DOKUZ EYLUL UNIVERSTY

ENGINEERING FACULTY

DEPARTMENT OF COMPUTER ENGINEERING

CME 3401 DATABASE MANAGEMENT SYSTEMS

PHASE 1

PET NABIZ

SYSTEM DESIGN REPORT

by

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IZMIR

Abstraction

PET NABIZ is a web application that helps pet owners and veterinarians manage pet health more easily. Through the system, pet owners can register their pets, make veterinary appointments, and track their pets' vaccination and medical history. Veterinarians can view their appointment schedules, record examination details, and update pet health information. An admin panel allows overall system management. The application is supported by a MySQL or MsSQL database to provide secure and organized data handling. Overall, PET NABIZ aims to create a simple, practical, and digital solution for everyday pet healthcare management.

Introduction

Nowadays, almost every family has at least one pet, but keeping track of their health, vaccines, and vet visits is still a headache for most people. Appointments are often written on paper, messages get lost, and old health records are hard to find. PET NABIZ is designed to make all of this easier. It's a simple web application where pet owners can book vet appointments, check their pets' health history, and acces vaccine and other health information about their pets easily. Veterinarians can also manage their schedules and update pet records quickly. This project is important because it makes pet care more organized, digital, and stress-free for both owners and vets.

Purpose and Benefits

The main purpose of PET NABIZ is to make pet healthcare simple and accessible for everyone. It brings pet owners and veterinarians together on one platform where appointments, medical records, and vaccination details can be managed easily. Pet owners benefit from convenience (no more forgotten appointments or lost papers) while veterinarians save time with organized records and recorded scheduling. Users would use this app because it saves time, reduces confusion, and keeps their pets' health information safe, updated, and always reachable.

Mode, Medium, and Environment

PET NABIZ will be a web-based application, accessible through any browser on computers, tablets, or smartphones. It is designed for use in two main environments: **homes**, where pet owners manage their pets' information and appointments, and **veterinary clinics**, where vets update medical records and schedules. The main assumption is that users have internet access and basic digital understanding. The user mode will be **interactive and role-based**, which means the interface will change depending on whether the user is a pet owner, veterinarian, or admin. These things shape the design — it must be **responsive, simple, intuitive** and it should provide easy navigation, clear visuals, and secure data handling for all users.

Functionality

Pet Nabız will include several key functions designed to make pet healthcare management easy and efficient.

1. **User Login System:** Three types of accounts: pet owners, clinic (veterinarians of the clinic will log in using account of the clinic), and admin, each with separate dashboards and permissions.
2. **Pet Registration:** Owners can add and manage their pets' details such as name, breed and age.
3. **Appointment System:** Owners can book, edit, or cancel vet appointments; veterinarians can view and manage their schedules.
4. **Medical Records Management:** Veterinarians can add diagnoses, time,date and diagnosis after each visit.
5. **Notification System:** In-app alerts for new appointments, updates, or reminders.
6. **Admin Panel:** User management, system monitoring, and data maintenance.
7. **Responsive Interface:** Works smoothly on any modern browser.
8. **Secure Database Integration:** All data stored safely in a MySQL or MsSQL database with role-based access control.

High-Level Organization

PET NABIZ will follow a **three-tier architecture** which consists of **frontend**, **backend**, and **database** layers. The frontend (user interface) will be web-based, built with HTML, CSS, and JavaScript or a framework such as React. The backend will handle application logic, authentication, and communication with the database using technologies like Node.js (Express) or Django. The database layer (MySQL or MsSQL) will securely store user, pet, and appointment information.

The application will have a **role-based hierarchy**:

- **Admin Panel** → manages entities, monitor data, oversee system health.
- **Clinic Dashboard** → manage appointments to vets, manage medical records, and view patient history.
- **Pet Owner Dashboard** → register pets, view health history, and book appointments.

Navigation will follow a **clear site-map structure**:
Login → Dashboard → (Appointments / Pets / Medical Records / Notifications / Profile Settings).
This layered design ensures modularity, scalability, and maintainability as the system grows.

Functionality vs. Polish

In the development of PET NABIZ, most of the time will be focused on implementing the **core functionality** of the system, such as the login system, appointment scheduling, database integration, and medical record management. Approximately **70%** of the total project time will be spent designing and coding these main features to ensure that the system is fully functional and stable. The remaining **30%** will be used to **polishing** the application such as improving the user interface, adding responsive design, making user experience better, testing for bugs, and working on data security. This balance allows the application to be both technically reliable and visually good enoug for end users.

Milestones and Timeline

The development of PET NABIZ will be divided into weekly milestones for steady progress and tracking. Assuming a eight-week project schedule, the plan is:

- **Week 1 – Project Setup and Design**
  Define requirements, create ER diagram, and design the database schema.
  Set up the project structure, choose tech stack (frontend, backend, DB).
- **Week 2 – Authentication and User Roles**
  Implement login/registration system with three user types (owner, vet, admin).
  Build basic dashboards for each role. And building data base.
- **Week 3 – Core Functionality (Appointments and Pets)**
  Develop pet registration, appointment booking, and schedule management modules.
  Connect database operations (CRUD).
- **Week 4 – Medical Records and Notifications**
  Add veterinarian medical record entry and vaccination tracker.
  Implement notification and reminder system (email or in-app).
- **Week 5 – Interface Polish and Testing**
  Improve UI/UX design, add responsive layout, fix bugs, and test all modules.
- **Week 6 – Final Integration and Documentation**
  Merge all modules, finalize database and complete project report.

Progress Report

Current Progress:

So far, the core structure of PET NABIZ has been designed. The projects main design (it's classes and their functionalities along with the attributes) is complete. The **ER diagram**, **Class Diagram** and **Database Schema** have been created, defining the main entities such as **Users**, **Pets**, **Appointments**, **MedicalRecords**, and **Vaccines**. Also use case diagrams are created in order to show a visual representation of basic workflows of the system.

Accomplished Milestones:

- Week 1: Requirement analysis, system design, and ER diagram completed.

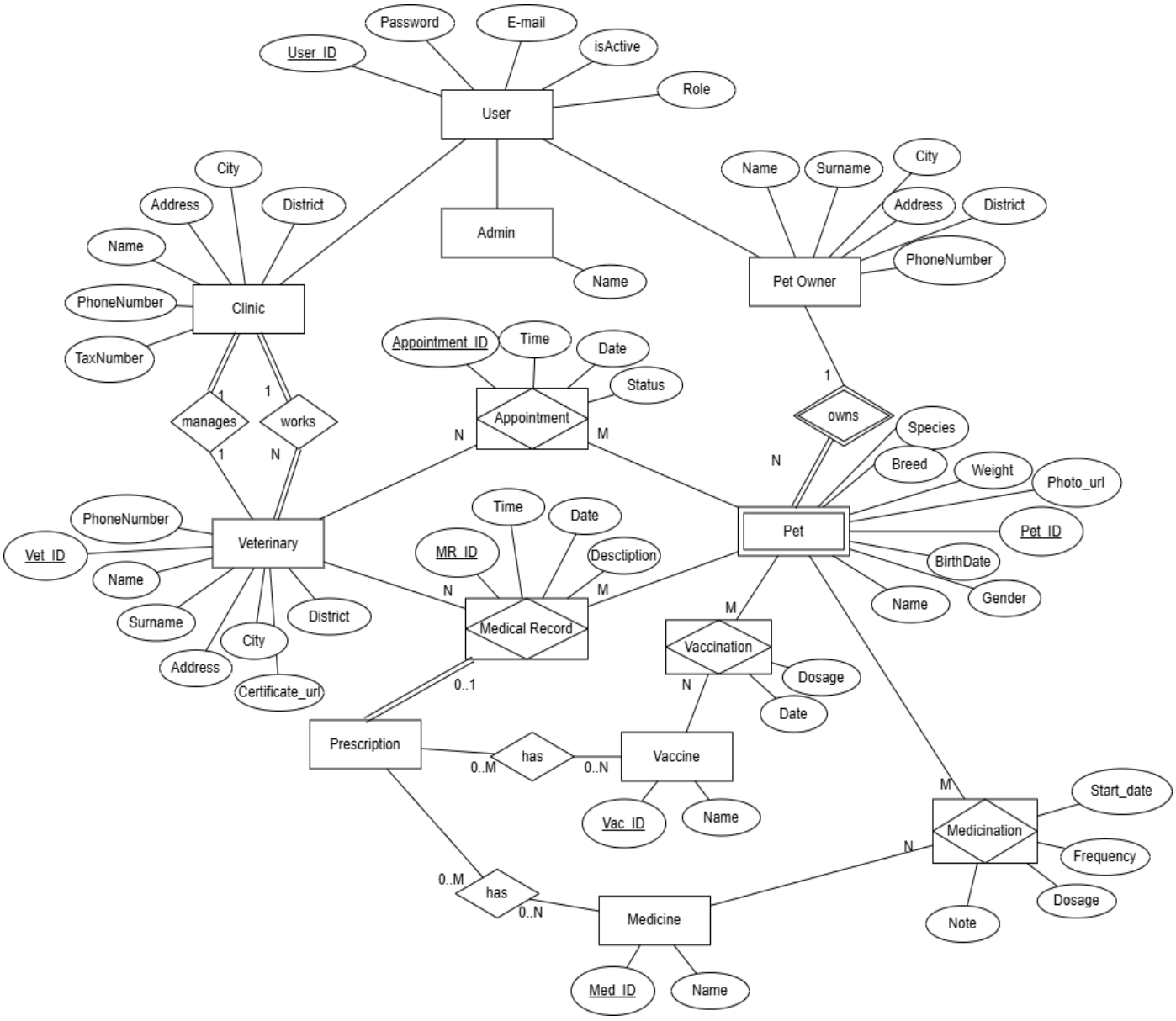
Remaining Milestones:

- Week 2: Authentication & User Roles implementation
- Week 3: Core Functionality (Appointments and Pets)
- Week 4: Medical Records and Notifications
- Week 5: Interface Polish and Testing
- Week 6: Final Integration and Documentation

Problems Encountered & Solutions

So far we have not faced any problems since we have not implemented the main part of the system.

E/R Diagram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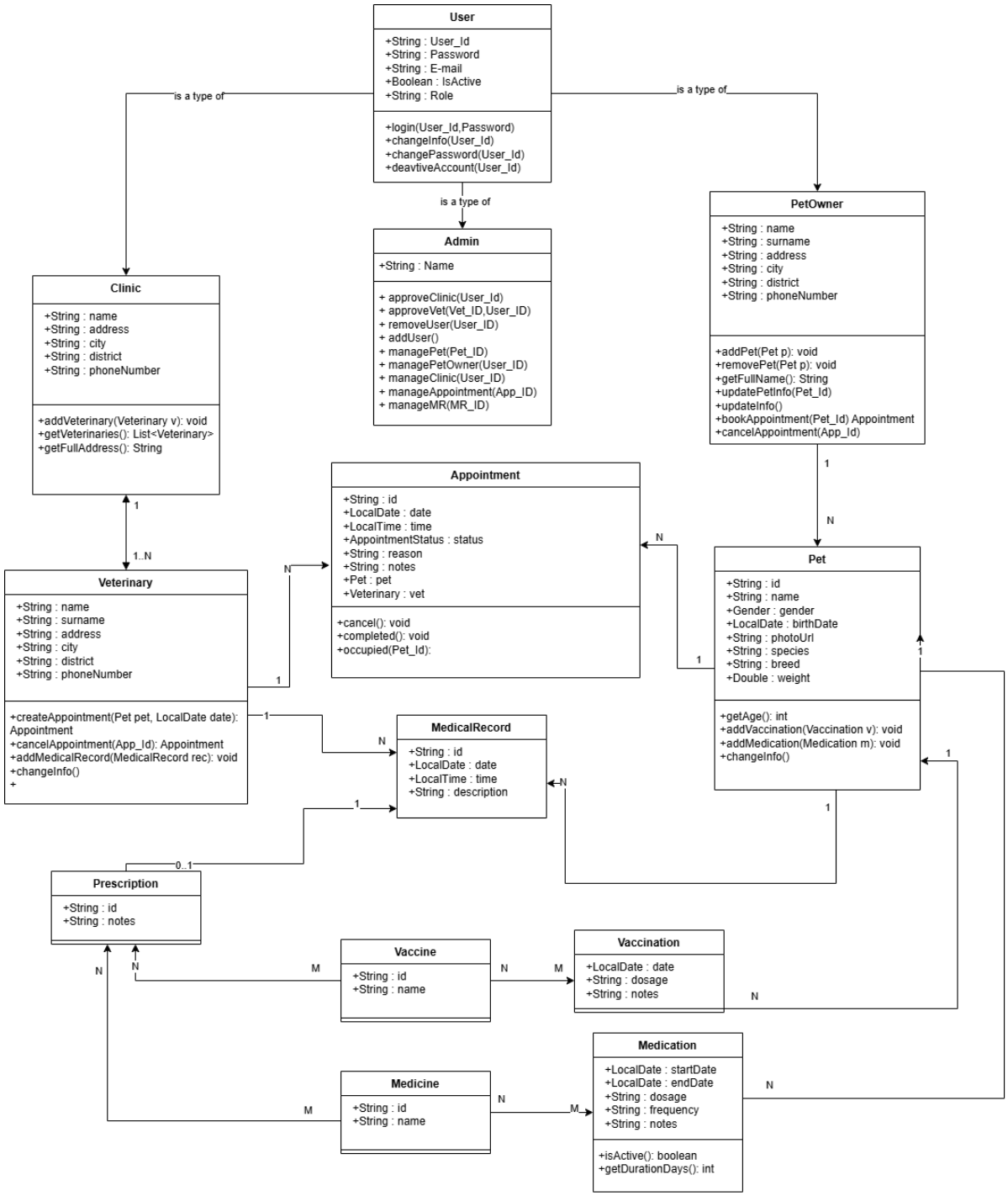
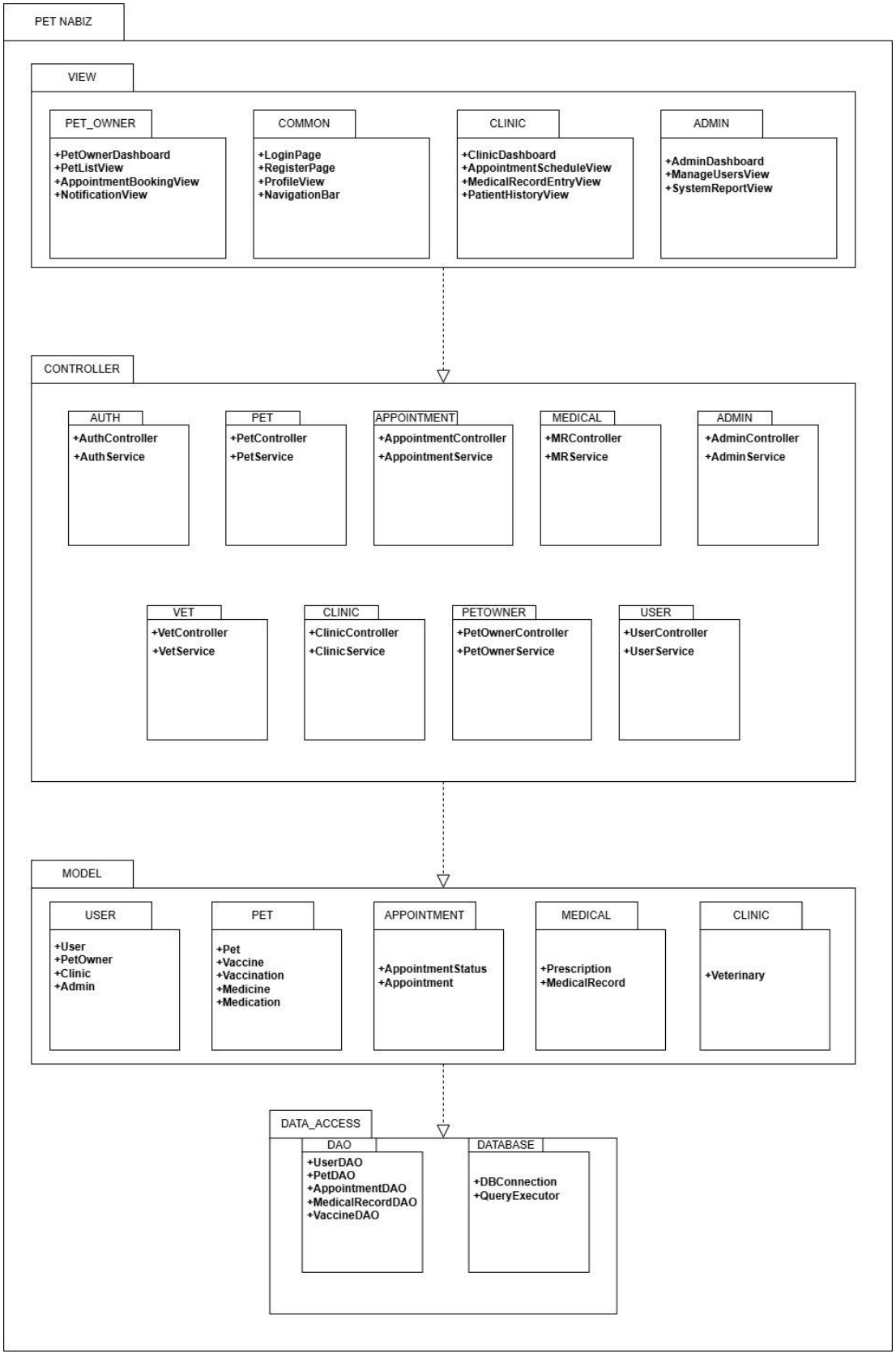
Use Case Diagram

Class Diagram



Package Diagram



This is the approximate diagram, it can be changed.

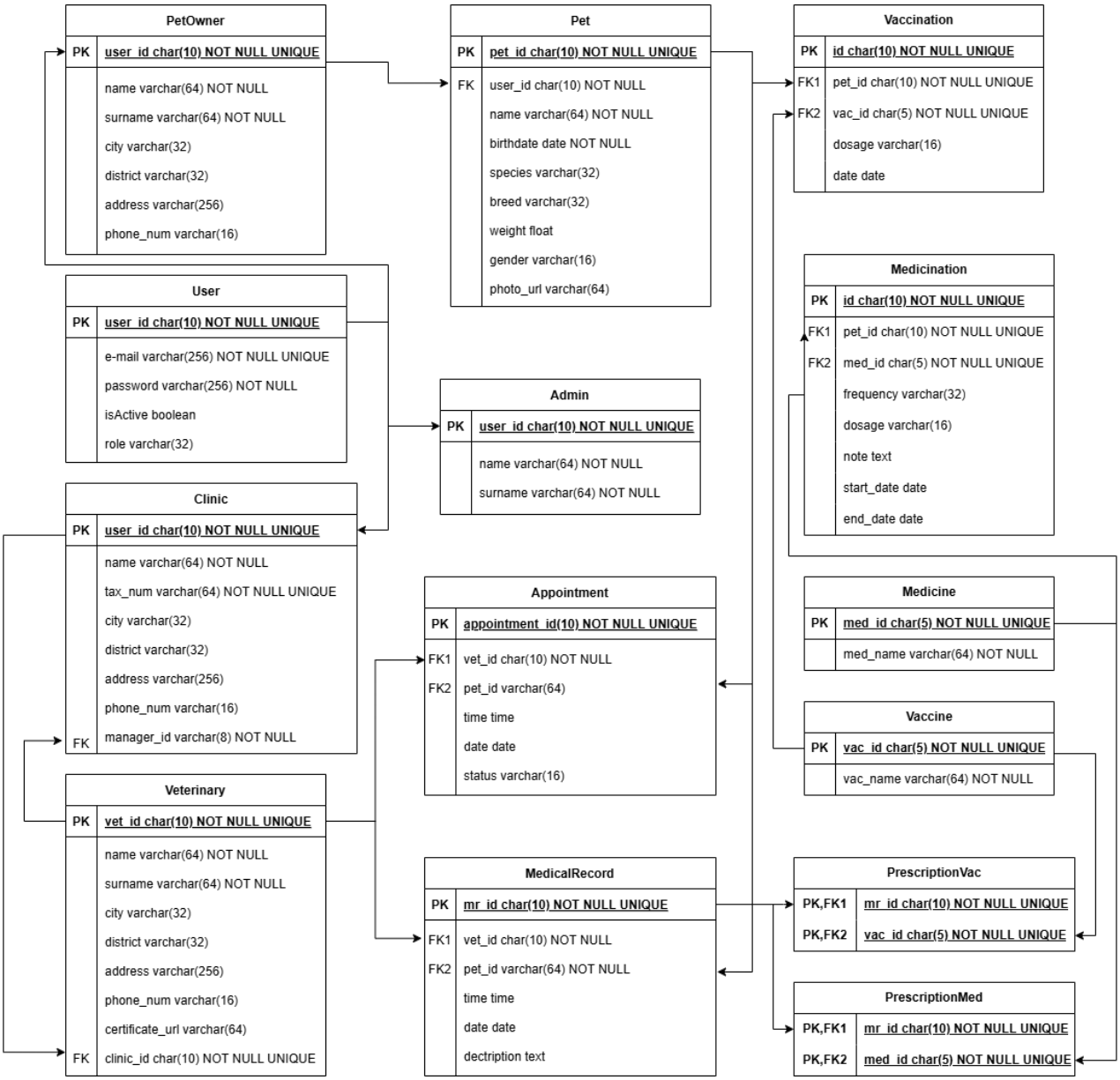
Normalization Steps (to 3NF)

1NF:
All attributes are atomic (like separate columns for name, breed, vaccine_name).

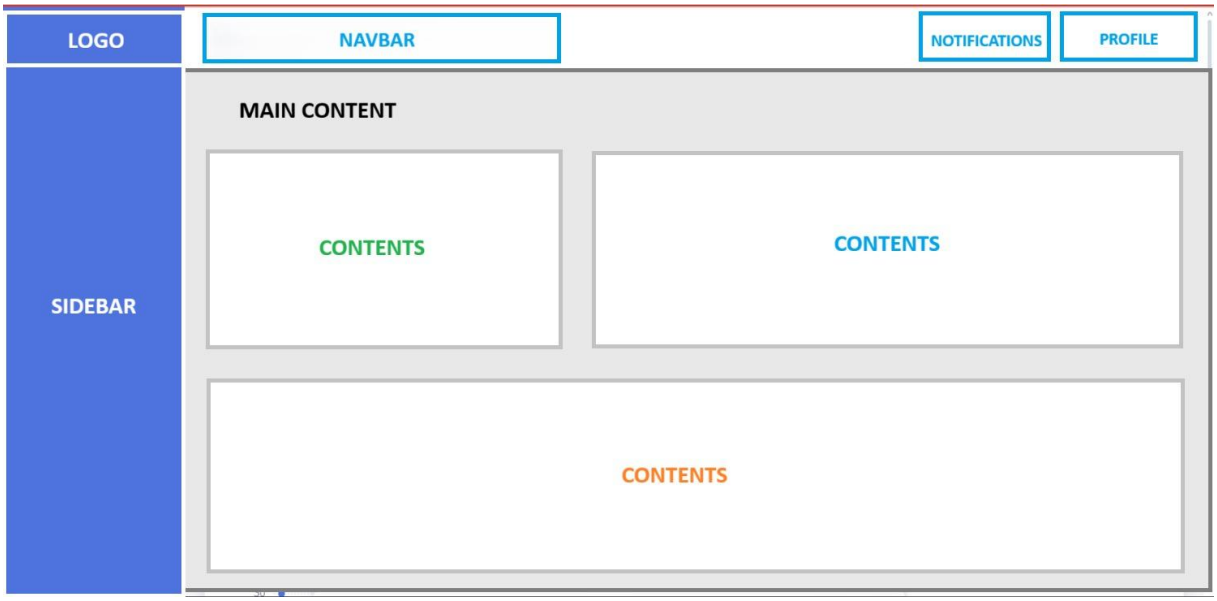
2NF:
Each non-key attribute depends on the full primary key (like appointment details depend on appointment_id, not just pet_id).

3NF:
No transitive dependencies (like veterinarian details are not stored in appointments; only vet_id is stored as a foreign key).

Database Shema



Layout



General Design Structure

1. Home / Login Page

- Simple login and registration interface with role selection (Owner / Vet / Admin).
- Background illustration of pets and a clean navbar with “About” and “Contact” links.

2. Pet Owner Dashboard

- Sidebar navigation: My Pets, Appointments, Health Details, Profile.
- Main panel displays upcoming appointments and pet health summary.
- A “Book Appointment” button opens a form with clinic, vet and time selection.

3. Clinic Dashboard

- Sidebar: My Schedule, Patients, Add Record, Messages.
- Main area shows today’s appointments and access to patient health histories.
- Each record entry page includes input fields for diagnosis, notes, and prescriptions.

4. Admin Panel

- Tabs for Manage Users, System Reports, and Data Maintenance.
- Table view of registered users with edit/delete options.
- Charts displaying total users, appointments, and active pets.

5. Notifications & Profile Pages

- Pop-up notifications for upcoming vaccines or appointment reminders.
- Profile pages allow users to update their personal information and password securely.

Design Elements

- **Color Palette:** Soft blues and whites for a clean, health-tech feel.
- **Typography:** Rounded, friendly fonts (e.g., Poppins or Open Sans).
- **Icons:** Pet and medical icons used for quick visual navigation cues.

Prognosis

At this stage, the **core functionality** of PET NABIZ is expected to be completed successfully by the end of development. The path has been succesfully designed along with creating ER Diagrams, Class Diagrams, Use Cases which specifies the core functionality of PET NABIZ.

Some **secondary features**, such as **advanced analytics** in the admin panel, and optional **AI-based symptom checking** functions will be documented as potential future improvements rather than essential deliverables.

Moving forward, the focus will be adding authentication and user roles and implementing the core features of the system to ensure that everything will be completed succesfully on time.