UE21CS351A: Database Management System

MINI PROJECT USER REQUIREMENT SPECIFICATION

Project Title: Election Management System

Team:

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1. Introduction

The purpose of the Election Management System (EMS) is to serve as a centralized tool for easy and efficient management of elections and all the data that supports it. The system organizes data related to political parties, officials, voters, candidates, elections, constituencies, and polling booths among other data. By centralizing this data, the management system enhances transparency and promotes trust in the electoral process while simplifying it. EMS streamlines various election-related tasks, such as candidate registrations, voter verifications, constituency delineations, and polling booth allocations. This streamlining reduces administrative overhead, minimizes errors, and ultimately leads to a more efficient electoral management. The system ensures security and integrity by setting up security measures such as authentication and permissions.

The scope of the EMS encompasses several important areas. It includes an extensive database that stores and manages data related to political parties, election officials, registered voters, candidates, election events, constituencies, and polling booths. This database allows for the smooth functioning of elections. The system also provides a user interface with role-based access. Different user roles, such as administrators, election officials, candidates, and voters, have specific/custom views and permissions ensuring security and allows users to interact with functionalities most relevant to them.

Administrators can configure the system, while election officials can manage elections and related data. Candidates gain access to campaign-related information within their respective constituencies, and voters can view polling booth locations and receive voting instructions.

The system also incorporates a user-friendly voting interface enabling voters to be authenticated and cast their votes with secrecy and accuracy. The Election Management System's purpose is to centralize, streamline, and secure the management of electoral processes, ensuring transparency and efficiency. Its scope covers database management, role-based access, and a user-friendly voting interface to ensure integrity and accessibility of the electoral system.

2. Project Description

Project Overview

The Election Management System (EMS) is a comprehensive software solution designed to manage all aspects of the electoral process while making it simple and efficient. This project aims to create a user-friendly system that centralizes data related to political parties, officials, voters, candidates, elections, constituencies, and polling booths among other data. The EMS enhances the efficiency and transparency of elections while ensuring the security and integrity of the electoral system.

Major Functionalities

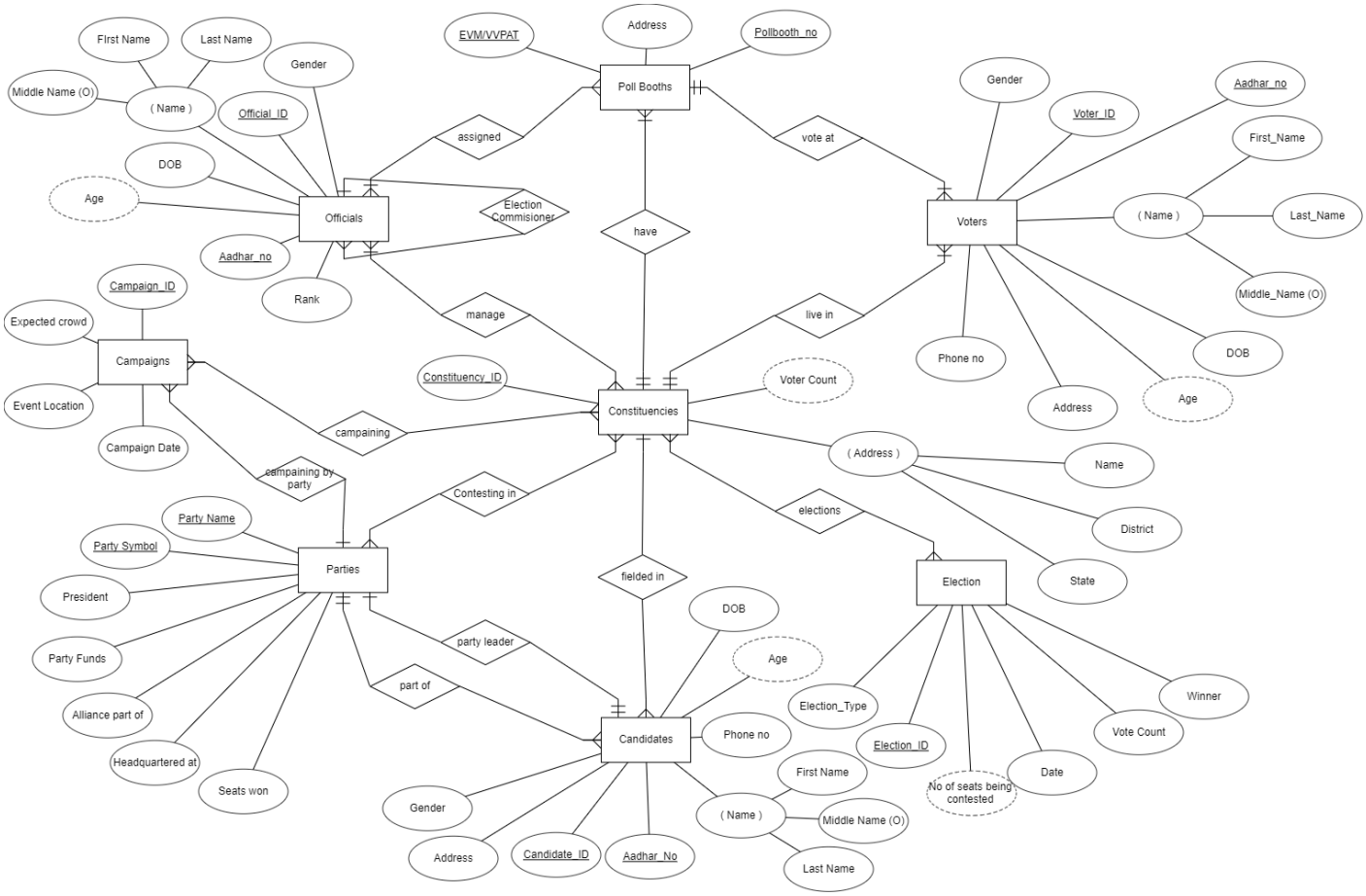
- Extensive Database: A structured database that includes information about political parties, election officials, registered voters, candidates, election events, constituencies, and polling booths while ensuring accuracy and consistency.
- User Management: Creating user profiles with different views and permissions, including admins, election officials, candidates, and voters. The admins can configure the system and manage all information part of the system.
- Election Management: Easy management of elections, like setting election and campaigning dates, managing constituencies, poll booths and registration of candidates, parties, and voters.
- Candidate Management: Allows candidates to register by providing all necessary details such as personal information, party being represented and can also access data relevant to candidates such as constituency and campaign related information.
- Voter Registration: Voters can register easily through the interface by providing all necessary information and they are allocated constituency and poll booth based on information provided. Voter records are maintained and can be used for analysis of the demographic. Voters can check their registration status and other relevant information.
- Voting Interface: A user-friendly voting interface enables voters to cast their votes securely and conveniently. Authentication mechanisms ensure security. Votes recorded are used for generating election results quickly. Outcomes and statistics are displayed with generation of reports.
- Accessibility and Compliance: The system is designed to ensure accessibility to all users while also following all requirements and guidelines set by the election commission and other government entities.
- Documentation and Communication: Comprehensive documentation will be provided withing the system with respect to guidelines, tutorials, and notifications from authorities among others. This ensures that all users have access to necessary information and instructions pertaining to the electoral process.

3. System features and Functional Requirements

- SF1: Data Modelling
  - Defining the entities for political parties, election officials, voters, candidates, constituencies, campaigns, and polling booths.
- SF2: Data Storage
  - The database to store and manage electoral data is implemented using MySQL.
- SF3: Data Maintenance
  - Interfaces developed will include options to insert and update data to ensure accuracy and consistency.
- SF4: User Registration
  - Different types of users register themselves using the interface. The input will be the same as the entity attributes for the user. E.g.: Voters, Candidates, Official.
- SF5: Authentication and User Access Control
  - Users are authenticated using userid/password and each user gets role-based access and restrict users to specific functionalities relevant to them.
- SF6: Election Setup
  - The officials/admin can setup elections using the Election entity, the inputs would be election date, The type and other details specified in the entity.
- SF7: Constituency Management
  - The constituency details are setup using the constituencies entity by declaring ID, address including Name, District, State. An interface to insert and update the details.
- SF8: Poll Booth Allocation
  - Voters part of constituency assigned poll booths which are also part of the same constituency. This involves the voters and Poll Booth entities.
- SF9: Candidate Registration
  - Interface to register and update details for candidates, the entity involved is the Candidates entity and inputs are candidate details specified in the entity as attributes.
- SF10: Candidate Access
  - Permissions allow candidates to access data relevant to them such as voter demographics, campaign-related information and other documentation.
- SF11: Voter Registration and Access
  - Registration for voters and verification of details provided using the interface, Voters can also update details and check status. The voters can access information related to their constituencies such as candidates, campaigns and other documentation. The Voter entity used here and relevant data needs to be inputted.

- SF12: Voting Interface
    - Voters are authenticated using data present in the dataset, voters are presented with the ballot containing candidate choices. Voters cast votes with secrecy and accuracy.
- SF13: Vote Recording and Results
    - Votes are recorded and stored and this is used to compute the results, and the results include vote count, percentage of votes and winner of election. These results and statistics are displayed to all users. This includes the election entity that stores the results.
- SF14: Accessibility and Compliance
    - This ensures the system is designed to be accessed by all stakeholders and the system should comply by all regulations and standards set by the election commission and other relevant government entities.
- SF15: Documentation and Communication
    - The system provides relevant extensive documentations by using advanced datatypes to all stakeholders including guidelines, tutorials and notifications to ensure adequate communication with all stakeholders part of the electoral process.
- SF16: Party Registration and Access
    - Parties can register and update information through the interface and the entity involved is the Party entity. Parties can access information related to campaigns, candidates, voter demographics, and other relevant documentation.
- SF17: Official Registration and Access
    - The official entity handles the data related to officials, the officials have the necessary permissions to view all electoral data and they can manage and setup info related to elections, poll booths, constituencies, documentations among others.

4. E-R Diagram



5. Relational Schema