

Week 2 Project Report

Database (MII212501)



PawPoint: Veterinary Clinic Appointment Scheduling and Management Application

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1. Overview of the SQL Script

The SQL script defines the core database structure for the veterinary clinic system. It includes the following tables:

- User – stores all user accounts (superadmin, admin, veterinarian, and pet owner)
- PetOwner – stores the pet owner details linked to user accounts
- Veterinarian – stores veterinarian details linked to user accounts
- Clinic – stores clinic details
- Pet -
- Appointment -
- TreatmentRecord -

2. Explanation of Tables and Attributes

A. User table

```
CREATE TABLE User (
    user_id INT AUTO_INCREMENT PRIMARY KEY,
    username VARCHAR(50) NOT NULL UNIQUE,
    password VARCHAR(300) NOT NULL,
    role ENUM('superadmin', 'admin', 'vet', 'pet owner') NOT NULL,
    email VARCHAR(100),
    created_at DATETIME DEFAULT CURRENT_TIMESTAMP
);
```

Each user is uniquely identified by *user_id*. The *username* attributes are ‘unique’ and ‘NOT NULL’ and is to ensure that every user has a distinct username and to prevent duplicate logins - maintaining the integrity of the authentication system. Whilst, *password* is NOT NULL for authentication of the user. Moreover, the *role* column uses an ‘ENUM’ to restrict values to validated user types (superadmin, admin, vet, and pet_owner). Lastly, *email* is optional for contact and *created_at* defaults to the current timestamp to record the creation of the account.

B. PetOwner table

```
CREATE TABLE PetOwner (
    owner_id INT AUTO_INCREMENT PRIMARY KEY,
    user_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    phone VARCHAR(20),
    address VARCHAR(300),
    FOREIGN KEY (user_id) REFERENCES User(user_id) ON DELETE RESTRICT,
    CHECK (phone REGEXP '^[0-9+-]{8,15}$')
```

```

) ;

ALTER TABLE PetOwner ADD UNIQUE (user_id);

```

Each owner in this table has a unique *owner_id*, and *user_id* links them to a user account with a foreign key using the constraint ‘ON DELETE RESTRICT’ to maintain referential integrity. Next, *name* is NOT NULL and stores the pet owner’s name. Moreover, *phone* has a CHECK constraint which validates the phone number format; the check constraint ensures that any value inserted into a column meets a certain condition. In this case, the criteria for the phone attribute are to match the pattern which only has characters (digits 0-9, plus (+), or minus (-)), and the string must be 8-15 characters long. Lastly, *address* is optional, and the *user_id* has a UNIQUE constraint which prevents one user from having multiple pet owner records.

C. Veterinarian table

```

CREATE TABLE Veterinarian (
    vet_id INT AUTO_INCREMENT PRIMARY KEY,
    user_id INT NOT NULL,
    name VARCHAR(100) NOT NULL,
    specialization VARCHAR(100),
    phone VARCHAR(20),
    schedule VARCHAR(300),
    FOREIGN KEY (user_id) REFERENCES User(user_id) ON DELETE RESTRICT,
    CHECK (phone REGEXP '^[0-9+-]{8,15}$')
);

```

```
ALTER TABLE Veterinarian ADD UNIQUE (user_id);
```

Within the veterinarian table, each vet has a unique *vet_id*, and the *user_id* links to a user account, like in the petOwner table to prevent orphaned records. *Name* is NOT NULL, *specialisation* and *schedule* are optional fields. Like in the petOwner table, *phone* has a CHECK constraint to validate the format, and the *user_id* has a UNIQUE constraint to ensure a user cannot have multiple veterinarian accounts.

D. Clinic table

```

CREATE TABLE Clinic (
    clinic_id INT AUTO_INCREMENT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    address VARCHAR(300) NOT NULL,
    phone VARCHAR(20),

```

```
    CHECK (phone REGEXP '^[0-9+-]{8,15}$')
);
```

The *clinic_id* uniquely identifies each clinic. *Name* and *address*' constraints are NOT NULL to make sure that important information about the clinic is stored, and *phone* like the two tables above has a CHECK constraint to enforce valid formatting.

E. Pet table

```
CREATE TABLE Pet (
    pet_id INT AUTO_INCREMENT PRIMARY KEY,
    owner_id INT,
    name VARCHAR(100) NOT NULL,
    species VARCHAR(50),
    breed VARCHAR(50),
    age INT,
    gender ENUM('Male', 'Female', 'Unknown') DEFAULT 'Unknown'
);
```

The pet table stores data for each pet registered in the system. The primary key *pet_id* uniquely identifies every pet. The *owner_id* column links the pet to its owner, while *name*, *species*, *breed*, *age*, and *gender* describe the pet's basic characteristics. The *name* attribute is NOT NULL to ensure that every pet has a recorded name and *gender* uses an ENUM type to keep the value consistent.

F. Appointment table

```
CREATE TABLE Appointment (
    appointment_id INT AUTO_INCREMENT PRIMARY KEY,
    pet_id INT,
    vet_id INT,
    clinic_id INT,
    appointment_date DATETIME NOT NULL,
    status ENUM('Scheduled', 'Completed', 'Cancelled', 'Follow-up
Needed') DEFAULT 'Scheduled'
);
```

The appointment table records scheduled visits between pets and veterinarians at a specific clinic. The primary key *appointment_id* uniquely identifies each appointment. Columns *pet_id*, *vet_id*, and *clinic_id* reference the pet, veterinarian and clinic involved in the appointment. The *appointment_date* attribute is NOT NULL to guarantee a

defined date and time, while status uses an ENUM to limit the appointment state to valid options.

G. TreatmentRecord table

```
CREATE TABLE TreatmentRecord (
    record_id INT AUTO_INCREMENT PRIMARY KEY,
    diagnosis TEXT,
    treatment TEXT,
    prescription TEXT,
    treatment_date DATE NOT NULL DEFAULT (CURRENT_DATE)
);
```

The TreatmentRecord table stores information about medical treatments given to pets. The primary key record_id uniquely identifies each treatment record. The columns of diagnosis, treatment, and prescription describe the medical actions taken, while treatment_date records when the treatment occurred and is set to NOT NULL with a default of the current data.

Entity	Unnormalised Form	1NF	2NF	3NF
User	User(user_id, username, password, role, email, created_at)	Already atomic (no repeating values)	user_id - all attributes depend on this PK	All non-key attributes depend only on user_id
petOwner	PetOwner(owner_id, name, phone, address)	All attributes are atomic	owner_id - all attributes depend on this PK	Phone, address, and name depend only on owner_id
Veterinarian	Veterinarian(vet_id, user_id, name, specialisation, phone, schedule)	All attributes are atomic	vet_id - all attributes depend on this PK	All non-key attributes depend only on vet_id
Clinic	Clinic(clinic_id, name, address, phone)	All attributes are atomic	clinic_id - all attributes depend on this PK	All non-key attributes depend only on clinic_id
Pet	Pet(pet_id, owner_id, name,	All attributes are atomic	pet_id - all attributes	All non-key attributes

	species, breed, age, gender)		depend on this PK	depend only on pet_id
Appointment	Appointment(appointment_id, pet_id, vet_id, clinic_id, appointment_date, status)	All attributes are atomic	appointment_id - all attributes depend on this PK	All non-key attributes depend only on appointment_id
TreatmentRecord	TreatmentRecord(record_id, diagnosis, treatment, prescription, treatment_date)	All attributes are atomic	record_id - all attributes depend on this PK	All non-key attributes depend only on record_id