

AN-NAJAH NATIONAL UNIVERSITY



Faculty of Engineering
Computer Engineering Department

Graduation Project -1-

TheVet

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Acknowledgment

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In the end i would like to thank myself and my partner for believing in ourselves and keep going until we achieve this project .

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Abstract

With the rise of technology which people use daily, people who raise pets in their houses still use old communication methods to communicate with their veterinary, which is a good communication way but not the best .

We believe that technology should play a role in this communication to make it easier and more efficient for each side .

So in an attempt to achieve that goal we have developed "TheVet" mobile app and web site .

TheVet connects people who raise pets in their houses with their veterinarian , and help them to know more about their pets , booking appointments , know the best vet for their pet and more .

Chapter 1

Introduction

1.1 Problem

People still use old communication method to communicate with their veterinary and it's is not the most efficient way to do that , also they may not know how much good is the veterinary that they communicate with ,also there is some cases that does not need a veterinary help (Common question) it just need a pets community to help each other in cases like this , also determine the location of the veterinary clinic may be a problem in some cases .

1.2 Aims and Objectives

The main goal of the project is to make the communication as efficient as possible and give the pets owner more information about the veterinary and also increase the pets owner's knowledge about their pets .

1.3 Overview of the report

- Chapter 2 : **Constraints and earlier work.** In this chapter we've talked about the reasons that make the process of building the project kind of slow and the earlier courses that we've taken which help us to develop the application.
- Chapter 3 : **Literature Review.** In this chapter we will talk about similar systems and additions in our application.
- Chapter 4 : **Methodology.** This chapter will cover tools, procedures and tasks our application provides.

- Chapter 5 : **Results and Discussion.** In this chapter we will discuss the results with figures.
- Chapter 6 : **Conclusion and Future Work.** In this chapter we will summarize the project and we will talk about some features we can add to our system in future.

Chapter 2

Constraints and earlier work

2.1 Constraints

- Knowledge constraints

The system is mainly based on Angular front-end framework , .Net for back-end APIs and Docker to run each service ,

The constraint is that we never learn any of these so that causes a big lag in the system build process.

- Veterinary clinic constraints

The small number of veterinary clinics was one of the reasons for the difficulty in finding new and useful features for the system, as we had to put all of the features from our imagination , without referring to one of the veterinarians to take him as a client

2.2 Earlier Work

We've taken a course in Angular framework and do some practice in GitHub using Git command ,also we've taken a course in .NET framework , that's helped us to increase the process of building the system a bit .

Chapter 3

Literature Review

TheVet application idea started from one of our friend's experiences who raised a cat , and faced a problem to which veterinary should i go and how can i communicate with and here TheVet application role came .

TheVet application offers a direct way to communicate with the veterinary , also he can know who is the best veterinary in his region , also he can know a lot of information about his pet .

As far as we know , there is no similar application to TheVet in the local area , but it takes a lot of features from many applications and merges them in one application .

For example "Facebook" , one of the features that the application offers is that the veterinarian can publish a post like facebook post that the users can see and comment on it .

Also the application has the feature of uploading scientific research papers which help the users to know more about their pets and expand their knowledge.

Also the Application has the features of instance direct messages , the features available in a lot of applications like : Messenger , whatsapp , ... which give the user the ability to communicate directly with the veterinarian .

One of the additional features that the application has is that the user can see the veterinary rating which reflects how good the veterinary is which helps the people to know which veterinary they should go to .

Also the application offers the functionality of booking an appointment with the veterinarian , which helps the veterinarian to manage his appointment by accepting or declining the appointment , also it helps the user to choose the appointment that is suitable for him .

Also the application offers the functionality of navigation which helps the user to know where the veterinary clinic is in a specific way and saves a lot of effort for the user .

Chapter 4

Methodology

In this chapter we will talk about how we developed the application using best practices , and we are going to explain in detail how the app gets done .

4.1 Framework

First of all and before we start to go deeper in details of the app , we will talk about the technology and framework that we used in our application .

We have been using “Angular” as a frontend framework which is a well known framework produced by google .

Also we have been using “Ionic” SDK to make our application a cross platform app which can be run on Android , IOS and Web .

4.2 Servers and APIs

For the server , we have used service oriented architecture (Microservices) in the back end and we implement it using the .Net framework .

Service oriented architecture has a lot of benefits for the application architecture for example :

- Scalability : service oriented architecture gives us the ability of adding services as much as we want without affecting the other services .
- Reusability : that means that we can use any microservice in other applications without effect on any other applications .

- Easy Maintenance : it gives us the ability of code reviewing and maintaining in a very convenient and easy way .

Also in our application we have the live chat system which is a real time functionality and for applying that we have used the WebSocket communication protocol which gives us a fullduplex communication channel over a TCP connection , and for the frontend we use rxjs package to implement it .

Also we have used linode which is a private cloud server provider to store our application secrets and we have used Azure key vault to encrypt these secrets .

Also we have used Docker technology which is an operating system level virtualization to run each microservice that we have implemented in an isolated environment .

Also one of the most important technologies that we have used is openid connect which is the technology that we apply the authentication by , and we have used OAuth 2.0 which is the technology we used in the Authorization .

4.3 System Requirements

4.3.1 Functional Requirements

In our application we have different types of clients. We can divide them into three types , normal user , vet and admin. In this section we are going to speak in detail about what our application offers .

- **The veterinary user**

- The user can change his profile picture by going to his profile and choosing the picture he wants .
- The user can create a post on his profile which can contain a text or image or both of them .
- The user can update the post text .
- The user can see the comments on his posts .

- The user can delete his posts .
- The user can see his rating .
- The user can see what appointment he has for a week .
- The user can see the case description for the pet .
- The user can accept or decline an appointment .
- The user can send messages and answer back .
- The user can upload a research paper .
- The user can add questions and it answers so the normal user can see it.

- **The normal user**

- The user can create an account from the sign up page .
- The user can change his profile picture by going to his profile and choosing the picture he wants .
- The user can see the Veterinary post and comment on them .
- The user can update his comment .
- The user can delete his comment .
- The user can book an appointment for any veterinarian he wants .
- The user can rate any veterinary .
- The user can update his rating points for any veterinary .
- The user can see Veterinary questions and answers to know the common pet questions .
- The user can see the research paper that the Veterinary has uploaded .
- The user can send messages and answer back .

- **The admin user**

- The user has the ability to add new client in our application
- The user has the ability to add new Role for the application
- The user has the ability to give a role to any user

4.3.2 Non Functional Requirements

- **Usability :**

The user interface in our application is very simple and it is at a high degree of user friendly so any user can deal with it .

- **Scalability :**

As a result of the architecture that we used which is Service Oriented we can add services as much as we want .

- **maintainability :**

Also the microservices architecture helps us to make our application highly maintainable because it is much easier to track a bug .

- **Portability :**

As a result of using a cross platform front end framework our application can run on any system (IOS , Android , Web) .

- **Reusability :**

As a result of using Angular framework which is a component base framework so we can use any component wherever we want .

- **Flexibility :**

We have built the back end in our application using the MVC module to give us a really high flexible system for any changes in the requirements .

4.4 implementation

In this section we are going to talk about our application UI and how to use it :

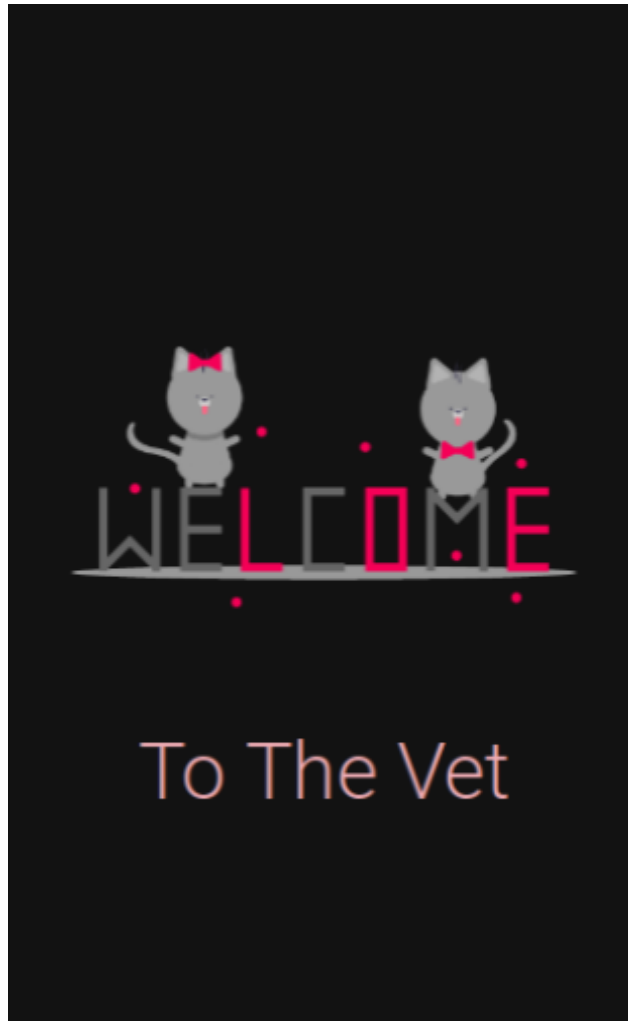


Figure-1-:The welcome page

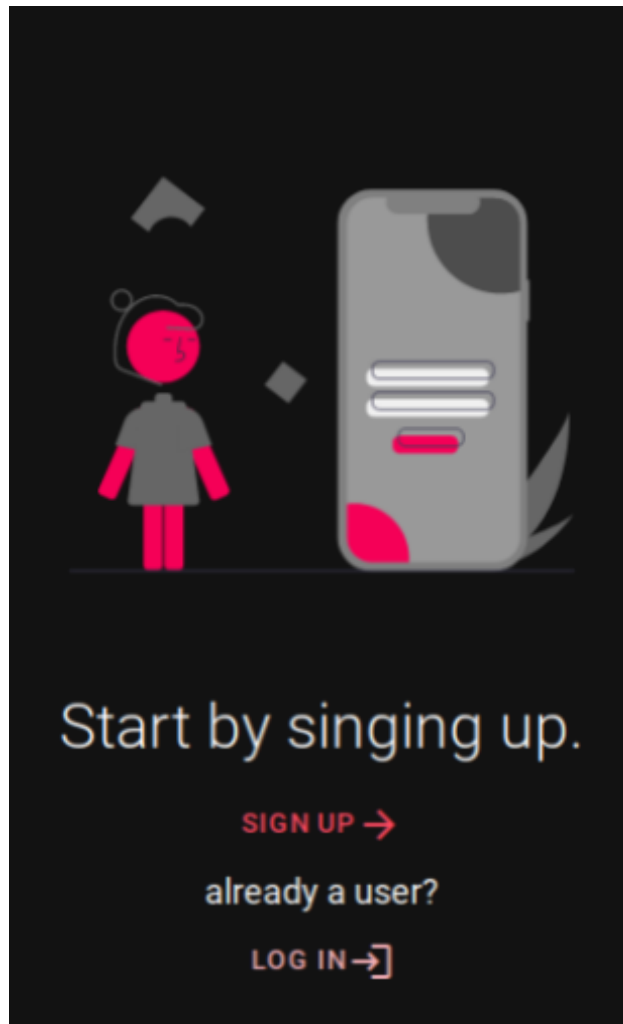



Figure-2:-The login/signup page

In this page the user chose to sign up to make a new account or login to the application if he has an account .

Sign Up



First Name * Last Name *

Username *

Email *

Password *

Confirm Password *

Birthday Date *
mm / dd / yyyy

Mobile Number *
Phone Number

SIGN UP

Figure-3-:The signup page

In this page the user should fill his date to make an account in the application .

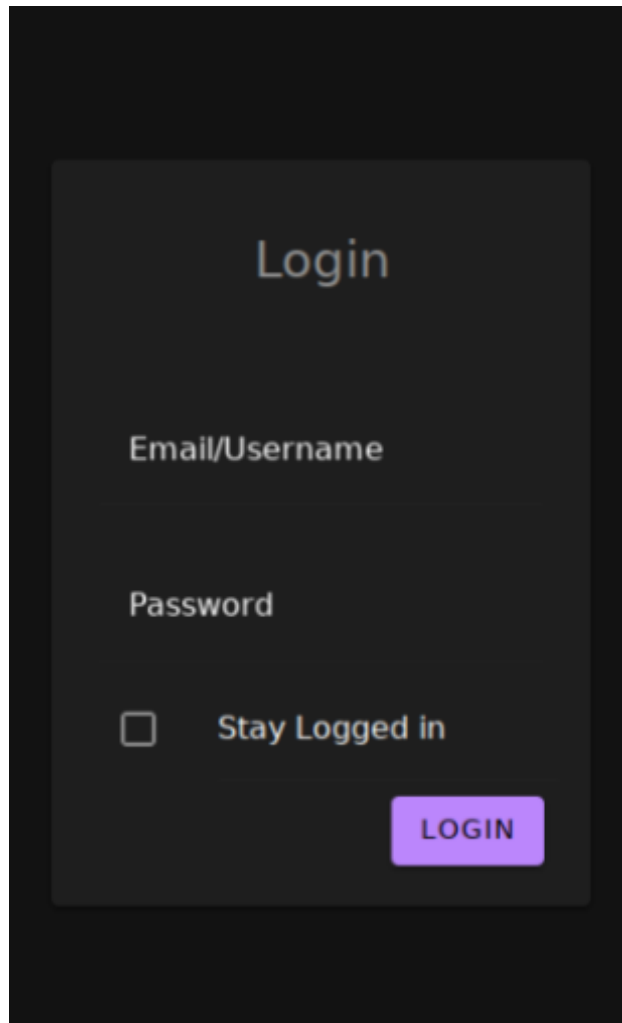


figure-4-:The Login page

This is the login page where the user should enter his/her email or user name and the password to start using the application.

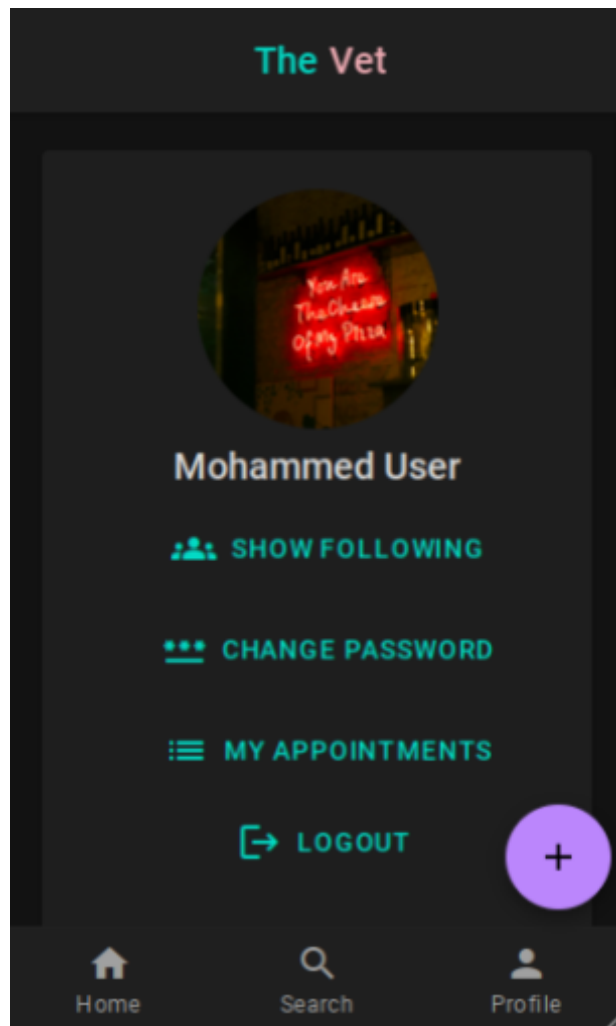


Figure-5-:The profile page for normal user

This is the profile page for a normal user (Not a doctor) where he can see the people who follow and the appointment that he book .

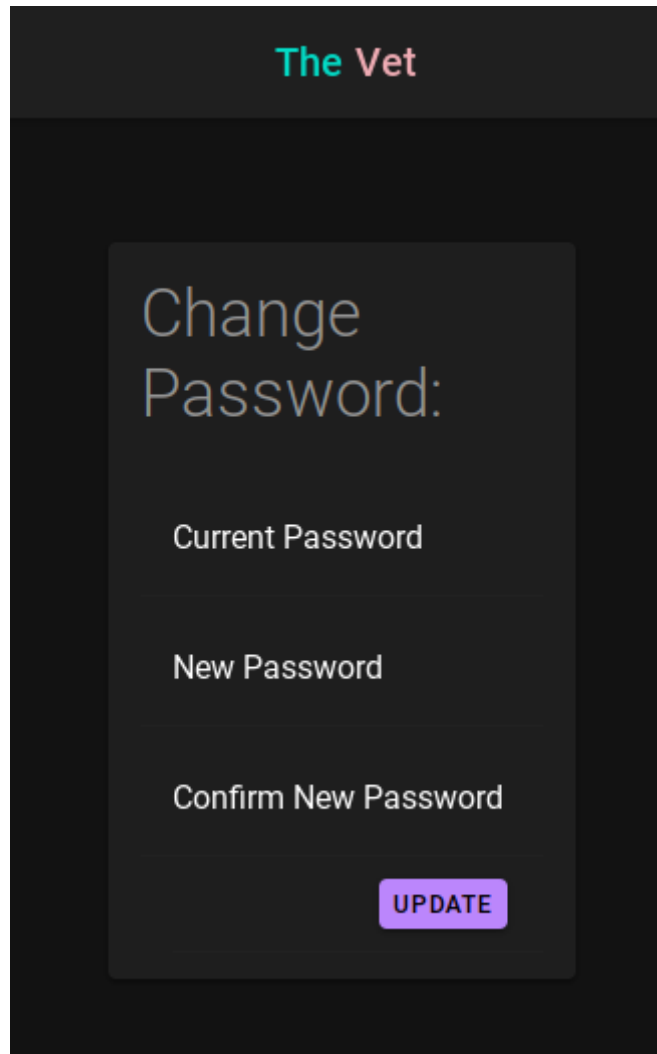


Figure-6-:The change password Page

In this page the user can change his account password by enter the old and the new password .

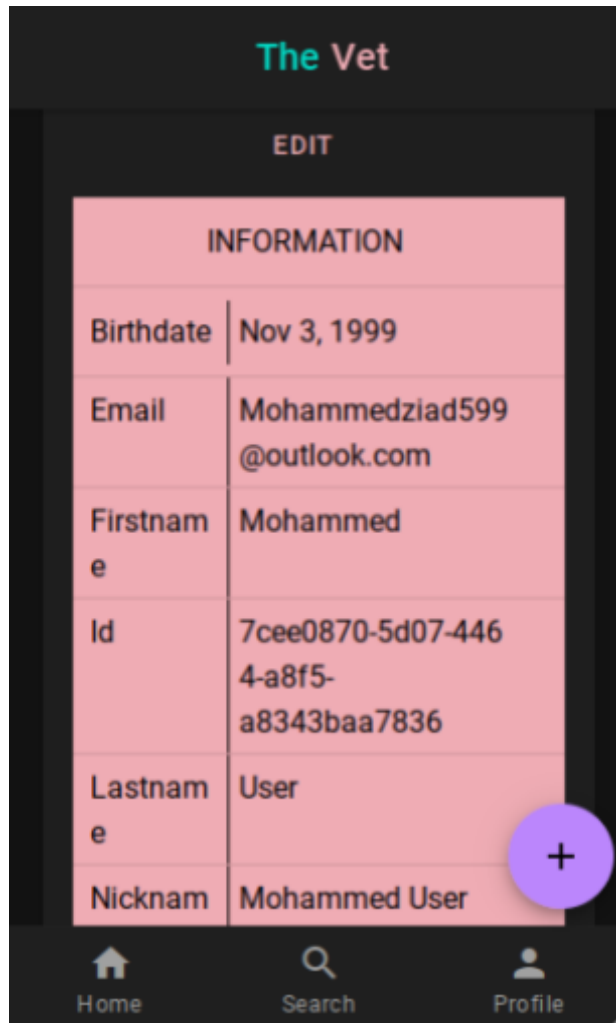


Figure-7-:The user data in Profile page

In this page the user can see his account data and he can edit it and change it whenever he wants .

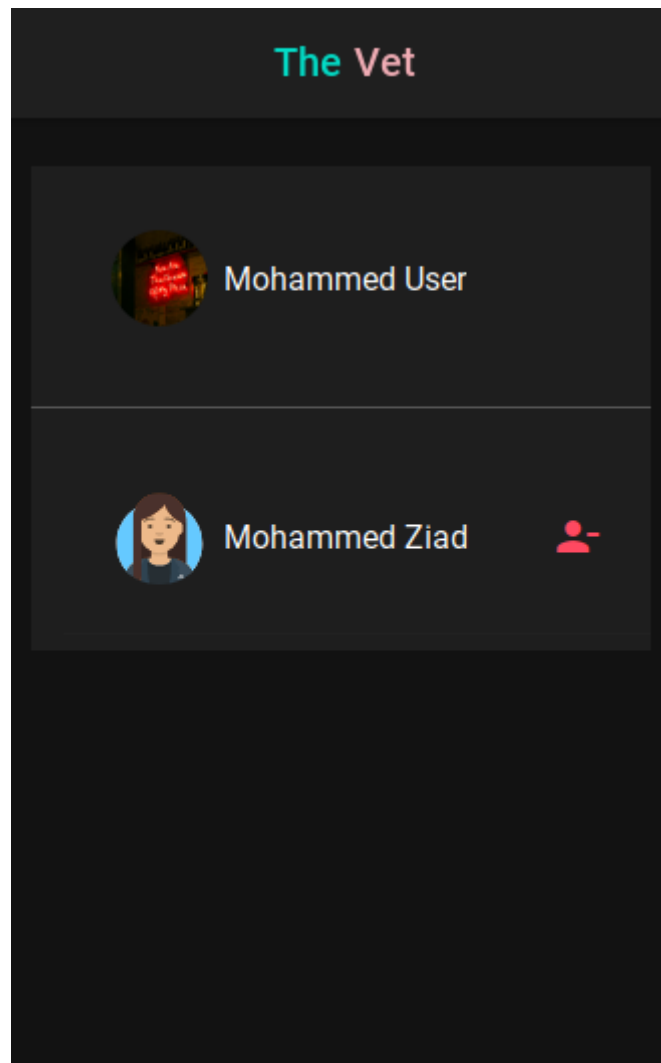


Figure-8-:The Following page

In this page the user can see the people who follow and he can visit their profiles by pressing on their name .

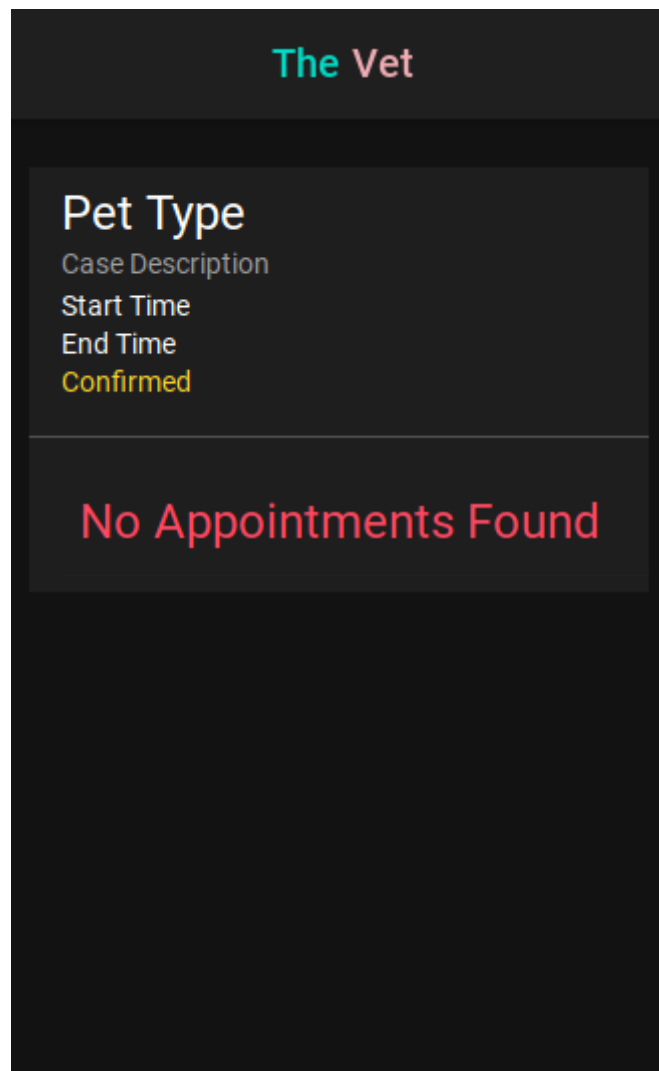


Figure-9:-The appointment page

In this page the user can see the appointment that he booked .

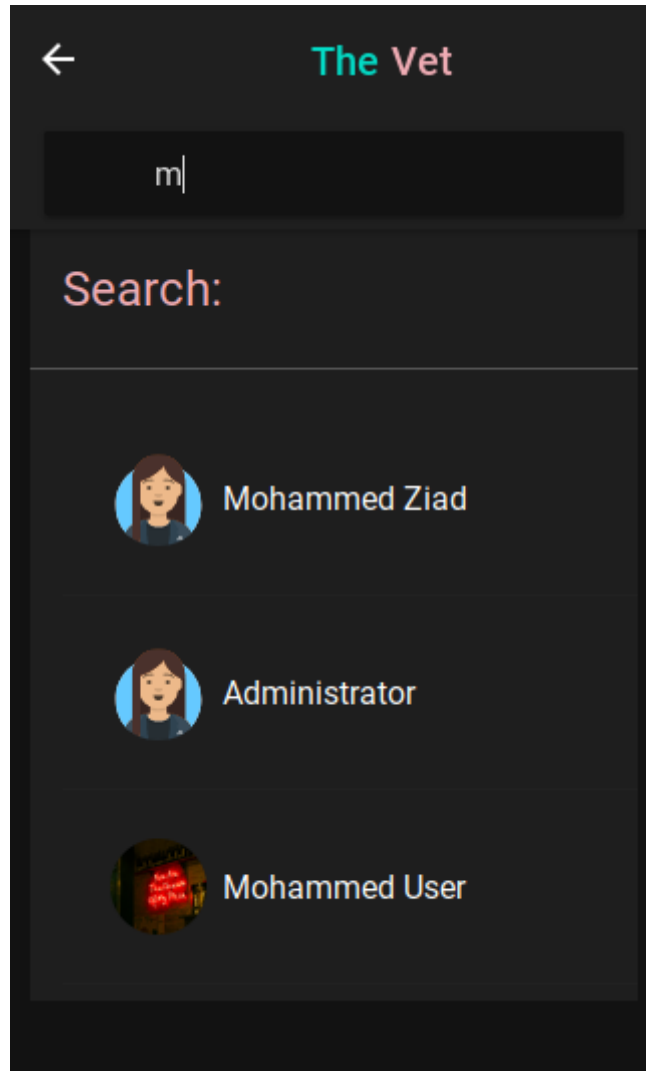


Figure-10:-The search Page

In this page the user can search for any user he want just by typing his/here name .

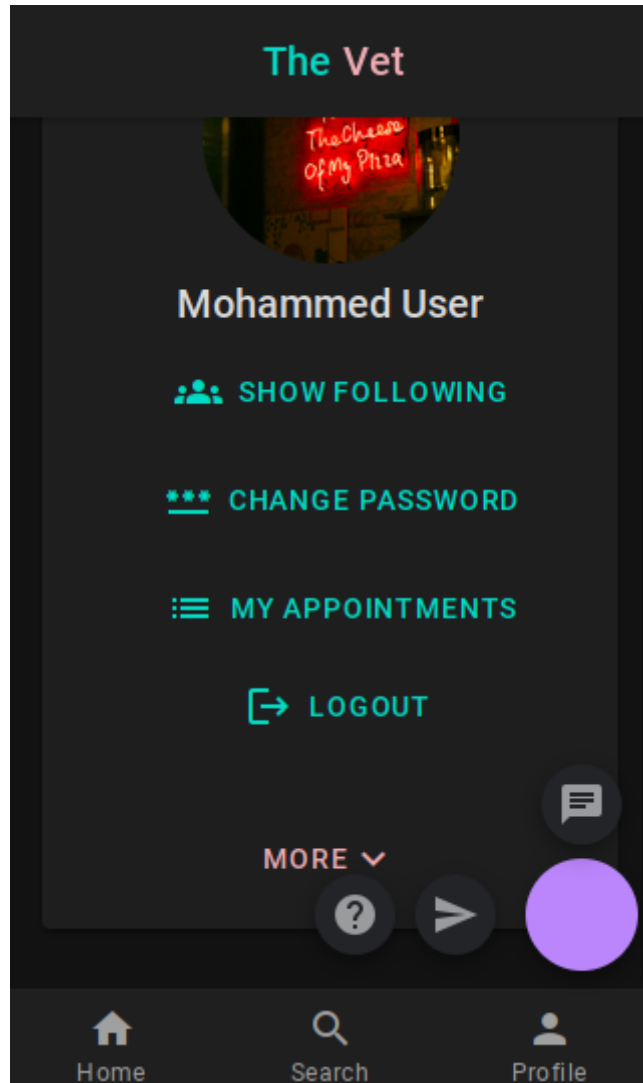


Figure-11-:Basic function panel

In this page the user can access the basic function which is the Post page , the Common Question page and the Messaging page .

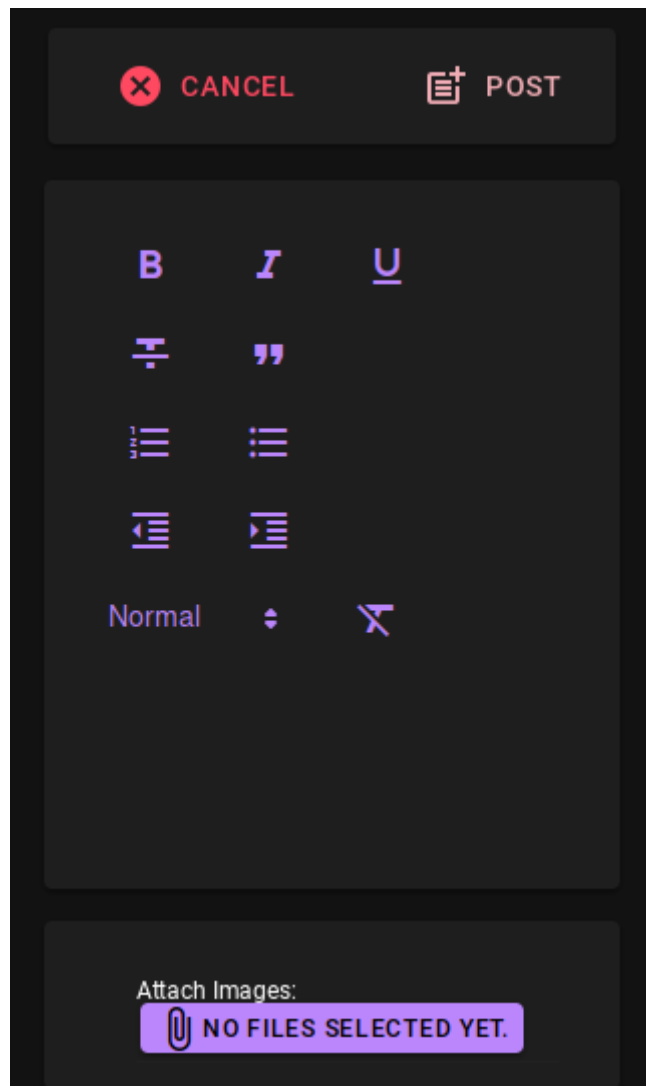


Figure-12:-The Post page.

In this page the user can create a post , he can make a words post or a image post or both of them .

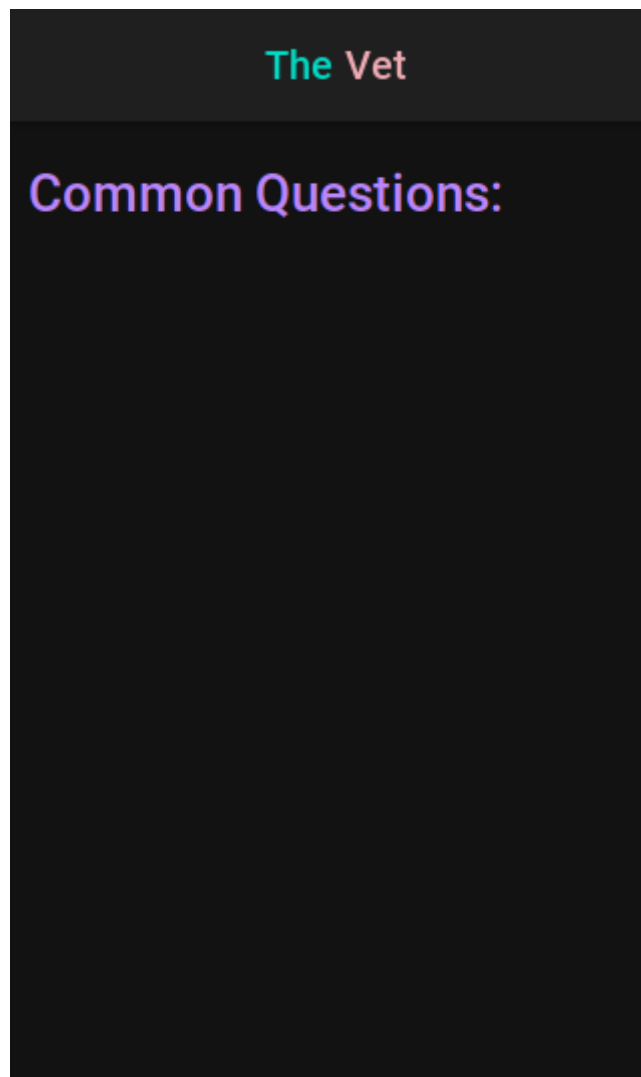


Figure-13-:The Common Question page

In this page the user (Normal user) can see the Common Question that the Doctor User has been added .

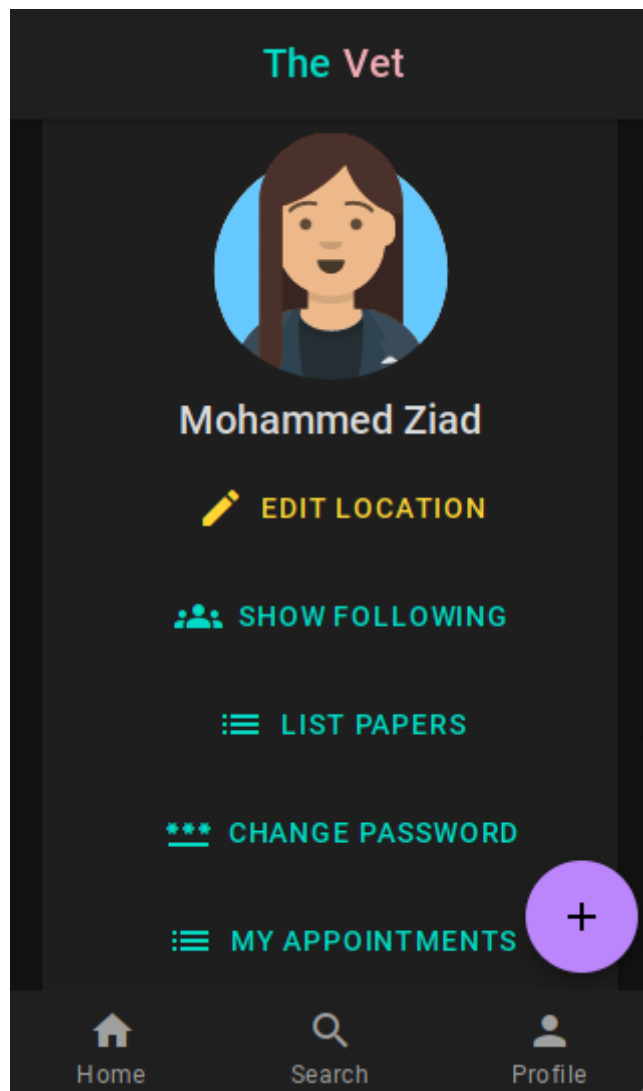


Figure-14-:The Doctor Profile page

This is the Profile page for the Doctor User where he can set his clinic location , see the following list , see the paper that he uploads , change his password and see his appointment list .

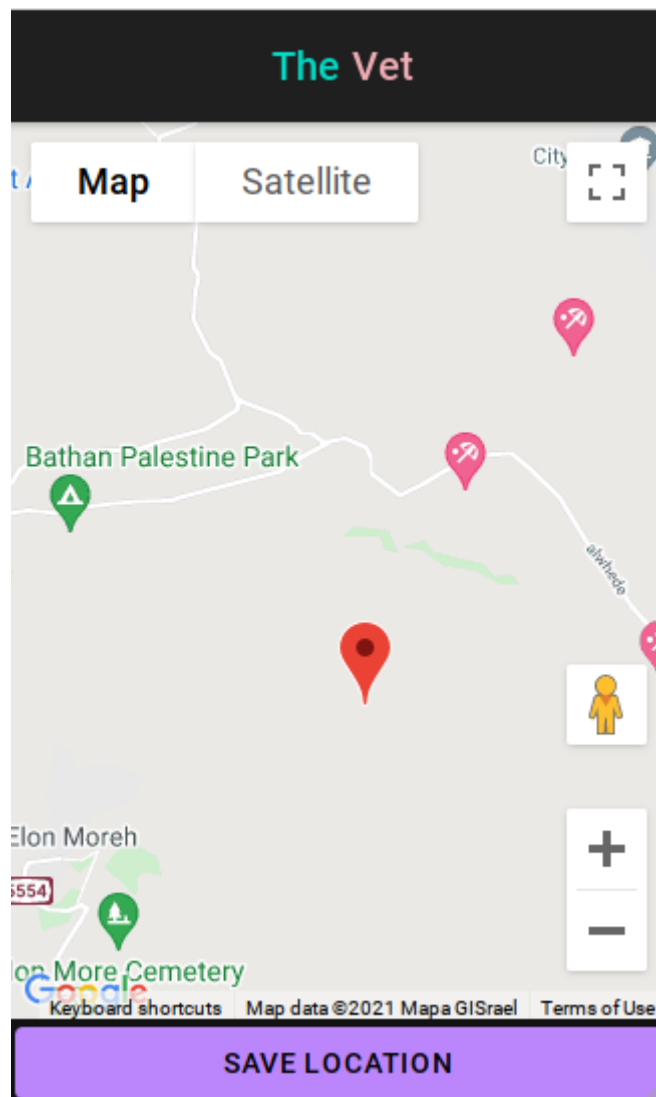


Figure-15:-The Location page.

In this page the doctor can set his clinic Location on google maps .

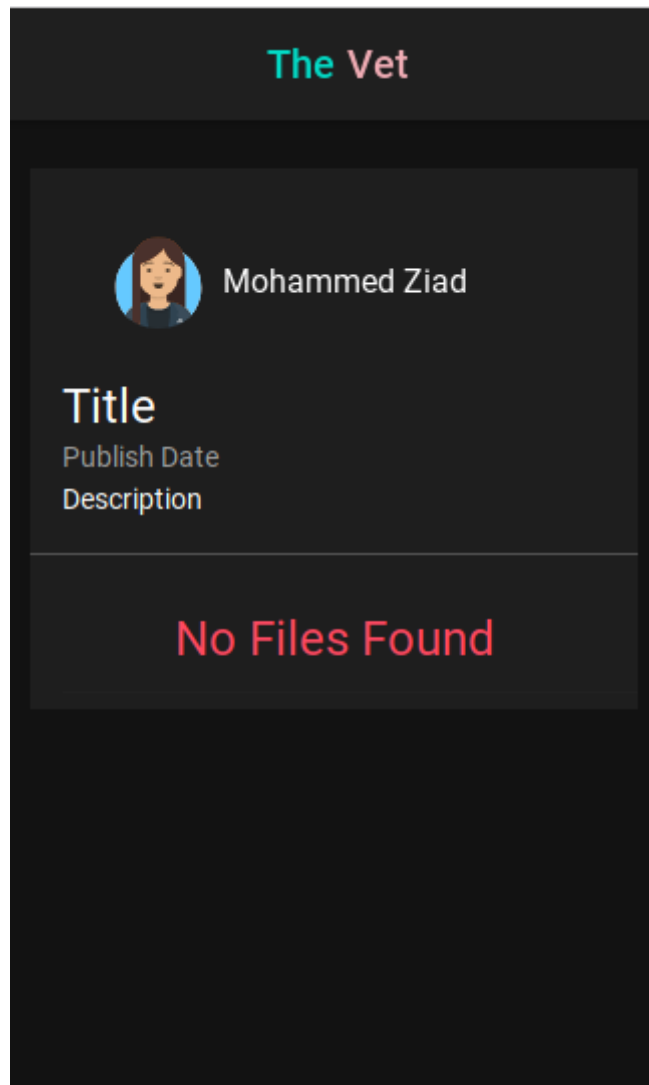


Figure-16-:The Paper Page.

In this page the users can see the papers that the doctor upload it and they can read it to know more about their pets.

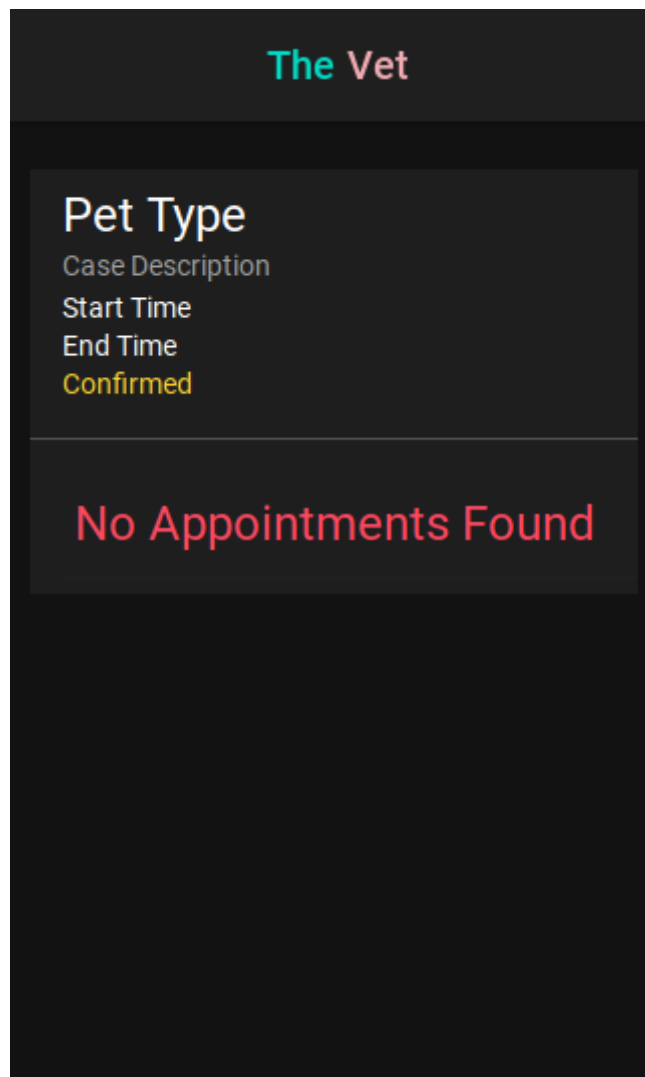


Figure-17-:The Appointment Page.

In this page the doctor can see the booked appointment and he can confirm it or delete it .


The Vet

Add Paper

Title *

Paper Description *

Publish Date *
mm / dd / yyyy

 NO FILES SELECTED YET.

PUBLISH

Detailed description: This is a screenshot of a mobile application interface for 'The Vet'. The background is dark grey. At the top, the app name 'The Vet' is displayed in a light blue font. Below it, the title 'Add Paper' is shown in a light purple font. The form contains three text input fields: 'Title *', 'Paper Description *', and 'Publish Date *'. The 'Publish Date *' field includes a date format hint 'mm / dd / yyyy'. Below the input fields is a light purple button with an upload icon and the text 'NO FILES SELECTED YET.'. At the bottom right, there is a light purple button labeled 'PUBLISH'.

Figure-18:-The paper Upload page.

On this page the doctor can upload a paper on his account .

Now let's go to the admin pages :

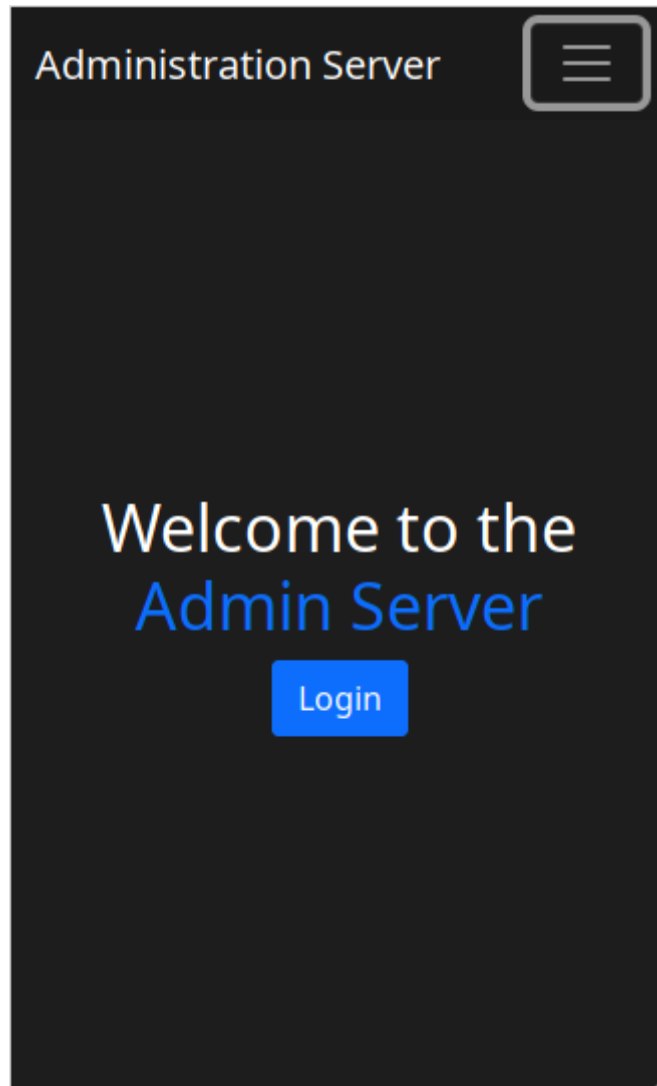


Figure-19:-The Admin Login page.

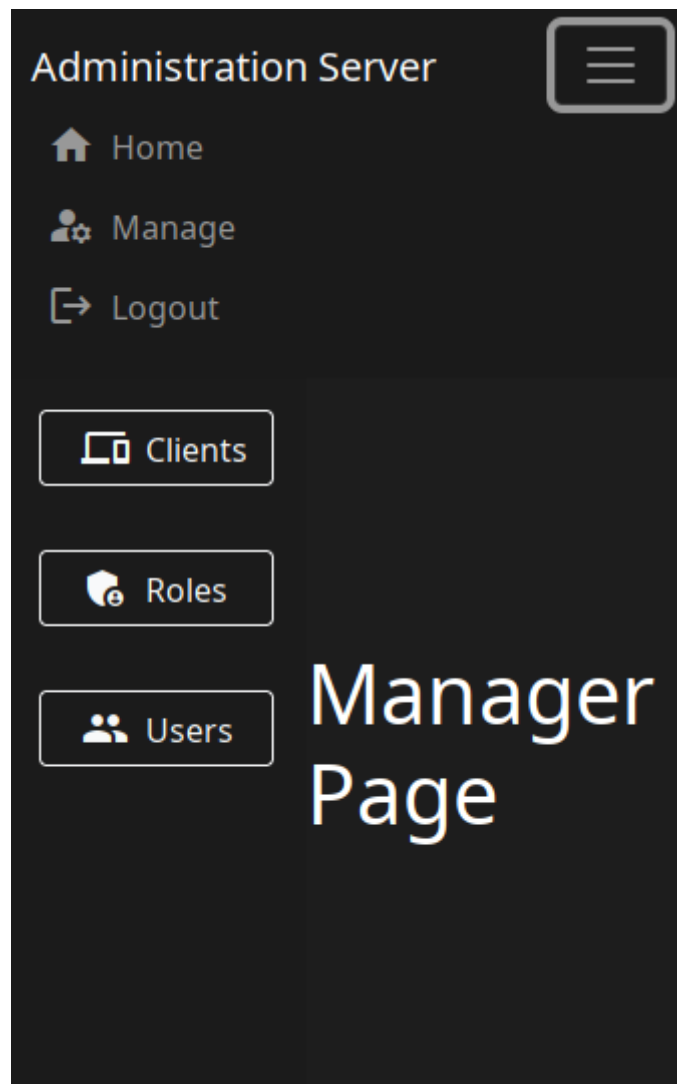


Figure-20:-The Admin Home page.

Here the admin can add a new client in the application (if we want to add a new app in our app) , he can give a role to an account (normal user , doctor , admin) and he can make some editing on the user's account .

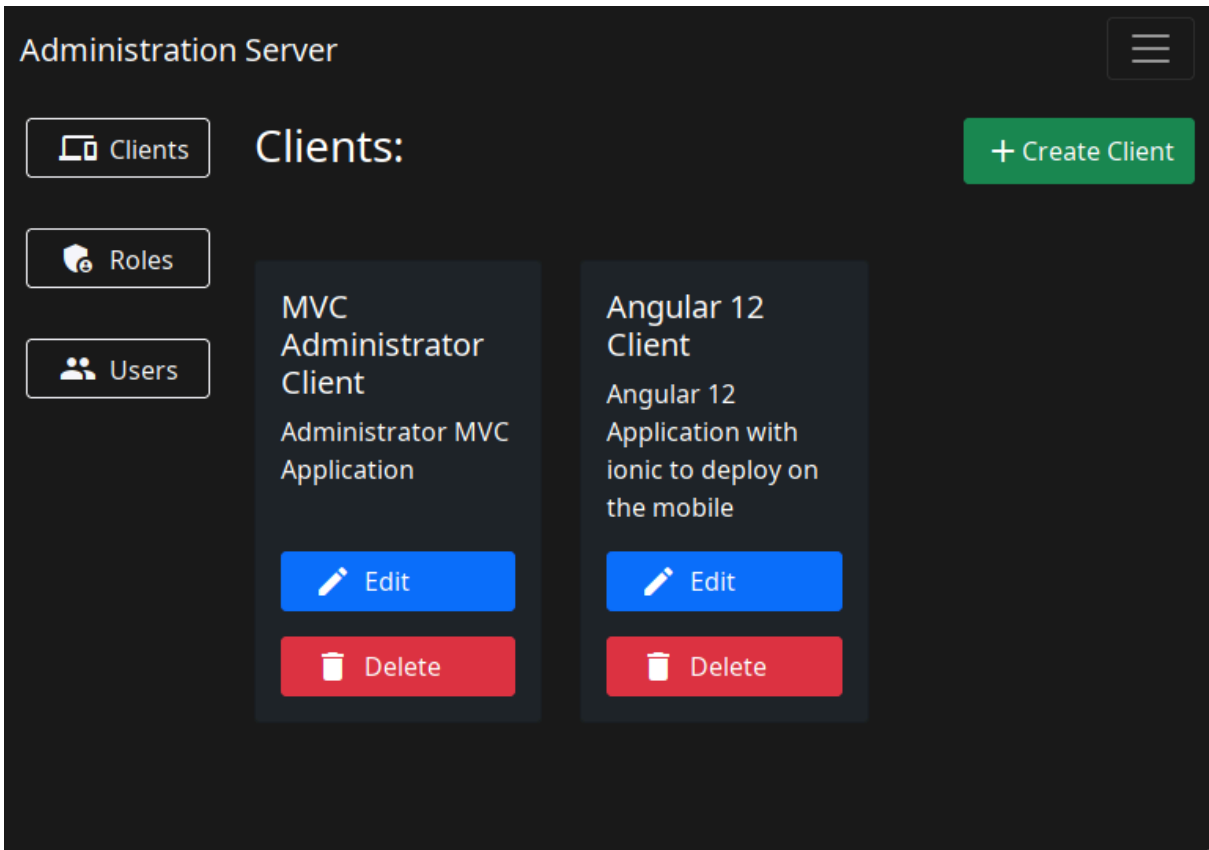


Figure-21-:The admin client page.

In this page the admin can edit the client in our application .

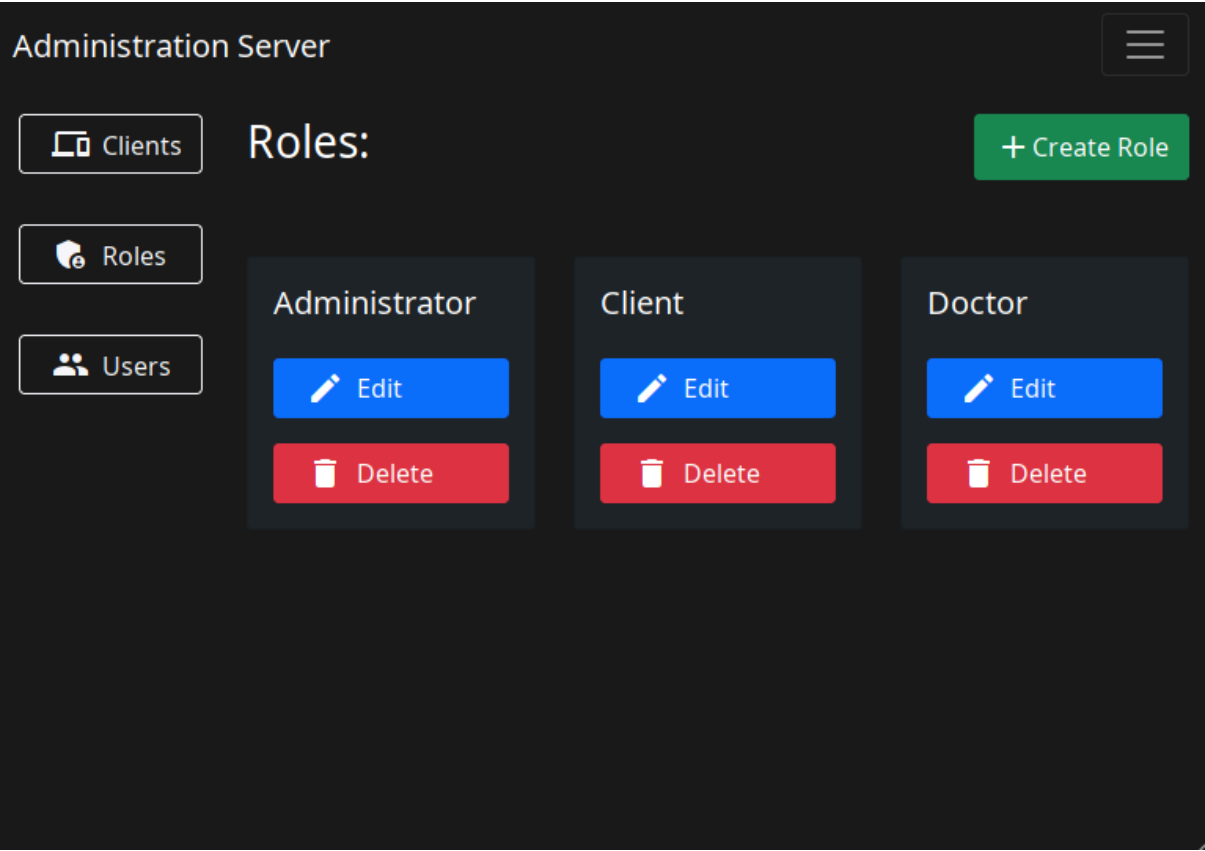


Figure-22-:The admin Role Page .

In this page the admin can create a new role in our app and he can give an role to any user account .

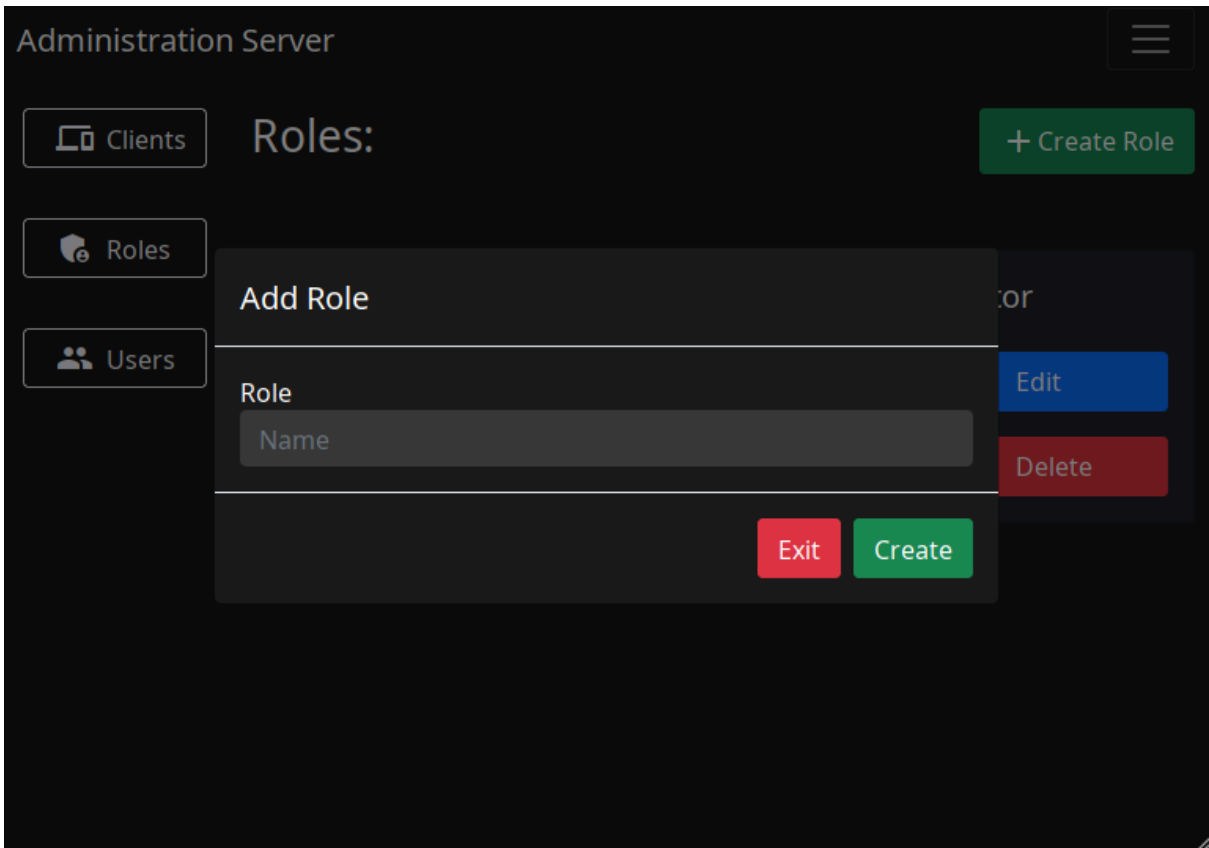


Figure-23:-The add new role panel .

In this panel the admin can add a new role that he can give to any account .

4.5 Database

For our application we choose MySQL Database which is an open source relational database management system , also it is free to use .

One of the main reason that push us to use MySQL database that is characterized as

high reliability in storing and getting data from and to it , also one of its advantages of using MySQL database is whenever the number of requests on the same data increases the response time for bringing data back reduces and becomes faster so it is a high performance database .

Now let's see some of our database schema :

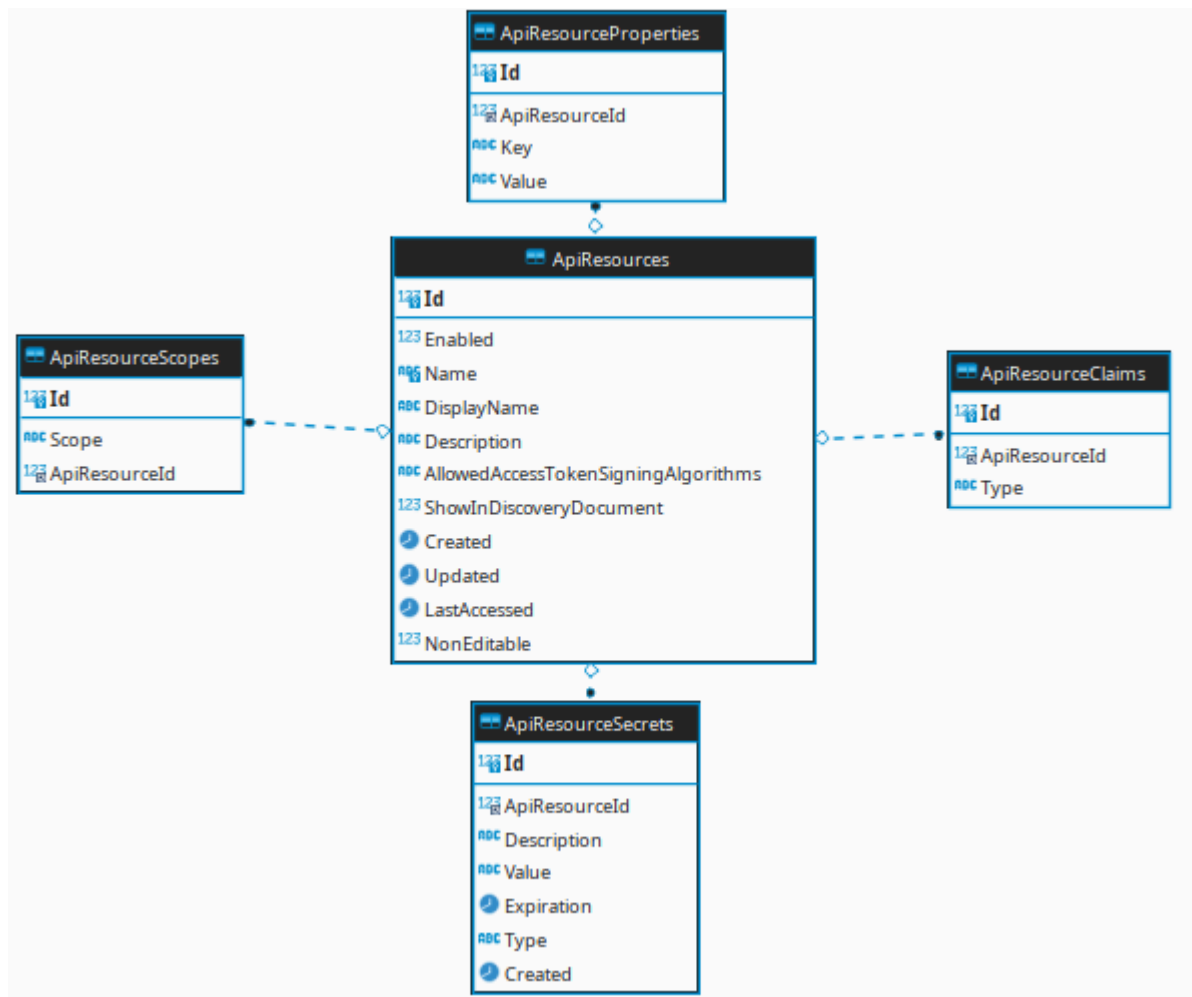


Figure-24:-The APIResources Schema

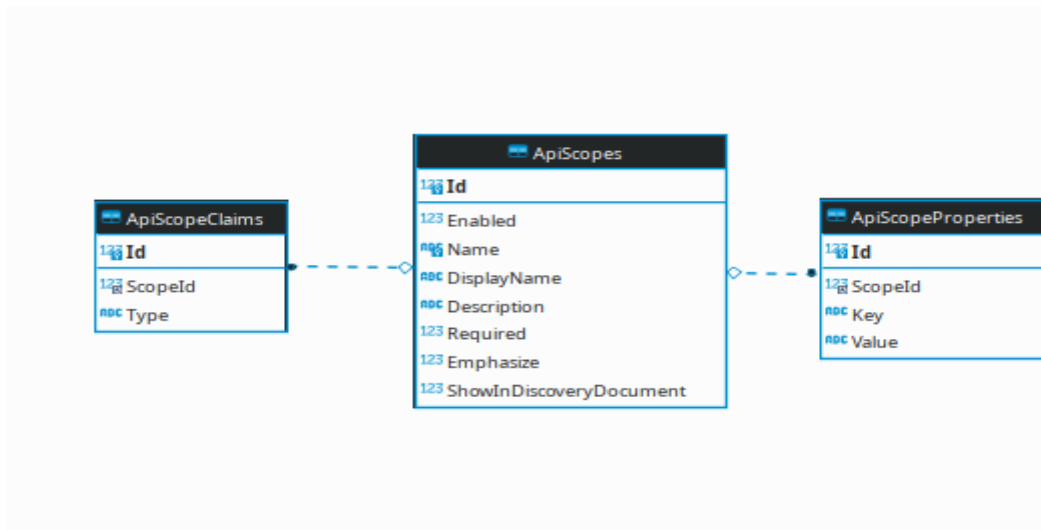


Figure-25:-The API Scopes Schema

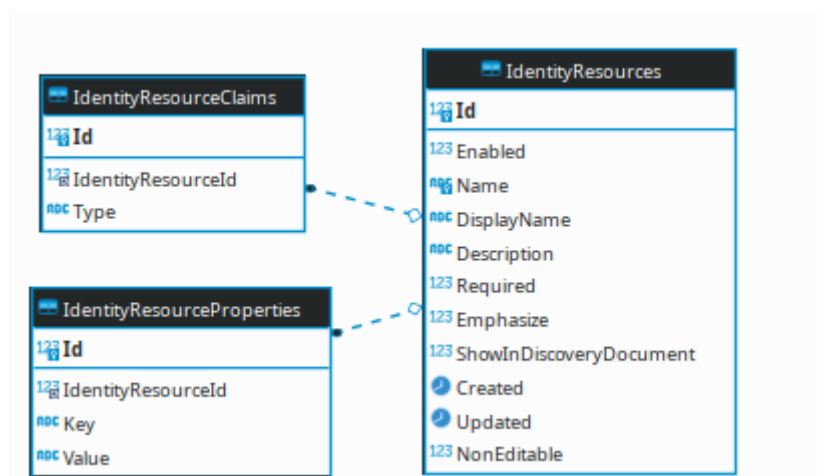


Figure-26:-IdentityResources Schema

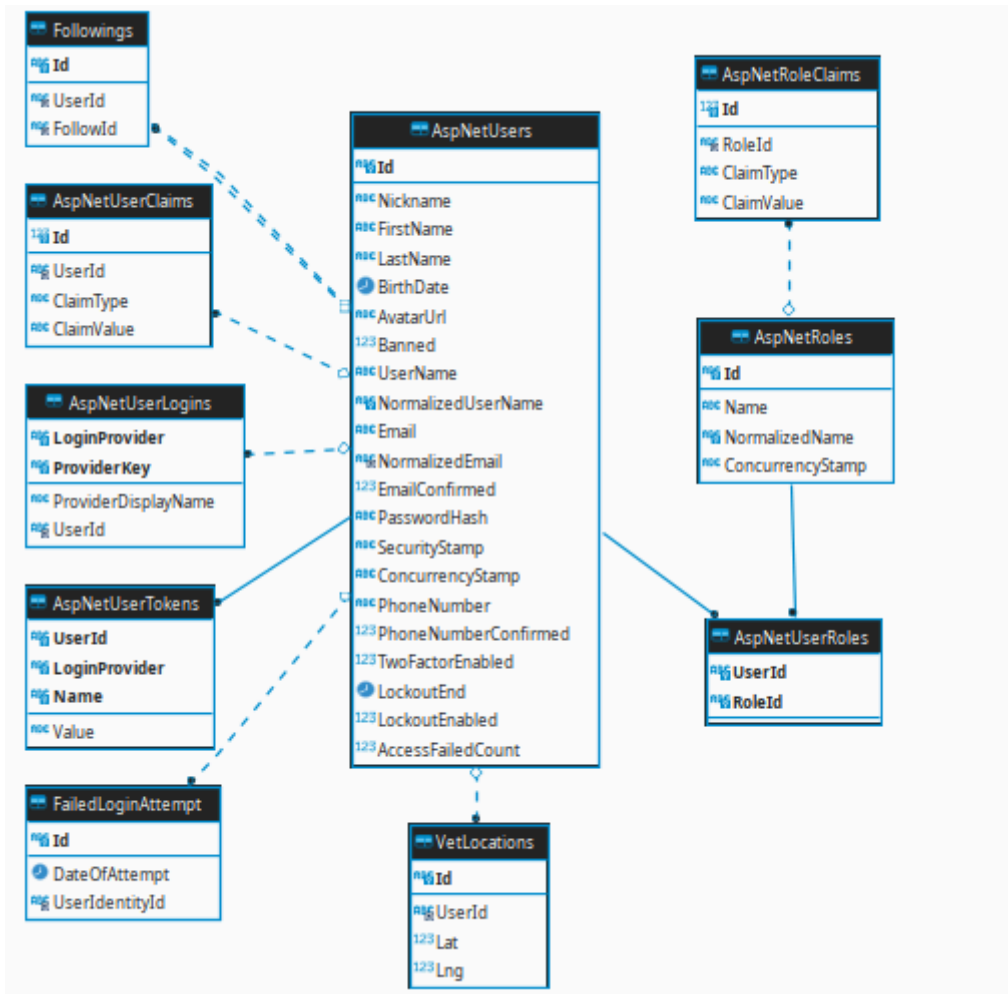


Figure-27-:The Users Roles Schema

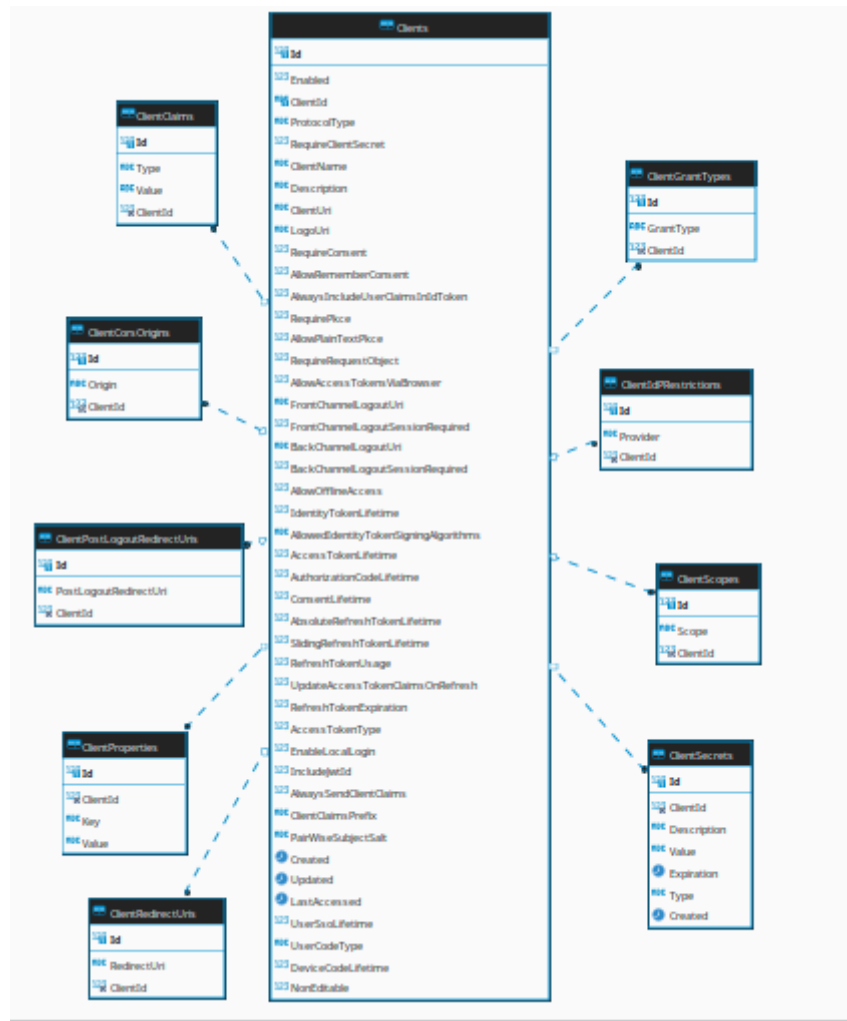


Figure-28:-The Client Schema

Chapter 5

Result and Discussion

As a result of using a lot of frameworks and technology for both the client and the server side we came out with a cross platform application that helps the pets owner to find and communicate with a veterinarian , and also give them the ability to know more about their pets by reading articles .

In the way to achieve this we faced a lot of problems and challenges and we learned a lot while attempting to solve these problems and that's what we are going to talk about in this chapter .

5.1 Learning Curve

One of the most important points that any begin is a hard thing which require a lot of research and study on the topic that we want and a lot of practice and make mistakes to understand how it work and to know the best practices for it and one of the most helpful thing is the amazing documentation and the string community that the framework we used are have .

5.2 Challenges

We faced a lot of challenges in the way of building this application , and this are some of the challenges that we face :

- The lack of experience in the process of building an application and the main sequence of the process and how to communicate with the team partner .
- Learn more than framework in a short period and also learn a lot of new technology and tools to use in our application .

Chapter 6

Conclusion and Future Work

Conclusion

To collect everything together , we built a cross platform application called TheVet which has a main goal is to help people who raise a pet to find a good veterinarian and communicate with him in an easy way. We also add some features from commonly used social media apps like facebook to make it more user friendly .

Future work

We seek to work more and add extra feature in both side front and back end sides like update the architecture of how the client UI communicate with the backend API's and for the front end we seek to add a recommendation system to help people to know the pet sick from the symptoms of the disease , also make it available in arabic language .