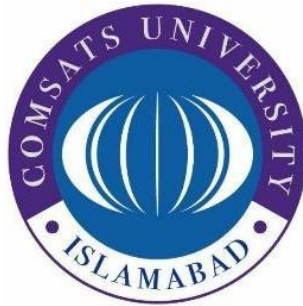


SMART VETERINARY SERVICES

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DEPARTMENT OF COMPUTER SCIENCES
COMSATS UNIVERSITY ISLAMABAD,
ATTOCK CAMPUS – PAKISTAN

SESSION 2019-2021

SMART VETERINARY SERVICES

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**A DISSERTATION SUBMITTED AS A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
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DEPARTMENT OF COMPUTER SCIENCES

COMSATS UNIVERSITY ISLAMABAD,

ATTOCK CAMPUS – PAKISTAN

SESSION 2019-2021

UNDERTAKEN

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FINAL APPROVAL

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DEDICATION

This thesis is dedicated to the greatest teacher and messenger, Muhammad (May Allah bless and grant him), who taught us the purpose of life. The COMSATS University; my second magnificent home; my great parents, who never stop giving of themselves in countless ways, To all my Teachers & Family. My friends who encourage and support me, all the people in my life who touch my heart, I dedicate this research.

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PROJECT BRIEF

PROJECT NAME	SMART VETERINARY SERVICES
ORGANIZATION NAME	COMSATS UNIVERSITY OF ISLAMABAD
OBJECTIVE	SAVE THE LIFE OF ANIMALS
UNDERTAKEN BY	DANYAL AHMAD (FA19-MCS-017) UMAD UD DIN (FA19-MCS-012)
SUPERVISED BY	MISS MEHREEN WAHAB LECTURER COMPUTER SCIENCE CUI ATTOCK
STARTED ON	SEPTMBER-15-2020
COMPLETED ON	MAY-23-2021
COMPUTER USED	DELL LATITUDE E7240
SOURCE LANGUAGE	JAVA
OPERATING SYSTEM	Windows 10
TOOLS USED	ANDROID STUDIO, ADOBEXD, STARUML, MS VISIO

ABSTRACT

Animal lives are important for the survival of human beings, they provide food, dress, drugs, and help in labour work and transport. Animals provide us meat, fats, milk, eggs, etc. Their skin, wool, and fur are used in making dresses and sports goods. Their blood and venom are used in making life-saving drugs. Their waste is used as organic fertilizers. Animals are also kept for exhibition, and games like hunting, riding, and company. Animals are domesticated on a small and large scale.

Animal health care is vital for healthy production. Knowledge of domestication is passing from one generation to the next. People are not aware of modern scientific knowledge about veterinary. The communication gap between farmers and qualified veterinary professionals is the main cause of the lack of awareness.

Qualified veterinary professionals are providing their services. Only a few people in their surroundings are taking advantage of the services of highly qualified veterinary professionals. Most people have no access to veterinary professionals which is a loss of efforts and skills of both.

A platform should be provided to veterinary professionals for offering their specialized services to people. This will increase the productivity of veterinary professionals and easy access to their services for people. People will get timely guidelines and support from professionals who will not only save lives but also improve the health and production of their animals.

TABLE OF CONTENTS

TABLE OF CONTENTS

CH#	TITLE	PAGE
CHAPTER 1:	INTRODUCTION	1
1.1	Introduction	2
1.2	Problem Statement	3
1.3	Proposed solution	4
1.4	The Scope & Objectives	5
1.5	Description Layout	6
1.6	Limitations	6
1.7	Performance Criteria	7
1.8	Software Dependencies Requirements	7
1.9	Hardware Dependencies	7
CHAPTER 2	BACKGROUND	8
2.1	Background	9
2.1.1	Existing System	9
2.1.1.2	Sehat Kahani App	9
2.1.1.2	PetCoach App	10
2.1.2	Presented solution.	11
CHAPTER 3	SYSTEM REQUIREMENTS SPECIFICATIONS	13
3.1	Requirements Specifications	14
3.2	Non-Functional Requirement	14
3.2.1	Compatibility	14
3.2.2	Reliability	14

3.2.3 Maintainability	14
3.2.4 Availability	14
3.2.5 User friendly	15
3.2.6 Scalability	15
3.2.7 Robustness	15
3.3 Functional Requirement	15
3.3.1 <i>Client's</i> Requirement	15
3.3.1.2 Search veterinary	16
3.3.1.3 Make an appointment.	16
3.3.1.4 Get notifications	16
3.3.1.5 Chat with a veterinarian	17
3.3.1.6 Rating	17
3.3.1.7 Videos	17
3.3.1.8 Location	17
3.3.1.9 Client logout	18
3.3.2 Veterinary Specialist	19
3.3.2.1 Veterinary login	19
3.3.2.2 Veterinary give/check appointment	19
3.3.2.3 Pending appointment	20
3.3.2.4 Get notifications.	20
3.3.2.5 Chat with client	20
3.3.2.6 Location	21
3.3.2.7 Veterinary logout	21
CHAPTER 4	PROJECT DESIGN
4.1 Use case Diagram	22
4.1.1 Client Use Case Diagram	22

4.1.2 Veterinarian Use Case Diagram	24
4.2 Activity Diagram	26
4.2.1 Client Activity Diagram	26
4.2.2 Veterinarian Activity Diagram	27
4.3 Class Diagram	28
4.4 Sequence Diagram	29
4.4.1. Client Sequence	29
4.4.2 Veterinarian Sequence Diagram	30
4.5 Data flow Diagram (DFD)	31
CHAPTER 5	IMPLEMENTATION 32
5.1 Tools and Techniques	33
5.2 Screenshots of Application	33
5.2.1 Home Page	33
5.2.2 Login Page	34
5.2.3 Selection Screen	35
5.2.4 Veterinarian Signup	36
5.2.5 Veterinarian Dashboard	37
5.2.6 Veterinarian profile	38
5.2.7 Client Signup	39
5.2.8 Client Dashboard	40
5.2.9 Client Profile	41
5.2.10 List of Veterinarians	42
5.2.11 Date Selection Info	43
5.2.12 Location and Detail	44
5.2.13 Appointment Request and Create	45
5.2.14 Appointment Accept or Reject	46

5.2.15 Appointment Confirmed and update	47
5.2.16 Appointment on map and distance	48
5.2.17 Chat Between Client and Veterinarian	49
5.2.18 Rating of Appointment	50
5.2.19 Videos	51
5.2.20 Logout	52
CHAPTER 6	TEST AND EVALUATION
CHAPTER 6	53
6.1 Testing	53
6.2 White box testing	53
6.3 Types of Testing	54
6.3.2 Integration Testing	54
6.3.3 System Testing	54
6.3.4 Function Testing	55
6.4 Test case results	55
6.4.1 Test Case for client Login	55
6.4.2 Veterinary Specialist login Testing	56
6.4.3 Whole Application testing	56
CHAPTER 7	CONCLUSION
CHAPTER 7	58
7.1 Conclusion	59
7.2 Future Work	59
7.2.1 Future features	59
Reference	60

List of Figures

Figure No.	Figure Title	Page number
2.1	Sehat Kahani App	16
2.2	PetCoach App	17
4.1	Client Use Case Diagram	27
4.2	Veterinarian Use Case Diagram	29
4.3	Activity Diagram of Client	30
4.4	Activity diagram of Veterinarian	31
4.5	Class Diagram	32
4.6	Client Sequence Diagram	33
4.7	Veterinarian Sequence Diagram	34
4.8	Data Flow Diagram	35
5.1	Splash Screen	26
5.2	Log-in	26
5.3	Selection Screen	27
5.4	Veterinarian signup	28
5.5	Veterinarian Dashboard	29
5.6	Veterinarian profile	30
5.7	Client Signup	31
5.8	Client Dashboard	32
5.9	Client Profile	33
5.10	List of Veterinarian	34
5.11	Date Selection	35
5.12	Location and Detail	36
5.13	Appointment Request and Create	37
5.14	Appointment Accept or Reject	38
5.15	Appointment Confirmed and update	39
5.16	Map and Distance	40
5.17	Chat	41
5.18	Rating	42

5.19	Videos	43
5.20	Logout	44

List of Tables

Table No.	Table Title	Page Number
2.1	Comparison Table	12
3.1	login for Client	15
3.2	Search veterinary	16
3.3	Make an appointment	16
3.4	Get notifications	16
3.5	Chat with a veterinarian	17
3.6	Rating	17
3.7	Videos	17
3.8	Location	17
3.9	Logout	18
3.10	Veterinary login	19
3.11	Veterinary give/check appointment	19
3.12	Pending appointment	20
3.13	Get notifications.	20
3.14	Chat with client	20
3.15	Location	21
3.16	Veterinary logout	21
4.1	Use case for client	24
4.2	Use case for veterinarian	27
6.1	Test Case for client Login	55
6.2	Veterinary Specialist login Testing	56
6.3	Whole Application testing	57

CHAPTER 1

INTRODUCTION

1.1 Introduction

Agriculture, Services, and industry are three big economic sectors. In the world contribution of the economy in agriculture is 4%. Agriculture is the backbone of the Pakistan economy. 42.3% of men's power is associated with agriculture and it pays 80.9% to GDP. Livestock is an important sector in agriculture and livestock includes two sectors, animals, and the labor force. In livestock, proper care of animal health is most important. Proper food, vaccination, and treatment are compulsory. A small negligence can cause a huge loss of livestock lives and a reduction in production.

Dairy farms produce milk and meat. Healthy animals produce healthy meat, and their milk production is also high. Poultry industries produce meat and eggs on a large scale. To meet the requirement of the growing population, large numbers of birds are kept in control sheds where diseases spread at a very high speed. Chicken meat and egg production are also dependent on the health of the birds. The quality and quantity of leathers and wool are also dependent on the health of birds. Pet animals and birds for exhibition need extra care. Wild animals which are domesticated are prone to a lot of diseases and filling their nutrition need is challenging for their owners.

Owners of large Dairy and Poultry farms can employ permanent Doctors of Veterinary in their Team as they have large investments. Medium dairy and pottery farms cannot afford permanent veterinary professionals, but they prefer to contact visiting veterinary. Subjected to the availability of veterinary professionals in that area, small-scale dairy and poultry farms can neither afford permanent as well as contract with Doctor of Veterinary. Whenever they require guidelines and professional expertise, they would like to visit a veterinary doctor. Without physical inspection of animals, proper treatment is not suitable. The cost of transporting animals to the veterinary hospital is much higher than the expense of a veterinary doctor's visit. Animal ambulances are very rare in our country and transporting animals in a critical situation is difficult and painful for the animal. It is time-consuming, so they are transported in goods vehicles and mini pickup trucks. Animals are not used to the urban areas and get frightened by the noise of vehicles and population, where animal hospitals are situated. Animals get frightened by traffic and it may cause road accidents risking the lives of both humans and animals. A visit to a veterinary specialist for checking the sick animal on the spot is a much better option. As it will save time arranging the transport and

loading the animals in the vehicle and shifting to the hospital. Transport for the doctor can be arranged in a very short time and the time which will be consumed in loading the animals would be saved. Besides, not to worst the situation of the animal as transporting animals in pain and illness will increase the pain or illness more.

There are few job opportunities for veterinary doctors in government sectors, a lot of qualified veterinary doctors are working in public sectors. People have very little access to their premises or veterinary clinics. Specialists of different fields in a veterinarian are available in different locations. The availability of veterinary professionals is also a matter of their preferences. Some professionals would like to serve in their working hours especially government veterinarian doctors as they are economically stable, and they prefer to enjoy their social life. While Others would like to provide their services whenever demanded by clients. Newly qualified veterinaries are energetic and motivated to serve the people. They are economically not stable and are willing to serve 24/7 to make their reputation.

1.2 Problem Statement

Due to advanced technology, our life has been changed. Now, we depend on technology, but we do not know how to utilize this technology.

- Animal health care is vital for healthy production. Knowledge of domestication is passing from one generation to the next. People are not aware of modern scientific knowledge about veterinary. The communication gap between farmers and qualified veterinary professionals is the main cause of the lack of awareness.
- In the current health care center such as Health Care private clinic hospitals, there is a lack of resources, we save human life but we don't care about our animals and pet animals. The animal is part of human life.
- In the current health care center of animals, there is no such android application for the animal. There is a communication gap between veterinary professionals and farmers.
- Pet Coach already works in this field but this application help with the nutrition of animals.
- Pet Coach wastes the investments of people. This app work slowly there is a lack of time.

- SehatKahani application work for humans.
- Qualified veterinary professionals are providing their services. Only a few people in their surroundings are taking advantage of the services of highly qualified veterinary professionals. Many people have no access to veterinary professionals which is a loss of effort and skills of both.
- The cost of transporting animals to a veterinary hospital is much higher than the expense of a veterinary doctor's visit. Animal ambulances are very rare in our country and transporting animals in a critical situation is difficult and painful for the animal. It is time-consuming, so they are transported in good's vehicles and mini pickup trucks.

Q.1 How to save the investment of farmers and small-scale industrialists?

Q.2 How to stabilize new qualified and young professional doctors?

Q.3 How to save efforts and money in transporting animals?

Q.4 How to improve the growth and health of animals also increase the generation of animals?

1.3 Proposed solution.

Pets and captive animals are away from their natural Habitants. They are in a continuous battle with many challenges especially with their captive environment for adoption. They must face air, noise, and water pollution. They are kept in very limited spaces confined in a cage which limits their movement and affects their metabolism rate and endurance.

Domestication of dogs has practiced even 10,000 years ago. Human and pet interaction is also dangerous and may result in a transfer of many diseases like Congo viruses, Bird flu, etc. Regular and periodic checkups of domesticated animals and pets are necessary.

- The application will serve as a communication link between Farmer and veterinary Professionals.
- This Application will replace the physical visits and Mobile Phone calls of farmers to Veterinary Professionals.
- Farmer of remote areas will be able to get services from a highly qualified and experienced specialist of veterinary.

- It will provide a platform for the newly qualified energetic veterinary profession to serve and make their good reputation.
- A farmer will be less dependent on an animal ambulance and the transportation cost of animals will be saved.
- Veterinary professionals will treat the animal at the doorstep of the farmer which will save the precious lives of animals in critical situations.
- This app will automatically record the treatment history of the animals which will be helpful for the veterinarian in future treatments.
- The farmer will be able to give feedback about the veterinary professional which will be a guide for other farmers and professionals will be conscious about their rating.

1.4 The Scope & Objectives

Almighty Allah created all animals for the benefit of mankind. As the Creator is the kindest and merciful, his kindness and mercifulness have no limit, so he teaches human beings to take benefits from animals and be careful about their rights of animals. The Owner of the domesticated and captive animals is responsible for the food, and Shelter. Human beings cannot give them unnecessary pain and discomfort. In case animal or pets are ill and feels any discomfort pain then Humans are responsible for their timely and good Treatment and care.

The large population is linked with livestock for their living. The majority of rural families are dependent on livestock for fulfilling life needs directly and indirectly. The death of any animal badly affects their income as they are already living below the poverty line. Small support and guidelines can save the lives of their animals and improving their income and living standard.

The app will utilize the skills of qualified veterinary professionals in a smart way which will save the investment of large to small stock-holders and it will timely deliver medical services to the clients of animals and will cut the expense and time of transportation of ill animals.

Our project has the following objectives that are given below.

- Our android application provides a platform for professional veterinary.
- Our android application provides a platform for people to communicate with a veterinary specialist.
- This android application increases the communication gap between professionals and people.
- Easy access of the professionals to the people.
- Increase the client of professionals.
- Increase the income of professionals.
- Save the investments of people.
- Improve the health of animals.
- Increase the production of animals.

1.5 Description Layout

This documentation content explains the steps that are required to complete a project.

The report documents the overall process including.

- Background
- Requirement's specifications
- Project design
- Implementation
- Testing

This documentation report also contains relevant figures and tables.

1.6 Limitations

- Internet availability is required 3G/4G.
- It is beneficial for humans for animals.
- Information provided would be accurate and update from time to time about relevant professional veterinary centers.

1.7 Performance Criteria

- This Android application responds quickly.
- This Android application is easy to understand for users and clients.
- This Android application will be user-friendly, and the user can get avail opportunity by using this application.

1.8 Software Dependencies Requirements

- Programming language: Java, XML.
- Database: Firebase Database
- Tools: Android Studio, Notebook,
- JDK, SDK
- Android Studio 4.0.1
- Star UML, MS Visio

1.9 Hardware Dependencies

- RAM:4GB
- Smart Mobile Phone: Android

CHAPTER 2

BACKGROUND

2.1 Background

In this section, we study some background knowledge of existing applications. We found many applications on the Google play store. Our application will timely deliver medical services to the clients of animals and will cut the expense and time of transportation of ill animals.

2.1.1 Existing System

2.1.1.2 Sehat Kahani App

The main feature of the application allows a patient to record their health history, chat, or conduct an audio/video consultation with an available network of qualified online female general physicians & specialists. Patients can also obtain a prescription and are provided with the facility of an at-home pharmacy delivery and lab tests, in limited areas, to increase convenience for people who work hard to make ends meet for their families.

How to use the Sehat Kahani Application?

- ❖ The patient can log in to the application creating a unique login patient ID.
- ❖ Patient can record their health data to have a virtual healthcare database within the application.
- ❖ Patients can access a female doctor (general physician or specialist) according to their health needs.
- ❖ Doctors are available for an “instant consultation” for the ease of the patient.
- ❖ A patient can opt for audio/video/ chat consultation with the doctor.



Figure 2.1 Sehat Kahani App

2.1.1.2 PetCoach App

PetCoach is the leading source of online veterinary advice. Ask questions about your pet's health, nutrition, behavior, or any other topic, and obtain trusted answers from verified veterinarians and other pet experts.

KEY FEATURES OF PETCOACH:

- ❖ **Reliable:** Obtain direct advice from certified US veterinarians, dog trainers, pet nutritionists, and other experts
- ❖ **Convenient:** Ask a vet anywhere, anytime.
- ❖ **Immediate:** We might already have your answer! Before submitting your question, try searching among our thousands of pet-related questions and answers.
- ❖ **Clear all your doubts:** Learn how to potty train your puppy, stop your cat's itching and scratching, obtain a second opinion about your dog's nutrition, discover how to prevent fleas and ticks.



Figure 1.2 PetCoach App

2.1.2 Presented solution.

This project will provide an easy and user-friendly remedy to the farmers. The focus of this App will utilize the skills of qualified veterinary professionals in a smart way which will save the investment of large to small stock-holders and it will timely deliver medical services to the clients of animals and will cut the expense and time of transportation of ill animals.

Comparison between Presented solution and Other Applications:

Competitive analysis is tabulated below.

Table 2.1 Comparison Table

Functionality	Sehat Kahani	PetCoach	Veterinary service
Treatment at doorstep	No	No	Yes
Take/check Appointment	Yes	No	Yes
Automatic record history	No	No	Yes
Appointment notification	Yes	No	Yes
Check pending appointment	No	No	Yes
Clients give feedback	No	No	Yes
Provide an accurate and updated center	Yes	No	Yes
Chat with client and vet	No	No	Yes
Works for human	Yes	No	No
Important videos	No	No	Yes
Check location	No	No	Yes
Find nutrition food	No	Yes	No

CHAPTER 3

SYSTEM REQUIREMENTS SPECIFICATIONS

3.1 Requirements Specifications

System Requirements Specification (SRS) is a formal statement of the application functional and operational requirements. It serves as a contract between the developer and the customer for whom the system is being developed. The developers agree to provide the capabilities specified. The software requirements specification enlists enough and requirements that are required for the project development.

3.2 Non-Functional Requirements

In system engineering and requirement engineering, a non-functional requirement (NFR) is that requirement specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. They are contrasted with functional requirements that define specific behavior or functions.

3.2.1 Compatibility

This application is only applicable on android phones not on any windows phones. The application is compatible with every android operating system.

3.2.2 Reliability

The system should be reliable to provide accurate location and suggest you the expertly. The information provided is authentic and published by the responsible organization.

3.2.3 Maintainability

The system is easy to maintain. The records of veterinarians and farmers are maintained in a database.

3.2.4 Availability

This application would be available for farmers 24/7 hours and farmers will be able to use it for services if they are available.

3.2.5 User friendly

Application GUI (graphical user interface) must be easy to use for the user and make sure users do not face any difficulty while performing any task.

3.2.6 Scalability

The application must have the ability to perform any task equally well, even when the traffic and maximum users use the system.

3.2.7 Robustness

Our application deals with any unexpected input instead of crashing and it will show the proper error message.

3.3 Functional Requirement

Functional requirements may be calculations, technical details, data manipulation and processing, and other specific functionality that define what a system is supposed to accomplish. In other words, a functional requirement will describe a particular behavior of function of the system when certain conditions are met.

Following are some functional requirements of our project:

3.3.1 Client's Requirement

There are some *Client* requirements which are mentioned below:

3.3.1.1 Login for Client

Table 3.1 login for Client

Name	Login for Client
Summary	A client can log in with name, CNIC, address, profession, phone, and Email and can register.
Rationale	Searching and seeking information about the doctor.
Pre-requisite	A client must have the app installed.

3.3.1.2 Search veterinary

Table 3.2 Search veterinary

Name	Search veterinary
Summary	Users can Search doctors from android applications and can check the information of doctors.
Rationale	Making the process of finding a particular veterinary.
Pre-requisite	The user must be logged in.

3.3.1.3 Make an appointment.

Table 3.3 Make an appointment

Name	Make appointment
Summary	A client can select a nearly veterinary for ill animal and take an appointment
Rationale	Taking the process of appointment from the doctor.
Pre-requisite	A client must be logged in. Veterinary must be available.

3.3.1.4 Get notifications.

Table 3.4 Get notifications

Name	Get notifications
Summary	The client will get a notification of an important appointment of nearly veterinary for an ill animal
Rationale	Get notification of appointment.
Pre-requisite	A client must be logged in. The Veterinary must be logged in.

3.3.1.5 Chat with a veterinarian

Table 3.5 Chat with a veterinarian

Name	Chat with veterinarian
Summary	The client will Chat with a veterinarian about timing, location, appointment, and medicines.
Rationale	Chat with a veterinarian about animals
Pre-requisite	The user must be logged in. A doctor must be logged in.

3.3.1.6 Rating

Tables 3.6 Rating

Name	Rating
Summary	The client will give a rating to the veterinarian when an order will complete.
Rationale	Rating when an appointment will complete.
Pre-requisite	A client must be logged in.

3.3.1.7 Videos

Table 3.7 Videos

Name	Videos
Summary	The client will make videos of ill animal and send to vet.
Rationale	Videos for guideline about animals
Pre-requisite	The user must be logged in. A doctor must be logged in.

3.3.1.8 Location

Table 3.8 Location

Name	Location
Summary	The client will make videos of ill animal and send to vet.
Rationale	Videos for guideline about animals
Pre-requisite	The user must be logged in.

3.3.1.9 Client logout

Table 3.9 Client logout

Name	Client logout
Summary	If a client has done his appointment and wants to logout then he/she can logout
Rationale	Clients can log out from their profiles.
Pre-requisite	A client must be logged in.

3.3.2 Veterinary Specialist

There are some veterinary requirements which are mentioned below:

3.3.2.1 Veterinary login

Table 3.10 Veterinary login

Name	Veterinary login
Summary	Veterinary logs in using a valid name, email, and password and must create a profile.
Rationale	To Create and login in application.
Pre-requisite	Veterinary must be login.

3.3.2.2 Veterinary give/check appointment

Table 3.11 Veterinary give/check appointment

Name	Veterinary give/check appointment
Summary	Veterinary will check location, time, and give appointment to the farmers to check ill animals
Rationale	To solve farmers' issues.
Pre-requisite	Veterinary must be login.

3.3.2.3 Pending appointment

Table 3.12 Pending appointment

Name	pending appointment
Summary	veterinary can pending a client's appointment if he has so many appointments together on the same location
Rationale	veterinary can pending appointment
Pre-requisite	veterinary must be logged in.

3.3.2.4 Get notifications.

Tables 3.13 Get notifications

Name	Get notifications
Summary	Veterinary will get a notification of the important appointment of a near client for an ill animal
Rationale	Get notification of appointment.
Pre-requisite	A doctor must be logged in.

3.3.2.5 Chat with client

Table 3.14 Chat with client

Name	Chat with client
Summary	The doctor and client will chat about an appointment, medicines, and ill animals.
Rationale	Chat with a client about animals
Pre-requisite	A doctor must be logged in.

3.3.2.6 Location

Table 3.15 Location

Name	Location
Summary	The doctor and client will check the location of each other for an appointment or visit.
Rationale	Check the location of the client.
Pre-requisite	A doctor must be logged in.

3.3.2.7 Veterinary logout

Table 3.16 Veterinary logout

Name	Veterinary logout
Summary	If veterinary has done his appointment and wants to logout then he/she can logout
Rationale	Veterinary can log out from profile.
Pre-requisite	Veterinary must be logged in.

CHAPTER 4

PROJECT DESIGN

4.1 Use case Diagram

Use case diagram represents different actors that interact with the system and perform a function.

4.1.1 Client Use Case Diagram

In the figure, we represent the Client use case diagram. It is representing all his functions.

4.1.1.1 Splash Screen

When the application will open, a splash screen will show.

4.1.1.2 Login

After creating an account, the client can easily log in next time.

4.1.1.3 Signup

Through the registration, form the client can register for using an app.

4.1.1.4 Selection of client

After signup, the selection board can display. Users can select a client or veterinarian.

4.1.1.5 Dashboard

Through the dashboard, the user can select chat, appointment, notification, and history, etc.

4.1.1.6 Make an appointment.

After searching for a veterinarian client can take an appointment with a vet for an animal.

4.1.1.7 History

The history of the client, animal, and veterinarian can save in the history option that the client contacts a veterinarian.

4.1.1.8 Chat

Client and veterinarian can chat with each other about appointments, medicines, and the illness of animals.

4.1.1.9 Notification

If the client takes an appointment and the vet will confirm an appointment, then the client will get a confirmation notification.

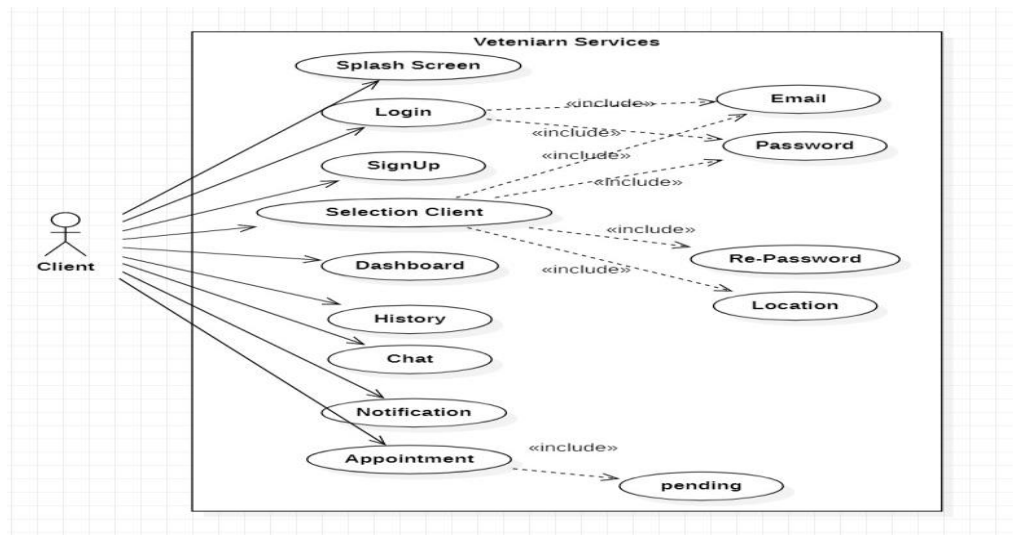


Figure 4.1 Client Use Case Diagram

Table 4.1 Client Use Case Diagram

Use Case Id	UC-1
Actor	Client
Pre-Condition	Signup/sign-in is a must to get into the system
Functionality	<ul style="list-style-type: none"> • Make appointment. • Add Details • Check notification • View Pending • Confirmed appointment • Messages • Give rating • Complete appointment • History • Videos
Post-condition	Log out from the app

4.1.2 Veterinarian Use Case Diagram

In the figure, we represent the Client use case diagram. It is representing his entire functions as a veterinarian.

4.1.2.1 Splash Screen

When the application opens, a splash screen will show.

4.1.2.2 Login

After creating an account, the client can easily log in next time.

4.1.2.3 Signup

Through the registration, form the client can register for using an app.

4.1.2.4 Selection of client

After signup, the selection board can display. Users can select a client or veterinarian.

4.1.2.5 Dashboard

Through the dashboard, the user can select chat, appointment, notification, and history, etc.

4.1.2.6 Notification

If the client takes an appointment and vet will get a notification of the appointment.

4.1.2.7 Appointment

A veterinarian can check appointments and confirm the appointment of a client.

4.1.2.8 Pending

A veterinarian can check appointments and can pending appointments of a client.

4.1.2.9 History

The history of the client, animal, and veterinarian can save in the history option that the client contacts a veterinarian.

4.1.2.10 Chat

Client and veterinarian can chat with each other about appointments, medicines, and the illness of animals.

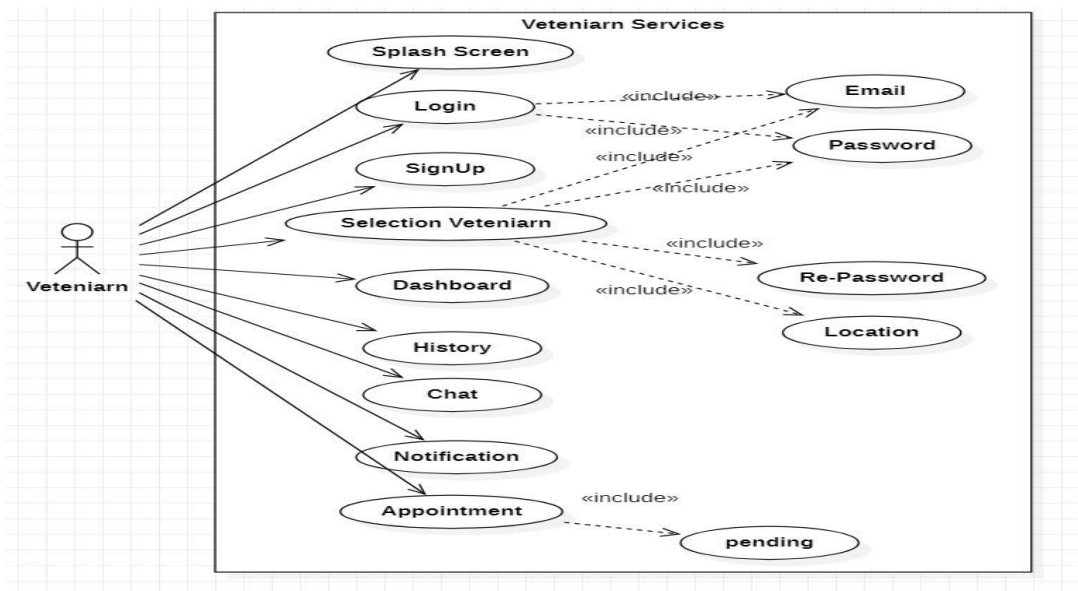


Figure 4.1 Veterinarian Use Case Diagram

Table 4.1 Client Use Case Diagram

Use Case Id	UC-2
Actor	Veterinarian
Pre Condition	Signup/sign-in is a must to get into the system
Functionality	<ul style="list-style-type: none"> • Check pending • Accept or reject appointment • Update appointment • View appointment on map • Messages • Complete appointment • History
Post-condition	Log out from the app

4.2 Activity Diagram

The activity diagram represents the flow of activities and actions. These can be shown in it.

4.2.1 Client Activity Diagram

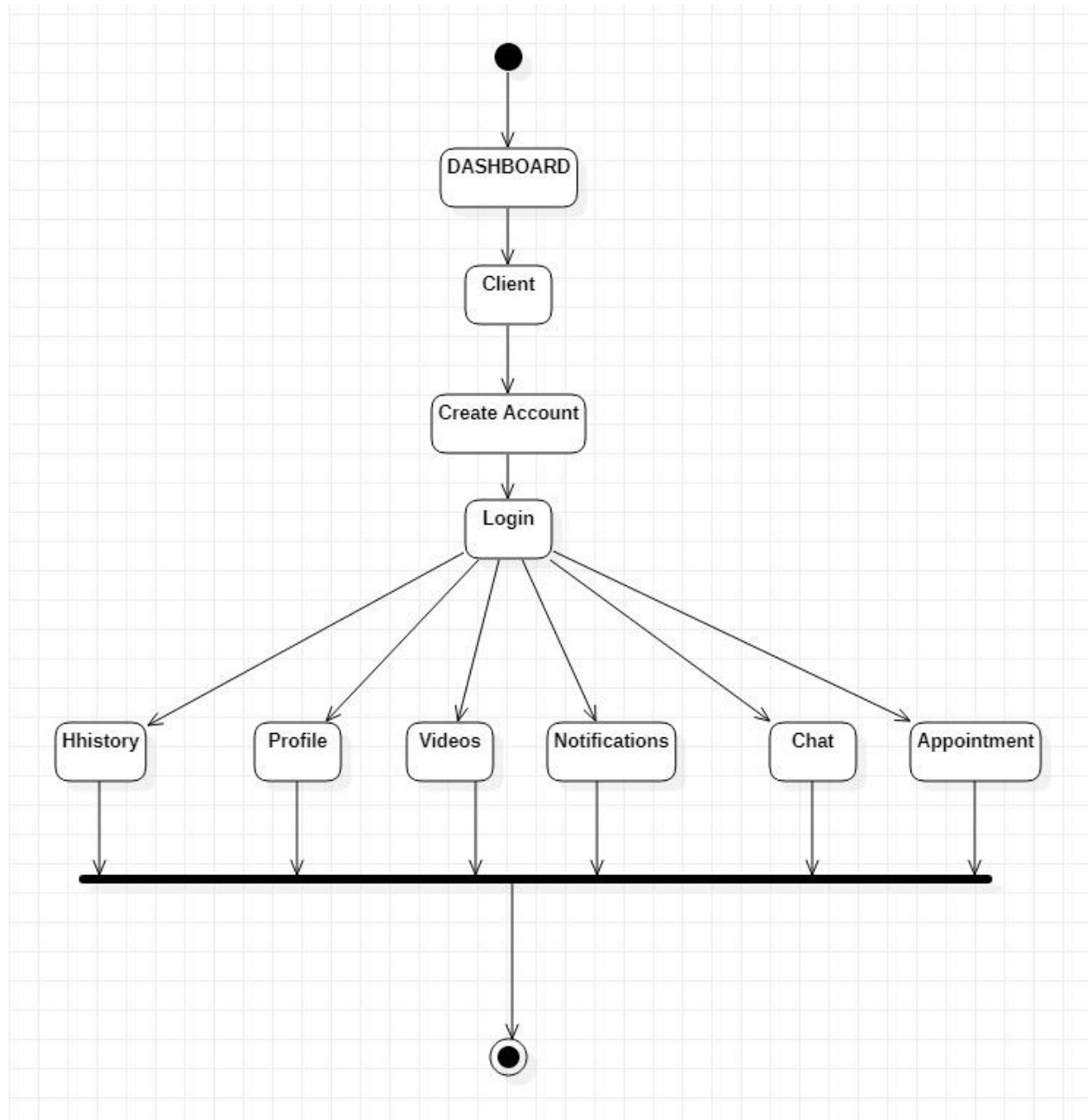


Figure 4.3 Activity Diagram of Client

4.2.2 Veterinarian Activity Diagram

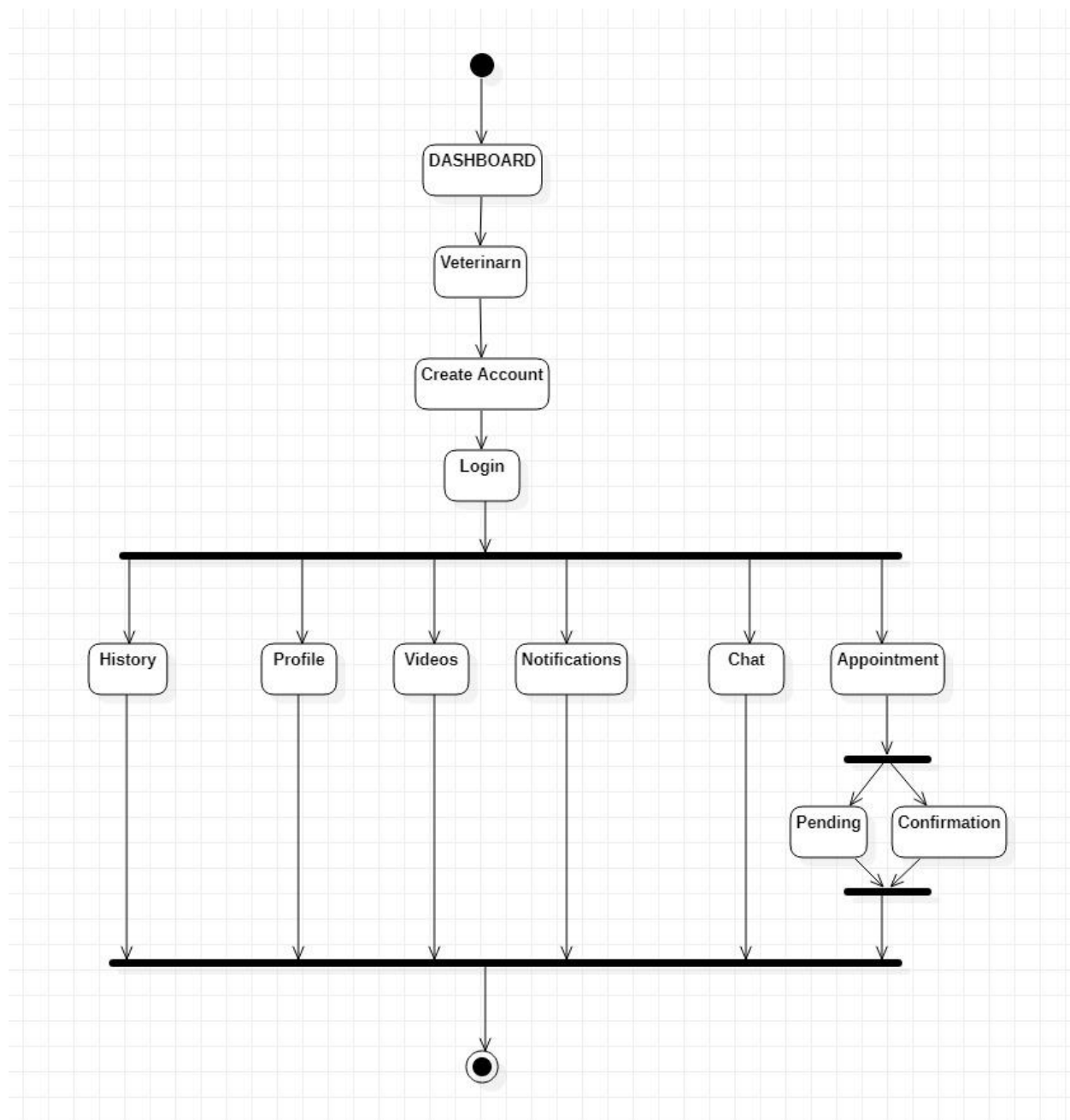


Figure 4.4 Activity diagram of Veterinarian

4.3 Class Diagram

The figure shows the classes and relationships between the class's client and veterinarian. The relationship between different classes displays in the figure.

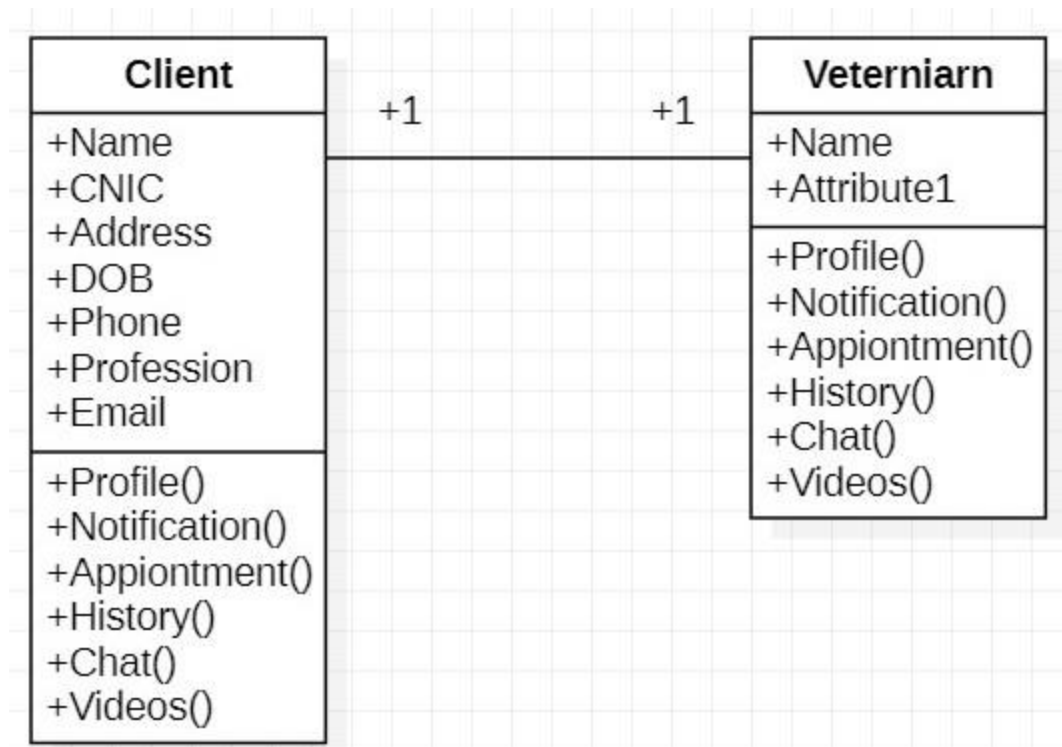


Figure 4.5 Class Diagram

4.4 Sequence Diagram

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. These diagrams are used by software developers and business professionals to understand requirements for a new system or to document an existing process.

4.4.1. Client Sequence

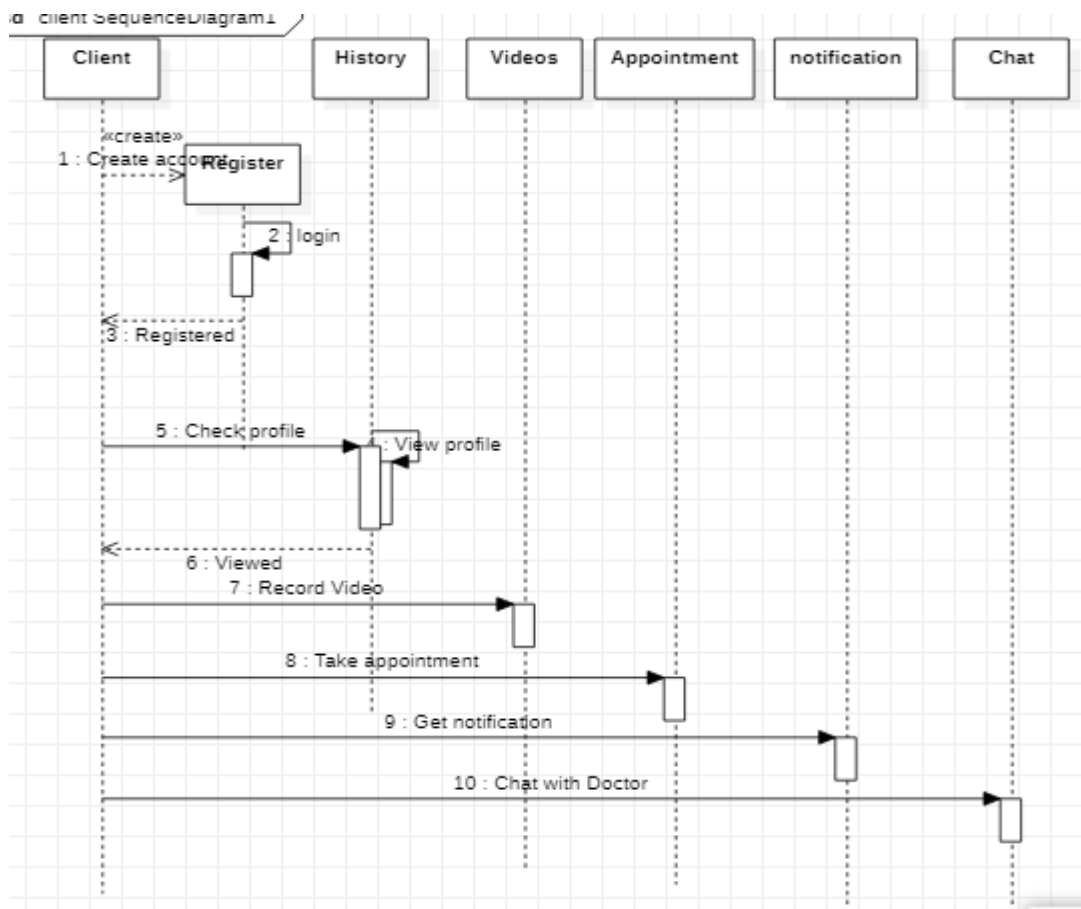


Figure 4.6 Client Sequence Diagram

4.4.2 Veterinarian Sequence Diagram

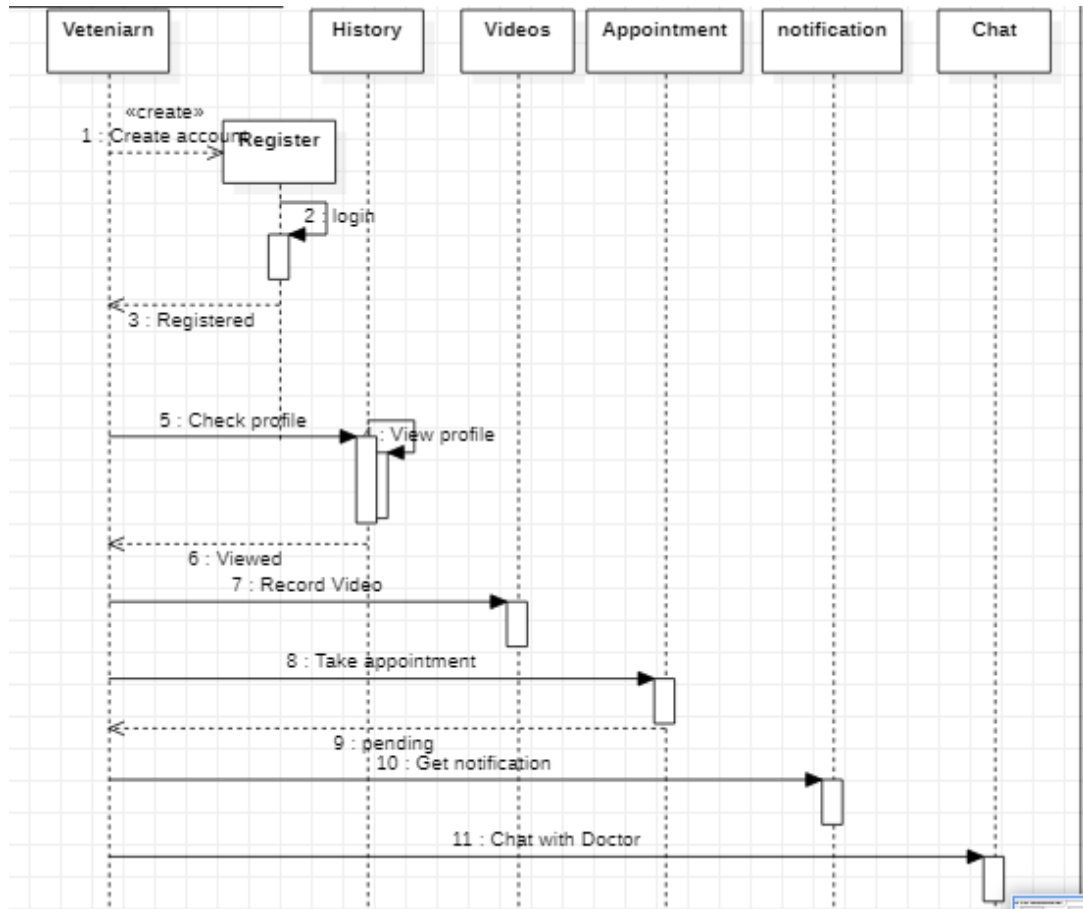


Figure 4.7 Veterinarian Sequence Diagram

4.5 Data flow Diagram (DFD)

Data flow diagrams are used to graphically represent the flow of data in a business information system. **DFD** describes the processes that are involved in a system to transfer data from the input to the file storage and report generation.

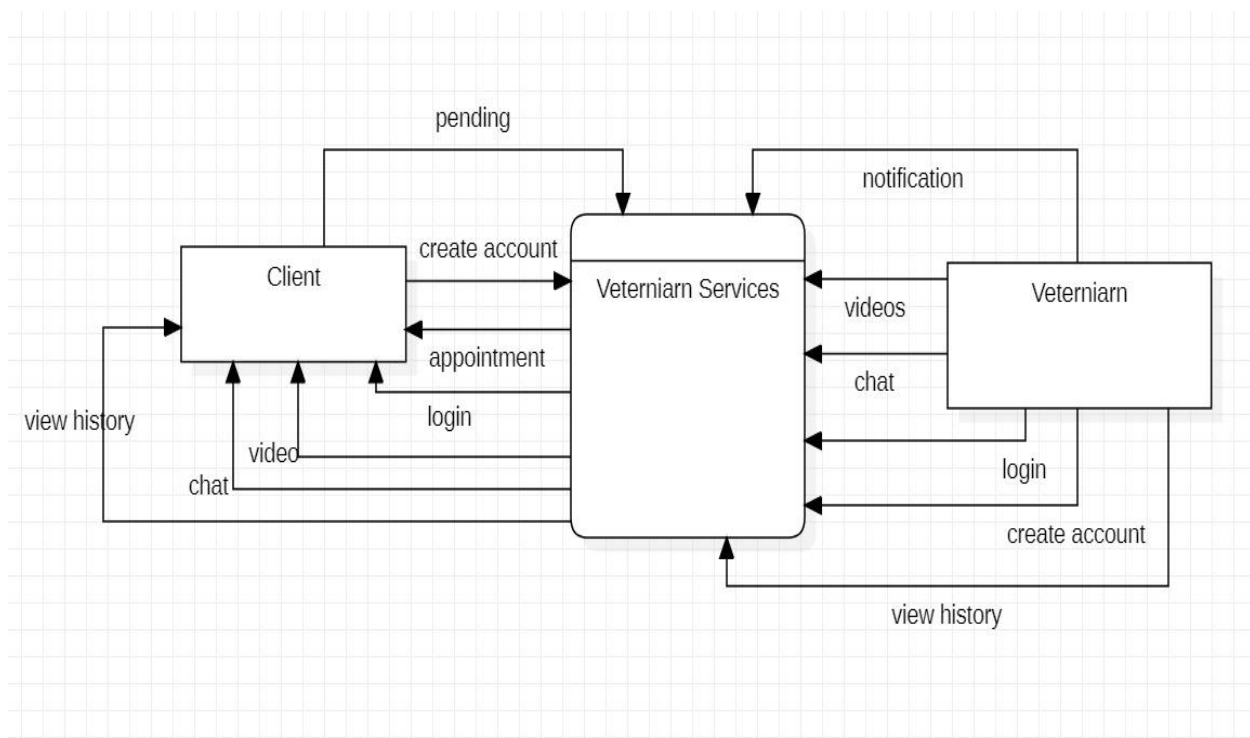


Figure 4.8 Data Flow Diagram

CHAPTER 5

IMPLEMENTATION

5.1 Tools and Techniques

Android Studio

Firebase

5.2 Screenshots of Application

There are Screenshots of the website in the following:

5.2.1 Home Page

This is the home page of our application. This layout will appear when the user visits our application.

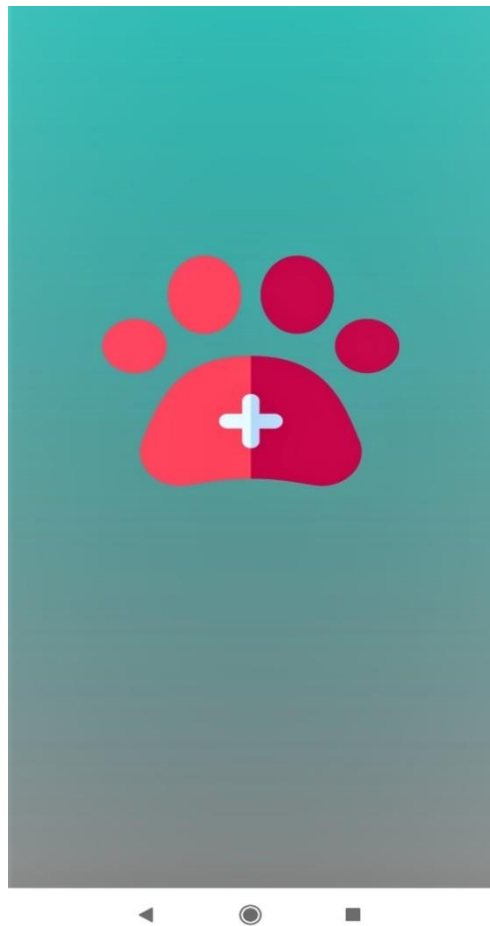


Figure 5.1 Splash Screen

5.2.2 Login Page

After the home page up login page will display. On the login page, the client and vet will have to enter their email address and password. He will remain login until he does not log out. In the end, we have provided create an account option so that anyone who has not to account can create an account directly from here.

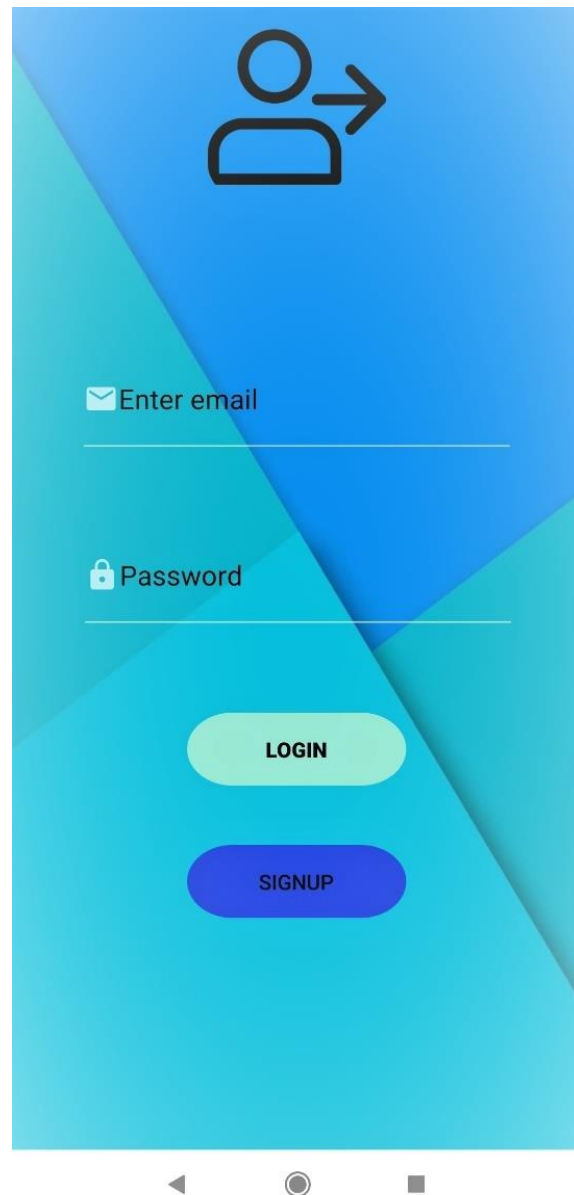


Figure 5.2 Login

5.2.3 Selection Screen

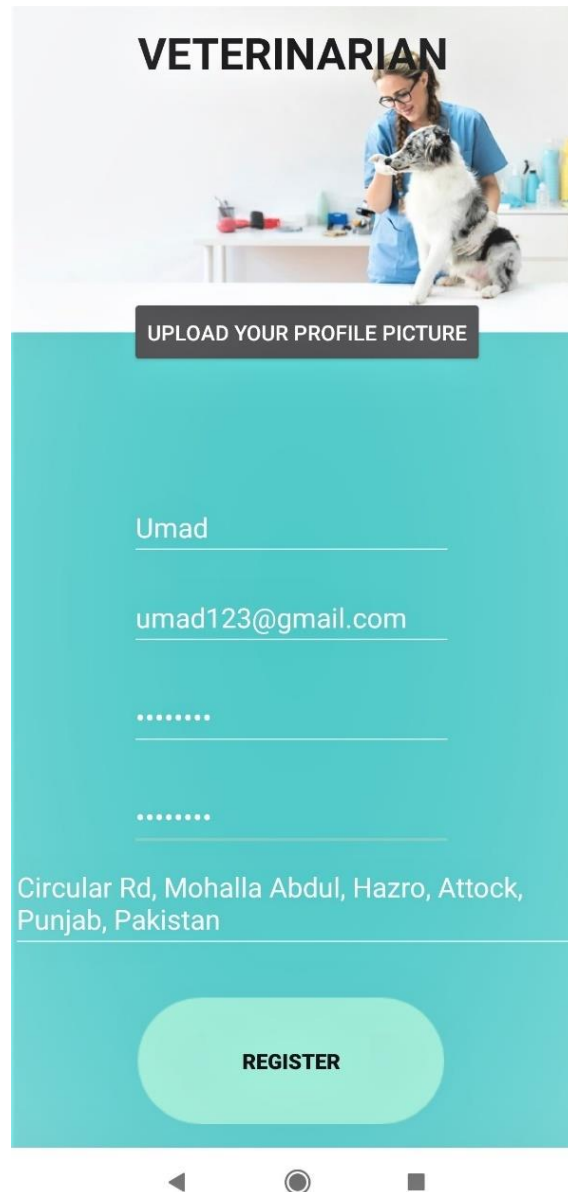
In the Selection Screen, the Client and Veterinarian will select their options. If a user is a client, then He/she will select Client and if He will be Vet then he will click on veteran.



Figure 5.3 Selection Screen

5.2.4 Veterinarian Signup

Clicking on veteran, the Veterinarian will sign up on his account through email, password, contact, and address. A veterinarian can also upload profile pictures and a veterinarian will be registered on the application.



The screenshot displays a mobile application interface for veterinarian registration. At the top, a banner image shows a female veterinarian in blue scrubs examining a dog. The word "VETERINARIAN" is overlaid in large, bold, black capital letters. Below the banner is a dark grey button with the text "UPLOAD YOUR PROFILE PICTURE". The main form area has a teal background and contains several input fields: a text field with "Umad", an email field with "umad123@gmail.com", two password fields represented by dots, and a text field with the address "Circular Rd, Mohalla Abdul, Hazro, Attock, Punjab, Pakistan". At the bottom of the form is a large, light green rounded button with the text "REGISTER". The bottom of the screen shows standard Android navigation icons.

Figure 5.4 Veterinarian signup

5.2.5 Veterinarian Dashboard

After Registration Veterinarian will come on the dashboard. Through Dashboard veterinarian can check his profile, check appointments, pending Appointments, chat with client and history.

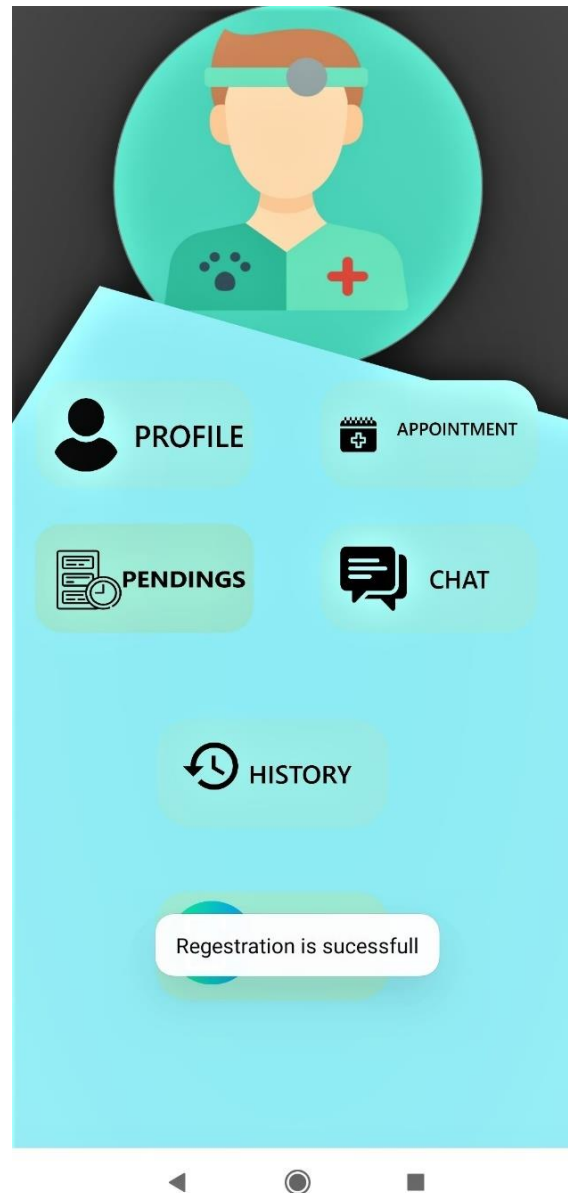


Figure 5.5 Veterinarian Dashboard

5.2.6 Veterinarian profile

Through the Dashboard of the veterinarian, a profile will show in the application. In profile name, Email, addresses, and Rating of the veterinarian will show to a veterinarian.

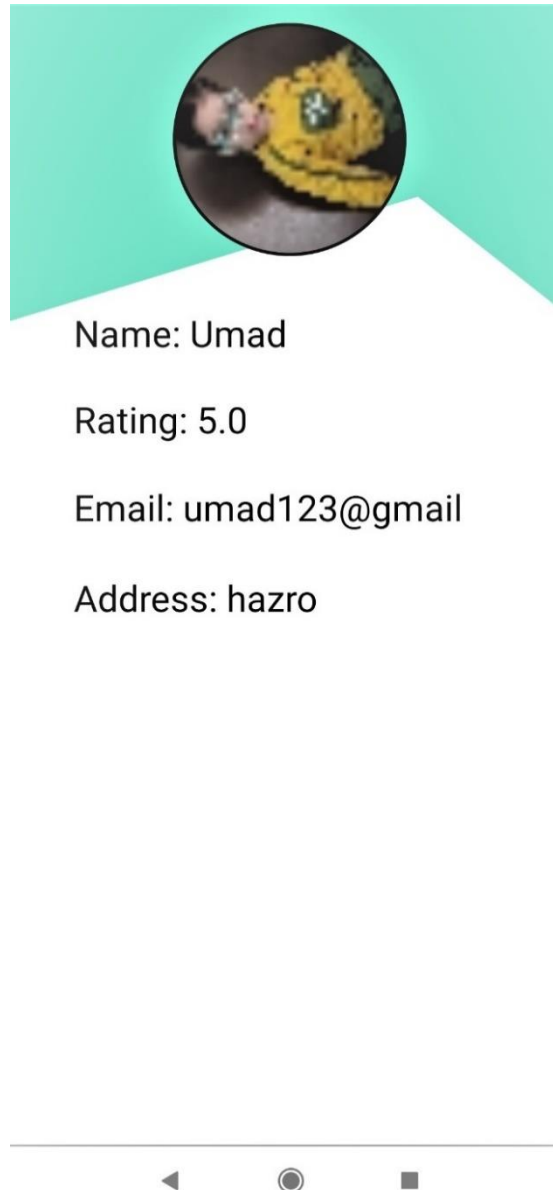


Figure 5.6 Veterinarian profile

5.2.7 Client Signup

If a user selects client on the selection screen, then he will come on client sign up. A client can sign up through email and password.



The image shows a mobile application interface for client signup. It features a teal header with the word "CLIENT" in large white letters. Below the header, there are several input fields with placeholder text: "Danyal", "1234567891", "hazro", "11111197", "098765442", "na", "dani123@gmail.com", and two rows of dots representing password fields. At the bottom, there is a teal button labeled "REGISTER". The interface is framed by a white border, and the bottom of the screen shows standard Android navigation icons.

Figure 5.7 Client Signup

5.2.8 Client Dashboard

After signing in client, the Client can view his profile, appointments, pending appointments. Notification of appointment confirmation, chat with a vet, videos related to problems of animals.

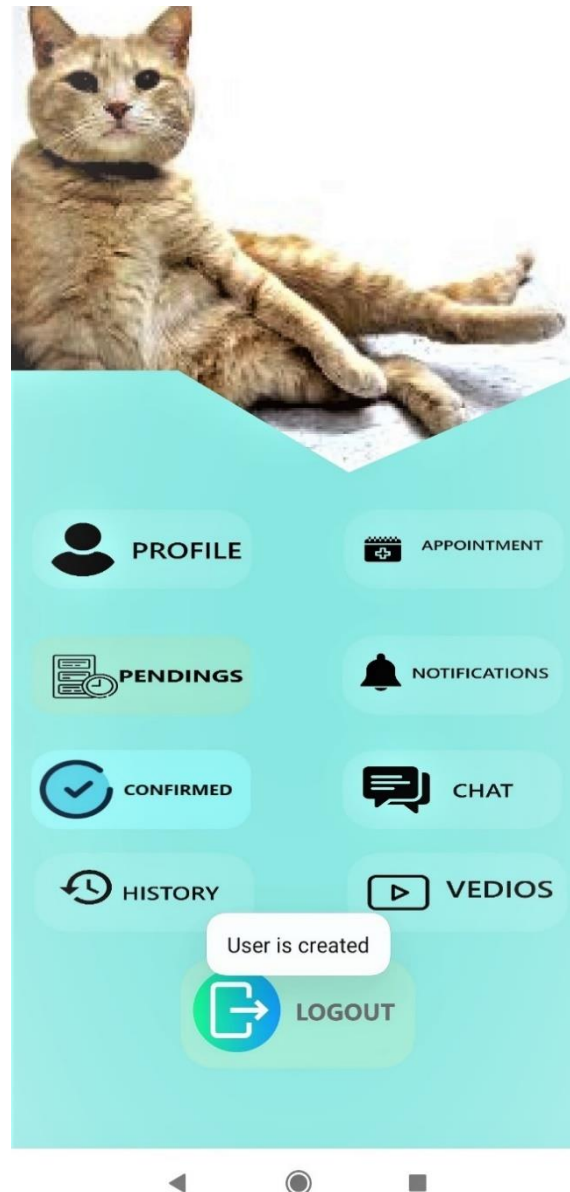


Figure 5.8 Client Dashboard

5.2.9 Client Profile

Through the Dashboard of the Client, a profile will show in the application. In profile name, cnic, dob, profession, email, address, and the phone will show to a veterinarian.

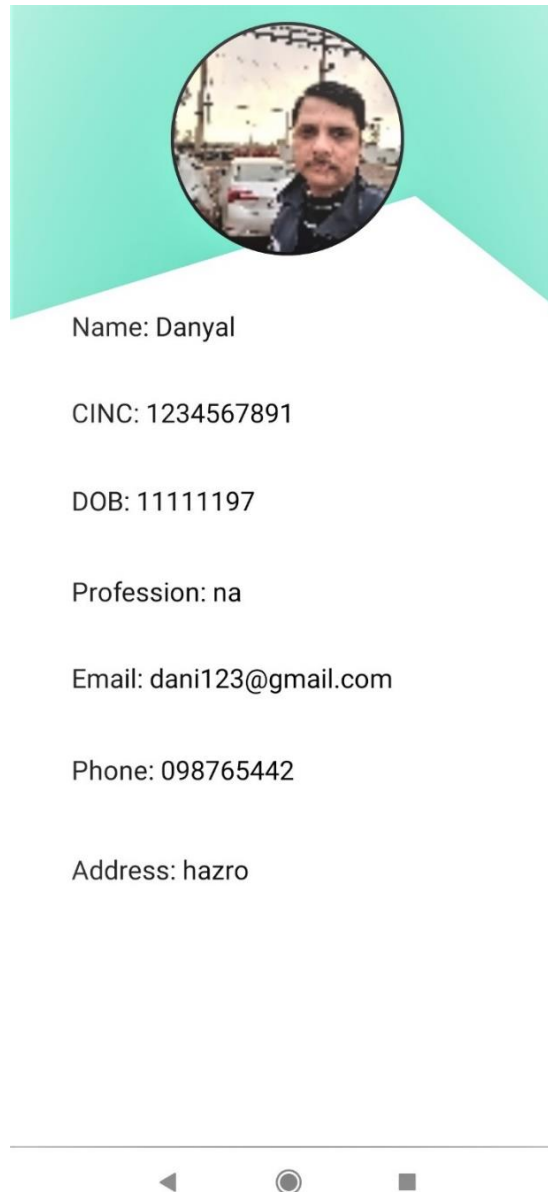


Figure 5.9 Client Profile

5.2.10 List of Veterinarians

A list of Veterinarians will show to the client So a client will select Vet according to his animal problem.

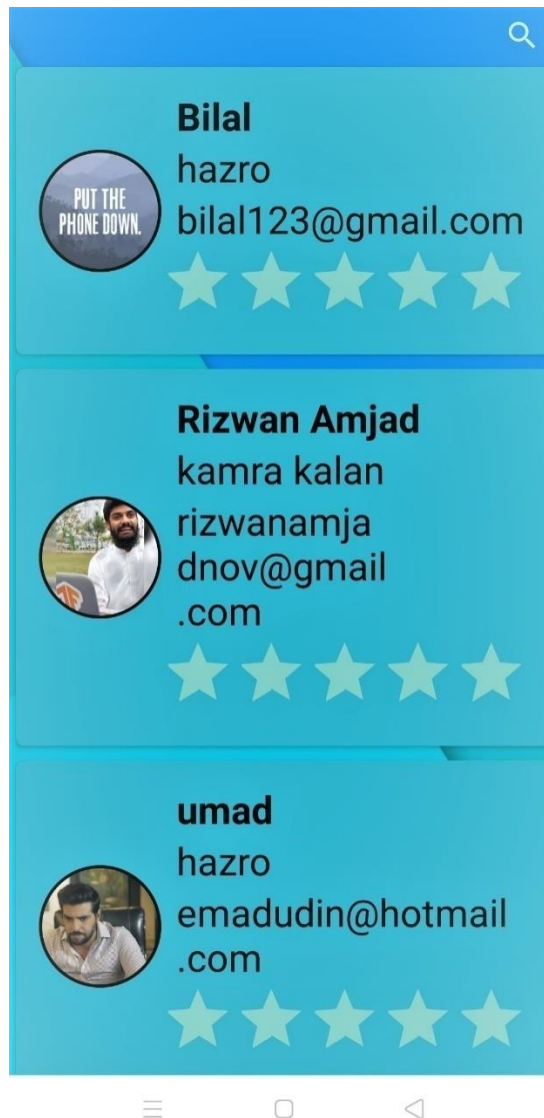


Figure 5.10 List of Veterinarians

5.2.11 Date Selection Info

Client will select date of appointment through calendar which will show in application. Client will select day, month, and year of appointment through calendar and can take appointment.

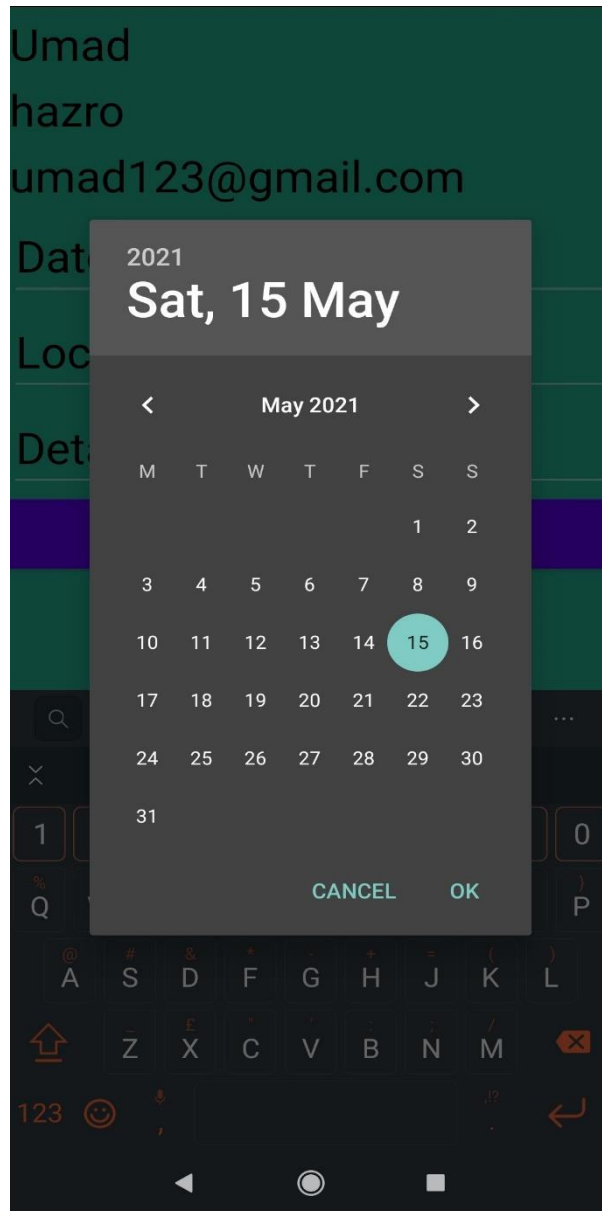
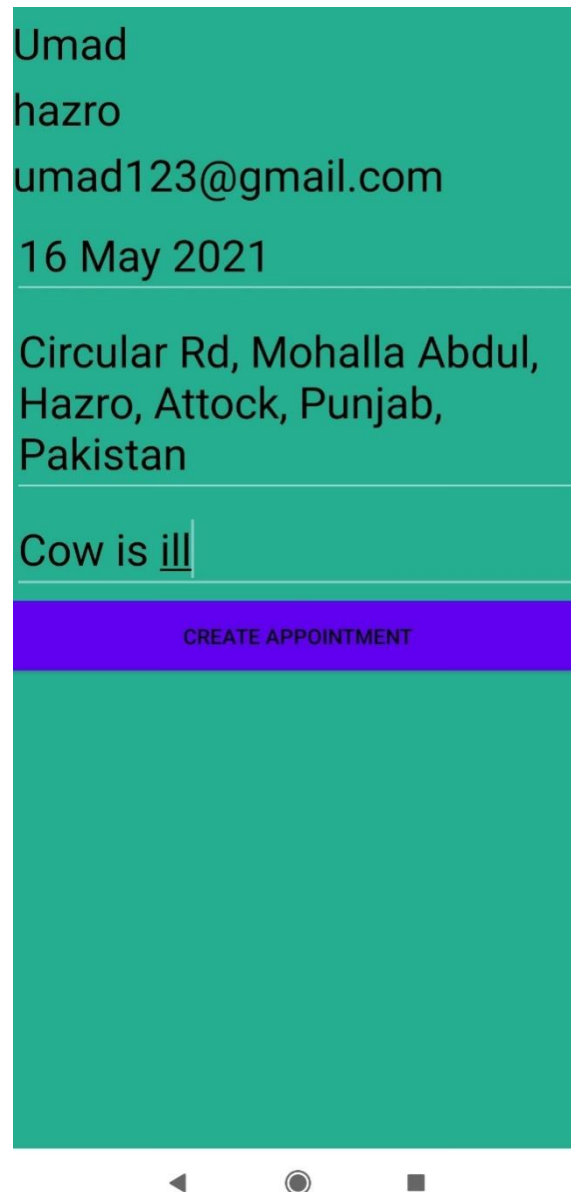


Figure 5.11 Date Selection.

5.2.12 Location and Detail

The client will create an appointment through the application. The client will write location, date, address, name, email, details of the problem, and select create appointment.



The screenshot shows a mobile application interface for creating an appointment. The form is divided into several sections by horizontal lines. The first section contains the text: "Umad", "hazro", "umad123@gmail.com", and "16 May 2021". The second section contains the text: "Circular Rd, Mohalla Abdul, Hazro, Attock, Punjab, Pakistan". The third section contains the text: "Cow is ill". Below the text input fields is a purple button labeled "CREATE APPOINTMENT". The bottom of the screen shows the Android navigation bar with three icons: a back arrow, a home circle, and a recent apps square.

Figure 5.12 Location and Detail.

5.2.13 Appointment Request and Create

The client will create an appointment and send the request for an appointment to the veterinarian. The veterinarian will check the appointment, profile of a client, problem, location, and problem of client and contact with the client through phone or chat through an application.

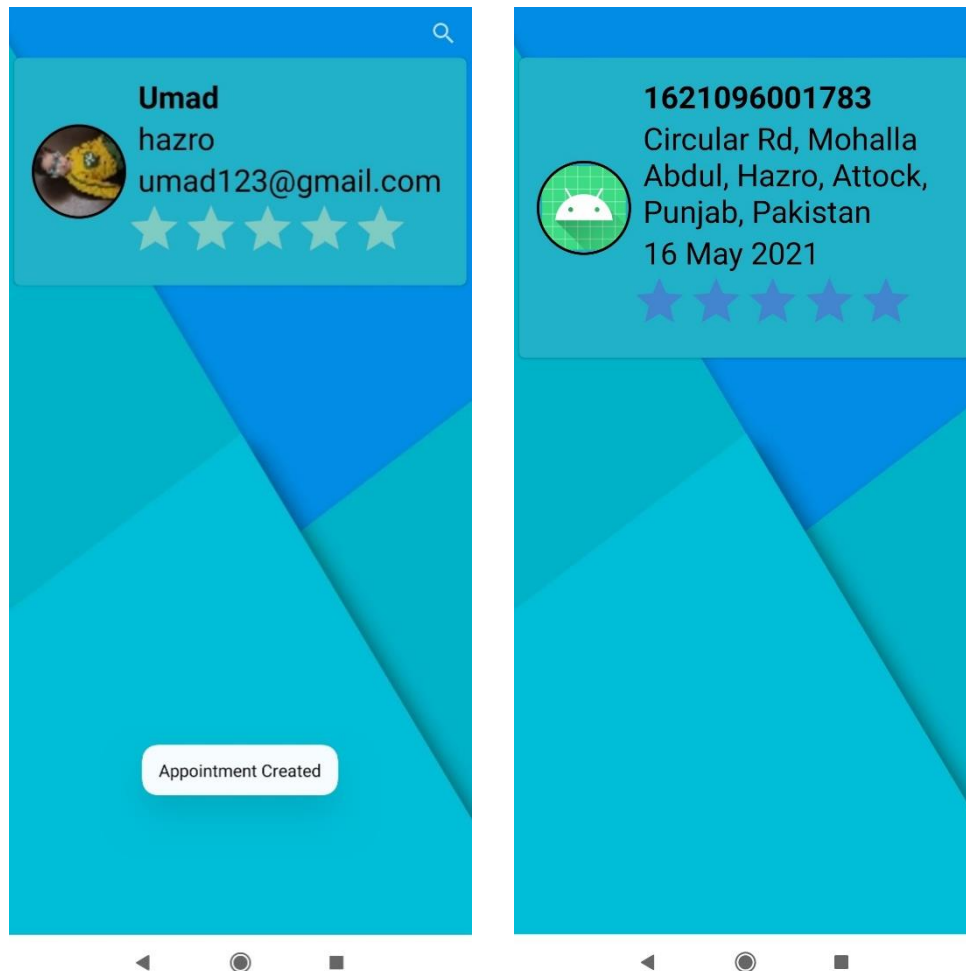


Figure 5.13 Appointment Request and Create.

5.2.14 Appointment Accept or Reject

After checking the appointment veterinarian will accept the appointment or reject the appointment if the location will far from the veterinarian so he will reject the appointment.

Appointment No
1621501005507

Address
Circular Rd, Mohalla Abdul, Hazro, Attock,
Punjab, Pakistan

Details
cow is ill

Date
21 May 2021

ACCEPT THE APPOINTMENT

REJECT THE APPOINTMENT

Figure 5.14 Appointment Accept or Reject.

5.2.15 Appointment Confirmed and update

If the veterinarian will accept the appointment so the client will get a notification of confirmation, or the veterinarian will change the date or location then an appointment will update and the client will get a notification of appointment.



Figure 5.15 Appointment Confirmed and update.

5.2.16 Appointment on map and distance

The client and veterinarian both can view the location of each other through a map so the client will choose the nearest vet for his animal. A vet can find the distance of a location.

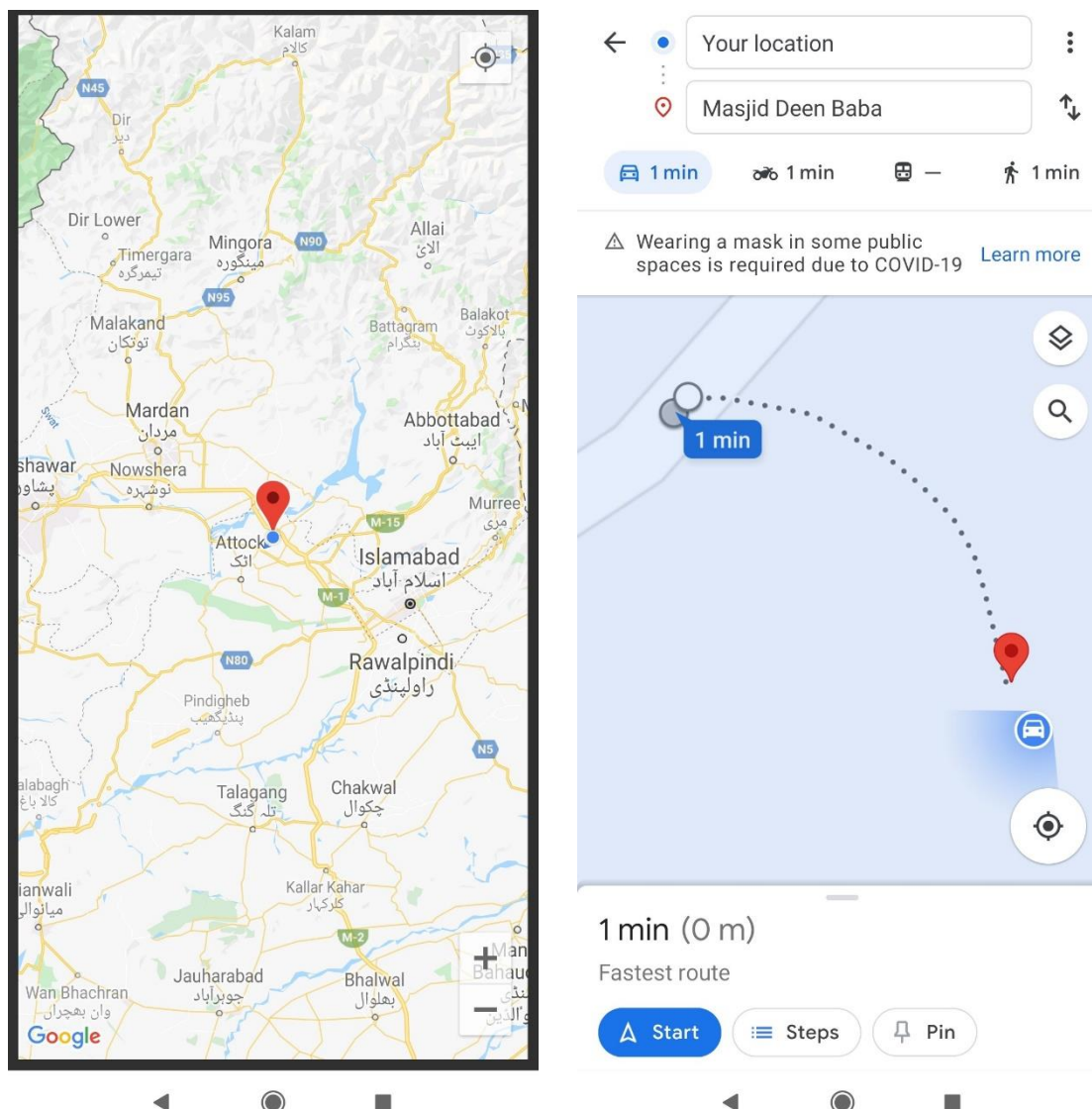


Figure 5.16 Map and Distance

5.2.17 Chat Between Client and Veterinarian

The client and veterinarian can communicate with each other through the chat option. They can discuss the appointment date time or condition of animals.

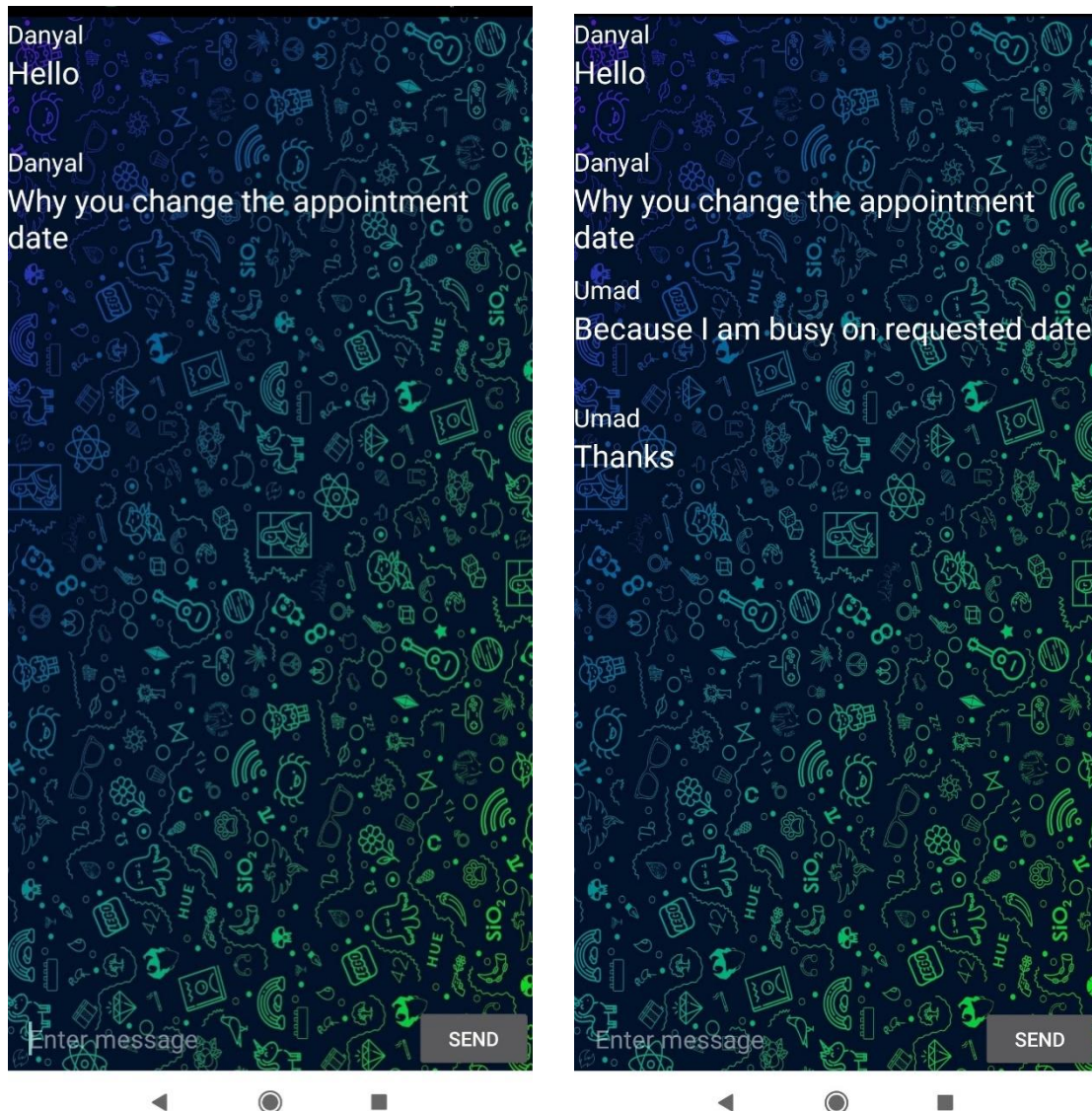


Figure 5.17 Chat

5.2.18 Rating of Appointment

After completing an order of the client, a client can give a rating to the veterinarian. Rating will show on veterinarian profile and the client can check the rating of any veterinarian.

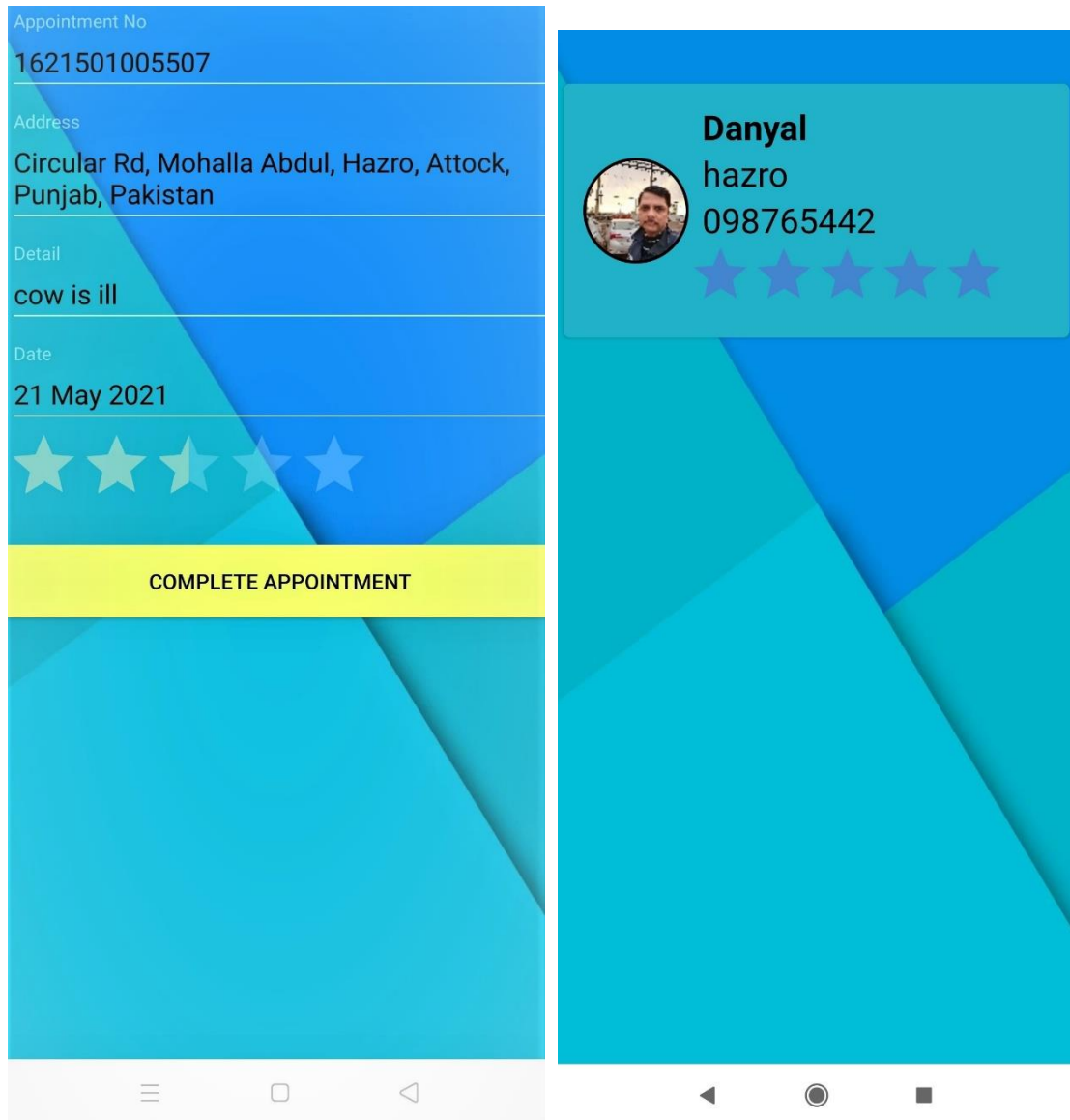


Figure 5.18 Rating

5.2.19 Videos:

Client will search the videos of animals if he don't want to take appointment So he will search videos related to problem of animals.

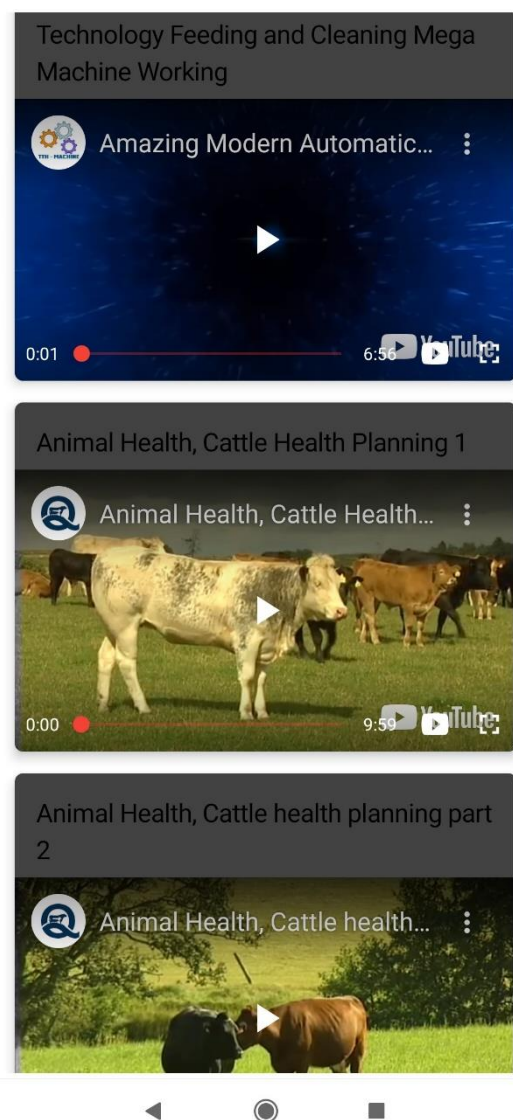


Figure 5.19 Videos

5.2.20 Logout

Clients can log out of the Application after gathering the required information from the Application. Logout successfully Confirmation message will display to the client.

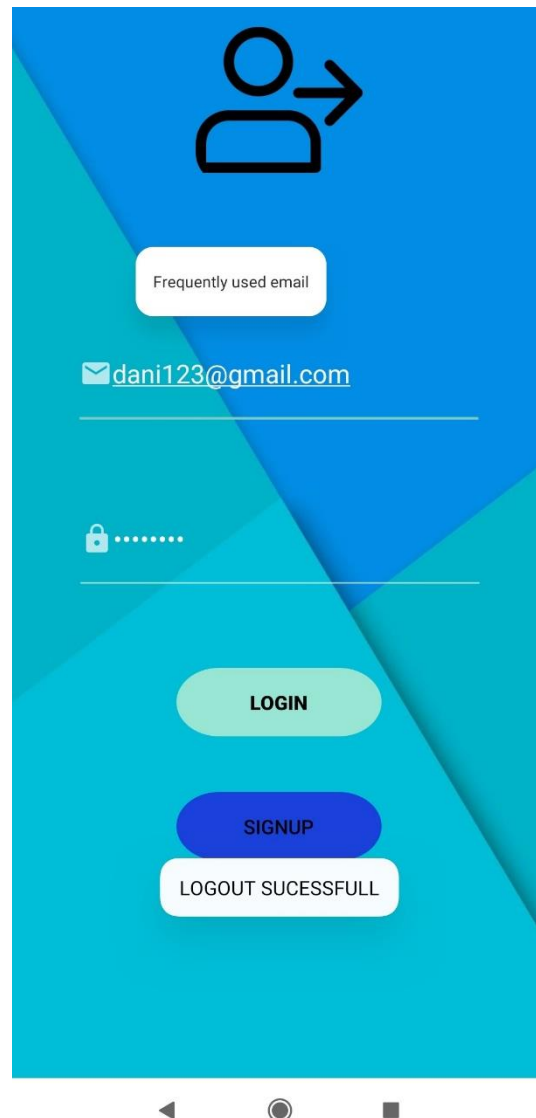


Figure 5.20 Logout

CHAPTER 6

TEST AND EVALUATION

6.1 Testing

Testing can be defined as any instrument or tool which can be used to reassure the quality or standard of product, system, or capacity of any website/software. To be effective, it is recommended that testing should not transpire only at the end of the documentation/process, rather it should be carried out throughout the entire cycle. focal point. In other words, it focuses on the general results of the system. It is often used for validation.

There are two foundations of testing:

6.2 White box testing

White box testing is also referred to as structural testing and glass box testing. On contrary to the previous testing, this testing examines the internal mechanism of the system. It is often used for verification.

6.3 Types of Testing

6.3.1 Unit Testing

Unit testing falls under the category of white-box testing. In unit testing, there is testing or examination of solo units or groups of similar units. The programmer used unit testing to examine that the unit he or she has used produces the expected results or not.

6.3.2 Integration Testing

This type of testing is applied after unit testing. In integration testing, the components or modules are combined and then the tests are applied which are defined in the integration testing plan. This type of testing may fall under the category of both white box testing and black-box testing.

6.3.3 System Testing

System testing is the third type of testing which applies its tests that by placing the system in several completely different environments it still works effectively. It falls under the category of black-box testing. In short words, system testing is the examination of the entire system.

6.3.4 Function Testing

The main reason for this testing is to check that each functionality of the app works properly or not and is tested.

6.4 Test case results

Test cases are created for each functional requirement. These tests are applied to the app to test the functionalities.

6.4.1 Test Case for client Login

Test Case: client Login

Description: the client must be able to log in successfully.

Table 6.1 Test Case for client Login

Step	Action	Expected Result	Actual Result	Pass/Fail
1	Click on the Login button	Display the client login form	Login form appeared	P
2	Enter client name	Enter client name	Name entered	p
3	Clients enter CNIC number	Enter the CNIC number	Number entered	P
4	Enter address	Enter address	Address entered successfully	P
5	Enter DOB	Enter DOB with dashes	DOB entered successfully	P
6	Enter phone	Enter client is phone number	Phone number entered. Successfully	P
7	Enter profession	Enter profession of client	Profession entered. Successfully	P
8	clients enter incorrect Email or password	Enter the incorrect information	Incorrect information	P
9	clients enter correct email or password	Login successfully	register successfully	P

6.4.2 Veterinary Specialist login Testing

Test Case: Veterinary Specialist login Testing

Description: Veterinary Specialists must be able to check location, pending appointments to the farmers successfully.

Table 6.2 Veterinary Specialist login Testing

Step	Action	Expected Result	Actual Result	Pass/Fail
1	Click on Login button	Display veterinary login form	Login form appeared	P
2	Click on name	Enter vet name	Name entered	P
3	Veterinary center. incorrect Email or password	Enter the incorrect information	Incorrect information	P
4	Veterinaries enter correct email or password	Enter the correct information	Register successfully	P

6.4.3 Whole Application testing

Test Case: Whole Application Testing

Description: the client must be able to select a doctor, chat with a doctor, see videos, get a notification, and take an appointment successfully.

Table 6.3 Whole Application testing

Step	Action	Expected Result	Actual Result	Pass/Fail
1	Click on the login button	Login successfully	Login successfully	P
2	Click on profile	Client profile open	Profile opened successfully	P
3	Click on notifications	Notification box open	Notification boxes open successfully	P
4	Click on appointment	Appointment box open	appointment boxes open successfully	P
5	Click on history	History box open	History option successfully open	P
6	Click on chat	chat box open	Chat box opened successfully	P
7	Select on videos	Videos open	Videos opened successfully	P
8	Click on logout	Client Logout successfully	Login successfully	P
9	Click on veterinary profile	Veterinary profile open	Profile opened successfully	P
10	Click on appointment	Appointment box open	Appointment box opened successfully	P
11	Click on notification	Notification box open	Notification box opened successfully	P
12	Click on pending	Pending box open	Pending box opened successfully	P
13	Click on chats	Chats open	Chat option opened successfully	P
14	Click on logout	Veterinary logout successfully	Logout successfully	P

CHAPTER 7

CONCLUSION

7.1 Conclusion

This app is an effort on our part to provide App will utilize the skills of qualified veterinary professionals in a smart way which will save the investment of large to small stock-holders and it will timely deliver medical services to the clients of animals and will cut the expense and time of transportation of ill animals. This will increase the productivity of veterinary professionals and easy access to their services for people. People will get timely guidelines and support from professionals who will not only save lives but also improve the health and production of their animals.

7.2 Future Work

As we built this project in android, android studio helps us to expand applications on updated platforms. Soon, we focus on audio/video calling so if a doctor will late, he will check the animals online through video call and give instruction to the farmer immediately. Soon, we focus on notification messages on mobile numbers when a client will be offline. In the veterinary profile list of vaccinations will be available for clients.

7.2.1 Future Features

- Audio/Video calling
- Notification message on the mobile number
- List of vaccinations
- Nutrition food plans

Reference

1. https://en.wikipedia.org/wiki/Android_software_development
2. <https://console.firebase.google.com/project/smartveterinary-98e5b/database/smartveterinary-98e5b-default-rtdb/data>
3. <https://www.flaticon.com>
4. <https://en.wikipedia.org/wiki/Veterinarian>
5. <https://stackoverflow.com/questions/12442703/getting-started-with-android-development/12442977>
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9. <https://cloud.google.com/maps-platform>
10. <https://www.raywenderlich.com/5359-firebase-tutorial-real-time-chat>
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