

Pet Clinic

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# Deliverable 1

## Project Specification

The pet clinic application I have chosen to develop is designed to address three types of users: administrator, animal owner, and doctor. However, the animal owner is the main user of this application. Its primary objective is to streamline the appointment booking process for the user by providing a list of available doctors, allowing them to choose the most suitable one for their pet and also rate their experience at the veterinary center. The administrator is responsible for managing the database of users, including adding, updating, and deleting them. Both the doctor and animal owner can access their appointment schedules at any time.

## Functional Requirements

One of the main functionalities of the application is the possibility of registration and login so every user who starts to perform any action within the application must register, with the exception of the administrator who already has an account, and the login step must be completed successfully so that the user can enter the next stage.

* A doctor can register, login, update doctor details, create appointments, find appointments, find animals by different criteria.
* An animal owner can register, login, update owner details, register an animal, update animal details, create appointment, update appointment details, find doctors, find animals, by different criteria, give rating to doctors.
* An administrator can perform modifications related to the database: add, update, delete.

Before any data is added to the database, such as during registration, appointment creation or modification by the administrator, validators are employed to verify that the data meets the required standards. The database cannot be updated until all data has been validated.

## Use Case Model 1

### Use Cases Identification

Use-Case: Login.

Level: Subfunction

Primary Actor: User

Main success scenario: Login successful.

Use-Case: Register.

Level: User Goal

Primary Actor: User

Main success scenario: Register successful.

Use-Case: Update user details.

Level: Subfunction

Primary Actor: Doctor, Animal Owner

Main success scenario: User details successfully updated.

Use-Case: Add user.

Level: Subfunction

Primary Actor: Admin

Main success scenario: User successfully added.

Use-Case: Update user.

Level: Subfunction

Primary Actor: Admin

Main success scenario: User successfully updated.

Use-Case: Delete user.

Level: Subfunction

Primary Actor: Admin

Main success scenario: User successfully deleted.

Use-Case: Create appointment.

Level: User Goal

Primary Actor: Owner

Main success scenario: Appointment successfully created.

Use-Case: Find doctors.

Level: Subfunction

Primary Actor: Animal Owner

Main success scenario: List of doctors successfully returned.

Use-Case: Find animals.

Level: Subfunction

Primary Actor: Doctor, Animal Owner

Main success scenario: List of animals successfully returned.

Use-Case: Find appointments.

Level: User Goal

Primary Actor: Doctor, Animal Owner

Main success scenario: List of appointments successfully returned.

Use-Case: Give rating.

Level: User Goal

Primary Actor: Owner

Main success scenario: Rating registered.

### UML Use Case Diagrams

Chart

Description automatically generated

## Supplementary Specification

### Non-functional Requirements

***Reliability*** is an important non-functional requirement that refers to a system’s ability to perform its intended functions consistently, without errors or failures. In my project, I took this into consideration by rigorously testing each component in multiple scenarios. This approach ensured that the system not only performed its intended functions successfully, but also gracefully handled cases where unexpected data or requests were encountered. To achieve this, I created specific exceptions within the application and implemented control flows to handle them effectively.

To enhance ***usability***, my application will feature an intuitive user interface that addresses users with varying levels of technical expertise. Users can interact with the application through intuitive buttons, structured forms, and informative content. The application provides users with suggestive buttons that are labeled clearly, which enables them to generate requests and view relevant information with a single click. Using this approach, the application guarantees an effortless user experience.

The application was designed in such a way that it can be organized in layers, and a higher layer depends on a lower layer through abstraction. This design aims to minimize dependencies between layers, ensuring that changes to one layer will not require significant modifications to the entire system. As a result, the application's ***maintainability*** should not be a concern, provided that the system was structured and modularized appropriately.

***Performance*** is an important non- functional requirement so the system should be designed to handle a large volume of concurrent requests without slowing down or crashing. This includes optimizing database queries, minimizing response times, and ensuring efficient use of system resources.

### Design Constraints

The system is built using the Spring framework, which is a widely used and popular framework for developing Java-based web applications. This framework offers a set of tools and libraries that help with the development of web applications, such as the ability to handle HTTP requests and responses, manage database connections, and more. On the data storage side I worked with MySQL.

My system follows the Model-View-Controller (MVC) architectural pattern, which separates the concerns of the application into three distinct components: the model (data and business logic), the view (presentation layer), and the controller (handles requests and manages communication between the model and view). This pattern ensures that the system is well-structured.

Also, within the application I used some external libraries in order to accelerate the development process and provide additional functionality. In order to map the database tables to Java and also to perform database operations in an efficient way, I used Hibernate and JPARepository. Lombok is another library which reduces the time and effort required for development by providing annotations to reduce boilerplate code in the source code.

## Glossary

* Administrator: A user with special privileges who is responsible for managing the database, including adding, updating, and deleting users.
* CRUD operations: Create, Read, Update, and Delete operations that can be performed on the database.
* Model-View-Controller (MVC): A software design pattern that separates an application into three distinct components: the model, the view, and the controller.
* Subfunction: A use case that is a part of a larger use case and helps to achieve the main goal of that use case.
* UML Use Case Diagram: A graphical representation of the use cases in a system and their relationships with other system components.
* User interface: The graphical user interface (GUI) through which the user interacts with the application.