

An-Najah National University



An-Najah National University

Faculty of Engineering and Information Technology

Computer Engineering Department

Graduation Project I

Pets Club



Accomplished By:

Seba Yousef Salahat
Marah Kamal Jaber

Supervisor:

Dr.Samer Arandi

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Disclaimer:

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Chapter 1

Abstract

Due to people's interest in pets in recent times, especially when we browse social media every day, we see people asking for pet supplies, offering their pets for adoption, or inquiring about veterinary clinics in their area, so my colleague and I wanted to create an app that had all these details in one place. One is to help these people with their pets and make it easy to get to all their needs.

Our project is based on creating a mobile application for pet owners and lovers that provides them with all the services and supplies they need to raise their pets in one place, and the application will include

- 1- Pets for adoption.
- 2- Food and accessories for pet owners that can easily be ordered and purchased.
- 3- It will serve as a platform to connect pet owners by posting posts, accepting comments, and chatting to help them find a lost pet.
- 4- Providing the user with the names of doctors affiliated with veterinary clinics and helping him set an appointment to monitor the health of his pet.

- 5- Providing the user with the names of Grooming, cleaning, .. specialists affiliated with grooming clinics and helping him set an appointment to monitor the care of his pet.

- 6- Reserve a place in a hotel to place the animal Pet for a limited number of days when he is traveling.

Therefore, we found many applications in the application stores for buying and adopting pets, as well as various applications for selling pet food and supplies, but we did not find similar applications in Palestine or applications that provide all services at the same time.

The project is a mobile application for users, and a website for the administrator, which may be affiliated with a company in the pet owner services sector. The project is built with many tools and frameworks, to create the mobile app we used, Flutter framework (which is based on the Dart programming language) for frontend and backend NodeJS and Mongo Database, and mainly as a secondary database feature (posts, comments, chat. We to build the website we used Html and CSS and converted it to.EJS for the GUI and Node for the backend, and used a REST API to connect NodeJS to Flutter. This will be discussed further in the methodology.

Chapter 2

Introduction

2.1 Problem

The interest and love of people in Palestine have increased in owning pets that cultivate positive energy in the home, and one of the problems facing people who are thinking of owning a cat or a dog is exploiting them in terms of exaggerated prices, especially when a new cat is born, where her children are offered for amounts that are considered large for the citizen Palestinian. This is the main problem that we have tried to solve with this project.

There is a lack of institutions or associations that help homeless pets on the street, and there is no one to consult on raising or dealing with animals or knowing the accessories and clothes that the pet needs or the food for dogs and cats.

2.2 Objective

Our main goal in this project is to prevent the exploitation of people who want to own a pet through the idea of adopting a cat or a dog without any money according to the Prophet's (ﷺ) saying: *الرَسُولُ عَلَيْهِ الصَّلَاةُ وَالسَّلَامُ حَيْثُ قَالَ ابْنُ الْمُنْذِرِ: إِنَّ تَبْتَ عَنِ النَّبِيِّ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ التَّهْيُ عَنْ بَيْعِهِ، فَبَيْعُهُ بَاطِلٌ، وَإِلَّا فَجَائِزٌ*, Adoption increases the chances of having a pet and a new experience. As the important thing is to take care of the pet, protect it, preserve its food, and prevent it from vagrancy, as well as help the person who owns the pet in obtaining the needs of his pet, such as food, clothes, and others, through the purchase section of our project.

2.3 Scope of the Work

Our application generally focuses on pets and what is related to them, we give the user the opportunity to display a pet to adopt and benefit from the services provided by the application to its users.

2.4 Importance

This application is made to help homeless pets as the first goal by giving them for adoption, and also to assist pet's owners of caring with their pets and find all what they need from a to z in the same place and taking needed services in very easy way.

2.5 Report Organization

This report is organized as the following, Chapter1: abstract of our project, then in Chapter2: an introduction and overview of the importance and scope of this project. In Chapter 3: the problems and constraints that we faced in this project, Chapter4: literature review, Chapter5: the methodology used to complete the project. In Chapter 6: we explained in detail about the ml model, all the tools and languages used to design it, and how we used it in our application. Chapter7: result and discussion, Chapter 8: conclusion and recommendation.

Chapter 3

Constraints, Standards and Earlier coursework

3.1 Constraints and limitations

Since the beginning of this project, we have faced numerous challenges and difficulties.

5- Time constraint: We did not have prior knowledge of some of the programming languages with which we worked. Because this was the first time, we created a complete mobile app, we had to learn new programming languages such as Dart, and mobile frameworks such as flutter. The syntax is similar to C, so we were able to deal with this problem, but the big problem was the new background. The Node JS language that we also had to learn and deal with is based on JavaScript as well as Firebase database, which is a cloud-hosted database, to be used in some sub-properties such as chat and networking, as well as the MongoDB database, which is used as a database. We attempted to make everything we learned familiar to us in order to properly use the features and programming. This was more difficult than usual because we were working under pressure, as we had other subjects that required us to make an effort because each subject had requirements, such as projects, so we had to schedule a time and put in more effort to learn and get the app close to what we wanted.

2- Internet connection: Our application requires a constant internet and connection to the Node JS server to run the API.

3.2 Standards

3.2.1 MVC (Model View Controller)

In our system, the architectural pattern was used to display the form. We can divide the entire project into three sections to make tracking the flow easier. These parts are as follows:

- **Model:** represents the MongoDB database that we used. To continue updating itself, it will respond to both the view request and the controller request.
- **View:** This is the graphical user interface (GUI) that users and administrators will use to display and modify data.
- **Controller:** This is the Nodejs-based back-end server for the application and website. The controller makes it easier for the model and the view to coordinate and collaborate.

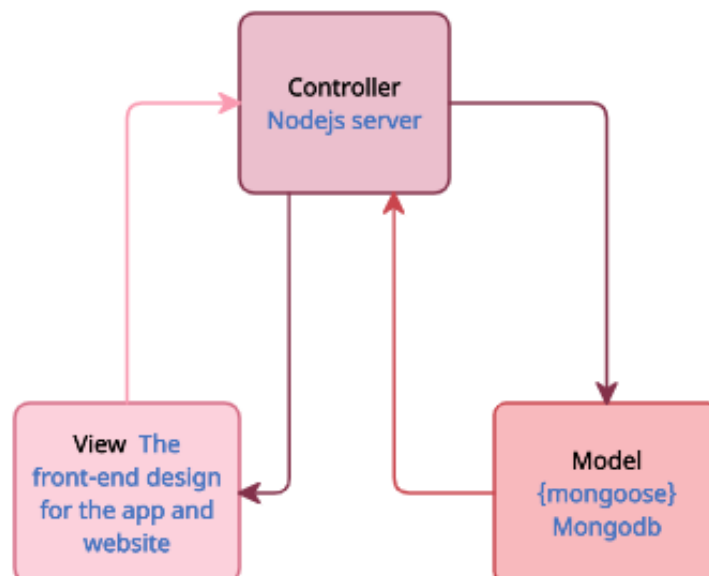


Figure 4.1

3.3 Earlier coursework

During our computer engineering studies, we took many courses in which we learned many things, such as programming languages, programming methods, and how to create and manage websites. These courses were Web Programming, Object Oriented Programming, and Databases Course, which served as the foundation for learning front and back-end programming and dealing with real databases. Similarly, the software engineering course was extremely beneficial in writing our code to meet the concepts in critical thinking, advanced courses, and so on. All of these courses aided us in the project and sped up the programming process; the syntax of the Dart language is nearly identical to the syntax and ideas of the Java language, and the Nodejs framework is a JavaScript file with advanced concepts and features. Furthermore, for our work needs, we have taken online courses in Flutter, Dart, Firebase, and Nodejs.

Chapter 3

Literature review

Research on the intersection of pets and human mental health is considered wide, and there is a large range of research topics regarding this subject can be worked on. Potential research topics includes new or minimally investigated topics and also exploring old research topics (Ryan & Ziebland, 2015).

Human-pet relationships occur across different nationalities, ethnicities, social positions and generations. It is a spontaneous un-coerced human activity.

Policy makers worldwide need to consider whatever particular evidences exists particularly where obvious human suffering can be perceived, a sound base exists for policy makers with an interest in promoting mental health to discard notions of pets as merely furry, fluffy and trivial. Those with an interest in improving mental wellbeing through harnessing the power of pets may often only need to recognize and seek to reduce barriers, rather than considering expensive or complicated new programs (Pawson et al., 2005).

Beginning from the importance of pets on human mental health, going through application of artificial intelligence and computer-based applications in pets caring and tracking which is considered one of the main applications related to realistic activities. There is some previous applications and technologies, which applies to help human to give wellbeing for their pets including having pets as a virtual pet (Arnaldo et. Al., 2021). Arduino system was applied for pet's food feeder, which is in a food storage container and including pet's water dispenser which can measure how much water for a pet on daily basis (Chen & Elshakankiri, 2020). Moreover, apply the pet litter box which can measure how much pet defecation (Sangvanloy, & Sookhanaphibarn, 2020; Wang, 2020)

A mobile application was developed in the zoo using 3 different languages such as English, Arabic, and French where the zoo's visitor can attach the animal cage's QR tag and get information regarding the animal either text or voice as text to speech. Moreover, the application can play an animal sound based on the attached QR tag and including the zoo's visitor can buy a pet in the zoo and rating the application (Kadhim & Al-Qaraawi, 2020). Another application was configured by (Tang et. Al., 2005) by which a GPS sensor was attached to the pet and used to track the pet's movement around house.

Another research applies to poultry pet such as chicken, duck, and so on, and using designed pet jacket which attached with a microcontroller in order to detect physical touch media as human-animal interaction systems (Lee et al., 2006). Moreover, in the Philippines, a mobile application for monitoring pets was proposed using sensor and designed remote activated smart pet door for pets' house such as cat and dog including defecation pad, food, and water dispenser (Luayon et. Al., 2019).

Another research trial, was designated to create animal Adoption platform, which can help to extend the efficiency in term of communication between public and animal welfare organization (Dsouza et. Al., 2022). With this platform, public can easily surrender in their own pets or stray animal. This platform is additionally available for

public to adopt pets or animal which available in any organization listed within the designed virtual platform (Dsouza et. Al., 2022). Also, kind hearted people will have a chance to try something for helpless animals. People are going to be able to share their stories of how they rescued Dogs and motivate others to try to do so (Dsouza et. Al., 2022).

Another mobile app in Pet caring and tracking field, was designed and improved through multi-stages by (Shah et. Al., 2021). This app has many features such as: A built-in chatting system for people who upload the picture of pets and who want to adopt them, a pet food store where food for pets would be available at a reasonable price and a Veterinarian section where people can contact vets for any help regarding their pet's health care. The major objectives covered by this application were: People will come to know about stray animals that need their help around their vicinity, the number of stray animals euthanized will be reduced and kind-hearted people will get an opportunity to do something for helpless animals and people will be able to share their stories of how they rescued pets and motivate others to do so (Shah et. Al., 2021).

Chapter 5

Methodology

5.1 Tools, Programming Languages, APIs Technologies

We have many options for application development, but after a lot of research and reading, in addition to the basic and irreplaceable parts of building mobile applications and websites, such as frameworks, programming languages, and tools. We will mention all these details and talk about them further. We decided to build them on the following framework

5.1.1 client Side:

- **Design:** We had to have a simple, user-friendly, and uncomplicated application, so that the user can understand the application and navigate between the interfaces simply and we chose the color of the basic application that is comfortable to look at. We saw many applications and designs, including on Google Play, App Store, and Pinterest, before we got a clear picture of our application, then we built this design in a way that suits us and started programming the interfaces.
- **Frameworks:** We choose the flutter framework to build our application which Flutter is a Google open-source user interface toolkit that allows you to create mobile (iOS and Android), web, and desktop apps (Linux, Mac, and Windows) from a single code base. By creating an application in this language, consumers can be given a refined, rich, and immersive user experience. The single code rule states that you write the code once and run it everywhere! This way, you can plan and target an app release across all platforms at the same time. Thus, by quickly releasing the application to the market, time and money can be saved.

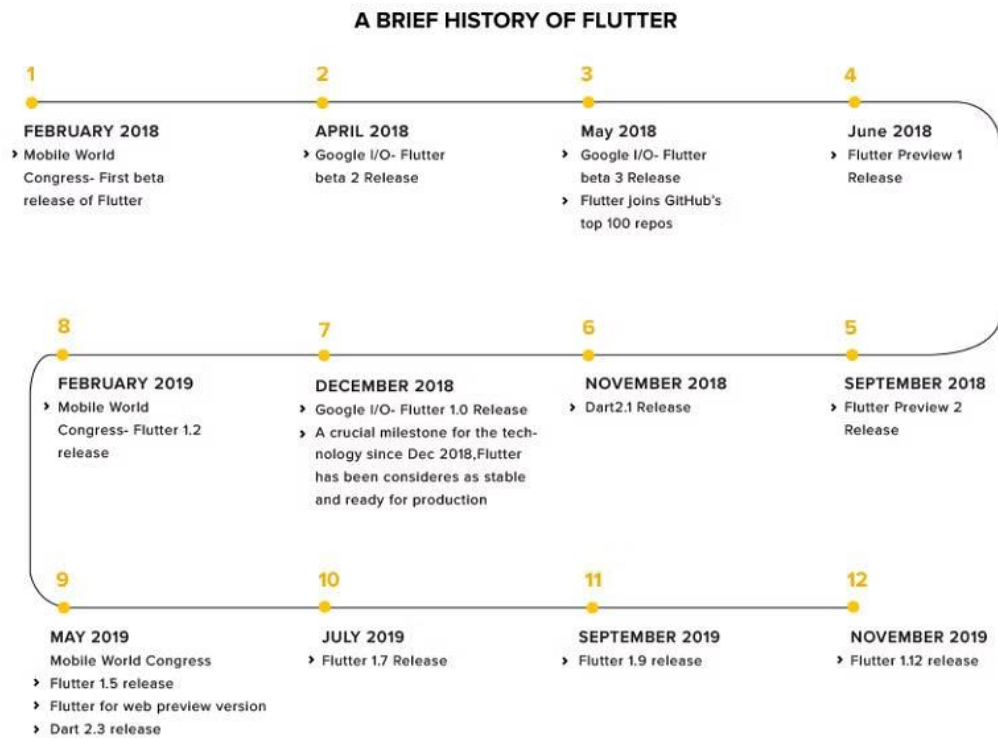


Figure 4.2

Top 10 Reasons why teams Choose Flutter App Development:

1. Easy to learn
2. High Performance
3. Reusable Widgets
4. Faster time to market
5. Hot reload
6. Ideal for MVP development
7. Ability to create great design
8. Lower development cost
9. Great documentation community
10. Outstanding performance

Flutter, which was developed to compete with React Native, has gained popularity for developing immersive applications not only for mobile and web apps, but also for desktop and embedded apps. As of May 2021, in terms of popularity and usage, Flutter was on track to overtake React Native as it increased by 42%. Let's take a look at the stats.

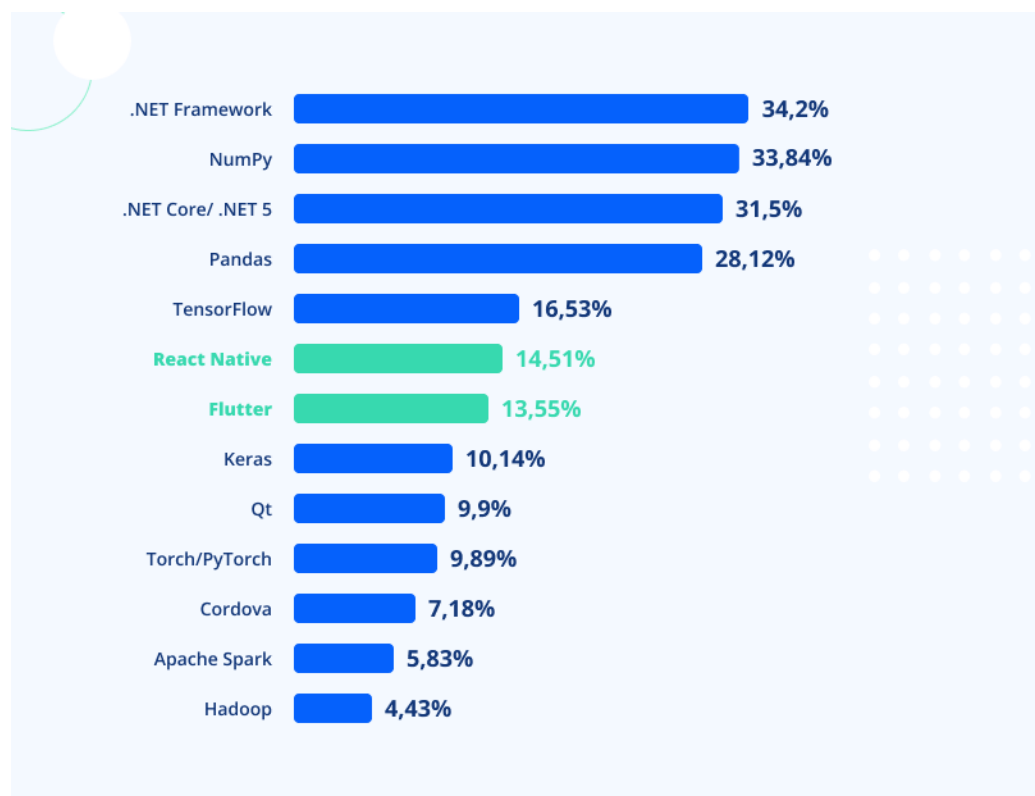


Figure 4.3

- Programming languages:** Flutter uses Dart is a programming language developed by Google that targets web and mobile application developers. It is designed to develop web applications, Android and iOS applications. One of the language's goals is to be able to run on all advanced web browsers, mobile devices, and even web servers. Because we'll be using the flutter framework, it's obvious that we'll be using Dart. Dart shares many similarities with other programming languages such as Java, C, Swift, and Kotlin. We saw that Dart is very similar to Java, which is the most familiar language we have, which reduces the difficulty of learning a new language and makes it straightforward and easy.

5.1.2 Website Side for admin:

- **Design:** We first created a website dedicated to the admin only, who can see the users of the application and perform services through this website in terms of adding products such as food and clothes, adding the category, deleting them and seeing the reservations for veterinary clinics.
- **Programming languages:**
we used HTML, CSS, Template Engine and JavaScript because easy to use, lightweight and interpreted language

5.1.3 Server Side:

- **Frameworks:** For the server side, we used the open-source Node.JS framework for mobile app and website.
Node.js is a single-threaded, open-source, cross-platform runtime environment for building fast and scalable server-side and networking applications. It runs on the V8 JavaScript runtime engine, and it uses event-driven, non-blocking I/O architecture, which makes it efficient and suitable for real-time applications... the benefit of this framework is:

1. Productivity
2. Simplicity in terms of learning and adapting.
3. Speed
4. Multi-platform
5. Maintainable

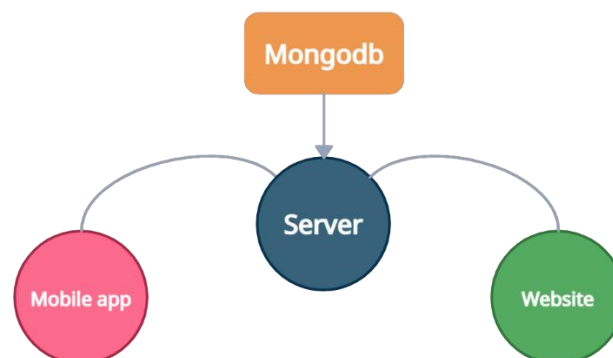


Figure 4.4

We use the Express.js framework, which is a Node.js and asynchronous form rendering and form rendering control framework for Node.js that is fast, powerful, and simple to use. Aids in the routing of the server and routes. It aids in the creation of various web applications based on template arguments. It enables us to dynamically render HTML pages. We use Express.js for its fast and high-speed I/O operations.

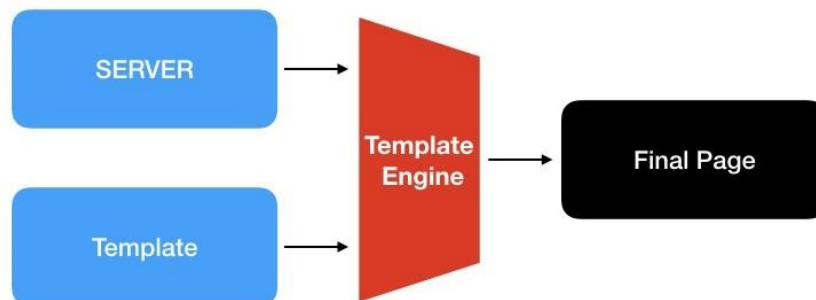


Figure 4.5

as well as Firebase Database for chat. Real-time Database is a database that is hosted in the cloud. Data is stored in JSON format and synchronized with each connected client in real time. When you create cross-platform apps with the Apple and Android platforms and the JavaScript SDK, all of your clients share a real-time database instance and automatically receive updates. so it's good for chat

- **Programming Languages:** Node.js uses JavaScript as its core. JavaScript helps you developing great front-end as well as back-end software using different JavaScript based frameworks Node.JS etc.

5.1.4 IDEs and Code Editors

Pets Club: we designed our application using Microsoft's visual studio code editor, which supports many programming languages, is cross-platform, free, and supports instant editing. It includes a number of built-in tools, including a class designer, database schema designer, web designer, and Support for Git. We also created a logo for our project, primarily with the help of Logo Maker

5.1.5 Version Control

We were working on a team, so we needed a way to share work and integrate code, so we used GitHub and created two repositories for this, one for the back-end and one for the front-end, and we occasionally used Google Drive.

5.1.6 API Endpoints Testing

Because our application has a RESTful API in the back-end server, we must test each endpoint before integrating it with the client. To do so, we used Postman.

Postman is a great tool for dissecting RESTful APIs. With Postman, we can run PUT, PATCH, DELETE, and various other request methods. Almost any functionality that any developer could need is encapsulated in this tool.

5.2 Database Structure

The database is very important in most applications, especially for the purposes of reading, editing, and deleting information, and it makes the application meaningful and we can back up data. Our application is directly dependent on the database, which displays information, and we used a NoSQL database because the relationships between different collections were few and were also easy to use when using API.

5.2.1 Database-NoSQL

We chose to build our schema without a relational database because it allows developers to easily build applications using documents. MongoDB stores documents in JSON format, a JavaScript-based format that is simpler than XML. As mentioned earlier, the backend of our application will be built using Node.js, and MongoDB is an excellent tool for prototyping Node.js applications. Your data is stored in a MongoDB database as JSON objects. In most cases, all data associated with the object can be found in a single document, unlike SQL databases, which require joining different tables to compose a document. MongoDB is an open source document database that uses a flexible schema to store data and is built on a scale-out architecture. MongoDB is a NoSQL database program that consumes JSON-like documents with an optional schema.



Figure 4.6

5.3 Features of The Application

5.3.1 Adoption

The user can adopt a pet, a cat, or a dog, through the interface in which Cards are displayed, which includes these animals. In addition, the user can display his pet via an adoption form that appears in the application via the RESTful API.

And the admin on the website has seen all of these animals, as well as the user who adopted one of them.

5.3.2 Shop

Through this feature, products related to animal needs such as food, accessories, toys and other details are provided which are shown to the user appear in the application via the RESTful API. These products are displayed with the ability to add new products or add a category by the admin on the site.

5.3.3 Veterinary Centers:

In this feature, the doctors affiliated with veterinary clinics will be shown to provide treatment and care for pets by booking an appointment by the user who has the doctors and appointments shown, and when the admin on the website shows a table showing the appointments and give him the ability to accept or reject the appointment.

5.3.4 Grooming Centers:

In this feature, people affiliated with pet cosmetic clinics will appear to provide all services and care for pets by booking an appointment by the user who has the people and appointments offered, and when the moderator on the site displays a schedule showing the appointments and give the responsibility to accept or reject it.

5.3.5 Social Network

Here, we have built the idea of social communication between people who own pets by downloading a post and taking advice on pet care and dealing with them, and also a post to search, for example, for his lost pet, where a chat takes place between the person who lost his cat or dog and the person who found it, and thus we made it easier for the person to find his pet The front end of the chat is flutter, but the backend uses the Firebase database.

5.3.6 Hotel

In this feature, the user will specify two dates to reserve a place for his cat or dog to take care of them in case he travels or is very busy, and this appears to the user in the application, and the reservation dates appear to the admin on the website

4.4 Implementation

In this section, we'll dive into the details of each part of the system. All the tools, methods and libraries used are discussed in detail.

5.4.1 Mobile Application:

Welcome Screens:

these screens appear before the user login or signup and used to let him know about the serviced features, then when he taps on "Let's go" will see the login/ sign up screens.

Welcome screens contain liquid slider with images represents the main services in our app

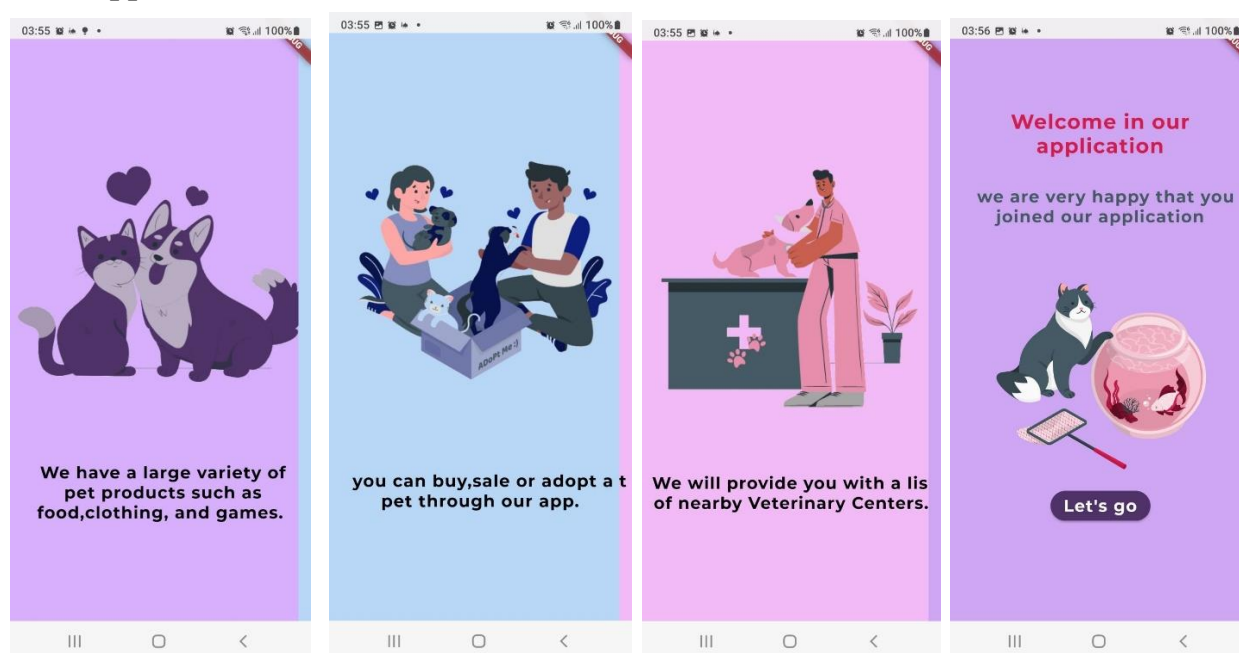


Figure 4.7

Signup Screen:

This screen contains three text fields for user name, email, and password, when user press the sign-up button user will be created according to user model in both firebase and mongo DB.

The user will be created only if:

1. All text fields are filled.
2. Email not existing for another user.
3. Password is most than 6 characters.

Login Screen:

Login screen contains two text fields one for user email and the other is for entering passwords.

And we have also a sign in button which move to home screen only if these three conditions are true:

1. Both text fields must be filled.
2. Email and password must authenticate in both firebase and mongo DB.
3. Password must match the email corresponding password.

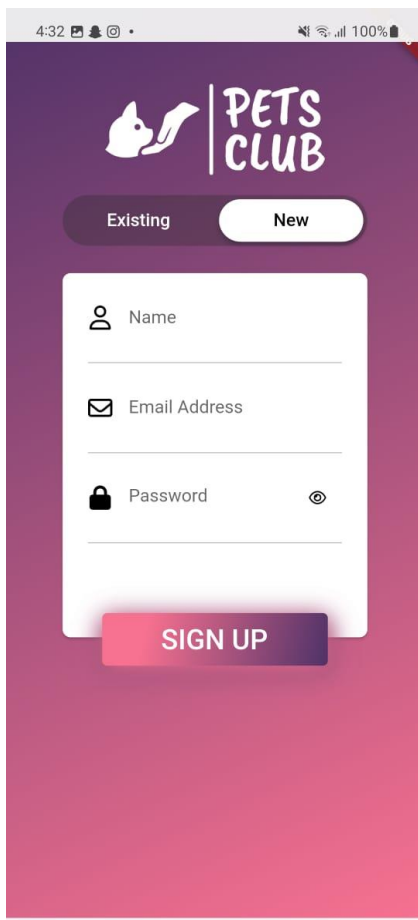


Figure 4.8

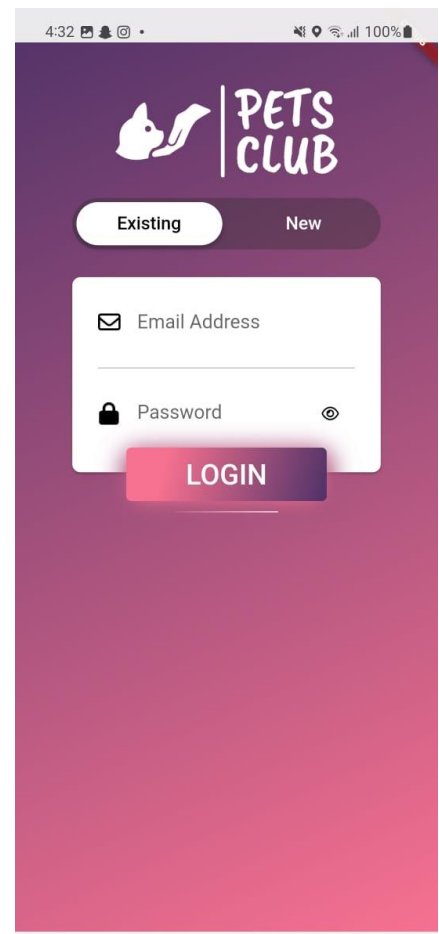


Figure 4.9

Home Screen:

Home screen contains components represents all the services in the app ass following:

Slider: contains 6 slides represents all main pages, when slide tapped it will navigate to the corresponding page:

1. Slide 1: welcome Slide.
2. Slide 2: goes to Shop page.
3. Slide 3: goes to All pits page.
4. Slide 4: goes to veterinary centers page.
5. Slide 5: goes to grooming centers page.
6. Slide 6: goes to social network timeline.

Picks List: Contains special pets choose before to reach it easier.

Buttons Row: contains two buttons one to go to social network timeline and the other goes to hotel booking page.

Bottom bar (nab bar): contains 5 options:

1. Home Screen.
2. Timeline Screen.
3. Shopping Cart Screen.
4. All Pets Screen.
5. Profile Screen.

Notification icon button: moves to notification screen.

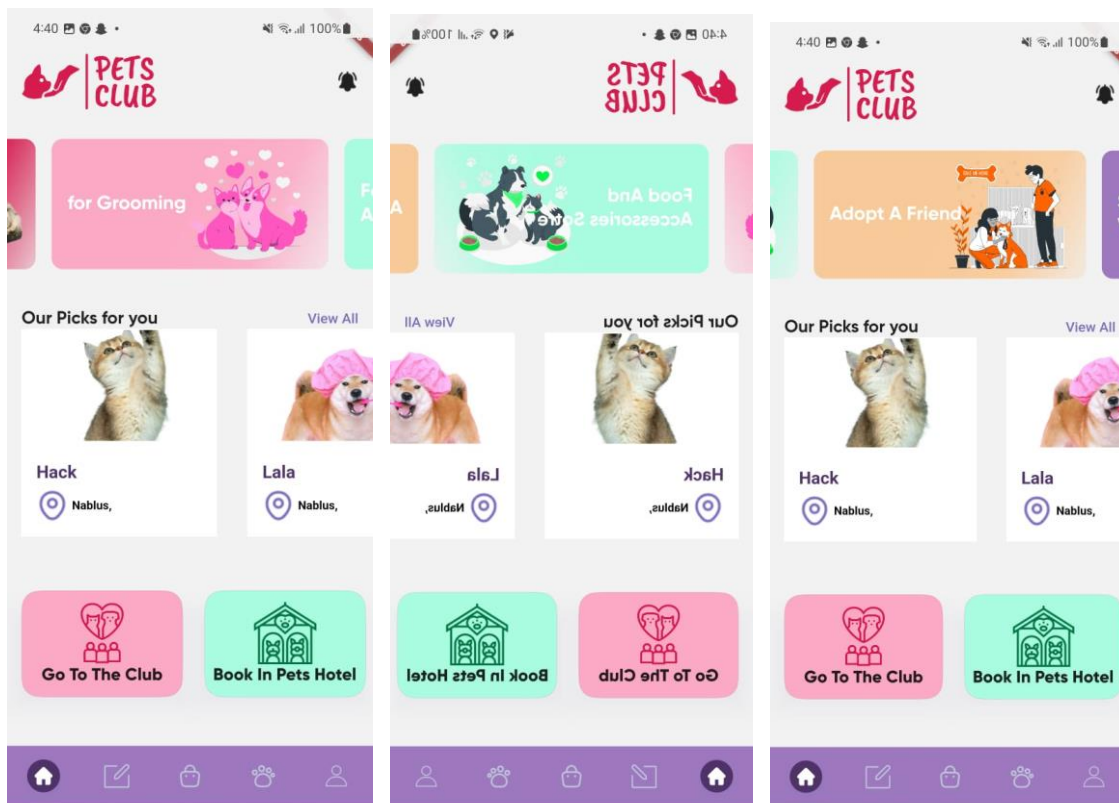


Figure 4.10

Shop Page:

Shop screen show all the product as cards, showing it can be according to category and can show all products.

Also, user can search about any product according to product name.

Any product can be added to shopping cart to check out it latter or delete from cart.

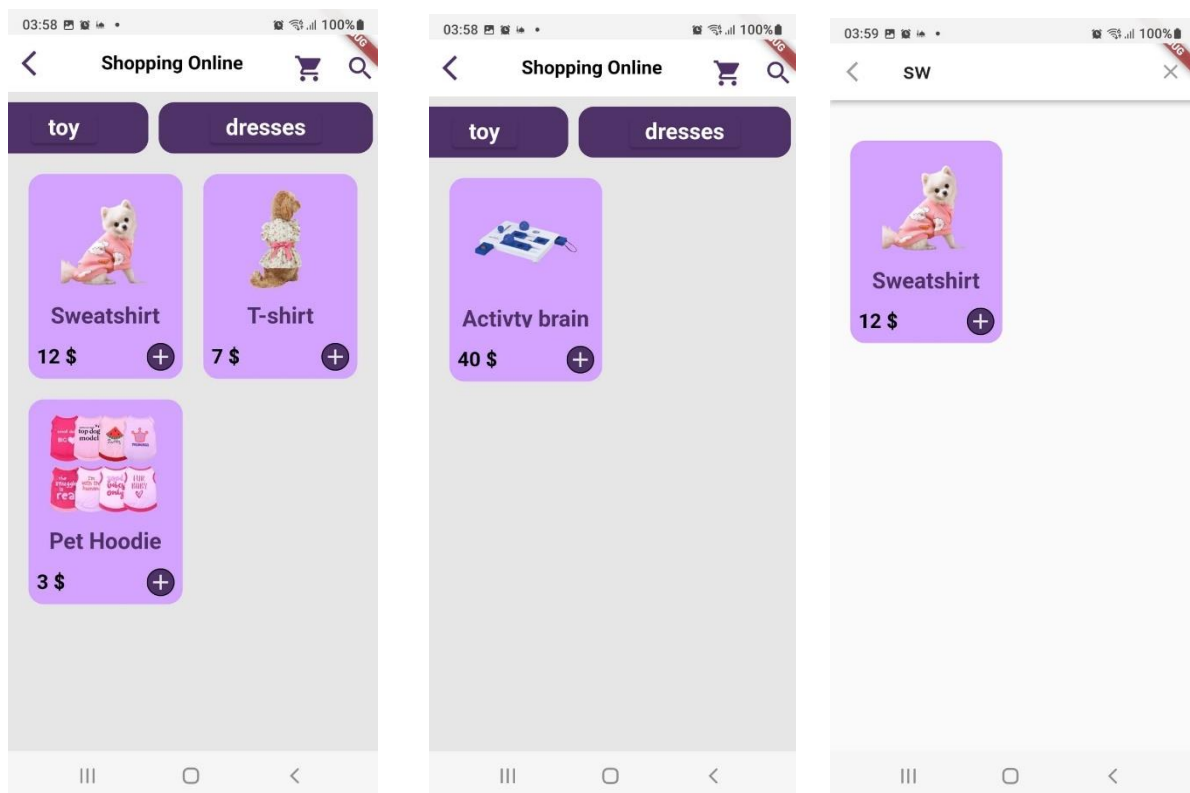
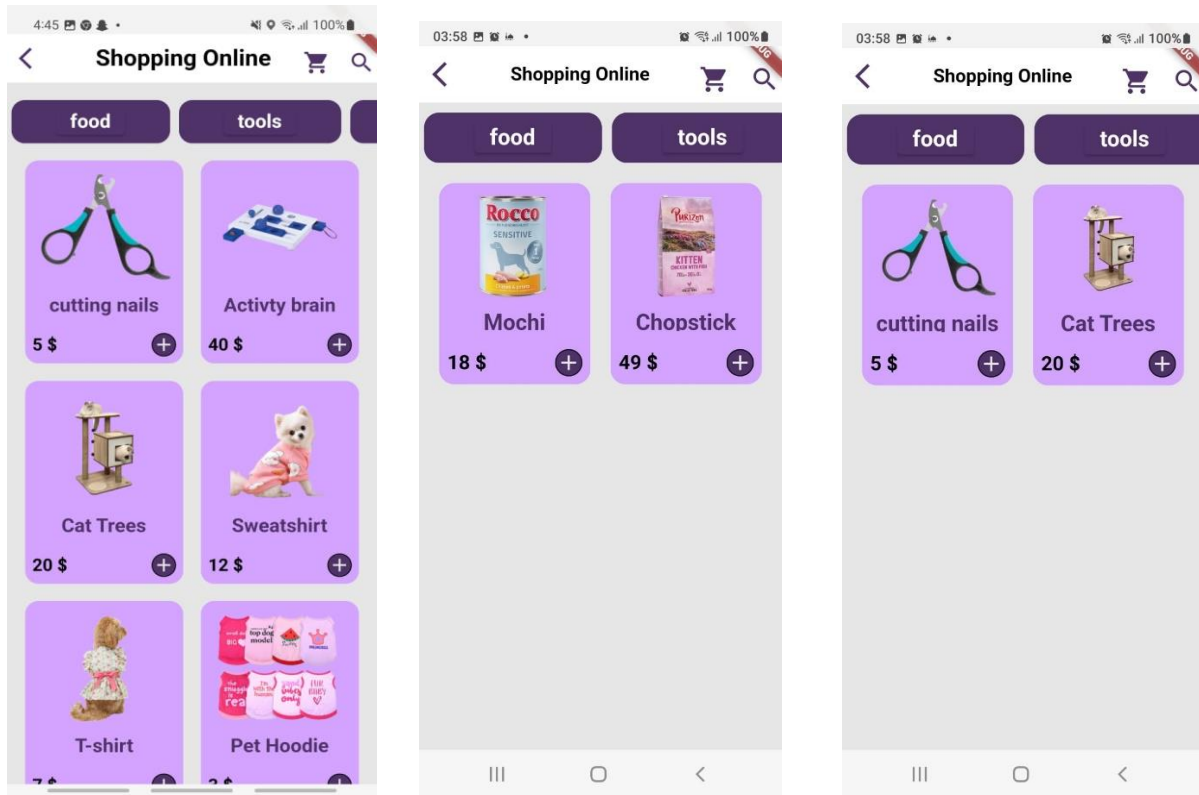


Figure 4.11

Shopping Cart Screen:

In this page user can add any product to his shopping cart and then reach it easily to check out. At the beginning the cart will be empty:

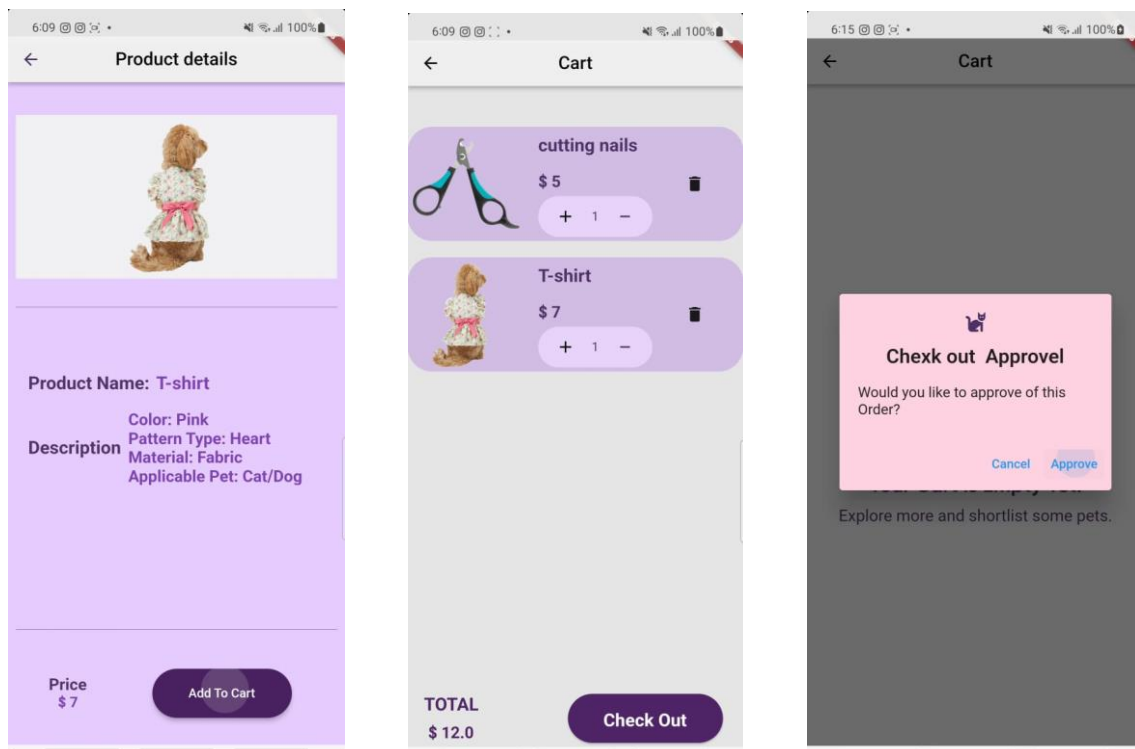
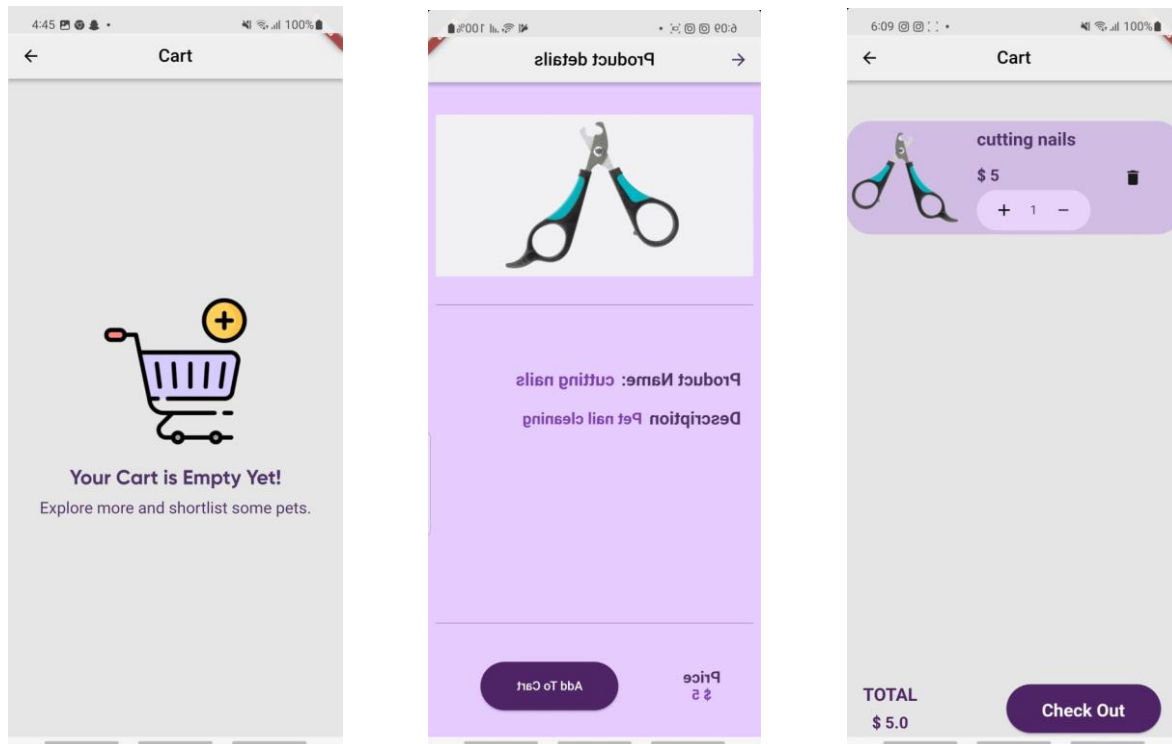


Figure 4.12

Then we can add a product to the cart using Product Details Screen from button “add to cart” the product will be added.

In cart page total price for all products in the cart is calculated and shown.

We can increase and decrease count of product we want or delete it from cart.

Veterinary Centers Screen:

At the main screen we show slider of images and we provide list of veterinary centers as cards in horizontal scroll.

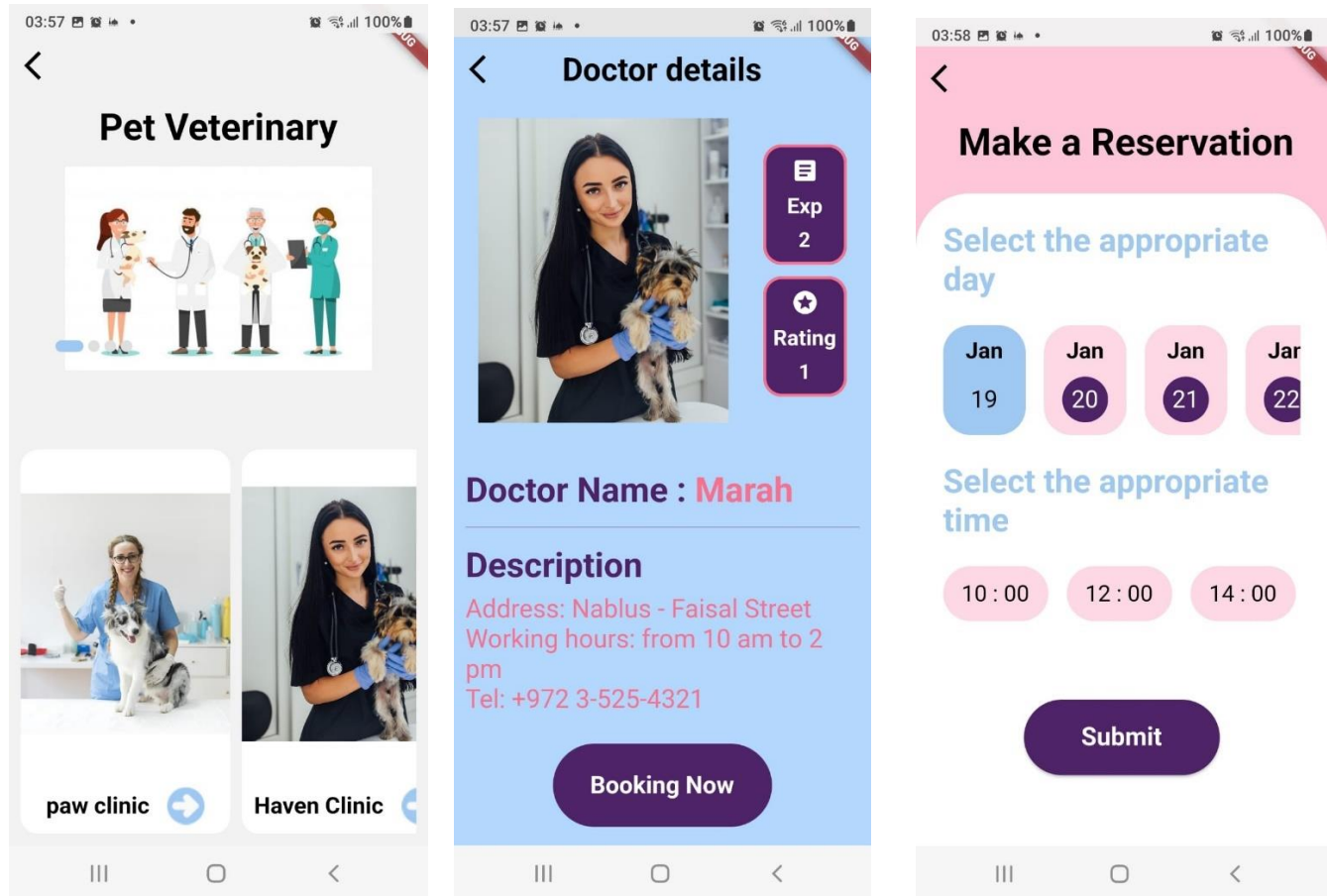


Figure 4.13

When we choose a center and pressed on it, we will move to details screen and can book an appointment to check pet's health.

Grooming Centers Screen:

As in veterinary centers, in grooming center main page we will find list of grooming centers as cards, when you choose a center and clicked on its card, the details screen will appear so you can read the detailed information and book a time for your pet.

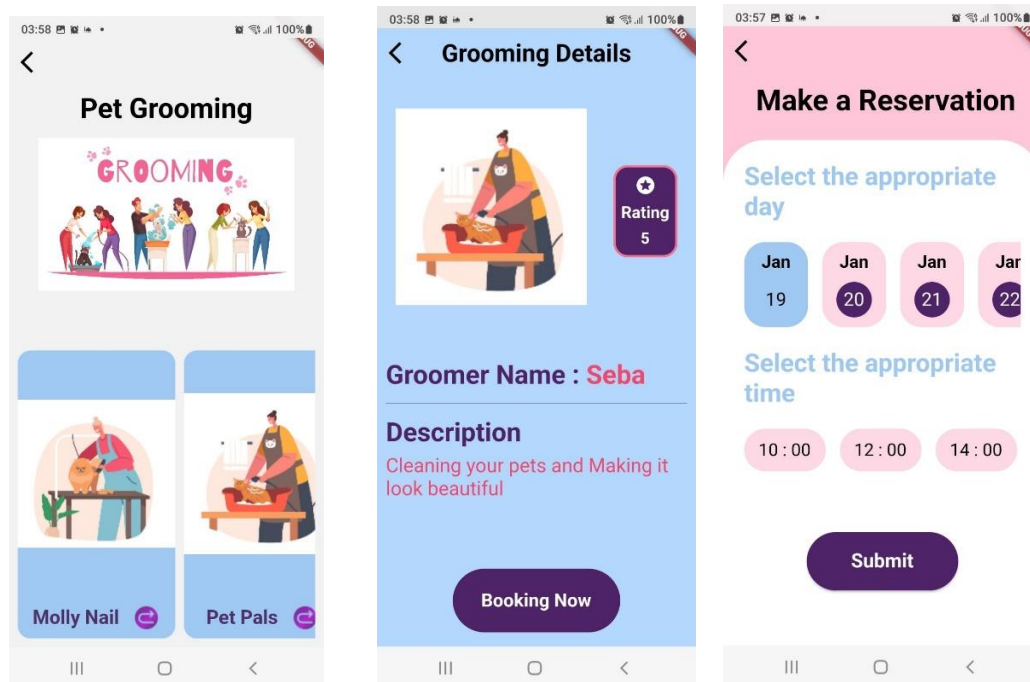


Figure 4.14

Hotel Booking:

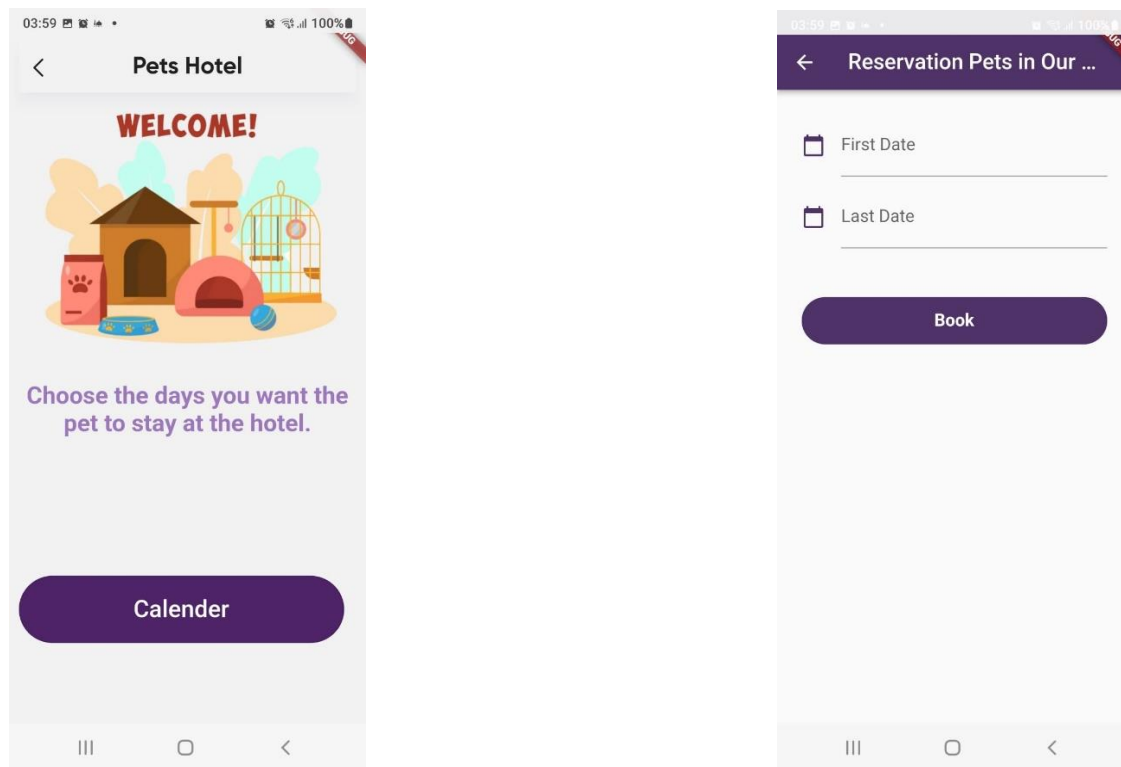


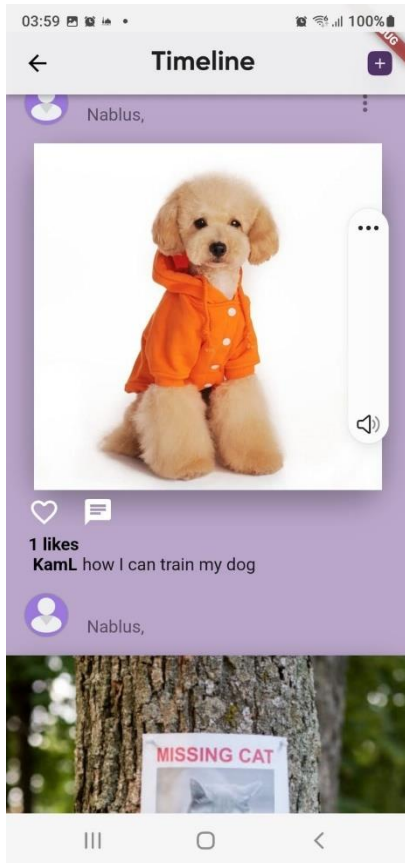
Figure 4.15

In hotel main you have to press “Calendar” button then you will get the calendar and choose two dates (starting and ending) dates where defines days that your pet can still at the hotel.

Social Network Screens:

Timeline:

Contains all posts from all users, shown as cards in a vertical scroll bar and have likes and comments features, also when you press the post header you will move to the post owner profile and then can chat with.



4.16

From plus icon at the top you can upload your own post:

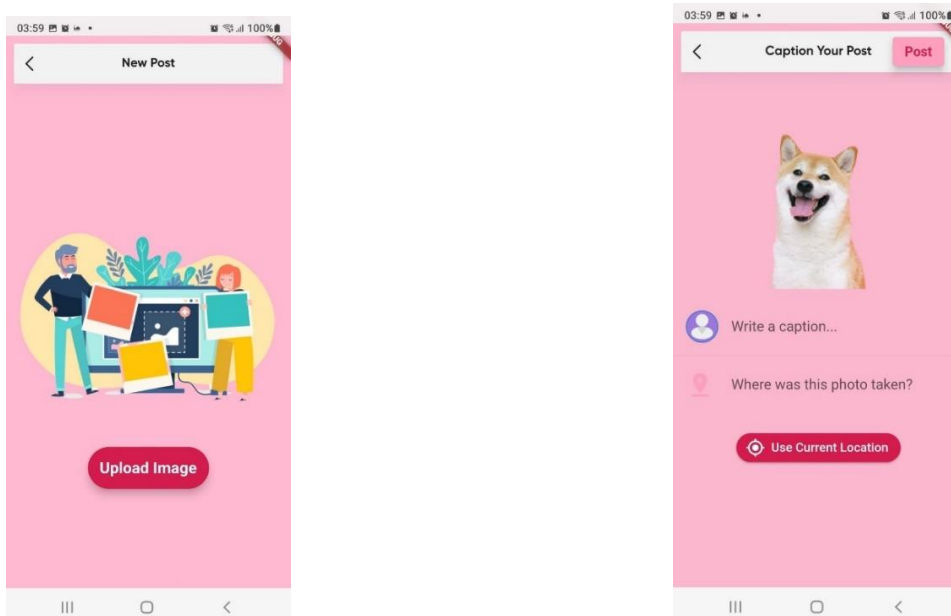


Figure 4.17

We take the image from gallery and the location will be detected using Geolocator.

Comments:

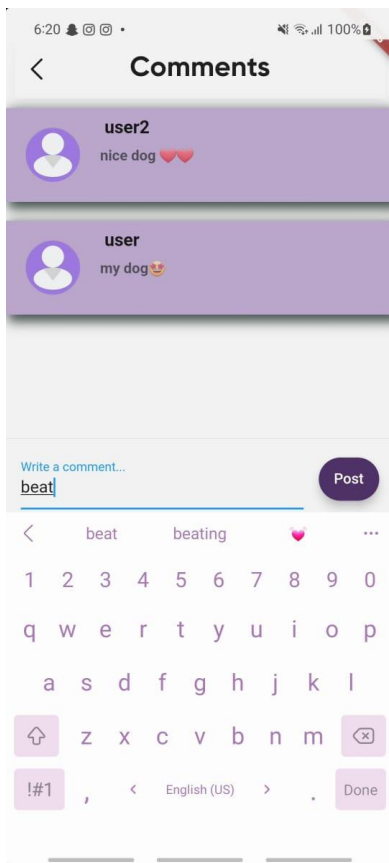
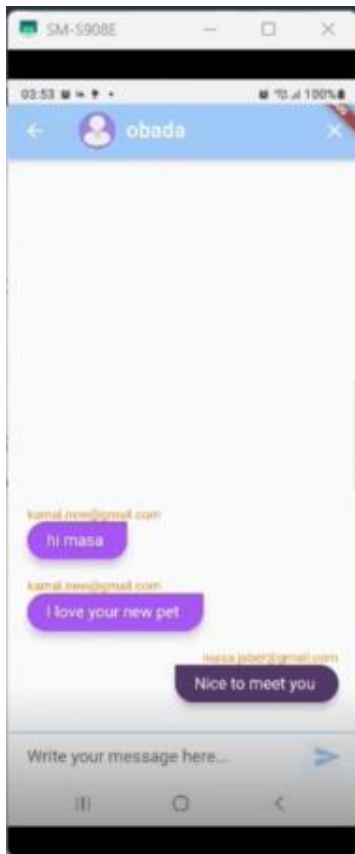


Figure 4.18

Chat Screen:



Notification Screen:

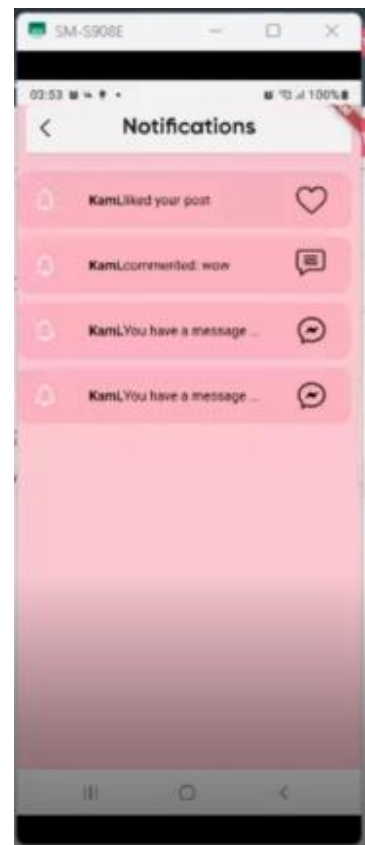


Figure:4.19

Notification Screen:

When you press on like or comment notification it will open the corresponding post and if you clicked on message icon it will open the chat screen.

Adoption Screen:

In this screen there are two important features:

1. Adopt a pet from pet details page

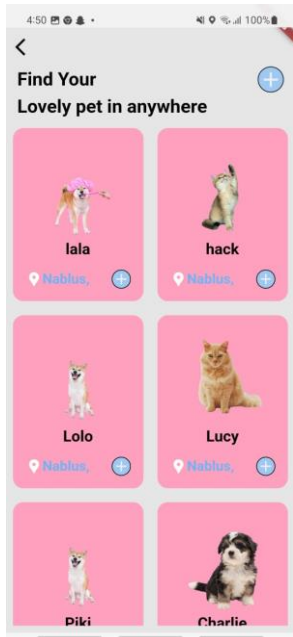


Figure 4.20

As we see the first image show the list of all pets, and the second one the pet detail page, from this page you can adopt a friend by clicking on "Adopt Me" button.

From plus icon at the top of all pets page you can fill a form and give your pet for adoption,³⁵ following the images below:

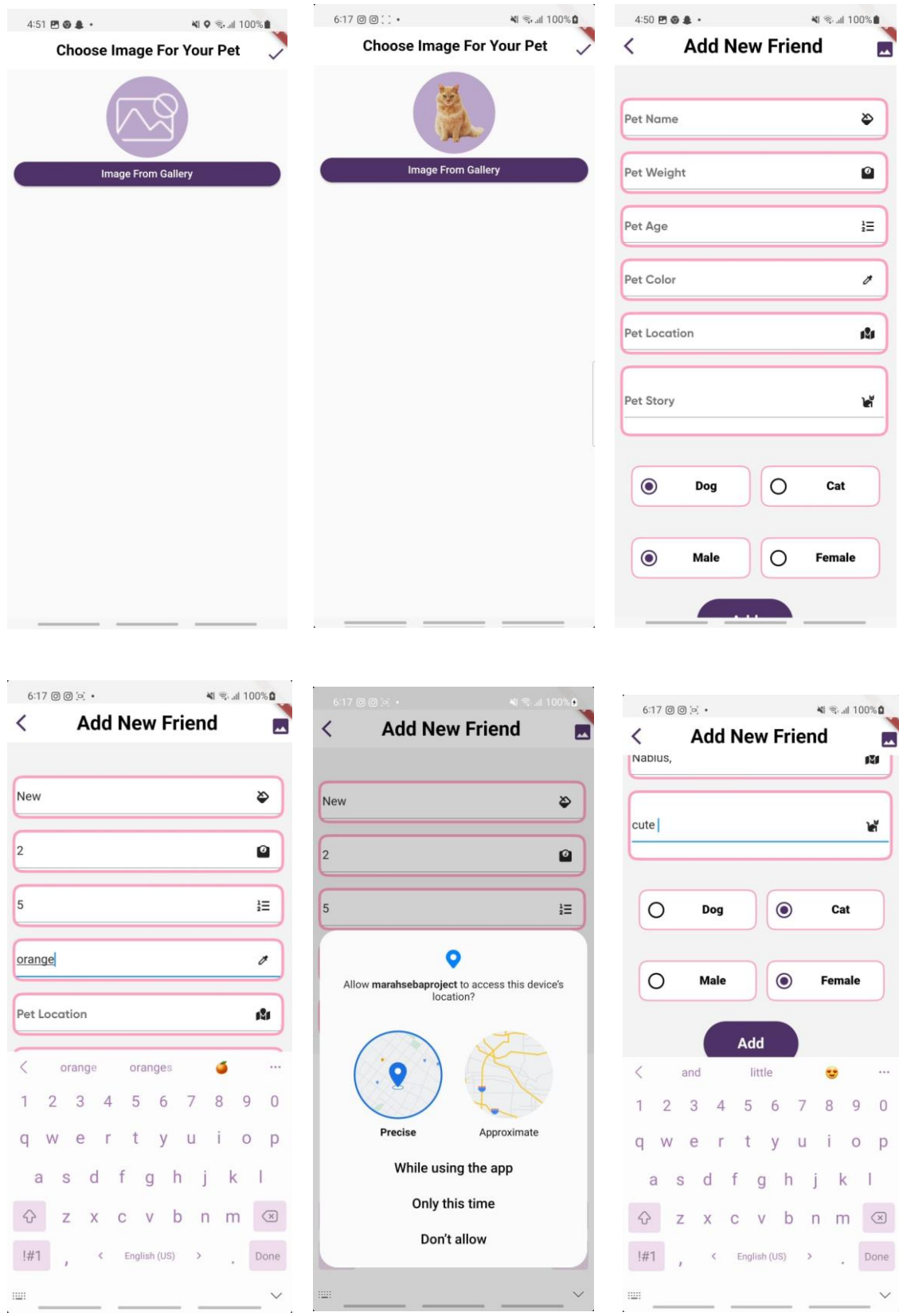
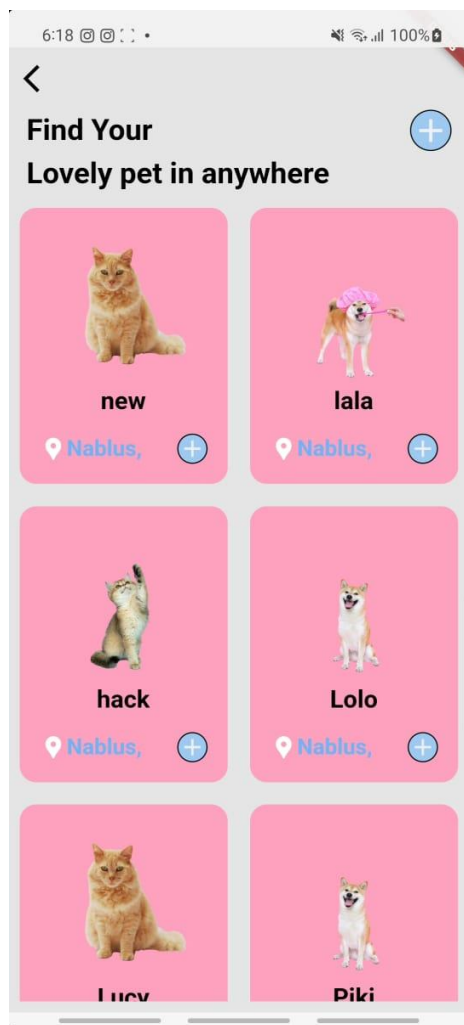


Figure 4.21

We used geolocator to detect location.

As a result of the previous form we added the new pet to all pet's screen:

36



4.22

Profile Screen:

In this screen we have user name and avatar and the posts that he shared, if the profile is open from profile's owner, he will see edit profile button but if the profile is opened from other users will see chat icon which navigate to the chat screen, we put the image before.

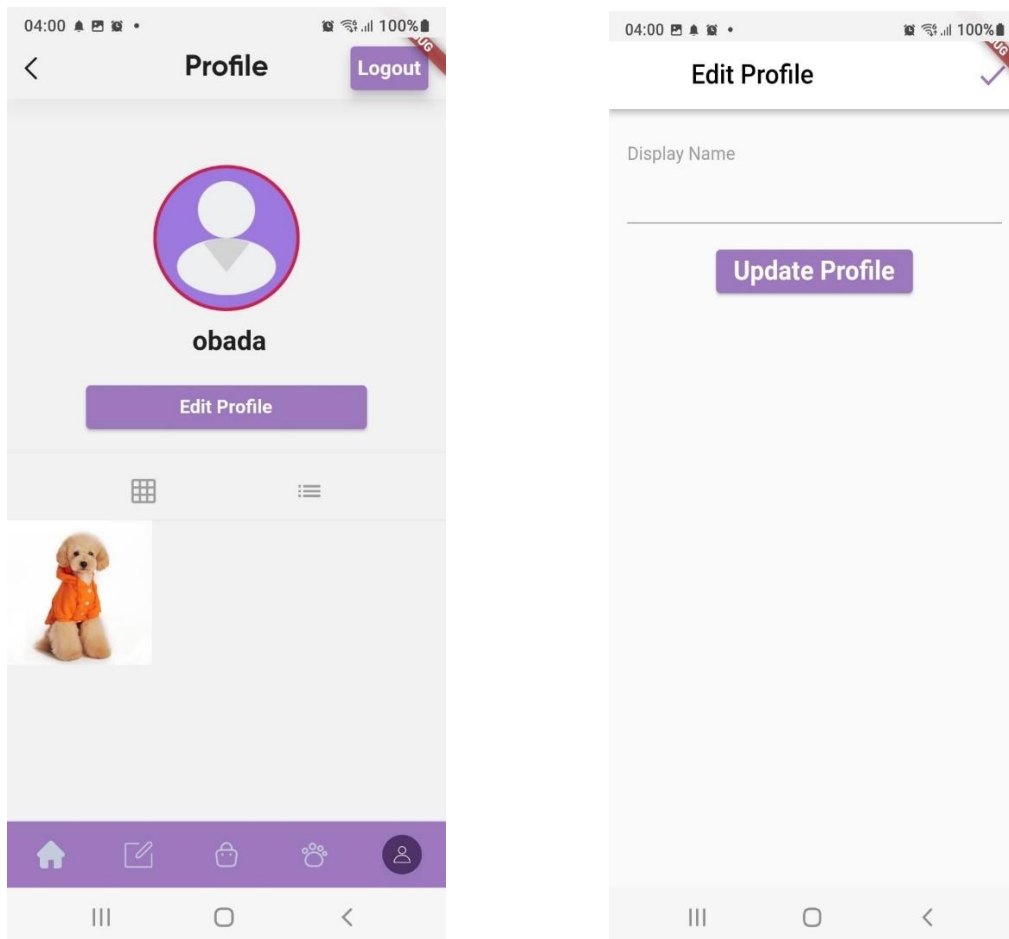


Figure 4.23

5.4.2 Website:

Website made to control and monitor all data of application, as tables, charts and statistics.

Login Screen:

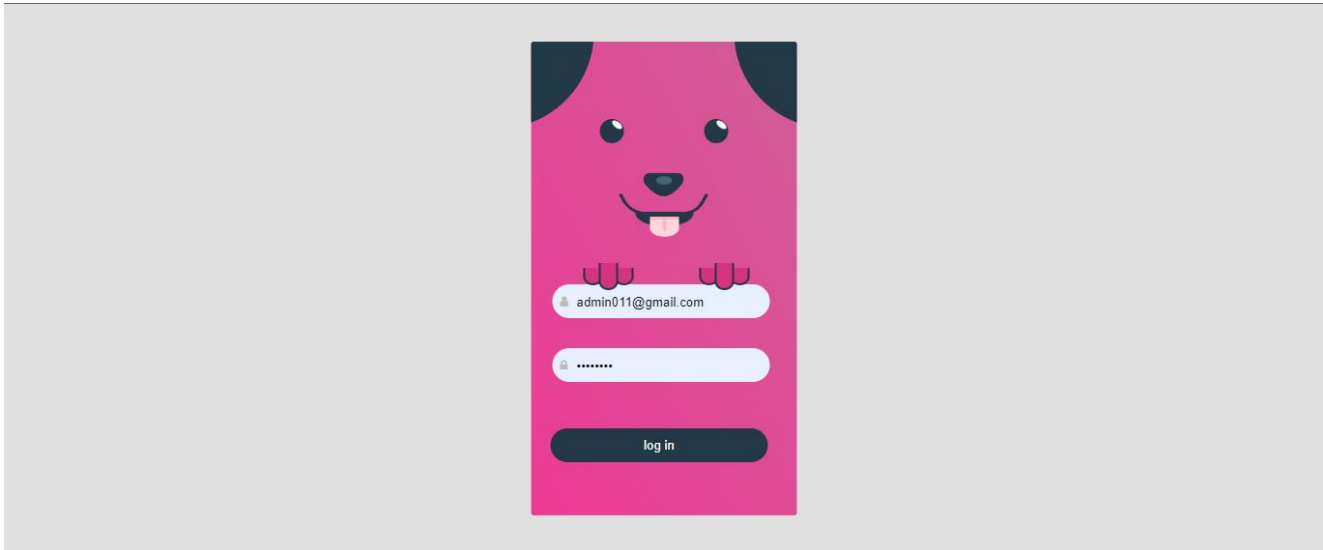


Figure 4.24

In login screen we have two text fields one for email and one for password, and the login button.

User can enter the website and access data if he authenticated to the email correctly.

Dashboard Screen:

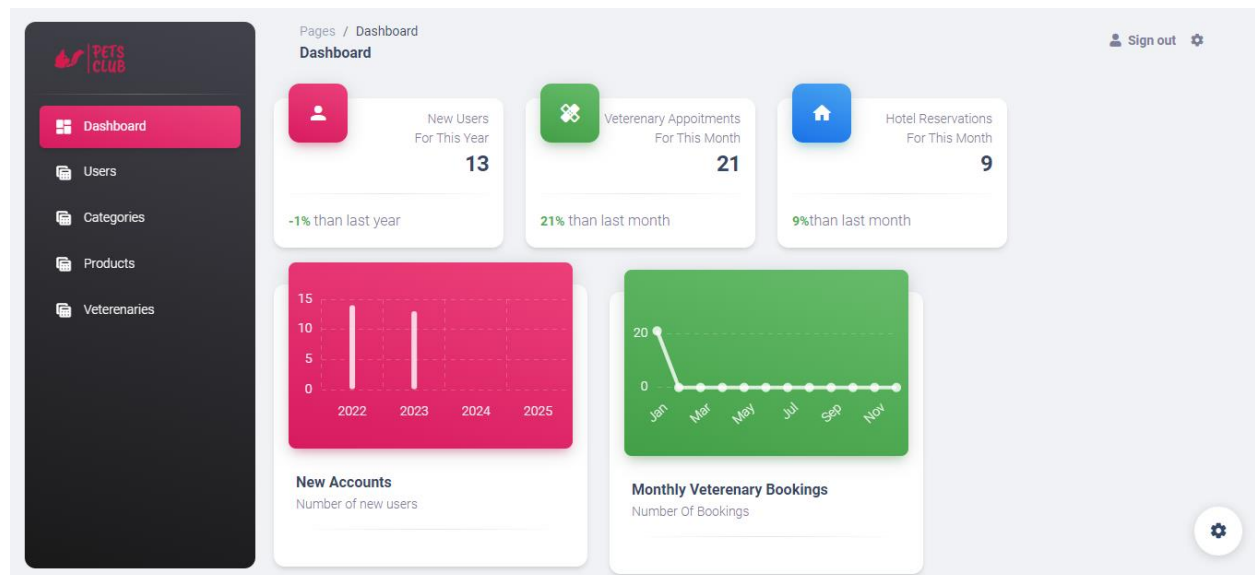


Figure 4.25

In dashboard we access the data in three ways:

Statistics:

- Count of new accounts per year.
- Count of veterinary appointments per month.
- Count of hotel bookings per month.

Charts:

We have two charts:

- First one for new account distribution over years from 2022-2023.
- Second chart is about Veterinary appointments distribution per month.

PET NAME	LOCATION	PET COLOR	PET WEIGHT	PET AGE	PET GENDER	PET TYPE	PET STATUS
Milo	Nablus,	Brown	20	2	Female	Dog	Adopted
Bella	Nablus,	Black	3	1	Female	Cat	Adopted
Charlie	Nablus,	Brown	3	5	Female	Cat	Adopted
hack	Nablus,	brown	2	3	Male	Cat	Adopted
Iala	Nablus,	White	3	4	Female	Dog	Adopted
kevan	,	brown	5	2	Male	Dog	Adopted
tokyo	Nablus,	begi	2	4	Female	Cat	Adopted

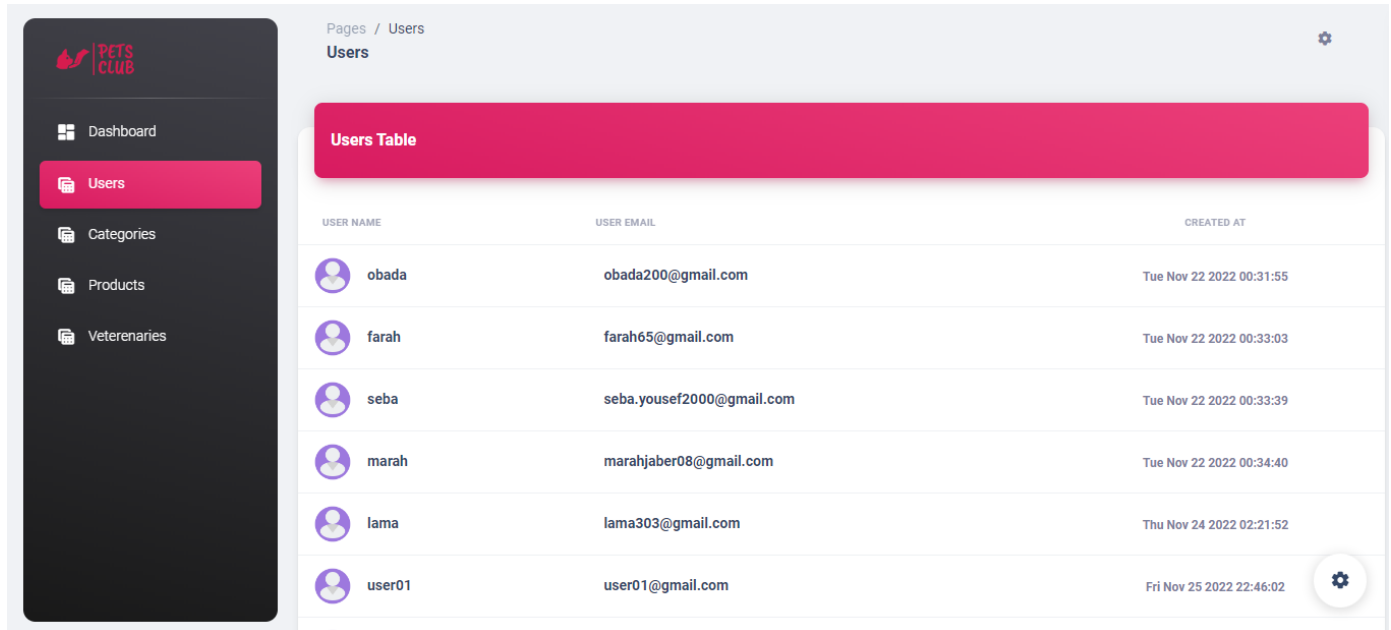
Figure 4.26

Tables:

We showed the table of all pets in data base with some details like name, image, type
And the most important one is the status that is adopted or not.

In these screens we displayed all important database tables with some actions like add, edit and delete.

Users Table:



Pages / Users
Users

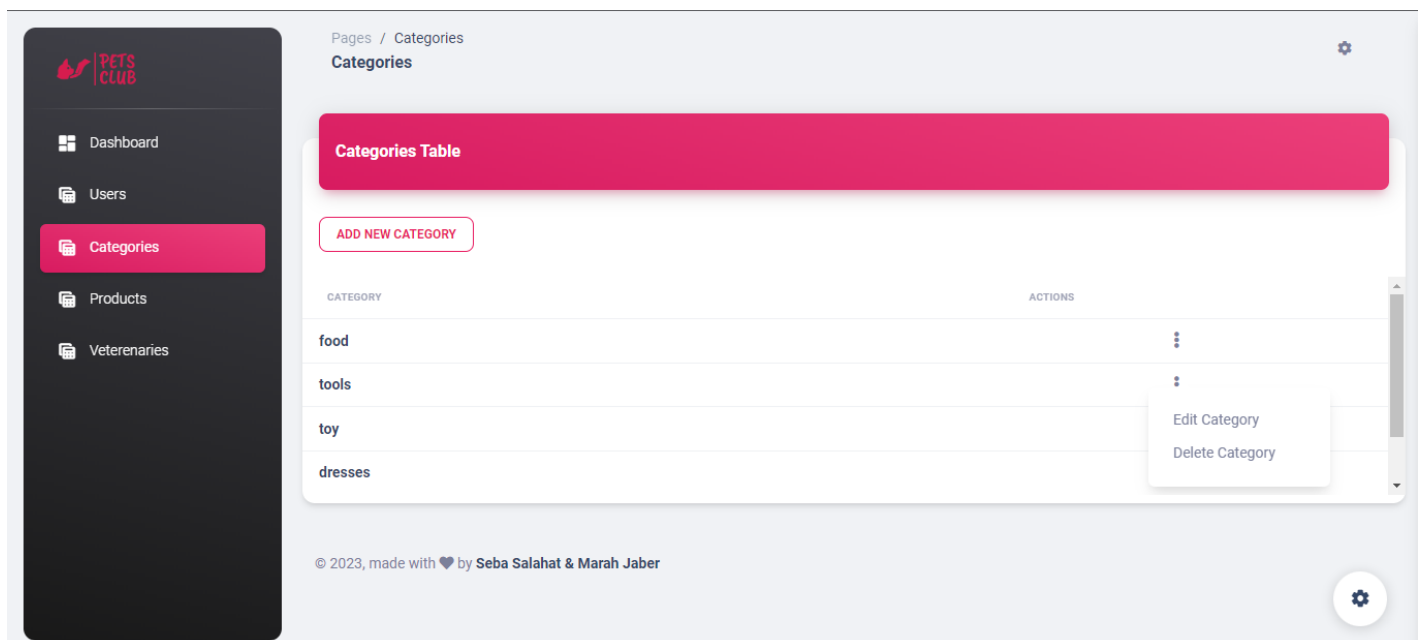
Users Table

USER NAME	USER EMAIL	CREATED AT
obada	obada200@gmail.com	Tue Nov 22 2022 00:31:55
farah	farah65@gmail.com	Tue Nov 22 2022 00:33:03
seba	seba.yousef2000@gmail.com	Tue Nov 22 2022 00:33:39
marah	marahjaber08@gmail.com	Tue Nov 22 2022 00:34:40
lama	lama303@gmail.com	Thu Nov 24 2022 02:21:52
user01	user01@gmail.com	Fri Nov 25 2022 22:46:02

Figure 4.27

Table of users here is used for monitoring and statistics.

Categories Table:



Pages / Categories
Categories

Categories Table

ADD NEW CATEGORY

CATEGORY	ACTIONS
food	⋮
tools	⋮
toy	⋮
dresses	⋮

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Figure 4.28

Edit Category: edit category name.

Delete Category: delete the category from database.

Add Category:

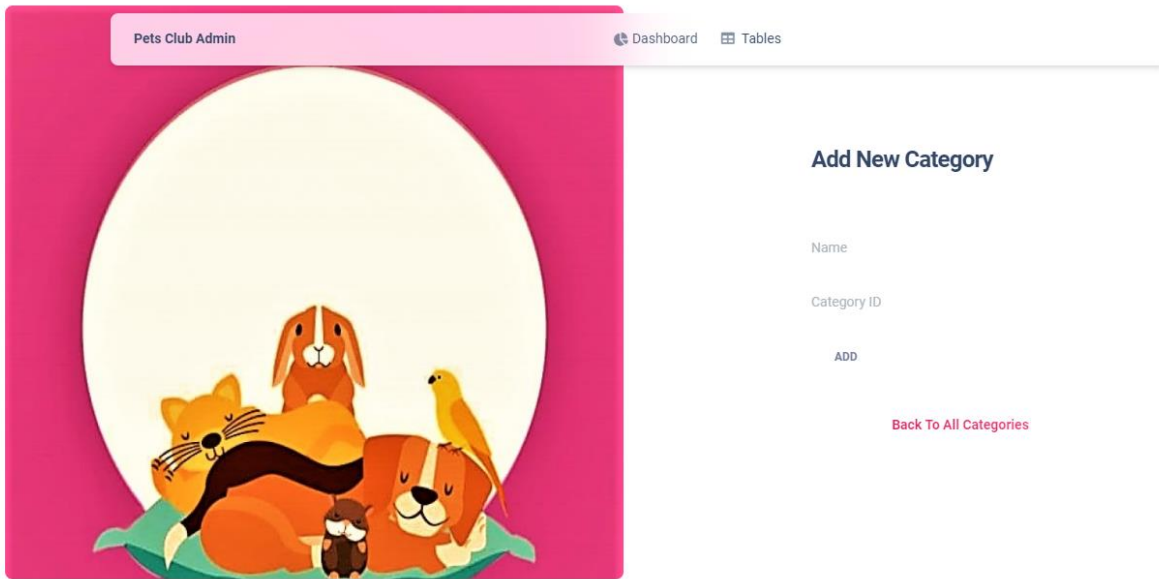


Figure 4.29

Edit Category:

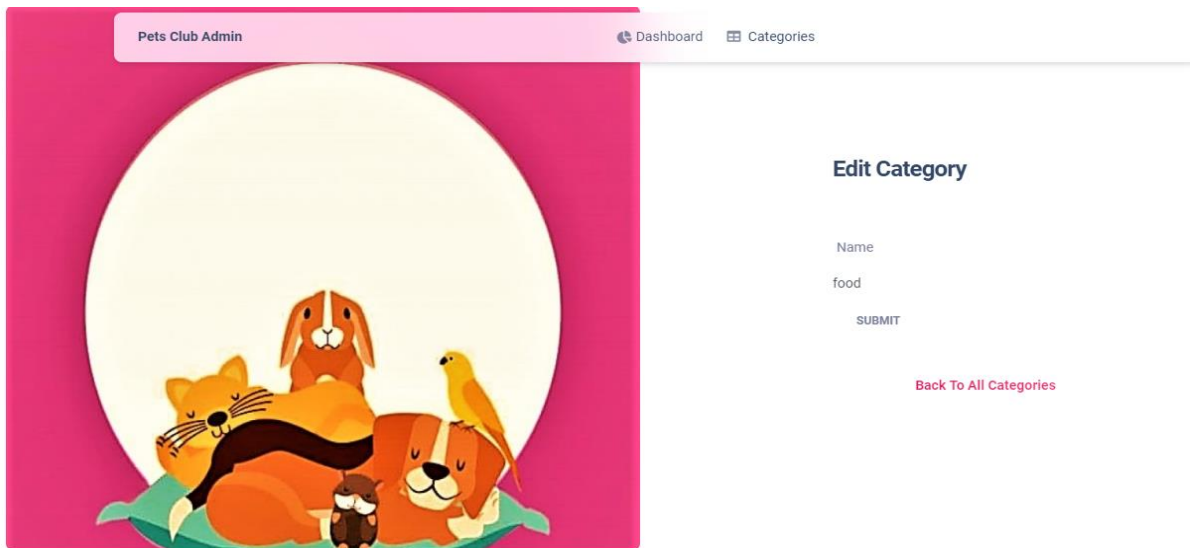
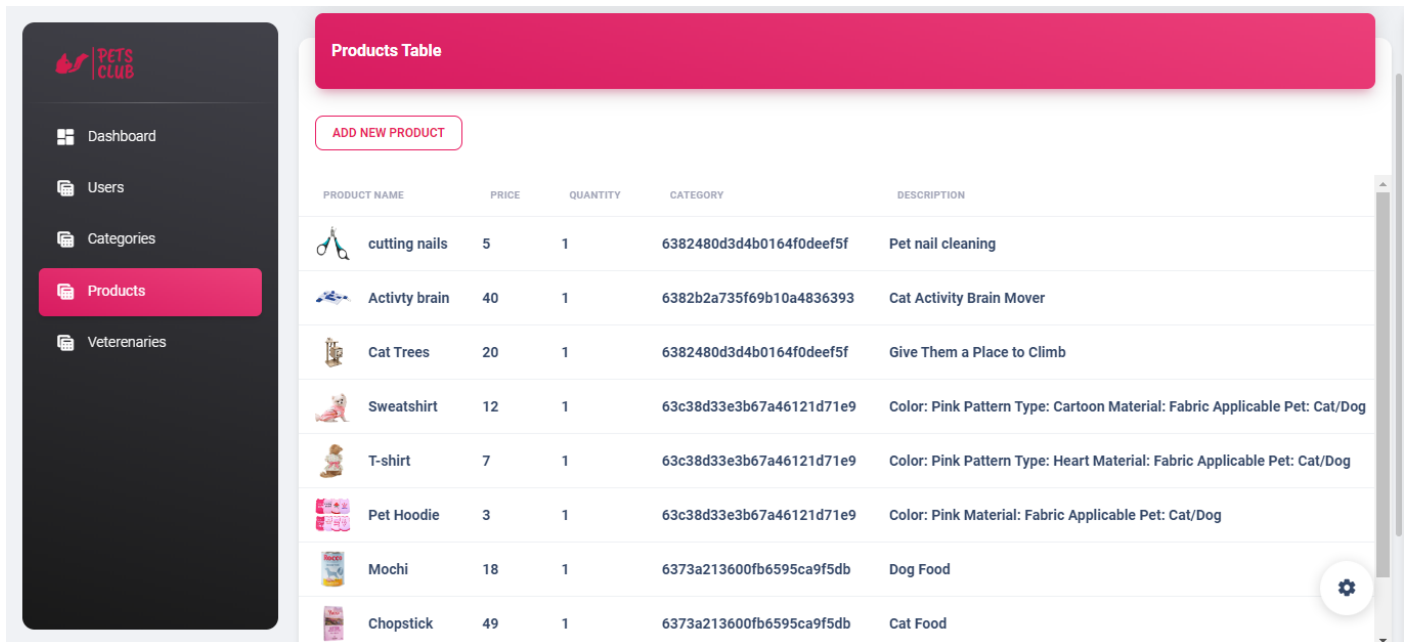


Figure 4.30

Products Table:











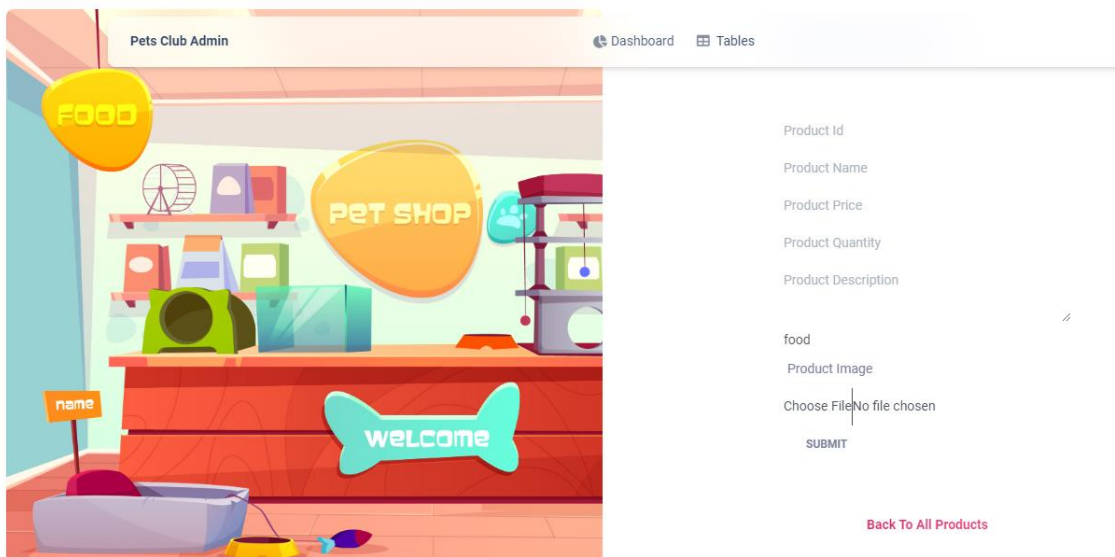
PRODUCT NAME	PRICE	QUANTITY	CATEGORY	DESCRIPTION
 cutting nails	5	1	6382480d3d4b0164f0deef5f	Pet nail cleaning
 Activity brain	40	1	6382b2a735f69b10a4836393	Cat Activity Brain Mover
 Cat Trees	20	1	6382480d3d4b0164f0deef5f	Give Them a Place to Climb
 Sweatshirt	12	1	63c38d33e3b67a46121d71e9	Color: Pink Pattern Type: Cartoon Material: Fabric Applicable Pet: Cat/Dog
 T-shirt	7	1	63c38d33e3b67a46121d71e9	Color: Pink Pattern Type: Heart Material: Fabric Applicable Pet: Cat/Dog
 Pet Hoodie	3	1	63c38d33e3b67a46121d71e9	Color: Pink Material: Fabric Applicable Pet: Cat/Dog
 Mochi	18	1	6373a213600fb6595ca9f5db	Dog Food
 Chopstick	49	1	6373a213600fb6595ca9f5db	Cat Food

Figure 4.31

Shows all product details like image, name, price, quantity, ...

For this table we can perform add and delete actions.

Add Product:



Pets Club Admin

Dashboard Tables

Product Id

Product Name

Product Price

Product Quantity

Product Description

food

Product Image

Choose File No file chosen

SUBMIT

Back To All Products

4.32

From the previous page we can add new product to the database.

Veterinaries Table:

DOCTOR NAME	CLINIC NAME	YEARS OF EXPERIENCE	RAITING	DESCRIPTION
Georgina	paw clinic	5	2	Address: Nablus - Palestine Street Working hours: from 10 am to 3 pm Tel: +972 3-525-4798
Marah	Haven Clinic	2	1	Address: Nablus - Faisal Street Working hours: from 10 am to 2 pm Tel: +972 3-525-4321
Kareman	Happy Clinic	6	2	Address: Tulkarm - Paris Street Working hours: from 8 am to 2 pm Tel: +972 3-666-4321
David	Health Clinic	10	5	Address: Tulkarm - Nablus Street Working hours: from 8 am to 2 pm Tel: +972 3-666-4321

4.33

Here we display the list of veterinaries in the database and the details of it like doctor name, clinic name, experience, rating and description.

Bookings Table:

USER ID	DOCTOR ID	DATE	SATATUS	ACTION
6381298ae56a1827c477d085	Marah	11/1/2023ValueNotifier<TimeOfDay?>#de42a(TimeOfDay(12:00))	Pending	⋮
6381298ae56a1827c477d085	Kareman	10/1/2023ValueNotifier<TimeOfDay?>#1167a(TimeOfDay(12:00))		
6381298ae56a1827c477d085	David	14/1/2023ValueNotifier<TimeOfDay?>#c40d4(TimeOfDay(12:00))		
6381298ae56a1827c477d085	David	14/1/2023ValueNotifier<TimeOfDay?>#707c6(TimeOfDay(14:00))	Accepted	⋮
6381298ae56a1827c477d085	Georgina	14/1/2023ValueNotifier<TimeOfDay?>#183fe(TimeOfDay(14:00))	Accepted	⋮
6381298ae56a1827c477d085	Georgina	16/1/2023ValueNotifier<TimeOfDay?>#e0f76(TimeOfDay(16:00))	Accepted	⋮
638ceae270b06667b017a925	Marah	16/1/2023ValueNotifier<TimeOfDay?>#d68f4(TimeOfDay(16:00))	Accepted	⋮
6381298ae56a1827c477d085	Kareman	16/1/2023ValueNotifier<TimeOfDay?>#ca104(TimeOfDay(12:00))	Accepted	⋮
6381298ae56a1827c477d085	Georgina	16/1/2023ValueNotifier<TimeOfDay?>#f2b4d(TimeOfDay(14:00))	Accepted	⋮
6381298ae56a1827c477d085	David	19/1/2023ValueNotifier<TimeOfDay?>#6e3cb(TimeOfDay(14:00))	Accepted	⋮

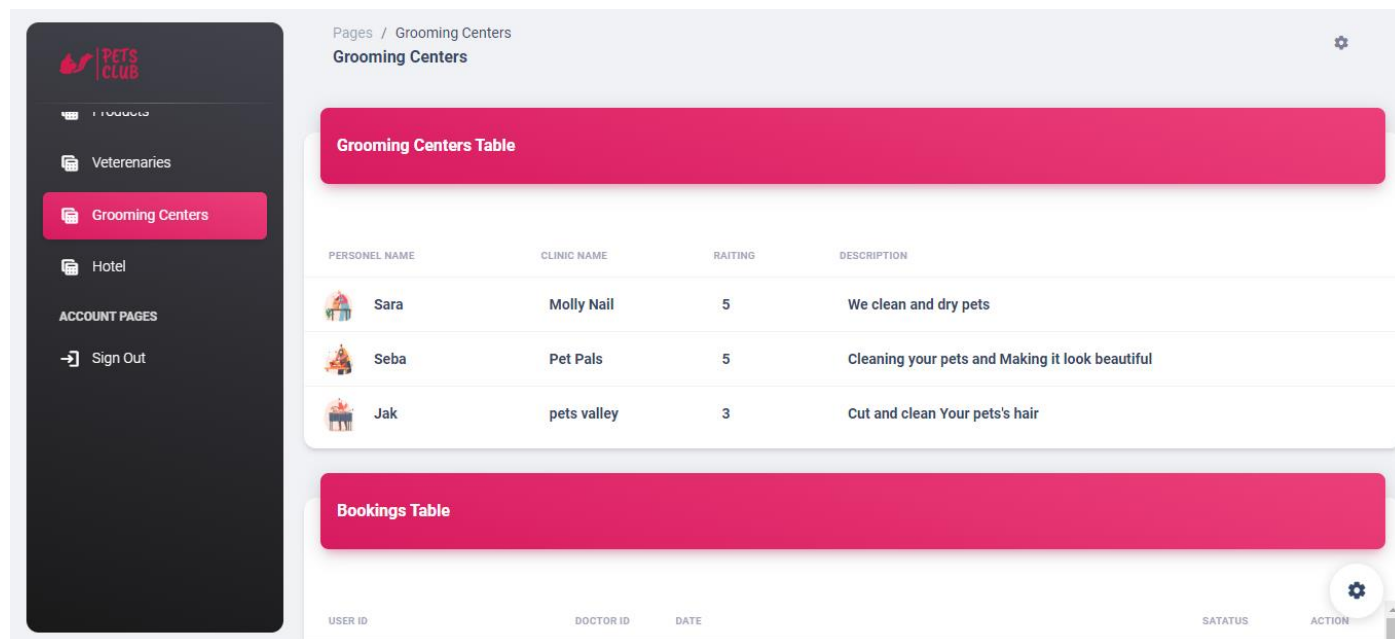
Figure: 4.34

For booking we have three status: 0: Accepted, 1: Pending (new booking needs approval), 2: Rejected.

Admin Chooses the next state of pending bookings from the dropdown menu if he accepted the appointment state become accepted as shown in screenshot.

And if he chooses reject the booking will be removed from admin page and still at the database with status 2 to be used in statistics.

Grooming Centers Table:



Pages / Grooming Centers
Grooming Centers

Grooming Centers Table

PERSONEL NAME	CLINIC NAME	RAITING	DESCRIPTION
Sara	Molly Nail	5	We clean and dry pets
Seba	Pet Pals	5	Cleaning your pets and Making it look beautiful
Jak	pets valley	3	Cut and clean Your pets's hair

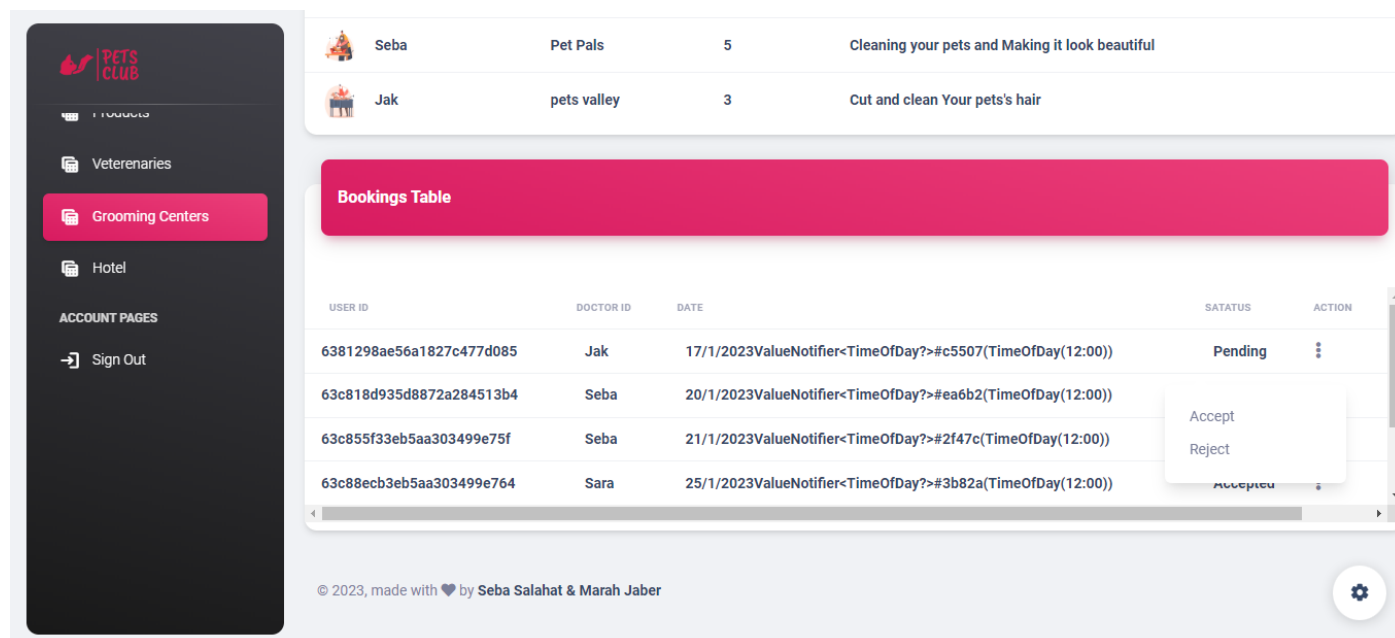
Bookings Table

USER ID	DOCTOR ID	DATE	SATATUS	ACTION
---------	-----------	------	---------	--------

Figure: 4.35

Here we display the list of grooming centers in the database and the details of it like specialist name, clinic name, rating and description.

Grooming Centers Booking:



Seba	Pet Pals	5	Cleaning your pets and Making it look beautiful
Jak	pets valley	3	Cut and clean Your pets's hair

Bookings Table

USER ID	DOCTOR ID	DATE	SATATUS	ACTION
6381298ae56a1827c477d085	Jak	17/1/2023ValueNotifier<TimeOfDay?>#c5507(TimeOfDay(12:00))	Pending	⋮
63c818d935d8872a284513b4	Seba	20/1/2023ValueNotifier<TimeOfDay?>#ea6b2(TimeOfDay(12:00))		Accept Reject
63c855f33eb5aa303499e75f	Seba	21/1/2023ValueNotifier<TimeOfDay?>#2f47c(TimeOfDay(12:00))		Accept
63c88ecb3eb5aa303499e764	Sara	25/1/2023ValueNotifier<TimeOfDay?>#3b82a(TimeOfDay(12:00))		Accept

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Figure:4.36

As in veterinary booking here also we have 3 states for grooming centers booking:

0: Accepted. (send notification for the user)

1: Pending. (new appointment admin can accept or reject).

2: Rejected (removed from admin table, but still stored in the database with state 2 because it used for statistics).

The screenshot shows a web interface for 'PETS CLUB' with a sidebar menu containing 'Hotels', 'Veterinaries', 'Grooming Centers', and 'Hotel' (highlighted). The main content area is titled 'Hotel Reservations' and contains a 'Hotel Bookings Table'. The table has three columns: 'USER', 'STARTING DATE', and 'ENDING DATE'. It displays 10 rows of booking data, each with a unique user ID, a start date and time in GMT+0200, and an end date and time in GMT+0200.

USER	STARTING DATE	ENDING DATE
6381298ae56a1827c477d085	Tue Jan 03 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Thu Jan 05 2023 00:00:00 GMT+0200 (Eastern Europ
6381298ae56a1827c477d085	Thu Jan 19 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Fri Jan 20 2023 00:00:00 GMT+0200 (Eastern Europe
6381298ae56a1827c477d085	Wed Jan 04 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Thu Jan 26 2023 00:00:00 GMT+0200 (Eastern Europ
6381298ae56a1827c477d085	Tue Jan 17 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Thu Jan 19 2023 00:00:00 GMT+0200 (Eastern Europ
6381298ae56a1827c477d085	Wed Jan 11 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Sat Jan 14 2023 00:00:00 GMT+0200 (Eastern Europ
63c818d935d8872a284513b4	Thu Jan 19 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Sat Jan 21 2023 00:00:00 GMT+0200 (Eastern Europ
63c855f33eb5aa303499e75f	Mon Jan 23 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Sat Jan 28 2023 00:00:00 GMT+0200 (Eastern Europ
63c88ecb3eb5aa303499e764	Thu Jan 26 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Tue Jan 31 2023 00:00:00 GMT+0200 (Eas+rop
63c8999f3eb5aa303499e76a	Sun Jan 29 2023 00:00:00 GMT+0200 (Eastern European Standard Time)	Wed Feb 01 2023 00:00:00 GMT+0200 (Easrop

Figure 4.37

In this table we displaying all hotel bookings with the user ID and the start/last date of the booking.

5.4.3 Database and API Server

/signup	Post	To add new user	name, email, password
/Login	Post	Log the user	email, password
/:userId	Patch	Update user data	Name, email, password
/data	Get	Authentication user	
/login	Post	Log the Admin	username, password
Product/create	Post	insert product for shop online	category name price description productImage quantity categoryId
Product/show	Get	Get the stored products	-
/getProductForCategory	Get	Get the stored products by category	-
gromming/create	Post	Insert grooming people for grooming clinic	grompersonId, name clinicgromName, description, image, rating,
gromming/get	Get	Get the grooming people for clinic	-
gromming/boking	post	Booking a day and time	grompersonId userId

			dateTime status	46
gromming/getBoking	Get	Get the user's appointments	-	
Doctor/create	Post	Insert doctors' people for clinic	docId name clinicName description image exp rating	
Doctor/get	Get	Get the doctor people for clinic		
Doctor/boking	Post	Booking a day and time	docId userId dateTime status	
Doctor/getBoking	Get	Get the user's appointments	-	
Doctor/getid		Get doctor id	Id	
category/creat	Post	Insert new category	name, categoryId	
category/show	Get	Get the categories		
Cart/show/:userId	Get	Get all order	-	
cart/	Post	Insert new order to cart	Product Quantity user	
bookhotel/add	Post	Insert New Appointment for hotel	User, lastdate, firstdate	
bookhotel/get	get	get all user's appointments		
Adoption/create	Post	To insert adoption	adoptionId petStory name location weight petImage age color gender type	
Adoption/get	Get	Get all adoptions	-	
Adoption/update	Post	Update adoption	Id Status	
reservation/show	get	to get all reservation		

We used the Nodejs framework in our application to help us build a high-performance backend server and implement all of the RESTful APIs. Nodejs includes a plethora of built-in functions and libraries that aided us in implementing and developing the required

features and method.

Chapter 6

Results and Discussions

We used a variety of tools and languages, including flutter and NodeJS, as well as two databases, the main database was MongoDB and Firebase for the social network. We created a user-friendly application in which the pet owner can find everything he needs in one place and easily access all of our features. A pet owner can buy all the supplies he needs to care for his pet, adopt a new pet, book a veterinary or grooming clinic or a hotel to keep his pet while traveling, and communicate with other pet owners for help or advice. We created an easy-to-use website for administrators to display and edit information in a straightforward manner.

▪ Learning

Since we've used new technology that we've never used before, learning new things clearly requires extensive investigation of these things and making sure they're used efficiently, both of which take time and effort. We chose flutter as our platform as well as Nodejs for back-and-end and dealing with two different ways of data base, and the internet provided us with access to a wealth of resources that facilitated our learning.

▪ Challenges

- Using new frameworks and programming languages so, it was hard to implement.
- Heavy editors and simulations which caused problems in our laptops.
- Varsity features from different fields delayed our work.
- Hard to work with two databases

Chapter 7

Conclusion

6.1 Summary

We have developed a cross-platform application, which is an application that helps the pet-loving person or the owner of the pet to find everything he needs with one application that provides services to the user in terms of a section to buy and also book appointments for veterinary clinics or cosmetic clinics for the cat or animal, as well as the adoption section and finally a special section for social media, where there is a communication system between all users allows them to exchange messages, have discussions, or search for a missing cat

6.2 Things we learned:

- Mobile development using the framework of Flutter, written in the Dart programming language,
- Building a high-performance REST API using node.js framework, written in JavaScript language,
- Testing endpoints APIs using postman
- Create a chat system
- Working with servers and URL's confidently,
- Dealing with developer APIs and using data from websites in our ejs application
- Working with developed APIs.
- Dealing with git and GitHub
- Collaborate with many Flutter packages to finish our project

6.3 Recommendations

Mobile app development has become a very important topic in computer science and engineering departments, and it should get more attention. Having a course to teach students the basics of building applications will save them time and effort

6.4 Future Work

There are many features we want to add to our software and many more we want to improve, will not stop there.

- The chat system will be enhanced to support voice messages, images, and videos in addition to group chats.
- Make the payment process effective and real.
- Making the app more like social media by including the story function, following/unfollowing.
- Ability to reserve hours in pet hotel not only days.

Chapter 8

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