System Analysis and Design Project Assignment

PROJECT NAME: Vote Tech

PHASE: System Design

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1. Introduction

1.1 Purpose

- The purpose of this document is to outline the system design for "Vote Tech", a digital voter registration system aimed at enhancing the voting process in Sri Lanka.
- Increase efficiency, accuracy, and accessibility in the voter registration process.
- Enhance security measures to ensure the integrity of the voting system.

1.2 General Overview

- “Vote Tech” is designed to provide a user-friendly platform accessible via both websites and mobile devices
- The system caters to various stakeholders, including citizens, election commissions, and administrators (Grama Niladari).
- Additionally, the system comprises three tables, each serving specific entities crucial for the voter registration process.

2. System Architecture

2.1 Logical View

The logical view of the "Vote Tech" system explains how the various components and modules interact to fulfill the user requirements and functional aspects of the system.

User Registration and Management:

- Users, including citizens and admins (Grama Niladari), can register and manage their accounts.
- User authentication and access control mechanisms ensure secure access to the system.

Form Submission and Validation:

- Separate forms are provided for new applicants, existing registrants, and administrative tasks such as adding or removing citizens from a house address.
- Validation checks ensure the accuracy and completeness of form submissions.

Database Management:

- The system relies on a database system to store user data, form submissions, and other relevant information.
- Tables are interconnected to facilitate data retrieval and management.

2.2 Software Architecture

The software architecture of the "Vote Tech" system will be designed to ensure scalability, maintainability, and security. It will consist of multiple layers, each serving specific functionalities:

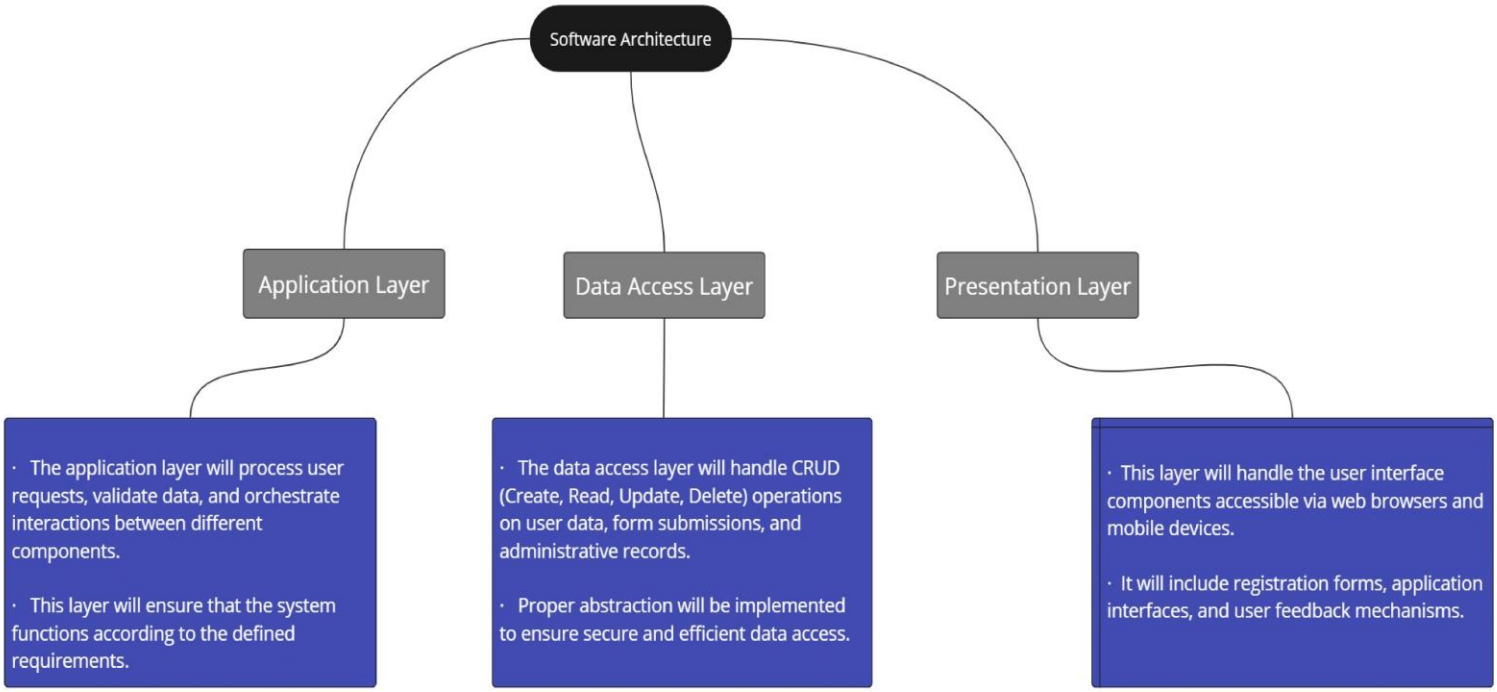

Figure 2.1

2.3 Security Architecture

Encryption:

- All sensitive data, including user information and form submissions, will be encrypted both in transit and at rest.
- Secure encryption algorithms will be employed to prevent unauthorized access and data breaches.

Authentication and Authorization:

- User authentication mechanisms will be implemented to verify the identity of users before granting access to the system.
- Role based access control (RBAC) will be used to enforce appropriate permissions and privileges based on user roles.

Regular Security Audits and Updates:

- The system will undergo regular security audits to identify vulnerabilities and weaknesses.
- Patch management processes will be established to ensure that software components and dependencies are up-to-date with the latest security patches and updates.

3. System Design

3.1 Database Design

The database design of the "Vote Tech" system will consist of three interconnected tables:

- Table 1: Contains entities such as GN_Code, GN_Division, and Secreter_Division, with GN_Code as the primary key.

- Table 2: Includes entities like Address, GN_Code, Name_Of_Chief_Occupant, House_No, Bill with Address as the primary key. And GN_Code as the foreign key. This table will have a relationship with Table 1.

- Table 3: Consists of entities such as NIC_No, Full_Name, Address, DOB, Gender, Civil_Status, ID_Pic, with ID as the primary key and Address as the foreign key. This table will have a relationship with Table 2.

3.2 Components Design

User Registration Forms:

- Separate forms for new applicants.
- Separate forms for existing registrants.
- Separate form for and removing citizens from a house address.

Data Validation Modules:

- Validate house addresses using pictures of bills such as electricity bills and water bills.
- Validate citizens using pictures of National Identity Cards (NIC).

Administrative Interfaces:

- Interfaces for admins (Grama Niladari) to register, validate, and maintain records of registered users.

4. Data Model

4.1 ER Diagram

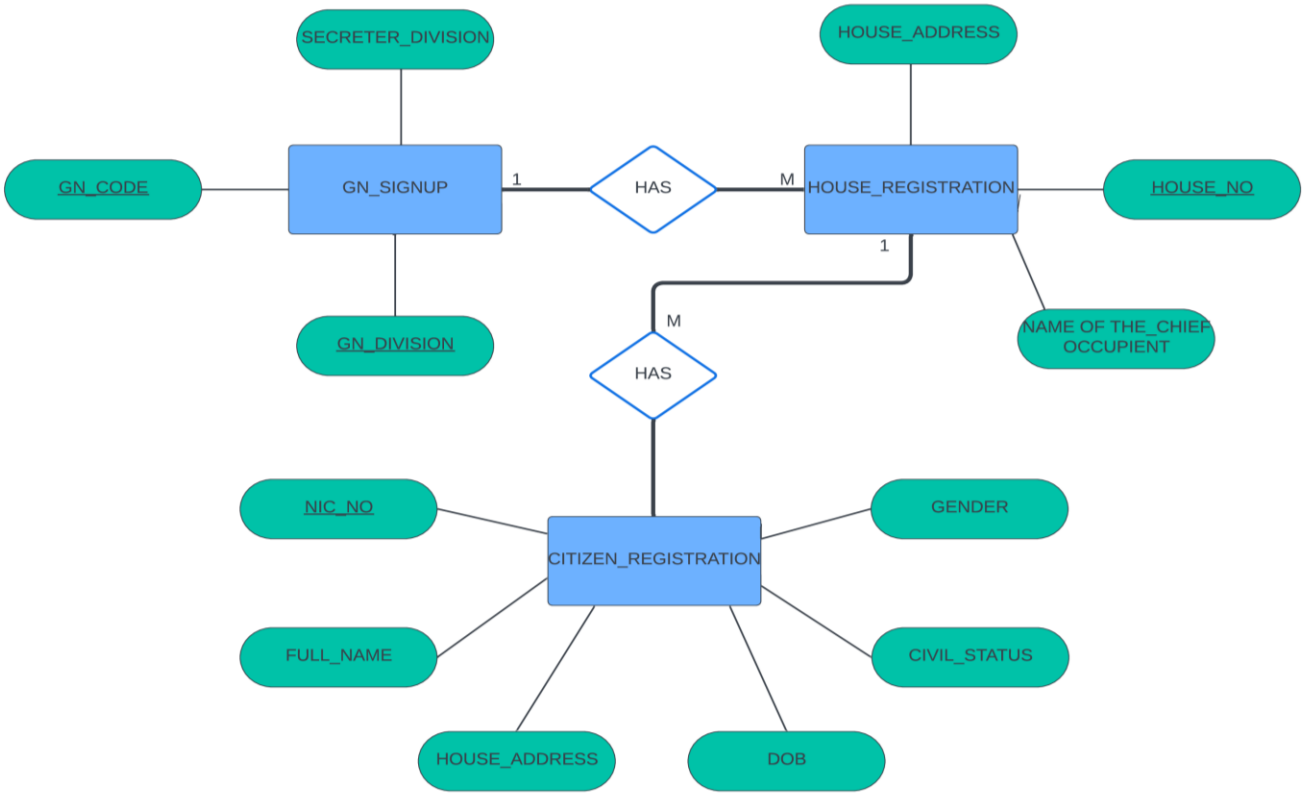

Figure 4.1

4.2 DB Diagram

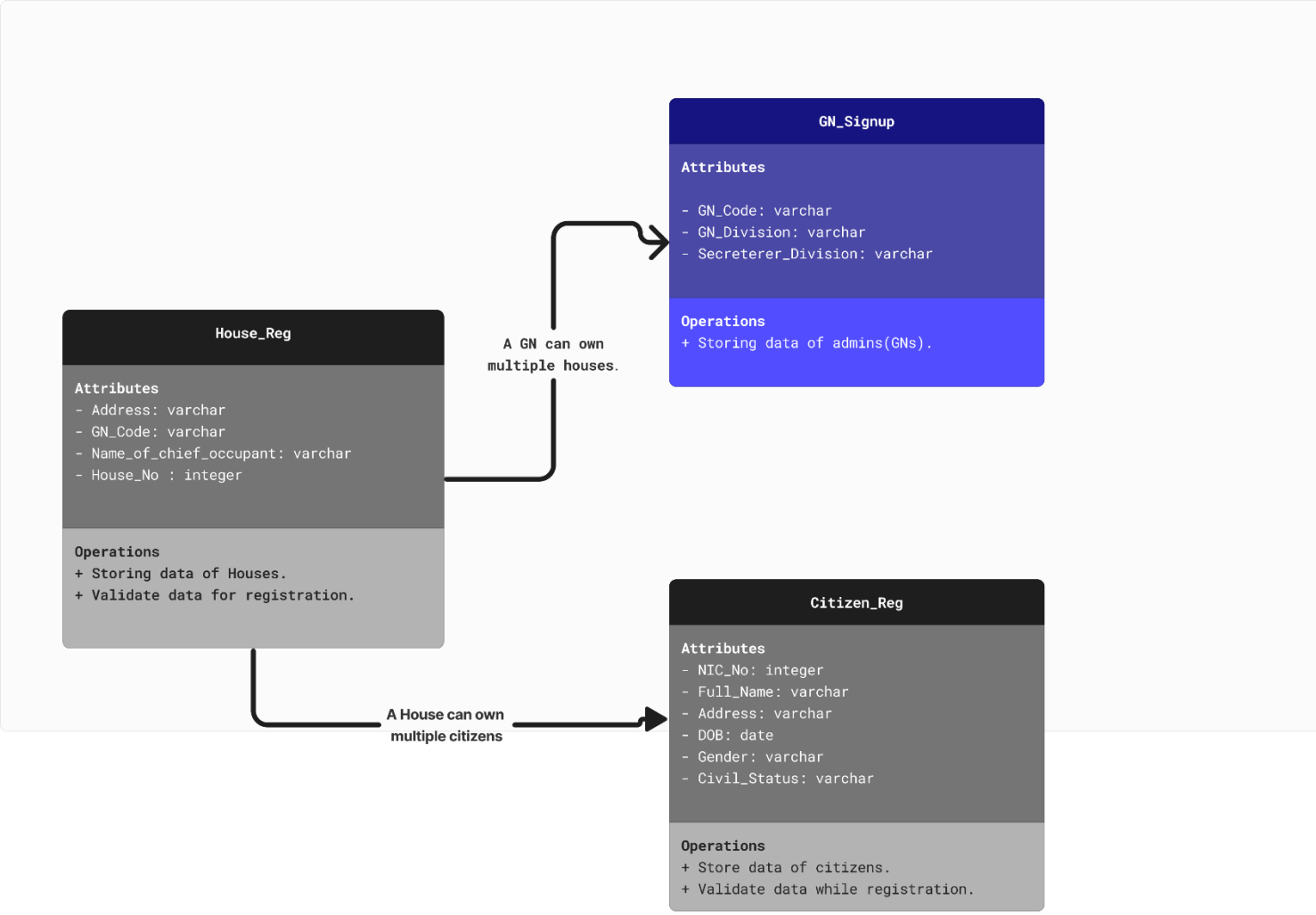

Figure 4.2