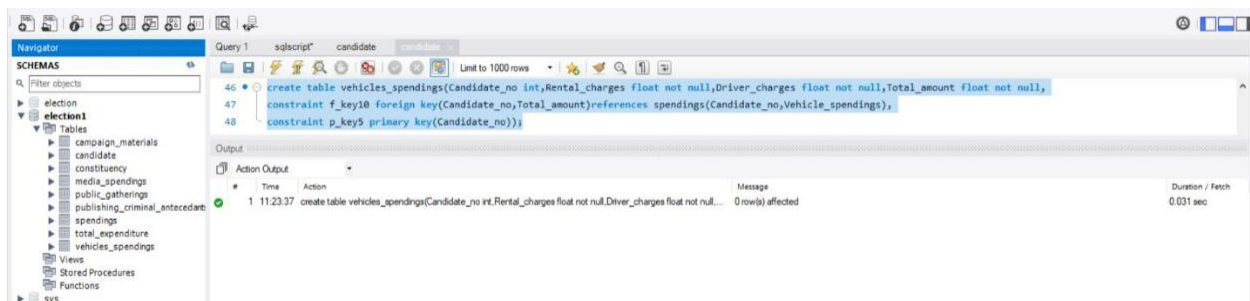
PUBLISHING CRIMINAL ANTECEDENTS IS CREATED



MEDIA SPENDINGS TABLE IS CREATED



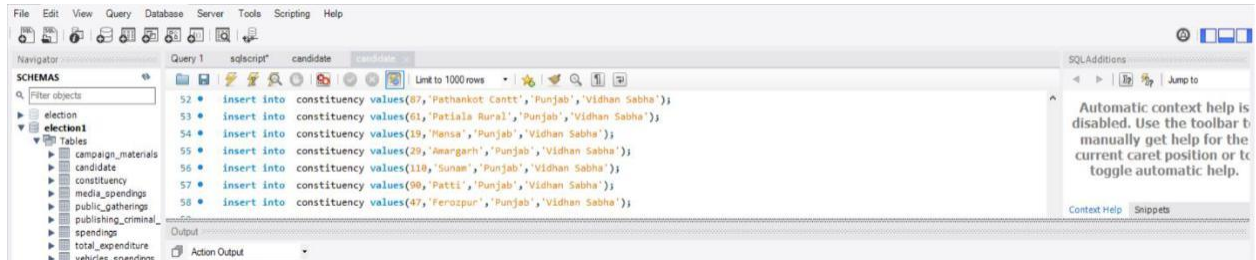
VEHICLE SPENDING IS CREATED



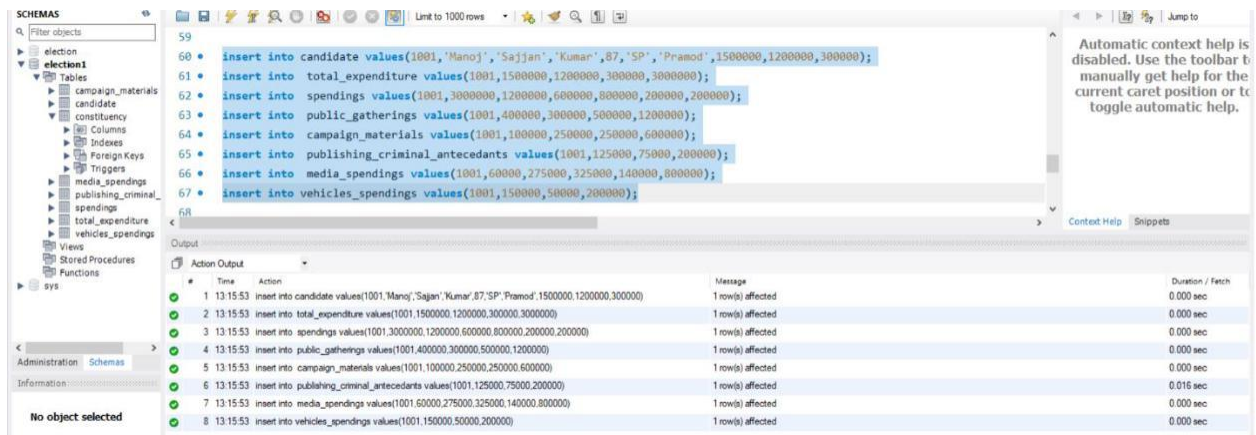
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2. INSERTION OF DATA INTO THE TABLES:

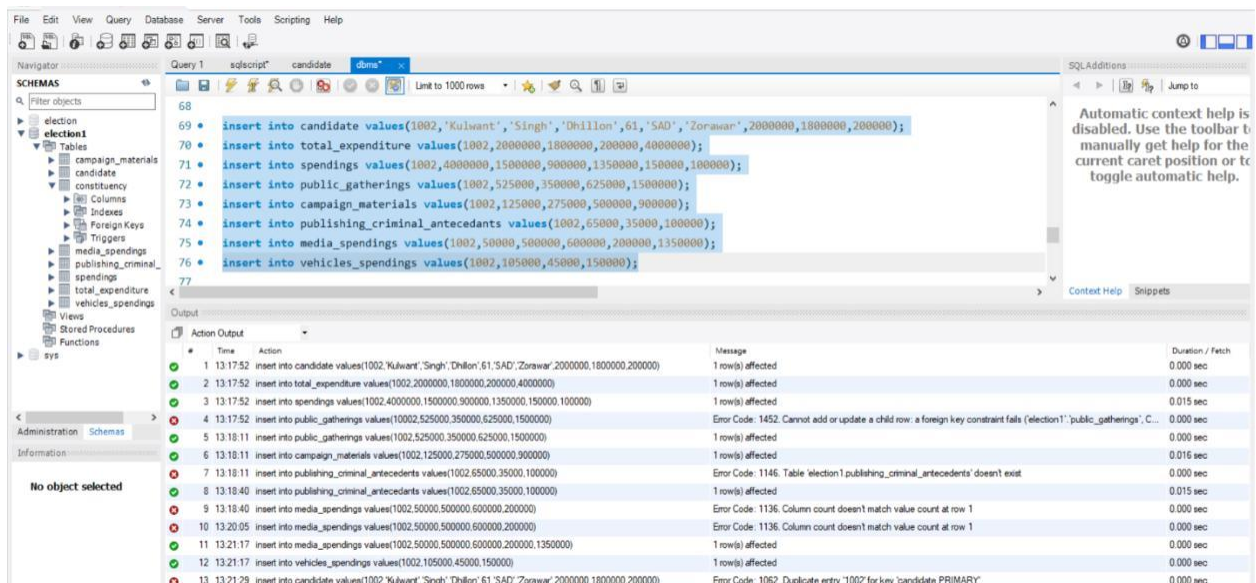
Values are inserted into constituency table



Values are inserted into every table(except constituency)with candidate_no 1001

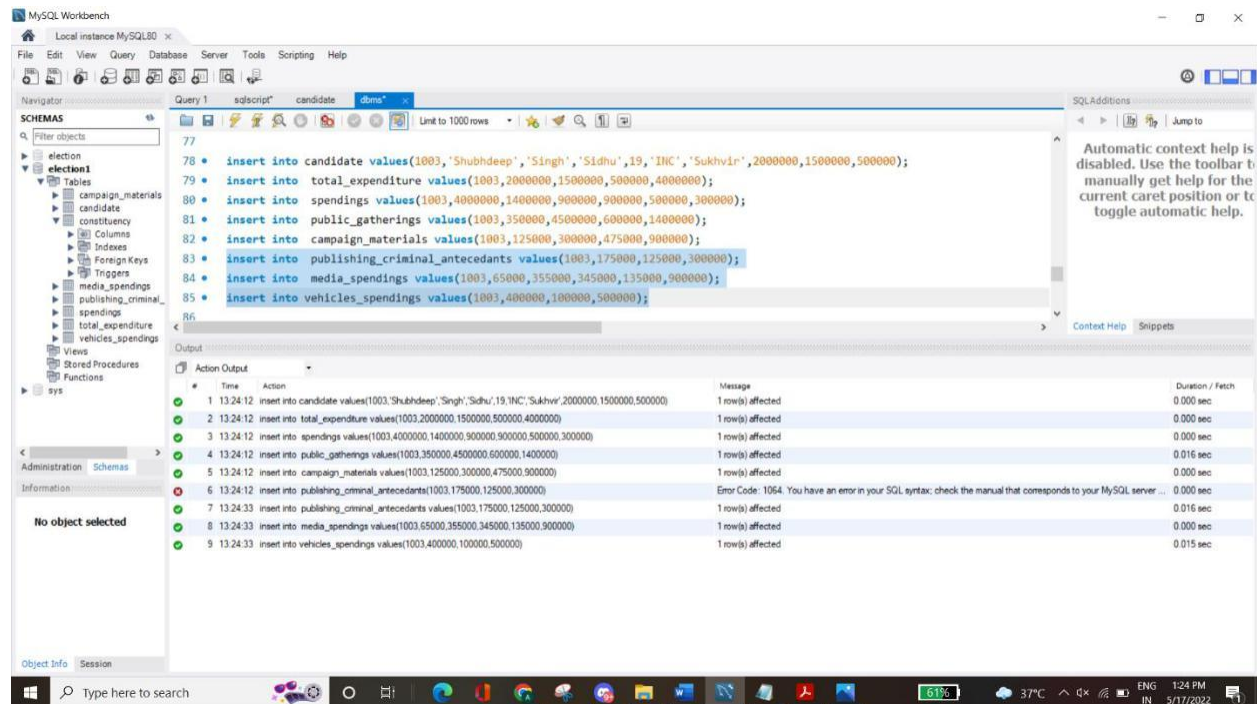


Values are inserted into every table(except constituency)with candidate_no 1002

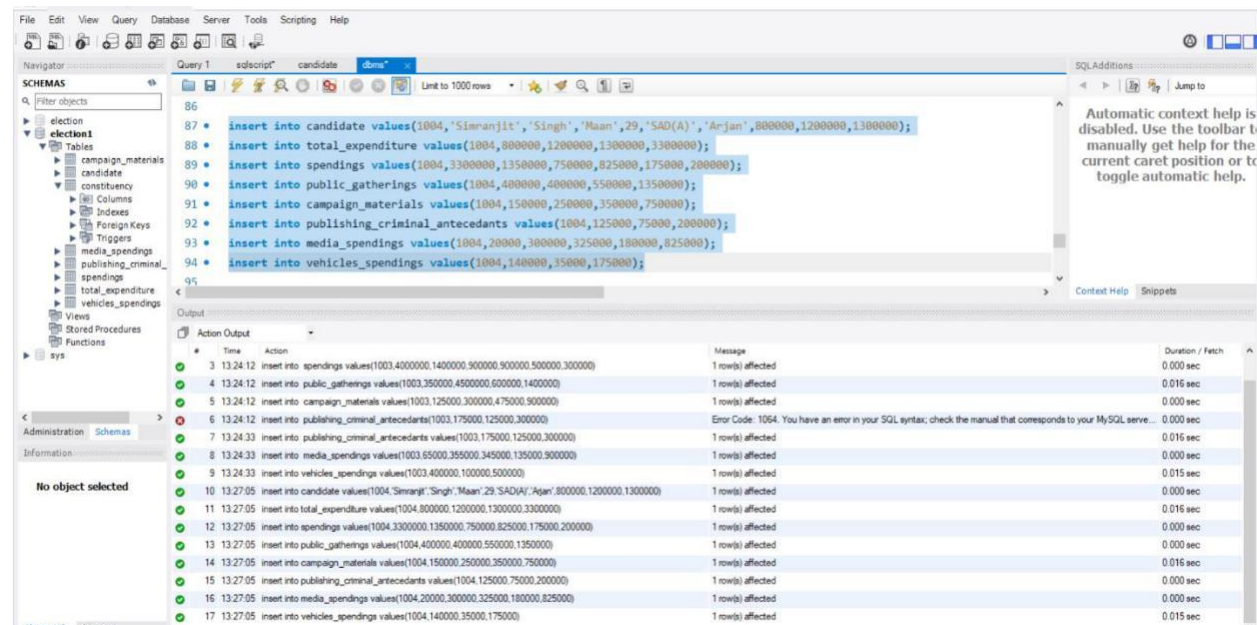


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Values are inserted into every table(except constituency)with
candidate_no 1003



Values are inserted into every table(except constituency)with
candidate_no 1004



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Values are inserted into every table(except constituency)with
candidate_no 1005

The screenshot shows the SQL Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'election' and 'election1' expanded. The 'election1' schema contains tables like 'candidate', 'campaign_materials', 'constituency', 'media_spending', 'publishing_criminal_antecedents', 'spending', 'total_expenditure', and 'vehicles_spending'. The main pane shows a SQL script with 9 insert statements for candidate 1005. The right pane shows the 'Output' window with the 'Action Output' tab selected, displaying the execution results of these statements.

#	Time	Action	Message	Duration / Fetch
1	13:29:04	insert into candidate values(1005,'Vijay','Inder','Singh','AAP','Rana',1900000,1100000,600000);	1 row(s) affected	0.015 sec
2	13:29:04	insert into total_expenditure values(1005,1900000,1100000,600000,360000);	1 row(s) affected	0.000 sec
3	13:29:04	insert into spending values(1005,3600000,1400000,800000,800000,350000,250000);	1 row(s) affected	0.000 sec
4	13:29:04	insert into public_gatherings values(1005,500000,355000,545000,1400000);	1 row(s) affected	0.000 sec
5	13:29:04	insert into campaign_materials values(1005,150000,300000,350000,800000);	1 row(s) affected	0.015 sec
6	13:29:04	insert into publishing_criminal_antecedents values(1005,150000,100000,250000);	1 row(s) affected	0.000 sec
7	13:29:04	insert into media_spending values(1005,70000,245000,385000,100000,800000);	Error Code: 1136. Column count doesn't match value count at row 1	0.000 sec
8	13:30:24	insert into media_spending values(1005,70000,245000,385000,100000,800000);	1 row(s) affected	0.016 sec
9	13:30:24	insert into vehicles_spending values(1005,270000,80000,350000);	1 row(s) affected	0.000 sec

Values are inserted into every table(except constituency)with
candidate_no 1006

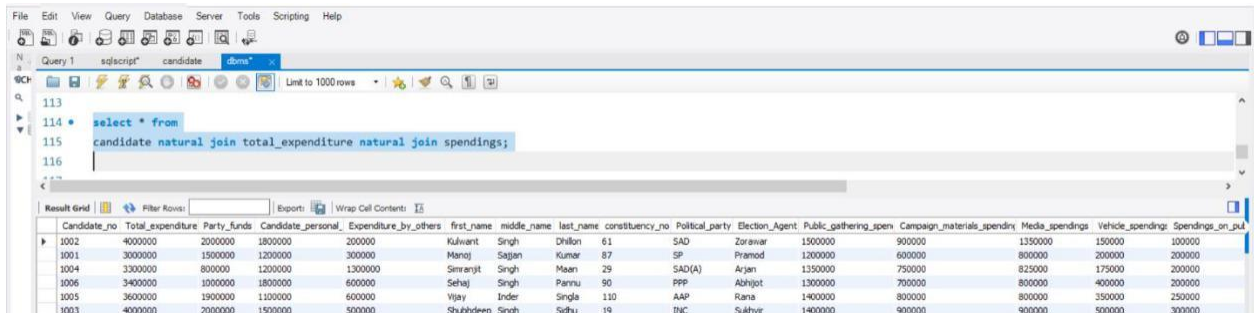
The screenshot shows the SQL Enterprise Manager interface. The left pane displays the 'Schemas' tree with 'election' and 'election1' expanded. The 'election1' schema contains tables like 'candidate', 'campaign_materials', 'constituency', 'media_spending', 'publishing_criminal_antecedents', 'spending', 'total_expenditure', and 'vehicles_spending'. The main pane shows a SQL script with 11 insert statements for candidate 1006. The right pane shows the 'Output' window with the 'Action Output' tab selected, displaying the execution results of these statements, including several errors.

#	Time	Action	Message	Duration / Fetch
1	13:32:26	insert into candidate values(1006,'Sehaj','Singh','Pannu','90','PPP','Abhijot',1000000,1800000,600000);	1 row(s) affected	0.000 sec
2	13:32:26	insert into total_expenditure values(1006,1000000,1800000,600000,3400000);	1 row(s) affected	0.015 sec
3	13:32:26	insert into spending values(1006,3400000,1300000,700000,800000,400000,200000);	Error Code: 3819. Check constraint 'ch' is violated.	0.000 sec
4	13:33:11	insert into spending values(1006,3400000,1300000,700000,800000,400000,200000);	1 row(s) affected	0.016 sec
5	13:33:11	insert into public_gatherings values(1006,450000,300000,550000,1300000);	1 row(s) affected	0.000 sec
6	13:33:11	insert into campaign_materials values(1006,100000,250000,350000,700000);	1 row(s) affected	0.000 sec
7	13:33:11	insert into publishing_criminal_antecedents values(1006,125000,75000,200000);	1 row(s) affected	0.015 sec
8	13:33:11	insert into media_spending values(1006,50000,250000,350000,150000,800000);	1 row(s) affected	0.000 sec
9	13:33:11	insert into vehicles_spending values(1006,140000,60000,200000);	Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('election1','vehicles_spending', ...	0.000 sec
10	13:35:57	insert into vehicles_spending values(1006,140000,60000,200000);	Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('election1','vehicles_spending', ...	0.000 sec
11	13:37:37	insert into vehicles_spending values(1006,140000,260000,400000);	1 row(s) affected	0.000 sec

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3. RETRIEVAL OF DATA FROM THE TABLES:

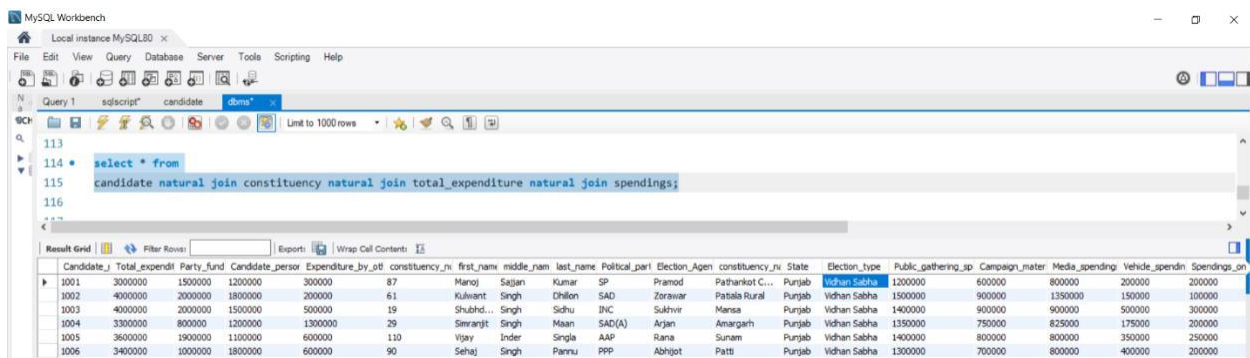
Data about Candidate Credentials, his spendings and Sources.



Query 1: `select * from candidate natural join total_expenditure natural join spendings;`

Candidate_no	Total_expenditure	Party_funds	Candidate_personal	Expenditure_by_others	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agent	Public_gathering_spen	Campaign_materials_spendin	Media_spendings	Vehicle_spendings	Spendings_on_pu
1002	4000000	2000000	1800000	200000	Kulwant	Singh	Dhillon	61	SAD	Zoravar	1500000	900000	1350000	150000	100000
1001	3000000	1500000	1200000	300000	Manoj	Sagan	Kumar	87	SP	Pramod	1200000	600000	800000	200000	200000
1004	3300000	800000	1200000	1300000	Sirrajit	Singh	Maan	29	SAD(A)	Arjan	1350000	750000	825000	175000	200000
1006	3400000	1000000	1800000	600000	Sehaj	Singh	Pannu	90	PPP	Abhijot	1300000	700000	800000	400000	200000
1005	3600000	1900000	1100000	600000	Vijay	Inder	Singla	110	AAP	Rana	1400000	800000	800000	350000	250000
1003	4000000	2000000	1500000	500000	Shubhdeep	Singh	Sidhu	19	INC	Sukhvir	1400000	900000	900000	500000	300000

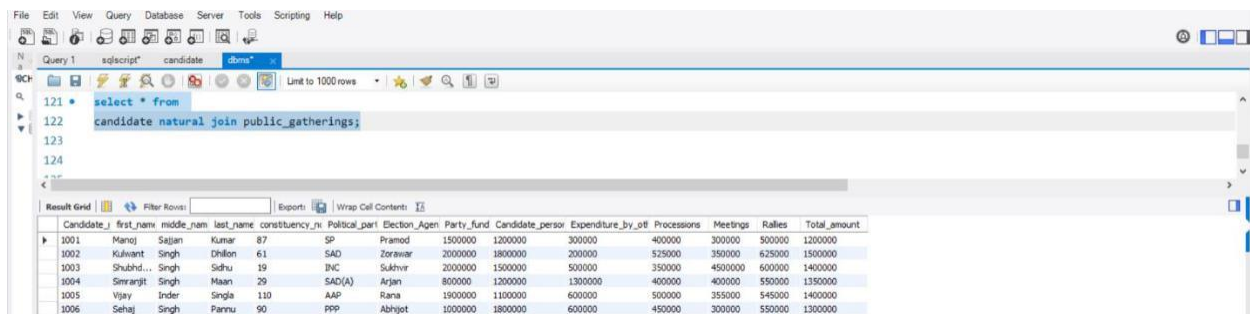
Data about Candidate Credentials, his constituency, his spendings and sources



Query 1: `select * from candidate natural join constituency natural join total_expenditure natural join spendings;`

Candidate_no	Total_expenditure	Party_fund	Candidate_personal	Expenditure_by_others	constituency_no	first_name	middle_name	last_name	Political_party	Election_Agent	constituency_no	State	Election_type	Public_gathering_sp	Campaign_meter	Media_spendings	Vehicle_spendings	Spendings_on
1001	3000000	1500000	1200000	300000	87	Manoj	Sajan	Kumar	SP	Pramod	87	Punjab	Assembly	1200000	600000	800000	200000	200000
1002	4000000	2000000	1800000	200000	61	Kulwant	Singh	Dhillon	SAD	Zoravar	61	Punjab	Vidhan Sabha	1500000	900000	1350000	150000	100000
1003	4000000	2000000	1500000	500000	19	Shubhd...	Singh	Sidhu	INC	Sukhvir	19	Punjab	Vidhan Sabha	1400000	900000	900000	500000	300000
1004	3300000	800000	1200000	1300000	29	Sirrajit	Singh	Maan	SAD(A)	Arjan	29	Punjab	Vidhan Sabha	1350000	750000	825000	175000	200000
1005	3600000	1900000	1100000	600000	110	Vijay	Inder	Singla	AAP	Rana	110	Punjab	Vidhan Sabha	1400000	800000	800000	350000	250000
1006	3400000	1000000	1800000	600000	90	Sehaj	Singh	Pannu	PPP	Abhijot	90	Punjab	Vidhan Sabha	1300000	700000	800000	400000	200000

Data about Candidate Credentials and his public gathering spendings



Query 1: `select * from candidate natural join public_gatherings;`

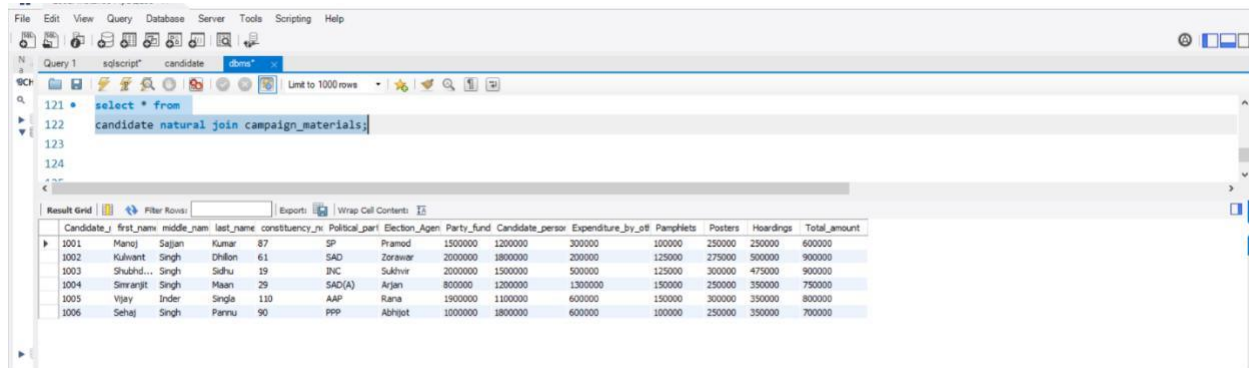
Candidate_no	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agent	Party_fund	Candidate_personal	Expenditure_by_others	Processions	Meetings	Rallies	Total_amount
1001	Manoj	Sajan	Kumar	87	SP	Pramod	1500000	1200000	300000	400000	300000	500000	1200000
1002	Kulwant	Singh	Dhillon	61	SAD	Zoravar	2000000	1800000	200000	525000	350000	625000	1500000
1003	Shubhd...	Singh	Sidhu	19	INC	Sukhvir	2000000	1500000	500000	350000	450000	600000	1400000
1004	Sirrajit	Singh	Maan	29	SAD(A)	Arjan	800000	1200000	1300000	400000	400000	550000	1350000
1005	Vijay	Inder	Singla	110	AAP	Rana	1900000	1100000	600000	500000	355000	545000	1400000
1006	Sehaj	Singh	Pannu	90	PPP	Abhijot	1000000	1800000	600000	450000	300000	550000	1300000

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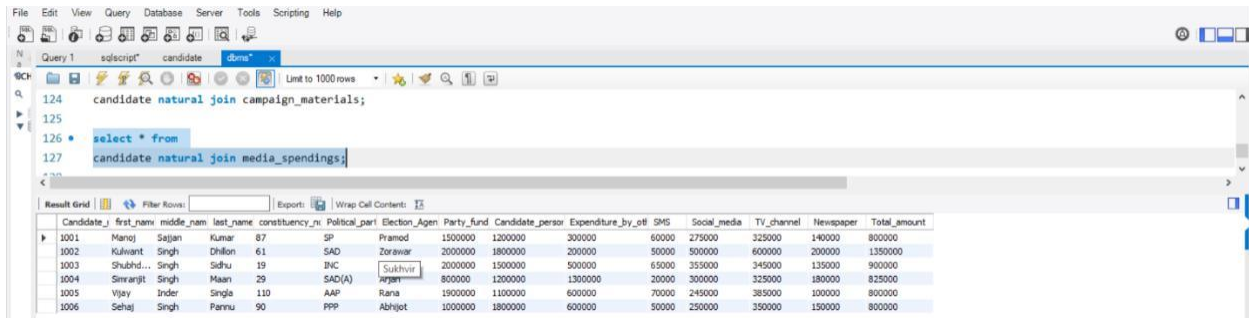
Data about Candidate Credentials and his campaign material spendings



Query 1: `select * from candidate natural join campaign_materials;`

Candidate_id	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agen	Party_fund	Candidate_person	Expenditure_by_oil	Pamphlets	Posters	Hoardings	Total_amount
1001	Manoj	Sajjan	Kumar	87	SP	Pramod	1500000	1200000	300000	100000	250000	250000	600000
1002	Kulwant	Singh	Dhillon	61	SAD	Zorawar	2000000	1800000	200000	125000	275000	500000	900000
1003	Shubh...	Singh	Sidhu	19	BNC	Sukhvir	2000000	1500000	500000	125000	300000	475000	900000
1004	Simranjit	Singh	Maan	29	SAD(A)	Arjan	800000	1200000	1300000	150000	250000	350000	750000
1005	Vijay	Inder	Singh	110	AAP	Rana	1900000	1100000	600000	150000	300000	350000	800000
1006	Sehaj	Singh	Pannu	90	PPP	Abhijot	1000000	1800000	600000	100000	250000	350000	700000

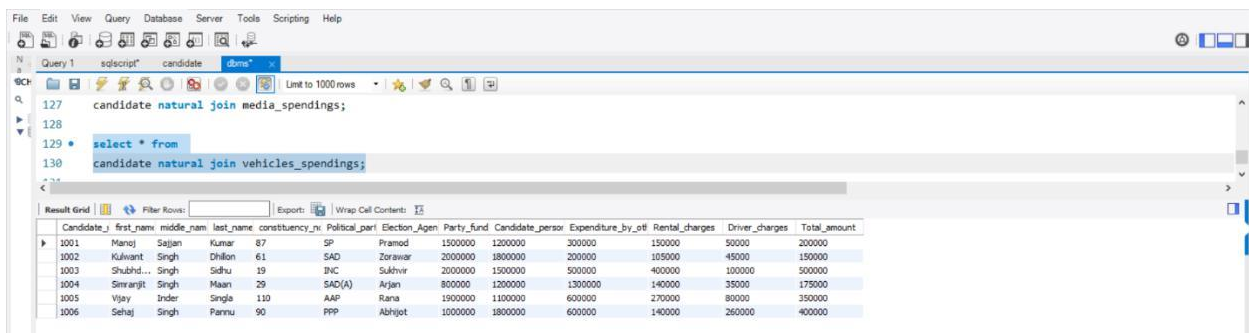
Data about Candidate Credentials and his media spendings



Query 1: `select * from candidate natural join media_spendings;`

Candidate_id	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agen	Party_fund	Candidate_person	Expenditure_by_oil	SMS	Social_media	TV_channel	Newspaper	Total_amount
1001	Manoj	Sajjan	Kumar	87	SP	Pramod	1500000	1200000	300000	60000	275000	325000	140000	800000
1002	Kulwant	Singh	Dhillon	61	SAD	Zorawar	2000000	1800000	200000	50000	500000	600000	200000	1350000
1003	Shubh...	Singh	Sidhu	19	BNC	Sukhvir	2000000	1500000	500000	65000	355000	345000	135000	900000
1004	Simranjit	Singh	Maan	29	SAD(A)	Arjan	800000	1200000	1300000	20000	300000	325000	180000	825000
1005	Vijay	Inder	Singh	110	AAP	Rana	1900000	1100000	600000	70000	245000	385000	100000	800000
1006	Sehaj	Singh	Pannu	90	PPP	Abhijot	1000000	1800000	600000	50000	250000	350000	150000	800000

Data about Candidate Credentials and his vehicle spendings

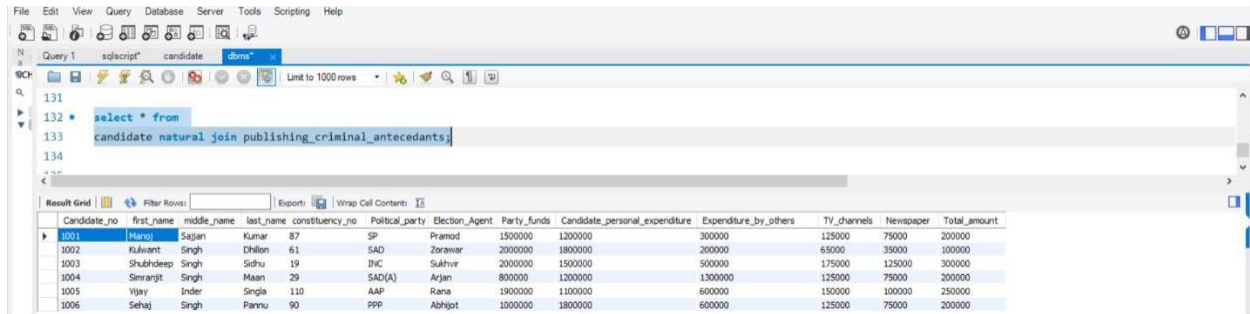


Query 1: `select * from candidate natural join vehicles_spendings;`

Candidate_id	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agen	Party_fund	Candidate_person	Expenditure_by_oil	Rental_charges	Driver_charges	Total_amount
1001	Manoj	Sajjan	Kumar	87	SP	Pramod	1500000	1200000	300000	150000	50000	200000
1002	Kulwant	Singh	Dhillon	61	SAD	Zorawar	2000000	1800000	200000	105000	45000	150000
1003	Shubh...	Singh	Sidhu	19	BNC	Sukhvir	2000000	1500000	500000	400000	100000	500000
1004	Simranjit	Singh	Maan	29	SAD(A)	Arjan	800000	1200000	1300000	140000	35000	175000
1005	Vijay	Inder	Singh	110	AAP	Rana	1900000	1100000	600000	270000	80000	350000
1006	Sehaj	Singh	Pannu	90	PPP	Abhijot	1000000	1800000	600000	140000	260000	400000

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Data about Candidate Credentials and his spendings on publishing criminal antecedents



The screenshot shows a database query tool interface. The query editor displays the following SQL query:

```
131  
132 * select * from  
133 candidate natural join publishing_criminal_antecedents;  
134
```

The results grid shows the following data:

Candidate_no	first_name	middle_name	last_name	constituency_no	Political_party	Election_Agent	Party_funds	Candidate_personal_expenditure	Expenditure_by_others	TV_channels	Newspaper	Total_amount
1001	Harraj	Sajan	Kumar	87	SP	Pramod	1500000	1200000	300000	125000	75000	200000
1002	Kulwant	Singh	Dhillon	61	SAD	Zorawar	2000000	1800000	200000	65000	35000	100000
1003	Shubhdeep	Singh	Sidhu	19	INVC	Sukhvir	2000000	1500000	500000	175000	125000	300000
1004	Simranjit	Singh	Maan	29	SAD(A)	Arjan	800000	1200000	1300000	125000	75000	200000
1005	Vigay	Inder	Singla	110	AAP	Rana	1900000	1100000	600000	150000	100000	250000
1006	Sehaj	Singh	Pannu	90	PPP	Abhijot	1000000	1800000	600000	125000	75000	200000