DBMS Lab Assignment 4

Web Based Information System Design

Gram Panchayat Management System

Team Name: The Traveling Salesmen

Members

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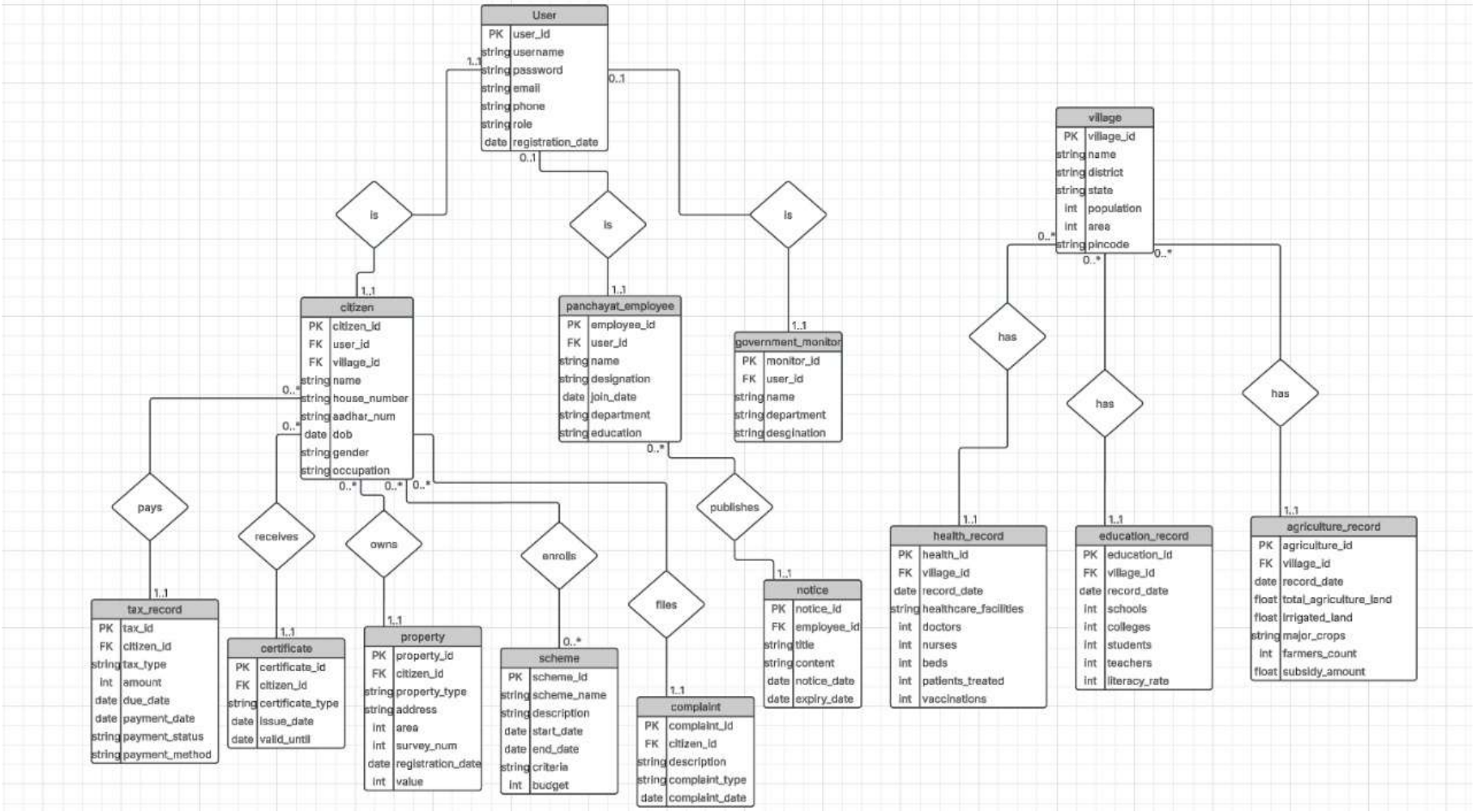
1. ER Diagram


User
PK user_id
string username
string password
string email
string phone
string role
date registration_date
is
is
is
citizen
PK citizen_id
FK user_id
FK village_id
string name
string house_number
string aadhar_num
date dob
string gender
string occupation
panchayat_employee
PK employee_id
FK user_id
string name
string designation
date join_date
string department
string education
government_monitor
PK monitor_id
FK user_id
string name
string department
string designation
village
PK village_id
string name
string district
string state
int population
int area
string pincode
has
has
has
pays
receives
owns
enrolls
files
publishes
tax_record
PK tax_id
FK citizen_id
string tax_type
int amount
date due_date
date payment_date
string payment_status
string payment_method
certificate
PK certificate_id
FK citizen_id
string certificate_type
date issue_date
date valid_until
property
PK property_id
FK citizen_id
string property_type
string address
int area
int survey_num
date registration_date
int value
scheme
PK scheme_id
string scheme_name
string description
date start_date
date end_date
string criteria
int budget
complaint
PK complaint_id
FK citizen_id
string description
string complaint_type
date complaint_date
notice
PK notice_id
FK employee_id
string title
string content
date notice_date
date expiry_date
health_record
PK health_id
FK village_id
date record_date
string healthcare_facilities
int doctors
int nurses
int beds
int patients_treated
int vaccinations
education_record
PK education_id
FK village_id
date record_date
int schools
int colleges
int students
int teachers
int literacy_rate
agriculture_record
PK agriculture_id
FK village_id
date record_date
float total_agriculture_land
float irrigated_land
string major_crops
int farmers_count
float subsidy_amount

2. Table Schemas

```sql
CREATE TABLE USERS(
    user_id SERIAL PRIMARY KEY,
    username VARCHAR(50) UNIQUE NOT NULL,
    password VARCHAR(255) NOT NULL,
    email VARCHAR(100) UNIQUE NOT NULL,
    phone VARCHAR(15),
    role VARCHAR(20) NOT NULL CHECK (role IN ('admin', 'employee', 'citizen', 'government_monitor')),
    registration_date TIMESTAMP DEFAULT CURRENT_DATE
);
CREATE TABLE VILLAGE (
    village_id SERIAL PRIMARY KEY,
    village_name VARCHAR(100) NOT NULL,
    district VARCHAR(100) NOT NULL,
    state VARCHAR(100) NOT NULL,
    population INT,
    area FLOAT,
    pincode INT
);
CREATE TABLE CITIZEN (
    citizen_id SERIAL PRIMARY KEY,
    user_id INT NOT NULL,
    village_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    house_number TEXT NOT NULL,
    aadhar_number VARCHAR(12) UNIQUE,
    date_of_birth DATE,
    gender VARCHAR(20) NOT NULL CHECK (gender IN ('Male', 'Female', 'other')),
    occupation VARCHAR(100),
    FOREIGN KEY (village_id) REFERENCES VILLAGE(village_id) ON DELETE CASCADE,
    FOREIGN KEY (user_id) REFERENCES USERS(user_id) ON DELETE CASCADE
);
CREATE TABLE PANCHAYAT_EMPLOYEE (
    employee_id SERIAL PRIMARY KEY,
    user_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    designation VARCHAR(100) NOT NULL,
    joining_date DATE NOT NULL,
    department VARCHAR(100) NOT NULL,
    education VARCHAR(100),
    FOREIGN KEY (user_id) REFERENCES USERS(user_id) ON DELETE CASCADE
);
CREATE TABLE GOVERNMENT_MONITOR (
    monitor_id SERIAL PRIMARY KEY,
    user_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    department VARCHAR(100) NOT NULL,
    designation VARCHAR(100) NOT NULL,
    FOREIGN KEY (user_id) REFERENCES USERS(user_id) ON DELETE CASCADE
);
```

```sql
CREATE TABLE SCHEME (
    scheme_id SERIAL PRIMARY KEY,
    scheme_name VARCHAR(100) NOT NULL,
    description TEXT NOT NULL,
    criteria VARCHAR(50) NOT NULL,
    start_date DATE NOT NULL,
    end_date DATE,
    budget_allocated FLOAT NOT NULL
);
CREATE TABLE SCHEME_ENROLLMENT (
    enrollment_id SERIAL PRIMARY KEY,
    scheme_id INT NOT NULL,
    citizen_id INT NOT NULL,
    enrollment_date DATE NOT NULL,
    status VARCHAR(50) NOT NULL,
    benefit_amount FLOAT,
    FOREIGN KEY (scheme_id) REFERENCES SCHEME(scheme_id) ON DELETE CASCADE,
    FOREIGN KEY (citizen_id) REFERENCES CITIZEN(citizen_id) ON DELETE CASCADE
);
CREATE TABLE COMPLAINT (
    complaint_id SERIAL PRIMARY KEY,
    citizen_id INT NOT NULL,
    complaint_type VARCHAR(100) NOT NULL,
    description TEXT NOT NULL,
    complaint_date DATE DEFAULT CURRENT_DATE,
    FOREIGN KEY (citizen_id) REFERENCES CITIZEN(citizen_id) ON DELETE CASCADE
);
CREATE TABLE CERTIFICATE (
    certificate_id SERIAL PRIMARY KEY,
    citizen_id INT NOT NULL,
    certificate_type VARCHAR(100) NOT NULL,
    issue_date DATE NOT NULL,
    valid_until DATE,
    FOREIGN KEY (citizen_id) REFERENCES CITIZEN(citizen_id) ON DELETE CASCADE
);
CREATE TABLE TAX_RECORD (
    tax_id SERIAL PRIMARY KEY,
    citizen_id INT NOT NULL,
    tax_type VARCHAR(50) NOT NULL,
    amount FLOAT NOT NULL,
    due_date DATE NOT NULL,
    payment_date DATE,
    payment_status VARCHAR(50) DEFAULT 'Pending',
    payment_method VARCHAR(50),
    FOREIGN KEY (citizen_id) REFERENCES CITIZEN(citizen_id) ON DELETE CASCADE
);
```

```sql
CREATE TABLE PROPERTY (
    property_id SERIAL PRIMARY KEY,
    citizen_id INT NOT NULL,
    property_type VARCHAR(50) NOT NULL,
    address TEXT NOT NULL,
    area FLOAT NOT NULL,
    survey_number VARCHAR(50) UNIQUE NOT NULL,
    registry_date DATE NOT NULL,
    value FLOAT NOT NULL,
    FOREIGN KEY (citizen_id) REFERENCES CITIZEN(citizen_id) ON DELETE CASCADE

);
CREATE TABLE NOTICE (
    notice_id SERIAL PRIMARY KEY,
    title VARCHAR(200) NOT NULL,
    content TEXT NOT NULL,
    notice_date DATE NOT NULL,
    expiry_date DATE,
    employee_id INT NOT NULL,
    FOREIGN KEY (employee_id) REFERENCES PANCHAYAT_EMPLOYEE(employee_id) ON DELETE CASCADE
);
CREATE TABLE HEALTH_RECORD (
    health_id SERIAL PRIMARY KEY,
    village_id INT NOT NULL,
    record_date DATE NOT NULL,
    healthcare_facilities INT,
    doctors INT,
    nurses INT,
    beds INT,
    patients_treated INT,
    vaccination_count INT,
    FOREIGN KEY (village_id) REFERENCES VILLAGE(village_id) ON DELETE CASCADE
);
```

```sql
CREATE TABLE EDUCATION_RECORD (
    education_id SERIAL PRIMARY KEY,
    village_id INT NOT NULL,
    record_date DATE NOT NULL,
    schools INT,
    colleges INT,
    students INT,
    teachers INT,
    literacy_rate FLOAT,
    FOREIGN KEY (village_id) REFERENCES VILLAGE(village_id) ON DELETE CASCADE
);
CREATE TABLE AGRICULTURE_RECORD (
    agriculture_id SERIAL PRIMARY KEY,
    village_id INT NOT NULL,
    record_date DATE NOT NULL,
    total_agricultural_land FLOAT,
    irrigated_land FLOAT,
    major_crops TEXT,
    farmers_count INT,
    subsidy_amount FLOAT,
    FOREIGN KEY (village_id) REFERENCES VILLAGE(village_id) ON DELETE CASCADE
);
```

3. List of functionalities implemented

I. Citizen functionalities

➔ Citizen can view and edit data in their profile section.
➔ Can view Educational data, Agricultural data and Health data of his/her own village.
➔ Citizen can view notice board.
➔ Can file or withdraw a complaint.
➔ Can delete his/her own account.
(Cascade delete – i.e. all the details in all tables that are linked with citizen will be erased)
➔ Can view his/her
(i) Tax Records
(ii) Certificates
(iii) Property Records
(iv) Government Schemes

II. Panchayat Employee functionalities

➔ Panchayat employee will have all the citizen functionalities except for viewing his/her own village data.
➔ Can insert or modify data in any schema.
➔ Can add new notices and can view all the previous notices.
➔ A panchayat employee make different kinds of queries. These include –
(i) Basic Query –
In this the panchayat employee can query any kind of data belonging to a single schema.
(ii) Advanced Query –
In this the panchayat employee can query data with multiple table joins, custom filtering and column selection.

III. Government Monitor functionalities

➔ A government monitor can view health data, agriculture data and education data of any village in gram panchayat.
➔ he/she can view the notice board.
➔ Will have all the citizen functionalities.

IV. System Administrator

➔ System Administrator can also modify user roles.
➔ Can view data present in various schemas like –
(i) User
(ii) Citizen
(iii) Government Monitor
(iv) Panchayat Employee
(v) Schemes
(vi) Scheme Enrollment
(vii) Complaints
(viii) Certificate
(ix) Tax data
(x) Property
(xi) Notice
(xii) Health Record
(xiii) Education Record
(xiv) Agriculture Record
(xv) Village data

4. List of front-end tools used

Frontend – HTML, CSS, JavaScript, Bootstrap
Backend – Django

Google drive link for zip file -

https://drive.google.com/file/d/1mIJDzv9Mo4VvcAB1v04Go0LrG_X2s9_j/view?usp=sharing