DBMS Project – Voting Management System
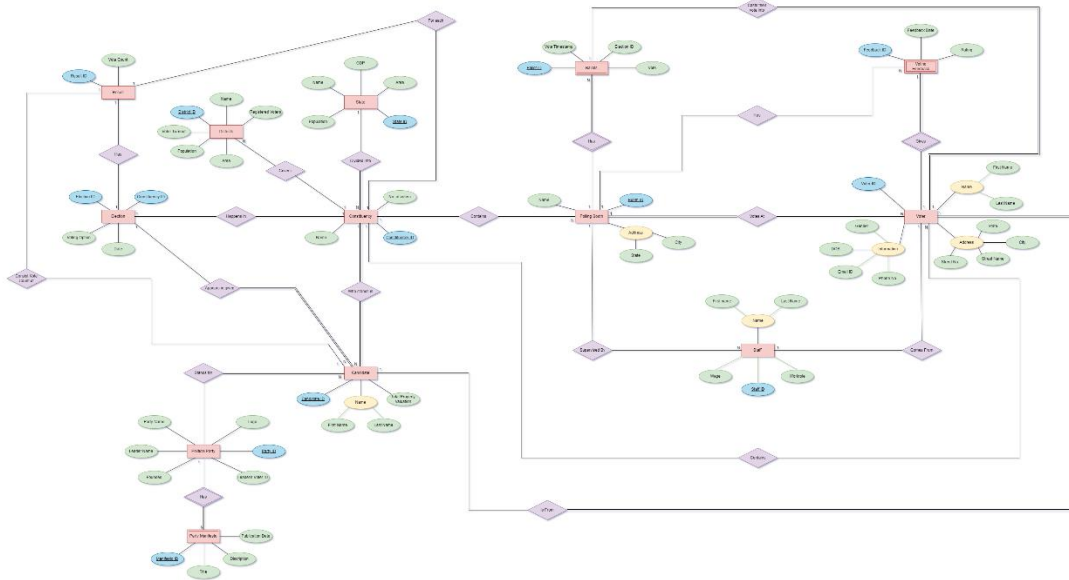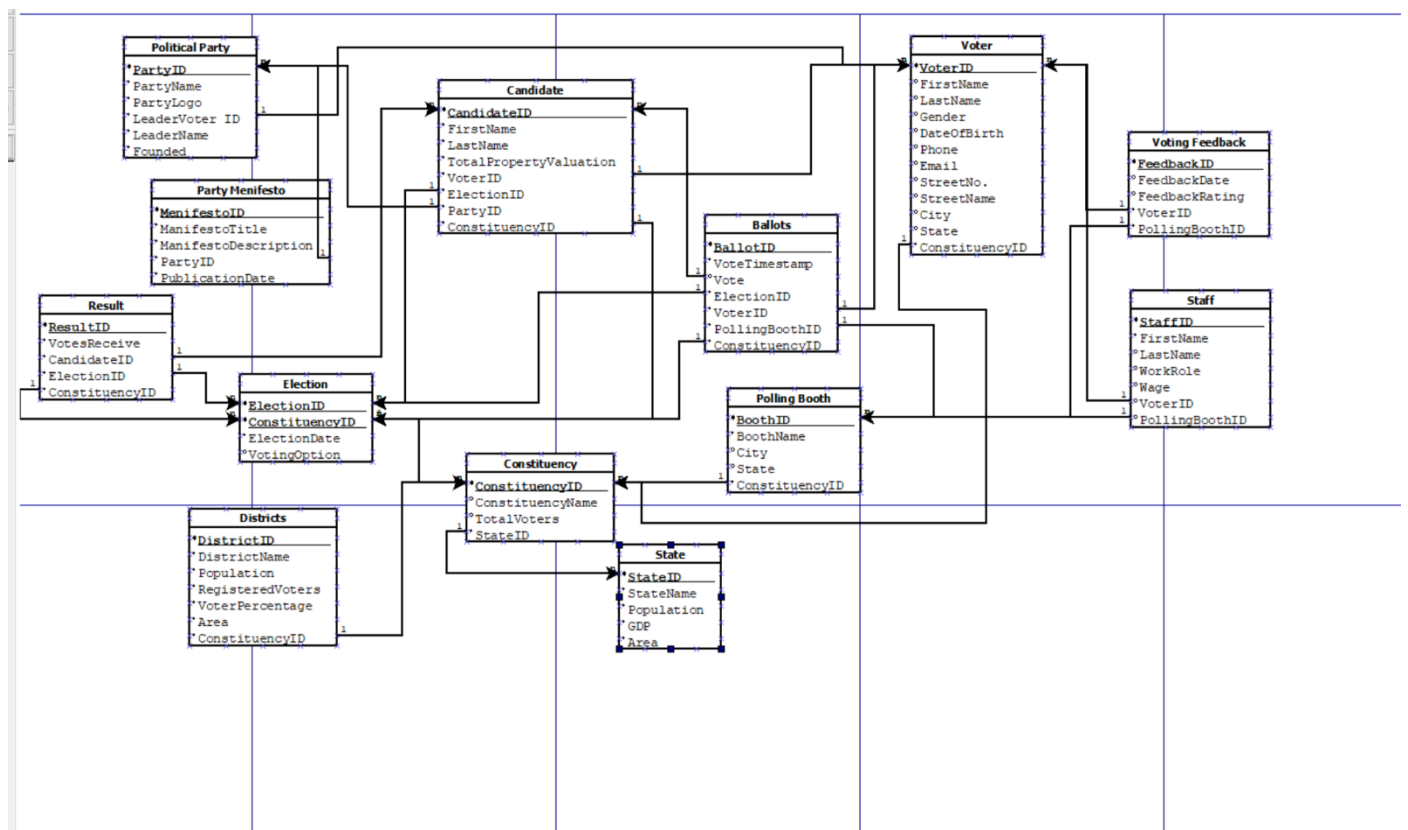
1) ER Diagram

As ER Diagram is not clear in the PDF, I have attached PNG File in the compressed file.

2) Relation Schema

3) Minimal FD Set

❖ Voter :-
  ➢ Voter ID → First Name
  ➢ Voter ID → Last Name
  ➢ Voter ID → Gender
  ➢ Voter ID → DOB
  ➢ Voter ID → Street No.
  ➢ Voter ID → Street Name
  ➢ Voter ID → City
  ➢ Voter ID → State
  ➢ Voter ID → Email ID
  ➢ Voter ID → Phone No.
  ➢ Voter ID → Constituency No.

❖ Political Party :-
  ➢ Party ID → Party Name
  ➢ Party ID → Logo
  ➢ Party ID → Leader's Voter ID
  ➢ Party ID → Leader's Name
  ➢ Party ID → Founded

❖ Party Manifesto :-
  ➢ Manifesto ID → Discription
  ➢ Manifesto ID → Party ID
  ➢ Manifesto ID → Title
  ➢ Manifesto ID → Publication Date

❖ State :-
  ➢ State ID → State Name
  ➢ State ID → Population
  ➢ State ID → GDP
  ➢ State ID → Area

❖ Constituency :-
  ➢ Constituency ID → Name
  ➢ Constituency ID → No. of Voters
  ➢ Constituency ID → State ID

❖ Districts :-
  ➢ District ID → Name

- ➢ District ID → Constituency ID
- ➢ District ID → Population
- ➢ District ID → Registered Voters
- ➢ District ID → Voter Turnout
- ➢ District ID → Area

- ❖ Election :-
  - ➢ {Election ID, Constituency ID} → Date
  - ➢ {Election ID, Constituency ID} → Voting Option

- ❖ Candidate :-
  - ➢ Candidate ID → First Name
  - ➢ Candidate ID → Last Name
  - ➢ Candidate ID → Total Property Valuation
  - ➢ Candidate ID → Constituency ID
  - ➢ Candidate ID → Election ID
  - ➢ Candidate ID → Party ID
  - ➢ Candidate ID → Voter ID

- ❖ Result :-
  - ➢ Result ID → Vote Count
  - ➢ Result ID → Candidate ID
  - ➢ Result ID → Election ID
  - ➢ Result ID → Constituency ID

- ❖ Polling Booth :-
  - ➢ Booth ID → Booth Name
  - ➢ Booth ID → City
  - ➢ Booth ID → State
  - ➢ Booth ID → Constituency ID

- ❖ Staff :-
  - ➢ Staff ID → Work Role
  - ➢ Staff ID → First Name
  - ➢ Staff ID → Last name
  - ➢ Staff ID → Wage
  - ➢ Staff ID → Voter ID
  - ➢ Staff ID → Booth ID

- ❖ Voting Feedback :-
  - ➢ Feedback ID → Feedback Date

- ➢ Feedback ID → Rating
- ➢ Feedback ID → Voter ID
- ➢ Feedback ID → Booth ID

❖ Ballots :-
- ➢ Ballot ID → Election ID
- ➢ Ballot ID → Voter ID
- ➢ Ballot ID → Voting Timestamp
- ➢ Ballot ID → Vote
- ➢ Ballot ID → Booth ID
- ➢ Ballot ID → Constituency ID

4) BCNF Relation

❖ Voter :-
- In every FD set of the relation, **Voter ID** is a super key.
- Therefore, Voter relation is BCNF.

❖ Political Party :-
- In every FD set of the relation, **Party ID** is a super key.
- Therefore, Political Party relation is BCNF.

❖ Party Manifesto :-
- In every FD set of the relation, **Manifesto ID** is a super key.
- Therefore, Party Manifesto relation is BCNF.

❖ State :-
- In every FD set of the relation, **State ID** is a super key.
- Therefore, State relation is BCNF.

❖ Constituency :-
- In every FD set of the relation, **Constituency ID** is a super key.
- Therefore, Constituency relation is BCNF.

❖ Districts :-
- In every FD set of the relation, **District ID** is a super key.
- Therefore, District relation is BCNF.

❖ Election :-
- In every FD set of the relation, **{Election ID, Constituency ID}** is a super key.
- Therefore, Election relation is BCNF.

❖ Candidate :-
- In every FD set of the relation, **Candidate ID** is a super key.
- Therefore, Candidate relation is BCNF.

❖ Result :-
- In every FD set of the relation, **Result ID** is a super key.
- Therefore, Result relation is BCNF.

❖ Polling Booth :-
- In every FD set of the relation, **Booth ID** is a super key.
- Therefore, Polling Booth relation is BCNF.

❖ Staff :-
- In every FD set of the relation, **Staff ID** is a super key.
- Therefore, Staff relation is BCNF.

❖ Voting Feedback :-
- In every FD set of the relation, **Feedback ID** is a super key.
- Therefore, Voting Feedback relation is BCNF.

❖ Ballots :-
- In every FD set of the relation, **Ballot ID** is a super key.
- Therefore, Ballots relation is BCNF.