deti universidade de aveiro
departamento de eletrónica, telecomunicações e informática

TQS: Product specification report

Alexandre Cotorobai [107849]*, Bernardo Figueiredo[108073], *Hugo Correia [108215], Joaquim Rosa [109089]
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1 Introduction

1.1 Overview of the project

Our project consists in the development of a MVP destined for the management of a Veterinary clinic, including the registration of new clients, a queue system for receptionist and doctor attendance and appointment booking.
To fit this project into the scope of the TQS course, during the development of this project we opted to use practices that are considered industry standard that were taught over the course, including test driven development, CI-CD and much more.

1.2 Limitations

Currently the mobile portal which was planned, hasn't begun development due to a shortage on time.

2 Product concept and requirements

2.1 Vision statement

Our system is designed to provide an integrated IT solution for managing appointments and admissions in veterinary clinics, simplifying processes for professionals, and enhancing the experience for pet owners. This system will address common challenges in scheduling, waiting time management, and administrative processing within veterinary settings, utilizing technology to increase efficiency and reduce waiting times, which is crucial in emergencies involving animals

2.1.1 Functional Description:

i) Appointment Scheduling and Management (Φ-Patient)

- **Pet Owner Portal:** This online portal allows pet owners to schedule, reschedule, or cancel appointments with ease. Features include:
  - **Robust Scheduling Options:** Pet owners can search for appointments by type of service (e.g., check-up, emergency calls, vaccinations), preferred veterinarian, or specialty. The system also allows searching for nearby veterinary clinics if their primary choice is unavailable;
  - **Viewing Past Appointments:** Pet owners can access their history of appointments, including details of the visit, prescribed treatments, and follow-up recommendations. This record keeps all pertinent health information in one place, facilitating ongoing care and consultation;
  - **Automated Reminder or Notifications:** The system sends automatic reminders to pet owners via SMS or email, reducing the number of missed appointments and last-minute cancellations
- **Mobile Portal:** This mobile app allows pet owners to access the same features as the Web Portal and few extra features that include:
  - **Mobile App Features:** The upcoming mobile app will extend the functionalities of the Φ-Patient portal, allowing pet owners to handle appointments remotely and offering a self-check-in feature. This feature will enable owners to check their pets using their smartphones, reducing reception congestion and streamlining the entire check-in process.

ii) Reception and Administrative Handling (Φ-Desk):

- **Check-In Desk:** Enables efficient patient registration as pets arrive, utilizing quick data entry methods that can integrate with unique codes. This system streamlines check-in and updates the pet's medical records in real time.
- **Payment Processing:** Comprehensive billing functionalities are integrated to process payments swiftly, issue receipts, and handle financial transactions smoothly.
- **Queue Management:** Staff can monitor and manage waiting lines through the system, calling patients to consultation or examination rooms as needed. This helps in maintaining an orderly flow, especially during peak hours.

iii) Waiting Room Management (Φ-Boards):

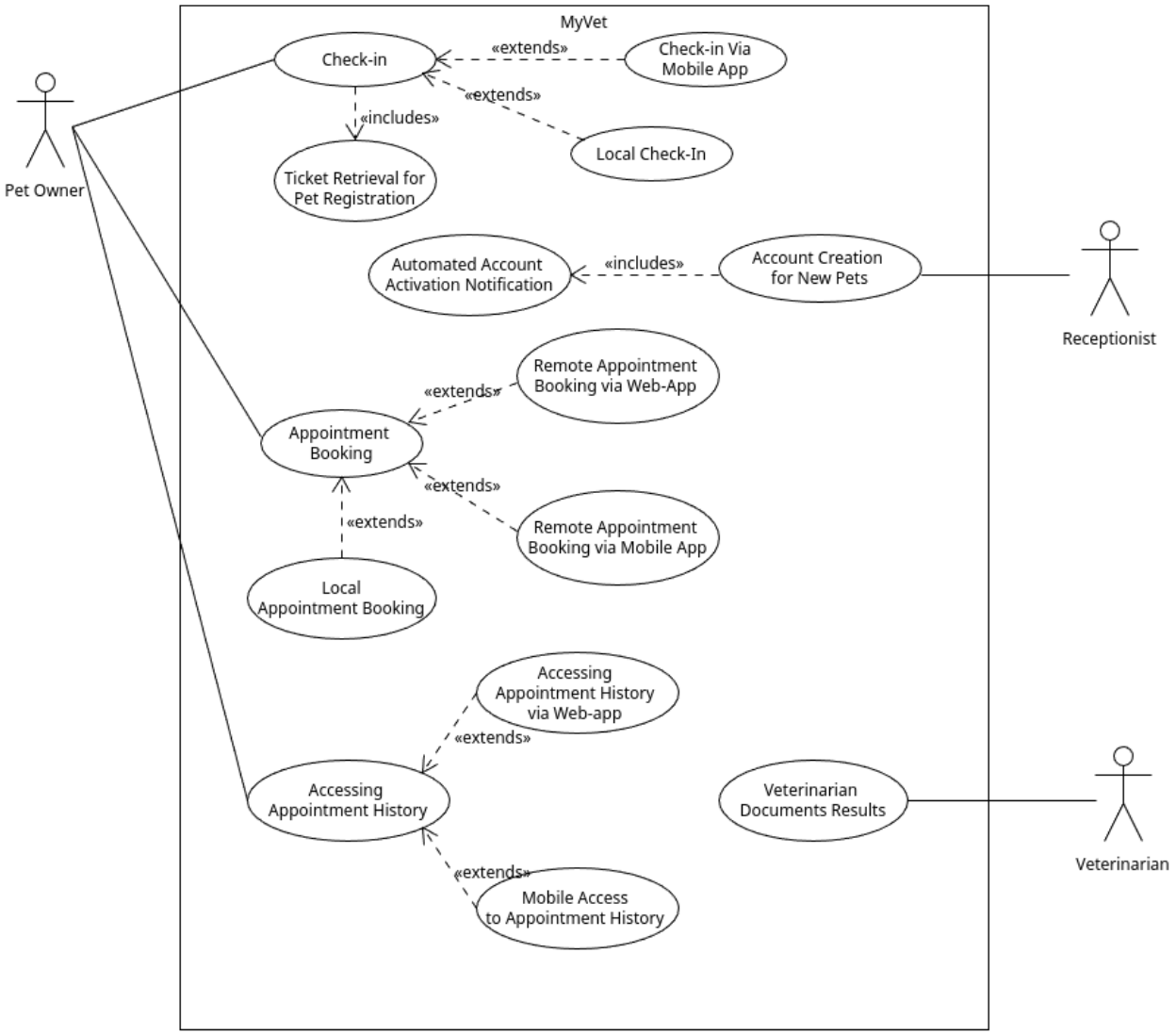
- **Digital Display Boards:** Simple digital signage solution to handle the call screens at the Veterinarian facilities. These boards are designed to process pets by order of arrival, with a separate queue system for emergencies which are given priority.

2.1.2 State of Art:

Software	Key features	Limitations	How our system stands out
Vetsoria	Strong in appointment scheduling, online client portals, and automated reminders	Limited queue management solutions	Offers advanced queue management with priority for emergencies and comprehensive mobile app integration
ezyVet	Focuses on practice management including client communication and medical records	Less emphasis on the visual waiting room display aspect, which can enhance transparency and client satisfaction	Includes real-time digital signage for wait times and processes, improving transparency and reducing client anxiety.
GoReminders	Specializes in appointment reminders and communication, ensuring clients do not miss their appointments.	Does not provide comprehensive in-clinic process management features.	Integrates complete in-clinic and mobile management, significantly enhancing client and pet experience.
IDDEXX Neo	Cloud-based, accessible, simplified scheduling and records	Limited customization for workflows, and reduced mobile features.	Customizable workflows for various veterinary specialties, robust mobile app features.
Our System	Comprehensive appointment scheduling, emergency prioritization, mobile app integration, and real-time digital display boards.	Designed to be a complete solution, addressing both front-end client interactions and back-end clinic management seamlessly.	Unique in offering a fully integrated approach that enhances efficiency, client communication, and overall clinic workflow

Key Differentiators of our System

1. **Comprehensive Workflow Management:** My system goes beyond typical features by providing an all-encompassing solution that manages everything from appointment scheduling to payment processes and queue management. This holistic approach is designed to boost the efficiency of veterinary clinics significantly
2. **Priority for Emergency Cases:** Unlike most systems, ours ensures that emergency cases are prioritized. This is crucial in veterinary settings where the quick response to emergencies can save lives, reflecting a deep understanding of the practical needs of a veterinary clinic
3. **Integrated Mobile Functionality:** With features like self-check-in via mobile app and comprehensive appointment management, our system reduces the workload on clinic staff and streamlines the entire visit process, making it easier and more convenient for pet owners.
4. **Enhanced Transparency with Digital Signage:** The inclusion of real-time digital display boards in the waiting areas sets my system apart by improving communication. It keeps pet owners well-informed during their wait, reducing stress and enhancing their overall experience at the clinic.



2.2 Personas and scenarios

Personas

Name: Amelia

Age: 43

Profile: Amelia is a middle-age woman with no family or friends, and her only companion to brighten her day is her cat, Mia. Mia is not just a pet to Amelia, she's her closest confidant and source of comfort. Amelia's world revolves around Mia, and ensuring her well-being is Amelia's top priority.

Name: Cristina

Age: 24

Role: Receptionist

Profile: Cristina is a receptionist at MyVet clinic. She prioritizes maintaining an organized flow of clients while providing attentive care. Her dedication to ensuring a positive experience is evident as she oversees the ticket system and guides clients with patience and professionalism.

Name: Dr. Marta

Age: 31

Role: Veterinarian

Profile: Marta is a veterinarian who has always had an unconditional love for animals from an early age. With an unwavering dedication to the well-being of her furry patients, Marta combines exceptional clinical skills with a compassionate approach to providing the best possible care for all the animals that cross her path.

Scenarios

Scenario 1 - Booking an appointment remotely

Amelia, deeply concerned about Mia's health, decides it's time to schedule an appointment at MyVet clinic.

However, it's not convenient for Amelia to go to the clinic to schedule the appointment at this exact moment, so she decides to use the pet owner portal to make the appointment from home.

Since her cat Mia is already registered in the MyVet clinic system, she simply proceeds to schedule the veterinary appointment for the next available date in the system.

In the portal's agenda, Amelia can check the upcoming scheduled appointments, and there appears the appointment she just made.

Scenario 2 - Booking an appointment locally

Amelia, deeply concerned about Mia's health, decides it's time to schedule an appointment at MyVet clinic.

When she arrives at the clinic, Amelia goes to the ticket machine and takes a ticket to talk to the reception desk. A number and queue are assigned to Amelia's ticket, and she waits for her turn to be called by the receptionist.

The receptionist Cristina proceeds to the next client in the queue using the reception interface designated for this purpose, and Amelia's ticket number appears on the display. Upon seeing her number on the display, Amelia approaches the recession desk to book a veterinary appointment for her cat Mia.

As Mia was not yet registered in the system, Cristina enters the pet and its owner info into the Desk interface.

Once registered, Cristina books the appointment for the next available date.

Scenario 3 - Going to an appointment with in-person check-in

Amelia heads to MyVet clinic because her cat Mia has been showing signs of illness lately, and she had already scheduled an appointment with the veterinarian to check what's going on.

Upon arrival at the clinic, Amelia goes to the ticket machine and takes a ticket according to her needs. A number and queue are assigned to Amelia's ticket, and she waits for her turn to be called by the receptionist.

The receptionist proceeds to the next client in the queue using the reception interface designated for this purpose, and Amelia's ticket number appears on the display. Upon seeing her number on the display, Amelia approaches to be assisted by the receptionist.

After checking in at the recession desk, Amélia waits her turn to be seen by the vet.

The vet moves on to the next patient in the queue and Amélia's ticket number appears on the screen again, but this time in the queue to be seen by the vet.

Once called, Amélia heads for the consulting room.

Scenario 4 - Going to an appointment with self-check-in

Amelia heads to MyVet clinic because her cat Mia has been showing signs of illness lately, and she had already scheduled an appointment with the veterinarian to check what's going on.

As Amelia was already running late for the appointment and didn't want to waste any more time in queues, on her way to the clinic, Amelia accesses the MyVet mobile app and checks in her cat through it.

With the check-in completed, when Amelia arrives at the clinic, she waits for her assigned number to appear on the display to be attended by the veterinarian.

Scenario 5 - Veterinarian registers appointment notes

After the appointment, the veterinarian goes to her list of appointments, writes her notes about the consultation, and submits them.

The notes are available on the pet owner's interface for them to check.

Scenario 6 - Pet owner sees appointment history

Amelia accesses Mia's appointment agenda, where she can check her appointment history and read the doctor's notes.

2.3 Project epics and priorities

Epic 1: Register Pet

User Story 1: Check-in and Ticket Retrieval for Pet Registration

Priority: High

As a pet owner,

I want to check in at the reception desk

So that I can ask the desk to register me and my pet.

Acceptance Criteria:

Given that I'm a pet owner.

When I arrive at the clinic, and check in,

Then I should receive a ticket

And be inserted into the waiting line.

User Story 2: Account Creation for New Users

Priority: High

As a reception desk worker,

I want to create a pet owner account

So that I can fulfill the client request

Acceptance Criteria:

Given that I'm a reception desk worker.

When a pet owner asks to register them and their pets

Then I should be able to create a new account with the respective info.

Epic 2: Mark Appointment

User Story 3: Local appointment Booking

Priority: High

As a pet owner,

I want to mark an appointment locally,

So that I can get my pet the healthcare needed

Acceptance Criteria:

Given that I'm a pet owner,

When I arrive at the clinic, and check in,

Then I should receive a ticket,

And wait in the queue for my turn to mark the appointment.

User Story 4: Remote Appointment Booking via Web-App

Priority: High
As a pet owner,

I want to mark an appointment using the pet owner's portal,

So that I can get my pet the healthcare needed

Acceptance Criteria:

Given that I'm a pet owner

When I enter on the platform,

Then I should access the "Book appointment" section,

And mark the appointment for my pet

User Story 5: Remote Appointment Booking via Mobile App

Priority: Low
As a pet owner,

I want to mark an appointment using the mobile app,

So that I can get my pet the healthcare needed

Acceptance Criteria:

Given that I'm a pet owner

When I enter my Mobile application,

Then I should access the "Book appointment" section,

And mark the appointment for my pet

Epic 3: Go to appointment

User Story 6: Local Check-in for Veterinary Visit

Priority: High
As a pet owner,

I want to get my pet checked at the clinic

So that my pet can be promptly seen by the veterinarian

Acceptance Criteria:

Given that I have arrived at the clinic with my pet,

When I check-in at the reception,

Then my pet should be registered as present

And we should be placed in the queue to see the veterinarian.

User Story 7: Remote Check-in to Bypass Reception Queue

Priority: Low

As a pet owner,

I want to check in remotely before arriving at the clinic,

So that I can bypass the initial check-in queue and reduce waiting time upon arrival

Acceptance Criteria:

Given that I have a scheduled appointment,

When I use the mobile app to check in remotely,

Then my pet should be added to the appointment waiting line,

And I should receive confirmation of check-in,

And my pet and I should be directly placed in the queue to see the veterinarian

User Story 8: Veterinarian Documents Results

Priority: Medium

As a veterinarian,

I want to easily record the results of each consultation,

So that I can ensure accurate and timely updates to the pet's medical records

Acceptance Criteria:

Given that I have completed a consultation,

When I access the pet's digital record on the clinic's system,

Then I should be able to enter details of the diagnosis, treatment provided, and any follow-up care needed,

And This information should be saved securely and made accessible to the pet owner through their portal

Epic 4: Improve user experience

User Story 9: Accessing Appointment History via Web-app

Priority: Medium

As a pet owner,

I want to access the history of my pet's appointments,

So that I can review details of past visits, treatments, and follow-up recommendations.

Acceptance Criteria:

Given that I am logged into the platform,

When I navigate to the 'My Appointments' section,

Then I should see a list of past appointments,

And be able to click on each appointment to view detailed information

User Story 10: Mobile Access to Appointment History

Priority: Low

As a pet owner,

I want to access my pet's past appointment records through the mobile app.

So that I can have easy and anytime access to my pet's health history.

Acceptance Criteria:

Given that I am logged into the mobile app,

When I access the 'Appointment History' section,

Then I should see a list of all past appointments,

And be able to click on each appointment to view detailed information

User Story 11: Automatically Generated Password Sent by Email

Priority: High

As a reception desk worker,

I want to automatically send an email to pet owners after creating an account for their pets,

So that they can see their password and begin using their account securely.

Acceptance Criteria:

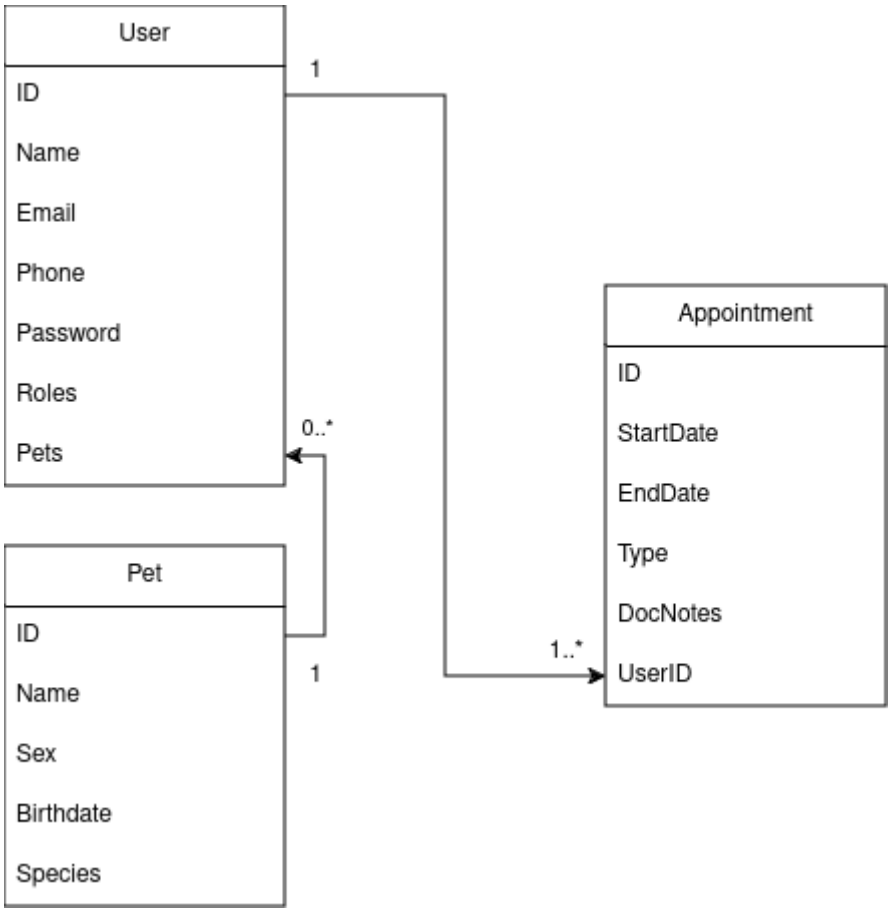
Given that a new pet owner account has been created by the receptionist,

When the account creation process is completed,

Then an automated email should be sent to the pet owner's provided contact information,

And the message should include an automatically generated password for their new account.

3 Domain model

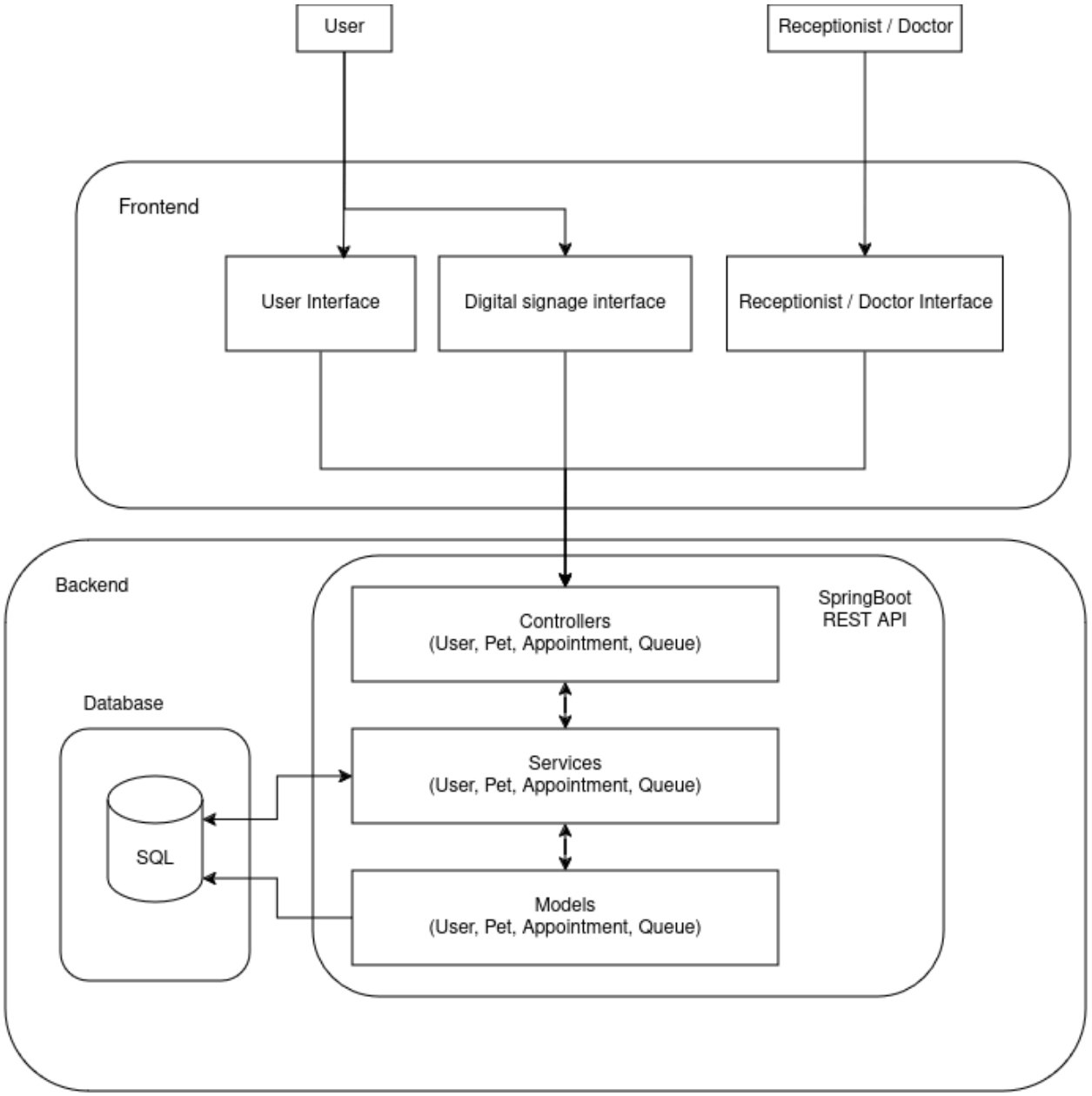


4 Architecture notebook

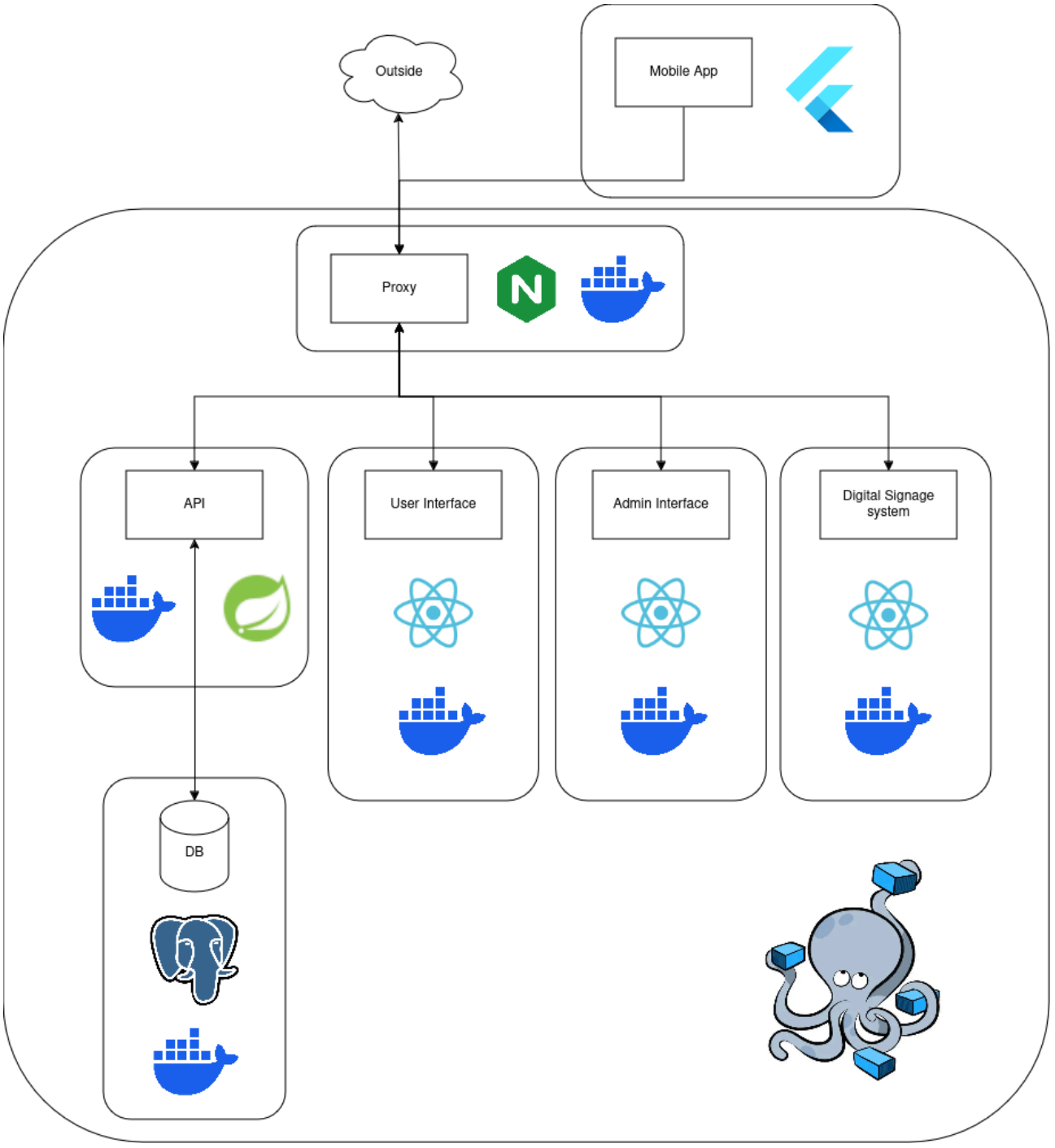
4.1 Key requirements and constraints

There are not many key requirements that will drive our architecture, the thing that we must consider is that there are multiple frontend applications that are running on different locations and they all must communicate with the central API that will be hosted on a remote machine.

4.2 Architecture view



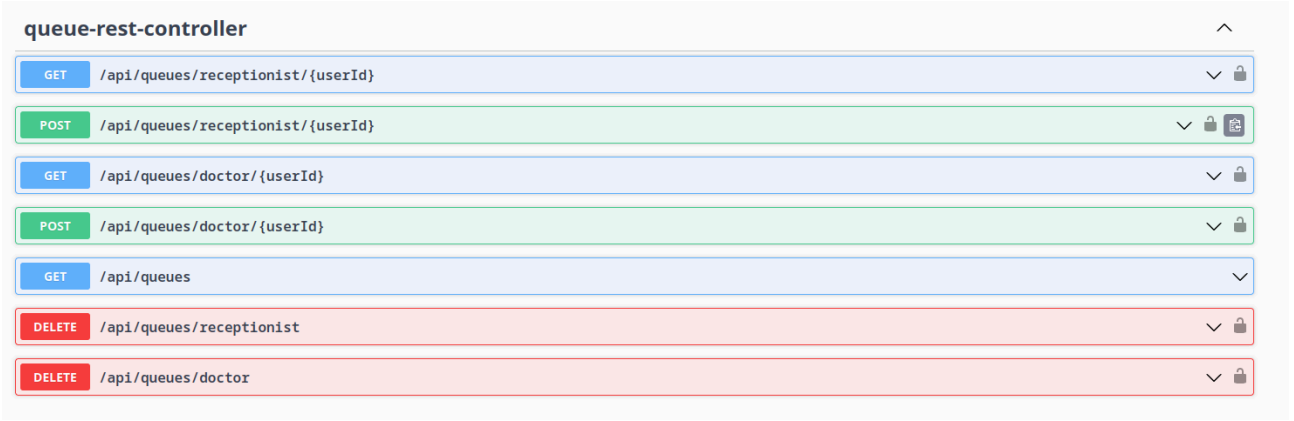
4.3 Deployment architecture



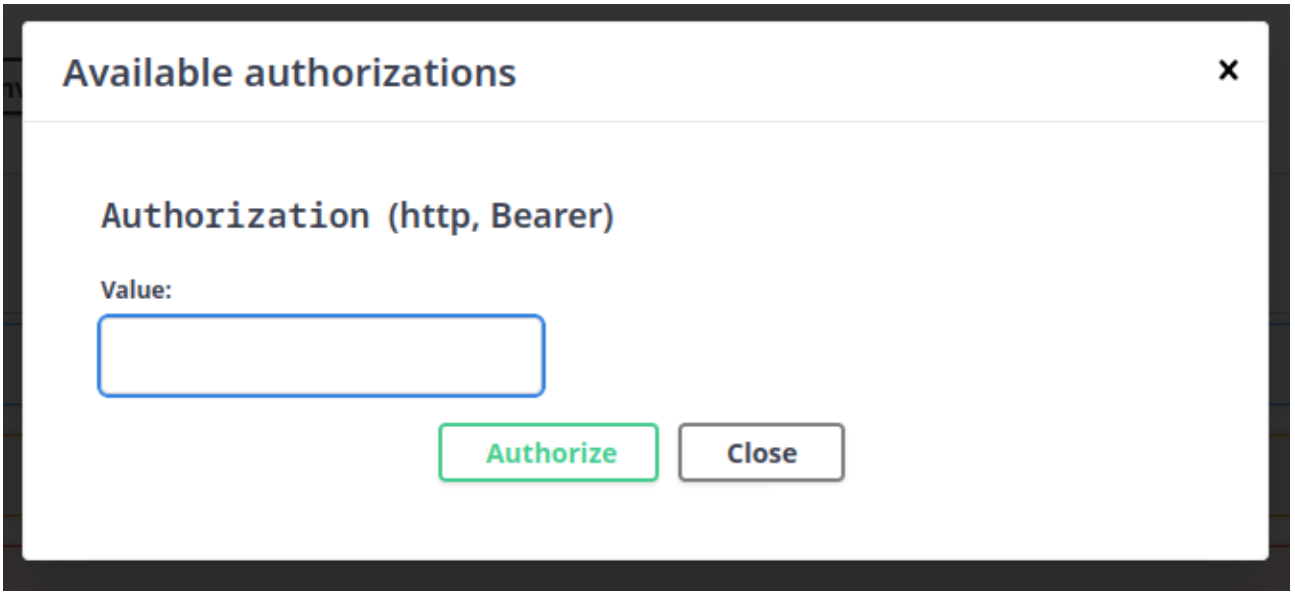
5 API for developers

Our API is open source and can be run locally, when doing this, users can access the API documentation by going to the default swagger docs link, “/swagger-ui/index.html”, where they will find complete documentation on all the available endpoints.


Servers
http://localhost:8080 - Server URL in Development environment
Authorize
user-rest-controller
GET /api/users/{id}
PUT /api/users/{id}
DELETE /api/users/{id}
GET /api/users
POST /api/users
POST /api/users/login
GET /api/users/{id}/pets
GET /api/users/name
pet-rest-controller
GET /api/pets/{id}
PUT /api/pets/{id}
DELETE /api/pets/{id}
GET /api/pets
POST /api/pets
GET /api/pets/species/{species}
GET /api/pets/name/{name}
appointment-rest-controller
GET /api/appointments/{id}
PUT /api/appointments/{id}
DELETE /api/appointments/{id}
GET /api/appointments
POST /api/appointments
GET /api/appointments/type/{type}
GET /api/appointments/pet/{petId}
GET /api/appointments/date/{date}



The lock on the right of the endpoints, signifies that the endpoint requires the user to be logged in, this works by using an authorization header with a bearer token that is supplied when the user logs in.



This however does not guarantee that the endpoint will work, the user that logged in must have the right roles for the endpoint to be used, these restrictions are in place so that unauthorized access does not take place.