# **D424 – Software Engineering**

# Task 3



Capstone Proposal Project Name:	Pet Health Companion Mobile Application

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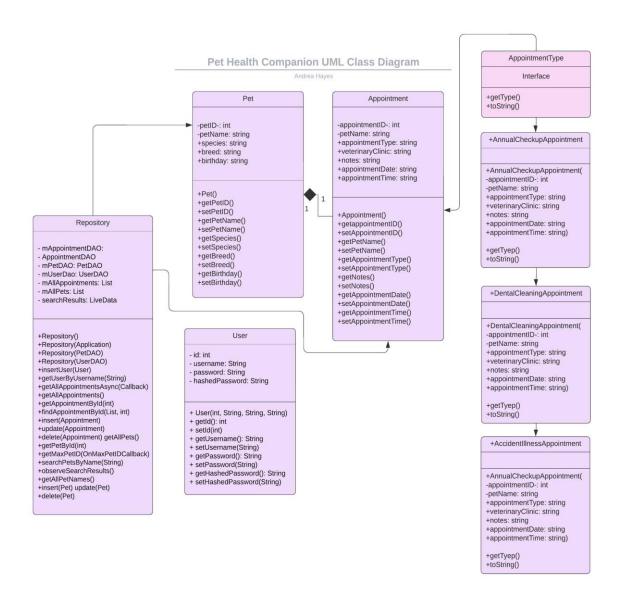
## **Application Design and Testing**

### **Class Design**

The Pet Health Companion is a minimum viable product (MVP) and was created in Android Studio, an Android app develop environment. To represent the class diagram for the Pet Health Companion, a UML diagram has been included below, depicting the main class components and their interrelationships. The class structure is designed to address pet owners' requirements for managing their pet's health, primary in the area of scheduling pet health care appointments. The mobile application's primary classes - Pet and Appointment - handle crucial data and facilitate key interactions within the application.

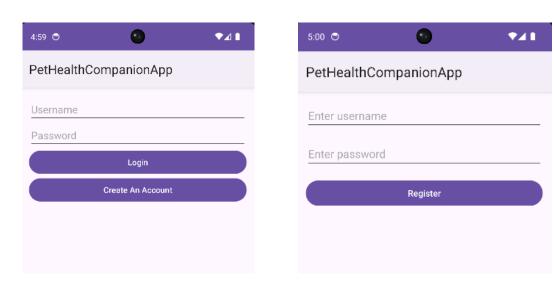
The class diagram visually represents the attributes, methods, and relationships among these components, providing a comprehensive illustration of the structure and functionality offered within the application. Android Studio's intuitive interface and powerful development tools make it possible for developers to implement multiple features. This includes appointment tracking, a 'share' pets and 'share' appointments feature, and customized reminders for appointments, ensuring that pets receive timely care when they need it. The Pet Health Companion embraces Android Studio's flexible and scalable set of development tools to steamline the pet care process, strengthening the bond between pet owners and their furry friends.

The Pet Health Companion app enables pet owners to easily incorporate pet care into their everyday routine, using the app as a consistent aid in overseeing their pets' health. With features designed to prioritize preventative care and improve communication with veterinarians, the Pet Health Companion enables pet owners to focus less on administrative tasks and more on the enjoyable activities of being a pet parent. By leveraging the capabilities of Android Studio, the app allows pet owners to maximize the joy of pet ownership while minimizing the stress.



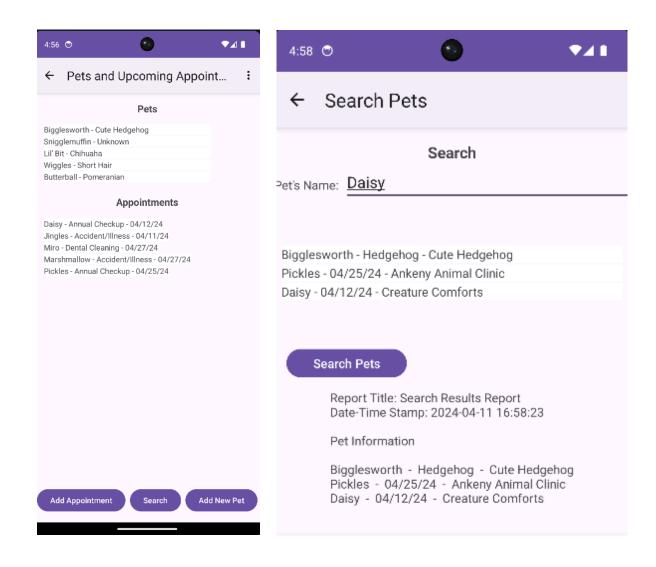
### **UI Design**

The Pet Health Companion application posseses a user interface (UI) that is easy to use, ensuring a reliable, consistent experience for pet owners. Navigation through the app starts with a login page where users can either log in or, if they haven't yet created an account yet, can go to a registration page where they register with a new username and password. The login functionality guarantees that all pet data will be secure. If the user logs in successfully, they will be able to view their pet's data, as well as the date, time, and type of any upcoming appointments.

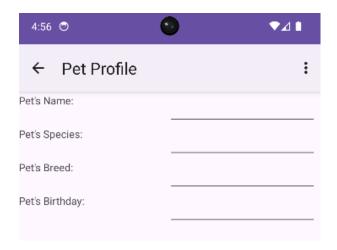


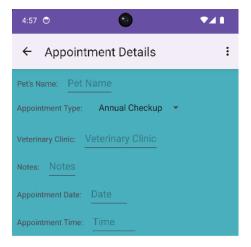


Upon entrance to the app, users are greeted with a list of all their pets and upcoming appointments. There is also a report section that allows users to search pets by pet name and to create reports that list any upcoming appointments. Used properly, the application allows the user to be proactive about managing their furry companion's health, ensuring that no timely checkups or dental care visits are missed.



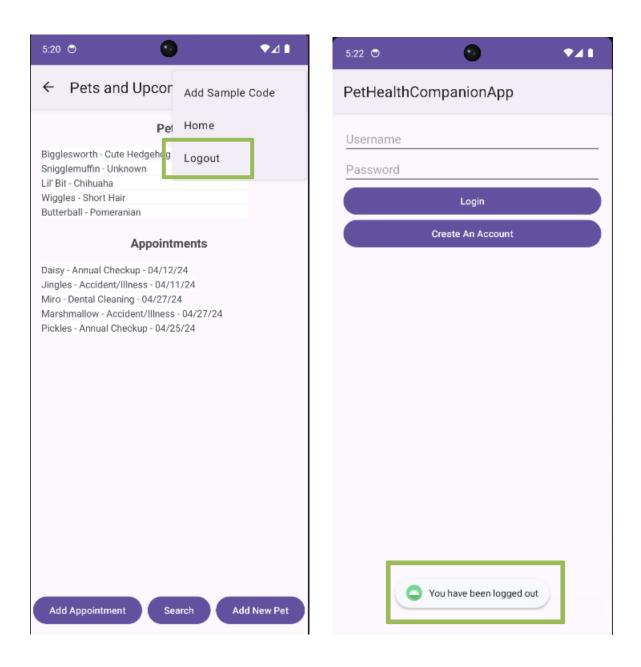
The key feature of the Pet Health Companion is managing and tracking pet healthcare appointments. The intuitive interface offers pet owners the ability to add, edit, and delete upcoming appointments, as well add, edit, or delete any additional pets, should the user's family of four-legged friends change in size. With the option of setting customized reminders, the application makes it very easy to check and monitor pet's upcoming appointments.





When users have finished monitoring their pet health care activities within the application, they are able to easily log out, and are provided with a message that verifies they have successfully logged out.

This ensures that their beloved furry friend's data always remains secure.



### **Unit Test Plan**

### Introduction

### **Purpose**

The Pet Health Companion's App unit tests are performed to ensure that the application is reliable and that it performs as intended. The tests are conducted to ensure that every part of the application has been tested systematically, that its functionality has been verified, and that it works together as an integrated, seamless whole.

### Overview

The unit test process for the Pet Health Companion ensures that the application's codebase is reliant and robust. The plan uses a custom methodology to test specified parts of the application. Core functions such as adding and deleting pets and appointments are assessed to ensure their reliability and accuracy. These tests are valuable for checking the functionality of the application's core features both in isolation and when integrated as a whole.

- Addition and Deletion of Pet: The unit tests created for the Pet Health Companion mobile app
  provide a thorough assessment of the functionality for adding and deleting pets. These tests
  involve the submission of simulated input data or a mock pet- to thoroughly assess and validate
  the application's mechanism for properly storing and removing data.
- Addition and Deletion of Appointment: In regards to the addition and deletion of appointments, the unit tests utilize a mock appointment to test how the data process behaves, discerning and evaluating the precision of data persistence and elimination from the database. The implication of these tests results are ultimately used to provide pet holders with software that is trustworthy and reliable for managing their pet's health.

### **Items**

- Development Environment: A development environment with Android Studio, the official Integrated Development Environment (IDE) for Android app development.
- Database: The Room database, which is a part of the Android Jetpack library used for local data storage in Android applications. The Repository class is called by the unit testing scripts to serve as a buffer between the code in the program and the actual database. Mockito is used to create mock implementations of the DAO interfaces in the program. These mocks simulate the behavior of the actual DAOs without having to access the actual database. By doing this, the tests focus solely on verifying the functionality of the repository methods without having to execute actual database interactions, which may otherwise have an unintended impact on the program.
- Test Framework: JUnit was used, which is a popular programming tool for writing
  and running unit tests in Java. Mockito was also used, which is a mocking
  framework used with JUnit to create mock objects for testing.
- Application Source Code: To run the tests, clone the source code from the Git repository. As the Pet Health Companion is a MVP, the test scripts are already integrated into the codebase.

## **Features**

- Appointment Management: Test the addition and deletion of appointments from the database using a mock appointment.
- Pet Management: Test the addition and deletion of pets from the database using a mock pet.

### **Deliverables**

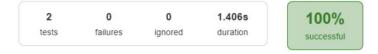
- Test Scripts: The source code includes a set of test scripts, which are written
  using the JUnit testing framework, JUnit assertion library, and Mockito for
  integration testing.
- Test Results: A report provides an overview of the test outcomes,
   encompassing successful tests and if present any failures, accompanied by
   error messages.

### **Tasks**

- Prepare the development environment with Android Studio and configure the Room Database.
- Ensure that test scripts for each outlined feature in the test plan, such as the Pet Records
   Manager Test script and the Appointment Records Manager test script, are available. As
   this is an MVP, the test scripts are not extensive and are integrated into the codebase.
- Execute the test scripts using the Android Studio testing framework by selecting either the Pet Records Manager Test script or the Appointment Records Manager test script and running it. The results of the test will be displayed in the console for you to monitor and assess. Alternatively, you can read test results in an HTML file that is located in the project's original file folder in the PetHealthCompanionapp > app build > reports> tests > testDebugUnitTest folder.
- Analyze the test results and identify any failed tests or unexpected behavior. The completed tests results would appear as below:



all > com.example.pethealthcompanionapp



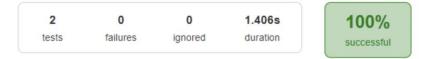
#### Classes

Class	Tests	Failures	Ignored	Duration	Success rate
PetRecordsManagerTest	2	0	0	1.406s	100%

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## Class com.example.pethealthcompanionapp.PetRecordsManagerTest

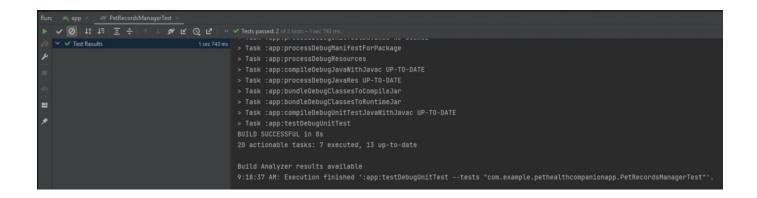
all > com.example.pethealthcompanionapp > PetRecordsManagerTest



Tests

Test	Duration	Result
testAddNewPetRecord	0.001s	passed
testDeletePetRecord	1.405s	passed

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### Package com.example.pethealthcompanionapp

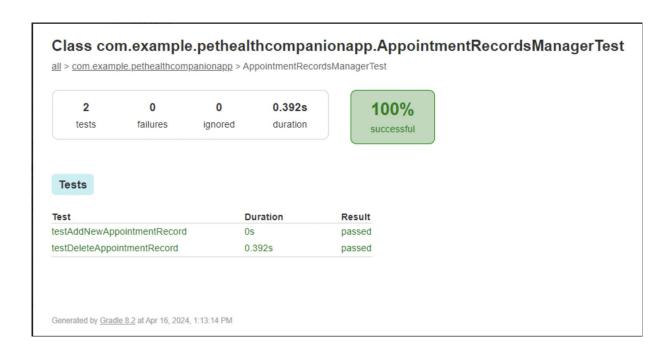
all > com.example.pethealthcompanionapp

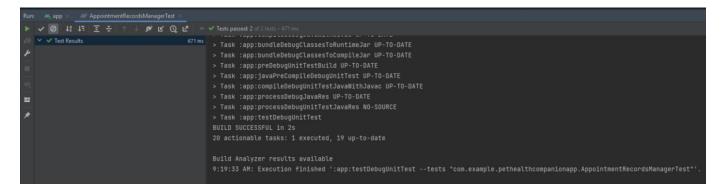


### Classes

Class	Tests	Failures	Ignored	Duration	Success rate
<u>AppointmentRecordsManagerTest</u>	2	0	0	0.392s	100%

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#### **Needs**

- Software Requirements: Within the build.gradle script, configure the required dependencies to conduct the unit testing, including Room, JUnit, and Mockito.
   These dependencies are essential for the unit tests to function properly.
- Testing Tools and Libraries: JUnit and Mockito are used as the testing
  framework, along with the JUnit library for assertions. Ensure that the proper
  version of these frameworks are installed so to maintain compatability and
  stability within the Android developer environment.
- Test Scripts: Ensure that the tests scripts within the original codebase are available and
  accessible so to execute the tests within the Android Studio developer environment. It
  may be necessary to employ a version control system such as Git or Github to handle
  code alterations and to monitor any adjustments made to the code as a result of the test
  results.

### Pass/Fail Criteria

- Appointment Addition:
  - Pass: The appointment is successfully added to the repository and the method returns true.
  - o Fail: The appointment is not added to the repository or if the method returns false.
- Appointment Deletion:
  - Pass: The appointment is successfully deleted from the repository and the method returns true.
  - Fail: the appointment is not deleted from the repository or if the method returns false.

### • Pet Addition:

- o Pass: The pet is successfully added to the repository and the method returns true.
- o Fail: The pet is not added to the repository or if the method returns false.

### • Pet Deletion:

- o Pass: The pet is successfully added to the repository and the method returns true.
- Fail: The pet is not added to the repository or if the method returns false.

If a test fails during the testing process, the following measures are recommended to remediate the issue:

- Identify the root cause: Investigate the failed test to find out the underlying cause of the
  problem. Analyze bug reports and error messages, logs, and other reports to discern the
  source of the issue.
- Document the issue: Create a bug report that describes the problem thoroughly, including
  details such as the error messages, which tests failed, and any insights into the resolution of
  the problem.

### **Specifications**

Displayed below are screenshots from the Pet Health Companion source codebase:

### APPOINTMENT RECORDS MANAGER TEST:

```
package com.example.pethealthcompanionapp;

import org.junit.Before;
import static org.junit.Assert.*;
import static org.mockito.Mockito.mock;

import com.example.pethealthcompanionapp.dao.AppointmentDAO;
import com.example.pethealthcompanionapp.database.Repository;
import com.example.pethealthcompanionapp.entities.Appointment;

new*
public class AppointmentRecordsManagerTest {

    4 usages
    private Repository repository;
    2 usages
    private AppointmentDAO appointmentDAO;

    new*
    @Before
    public void setUp() {
        appointmentDAO = mock(AppointmentDAO.class);
        repository = new Repository(appointmentDAO);
}
```

### REPOSITORY:

```
lusage new*
public boolean addNewAppointmentRecord(Appointment appointment) {
    try {
        mAppointmentDAO.insert(appointment);
        return true;
    } catch (Exception e) {
        e.printStackTrace();
        return false;
    }
}

lusage new*
public boolean deleteAppointmentRecord(Appointment appointment) {
    try {
        mAppointmentDAO.delete(appointment);
        return true;
    } catch (Exception e) {
        e.printStackTrace();
        return false;
    }
}
```

### PET RECORDS MANAGER TEST:

#### REPOSITORY:

```
public boolean addNewPetRecord(Pet pet) {
   try {
      mPetDAO.insert(pet);
      return true;
   } catch (Exception e) {
      e.printStackTrace();
      return false;
   }
}

lusage new*
public boolean deletePetRecordByName(String petName) {
   try {
      mPetDAO.delete(petName);
      return true;
   } catch (Exception e) {
      e.printStackTrace();
      return false;
   }
}
```

### **Procedures**

- Test Preparation: Identified the key functionalities of the Pet Health Care Companion, wrote
  test cases to cover various scenarios, and defined the pass/fail conditions involved in each
  case.
- Testing Environment Setup: Configured the test environment by adding JUnit and Mockito dependencies in Gradle. Ensured proper installation and configuration of the Android Studio development environment and Room.
- 3. Test Execution: Ran the tests within Android Studio and reviewed the test results. Analyzed any failed tests. When tests failed, the test cases and code for the application were reviewed and revised.
- 4. Documentation: Noted the test outcomes, as well as any changes made in the application's code. In other cases, tracked the failures and recorded the problems identified during testing.

### **Results**

After running the test scripts with the JUnit testing framework, the following test results for the Pet Health Companion were observed:

Test	What is Expected	What Happened	Pass?
User adds a new appointment	Appointment will be saved to the database	Mock appointment was saved to the database	Yes
User deletes an appointment	Appointment will be deleted from the database	Mock appointment was deleted from the database	Yes
User adds a new pet	Pet will be saved to the database	Mock pet was saved to the database	Yes
User deletes a pet	Pet will be deleted from the database	Mock pet was deleted from the database	Yes

Results Screenshot - all tests passed.

### Package com.example.pethealthcompanionapp

all > com.example.pethealthcompanionapp



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## Class com.example.pethealthcompanionapp.PetRecordsManagerTest

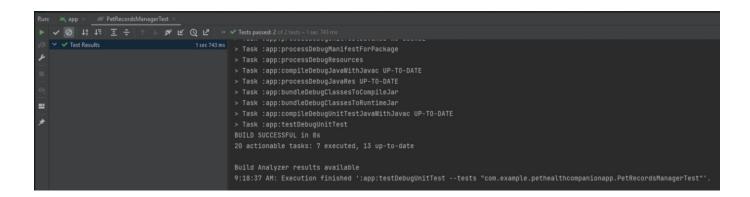
all > com.example.pethealthcompanionapp > PetRecordsManagerTest



Tests

Test	Duration	Result
testAddNewPetRecord	0.001s	passed
testDeletePetRecord	1.405s	passed

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## Package com.example.pethealthcompanionapp

all > com.example.pethealthcompanionapp



100% successful

#### Classes

Class	Tests	Failures	Ignored	Duration	Success rate
<u>AppointmentRecordsManagerTest</u>	2	0	0	0.392s	100%

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all > com.example.pethealthcompanionapp > AppointmentRecordsManagerTest

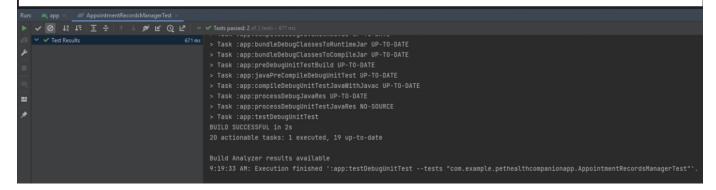


100% successful

#### Tests

Test	Duration	Result
testAddNewAppointmentRecord	0s	passed
testDeleteAppointmentRecord	0.392s	passed

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As a result of the current successful execution of the unit tests, no modifications were made to the Pet Health Care Companion.

## **Hosted Web Application**

### **Hosted Web Application Link:**

The Pet Health Care Companion is deployed on the Google Play Console and does not have a Hosted Web Application Link.

## GitLab Repository & Branch History

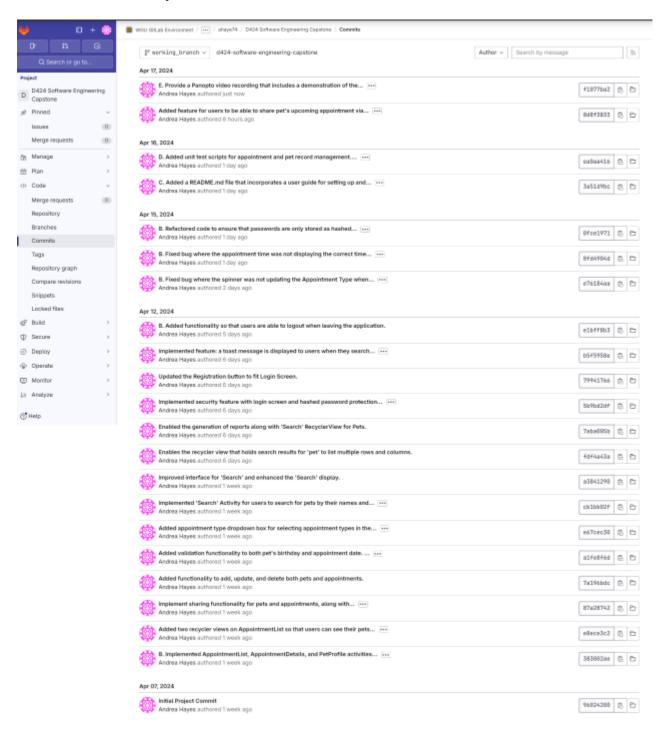
## GitLab Repository Link:

https://gitlab.com/wgu-gitlab-environment/student-repos/ahaye74/d424-software-engineering-capstone.git

Added WGU-Evaluation as a member



### GitLab Branch history:



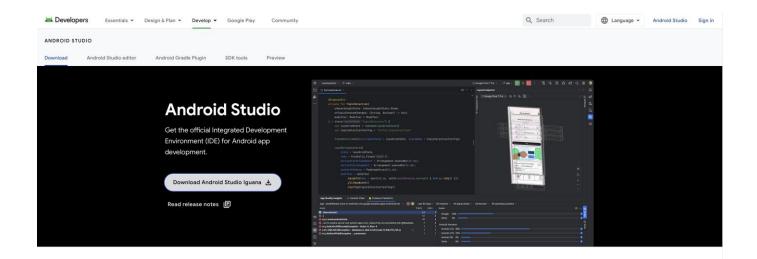
## **User Guide for Initial Setup & Running the Application**

### Introduction

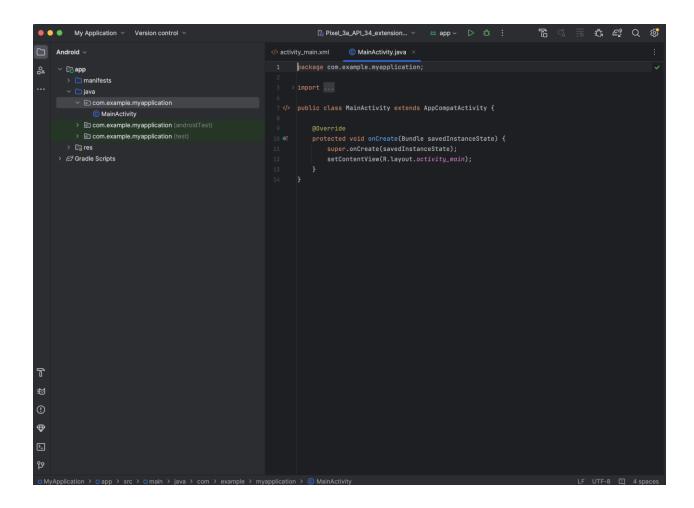
This User Guide provides a step-by-step walkthrough for setting up the Pet Health Companion application. By following these instructions, users can configure their developer environment with ease and begin making any desired modifications within the application.

### **Installation of Android Studio:**

Download Android Studio: Visit the official Android Studio website
 (https://developer.android.com/studio) and download the latest version of Android Studio that is
 congruent with your operating system (Windows, macOS, or Linux).



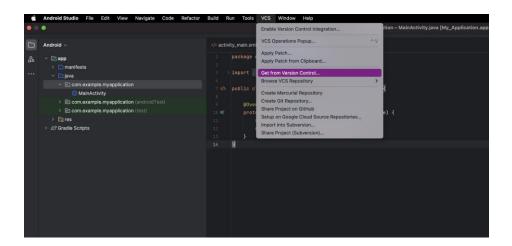
2. Install Android Studio: Once the download is complete, launch the installer and follow the onscreen instructions to install Android Studio onto your computer. Ensure that your computer possesses the system requirements that are specified by the installer. 3. Configure Android Studio: Upon successful installation, open Android Studio. You may be prompted to import settings from a previous installation or customize your development environment. Follow the prompts to configure Android Studio according to your preferences.



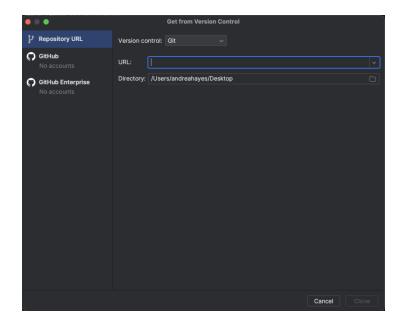
### **Cloning the Project from GitLab:**

Access the GitLab Repository: Navigate to the GitLab repository hosting the Pet Health
 Companion project at <a href="https://gitlab.com/wgu-gitlab-environment/student-repos/ahaye74/d424-software-engineering-capstone.git">https://gitlab.com/wgu-gitlab-environment/student-repos/ahaye74/d424-software-engineering-capstone.git</a>.

- 2. Open Android Studio: Launch Android Studio and ensure that it is fully loaded before starting to make any modifications.
- 3. Select "Check out project from Version Control": In the Android Studio welcome screen, choose "Check out project from Version Control" and select "Git" from the dropdown menu.



- 4. Enter GitLab Repository URL: In the "Clone Repository" dialog, paste the URL of the GitLab repository hosting the Pet Health Companion project.
- 5. Choose Project Directory: Enter the directory where you want to clone the project on your local machine.



- 6. GitLab Authentication: If required, provide your GitLab credentials (username and password) to authenticate and access the repository.
- 7. Clone the Repository: To start the cloning process, click on the "Clone" button. Android Studio will download the project files from the GitLab repository and initiate the project structure.
- 8. Open the Project: Once the cloning process is complete, Android Studio will automatically open the project. Users can now examine project files, modify them, and run the application using the built-in emulator or a physical Android device.

### Conclusion:

This User Guide has provided clear instructions for installing Android Studio and cloning the Pet Health Companion project from its GitLab repository. By following these instructions, users can easily set up their development environment up and start making modifications to the application.

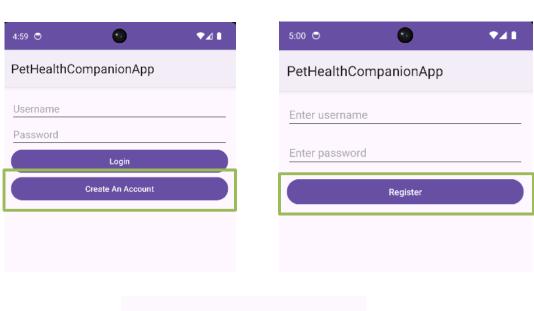
## **User Guide for Running the Application from User Perspective**

### Introduction

This user guide is designed to offer a comprehensive overview of all available feature within the Pet Health Companion application and to help users navigate through them.

### **Registration & Login**

Before users are able to access the Pet Health Companion app, they must first register an account. To register an account, click on the 'Create Account' button, which will take you to the Registration page. Enter a username, password, and click the 'Register' button. You will be redirected back to the Login page, where you can enter your username and password to enter the app. Upon successfully logging in, you will be shown a message that states 'Login Successful'.

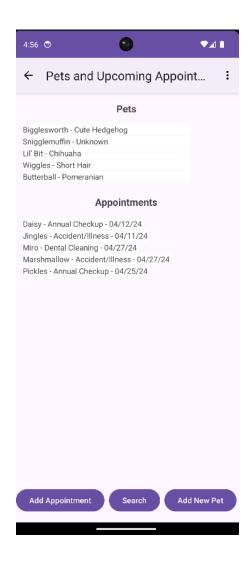


Login successful

Enter

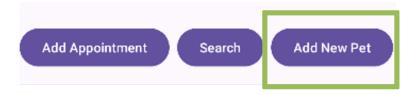
## Dashboard page

Once logged in, the application takes you to the 'Pets and Upcoming Appointments' page. From this page, you can perform searches, add, edit and update appointments, and add, edit, and update pets.

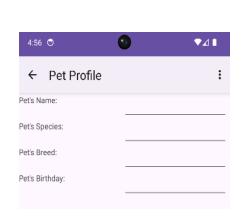


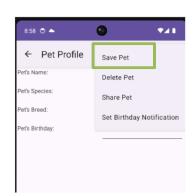
### **Add New Pet**

To add a new pet, select the "Add New Pet" button at the bottom of the 'Pets and Upcoming Appointments' page.



Complete all fields on this page and then click 'Save Pet'. By clicking the 'Save Pet' option in the menu, the application will redirect you to the 'Pets and Upcoming Appointments' page, where you should now see the newly added pet in the list. In addition, you should see a message confirming that your pet has successfully been saved.

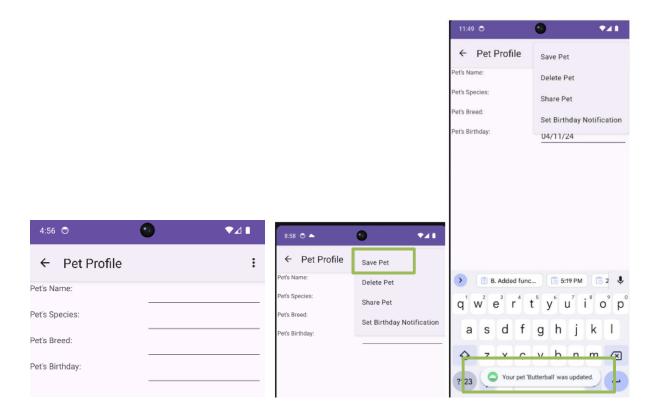






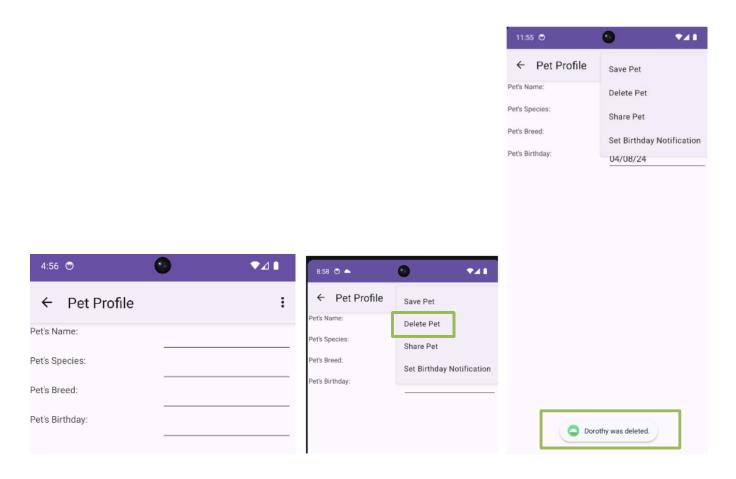
### **Edit Pet**

To edit an existing pet, navigate to the 'Pets and Upcoming Appointments' page and locate the pet you would like to update. Click on the pet in the 'Pet' list and you will be redirected to the 'Pet Profile' page. Make your changes in the fields and then simply click 'Save Pet' button. If successful, you will see a message confirming that your pet has been updated. When you click the 'Save Pet' button, the application will redirect you to the 'Pets and Upcoming Appointments' page where you will now see the updated information for the selected pet.



### **Delete Pet**

To delete a pet, go to the 'Pets and Upcoming Appointments' page and click on the pet you want to remove. This will take you to the 'Pet List' screen. Once there, in the menu, select the 'Delete Pet' option. When you select 'Delete Pet', the application will show a confirmation message that your pet has been deleted, will remove the pet from the list, and will return you to the updated 'Pets and Upcoming Appointments' page. The deleted pet should no longer be visible.



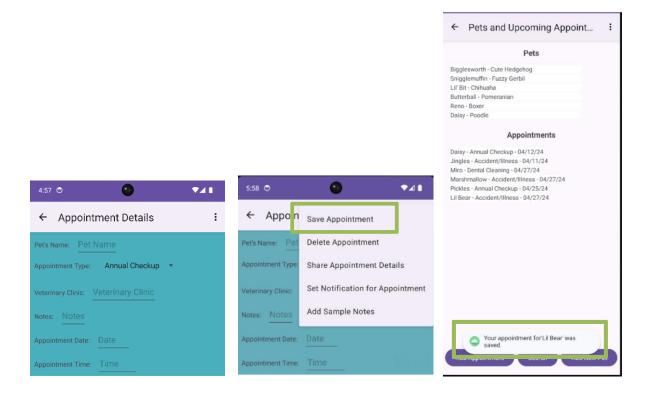
### **Appointments page**

## **Add Appointment**

To add a new appointment, select the 'Add New Appointment' button at the bottom of the 'Pets and Upcoming Appointments' page.

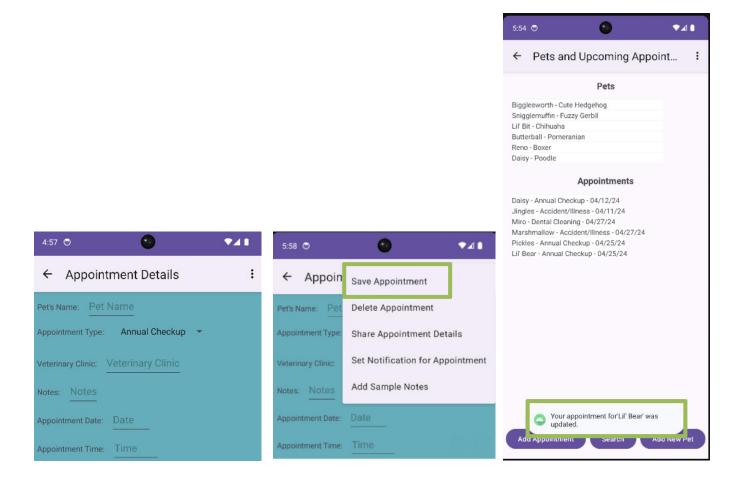


Fill out the requested information and ensure that all fields are completed on this page. Upon clicking the 'Save Appointment' option in the menu, the application will redirect you to the 'Pets and Upcoming Appointments' page, where you should now see the newly added appointment in the list along with a message confirming that your appointment has been saved.



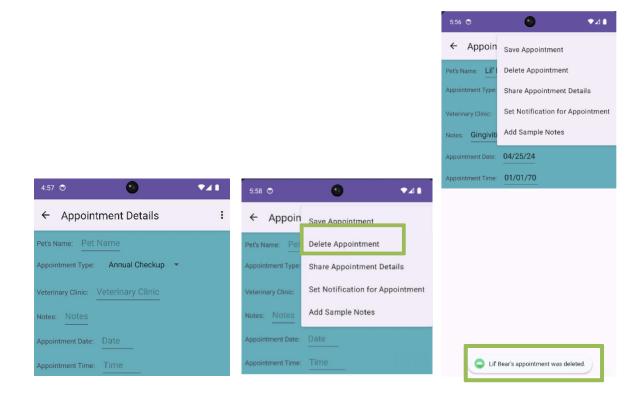
## **Edit Appointment**

To edit an existing appointment, navigate to the 'Pets and Upcoming Appointments' page and locate the appointment you would like to update. Click on the appointment in the 'Appointment' list and you will be redirected to the 'Appointments' page. Make your changes in the fields and then simply click 'Save Appointment' option. If successful, you will see a message confirming that your appointment has been updated. Once you click the 'Save Appointment' button, the application will redirect you to the 'Pets and Upcoming Appointments' page where you will now see the updated information for the selected appointment.



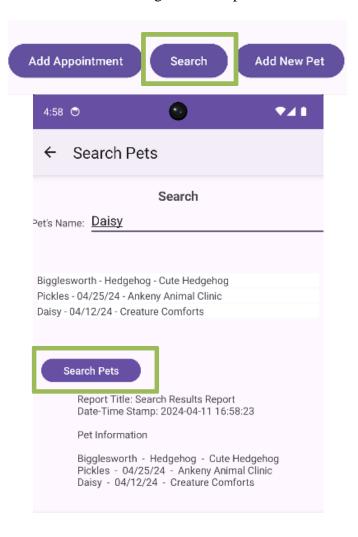
## **Delete Appointment**

To delete an appointment, go to the 'Pets and Upcoming Appointments' page and find the appointment you want to remove. This will take you to the 'Appointment' screen. Once there, in the menu, select the 'Delete Appointment' option. Once you click the 'Delete Appointment' option, the application will show a confirmation message that your appointment has been deleted and will remove the appointment from the list. You will then be re-directed to the you to the 'Pets and Upcoming Appointments' page, where the deleted appointment should no longer be visible.



### Search & Reports page

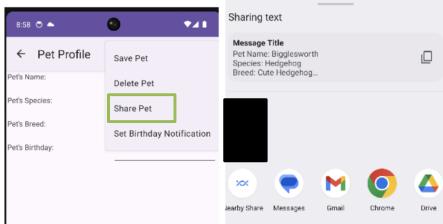
On the 'Search' page, you can generate various reports that display information about both your pets and their upcoming appointments. By clicking on the 'Search' button, you will be directed to the 'Search' page, where you can initiate a search based on a pet's name. Just type in the name of the pet you would like to search, click the 'Search Pets' button, and a report will be generated that displays information about your pet. If you have added such data to the 'Pet Profile', the application will display your pet's name, breed, and species. If you have added any upcoming appointments for your pet, the report will display your pet's name, the upcoming date of the appointment, and the veterinary clinic where your appointment is scheduled. If you have added all of this information to the app, the application will display both your pet's information and any upcoming appointment information in the generated report.



### **Share Pet Information**

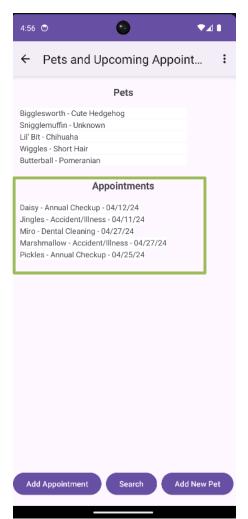
To share information about your pet, select the pet you would like to share from the 'Pets and Upcoming Appointments Page'. This will direct you to the 'Pet Profile' page, where you will find information about your pet. In the menu, click the 'Share Pet' action menu bar, and then select how you would like to share the information (either through notepad, email, or text).

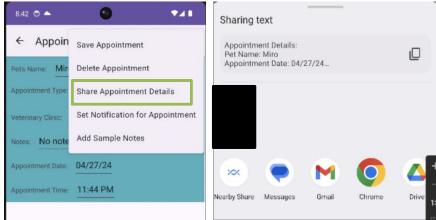




## **Share Appointment Information**

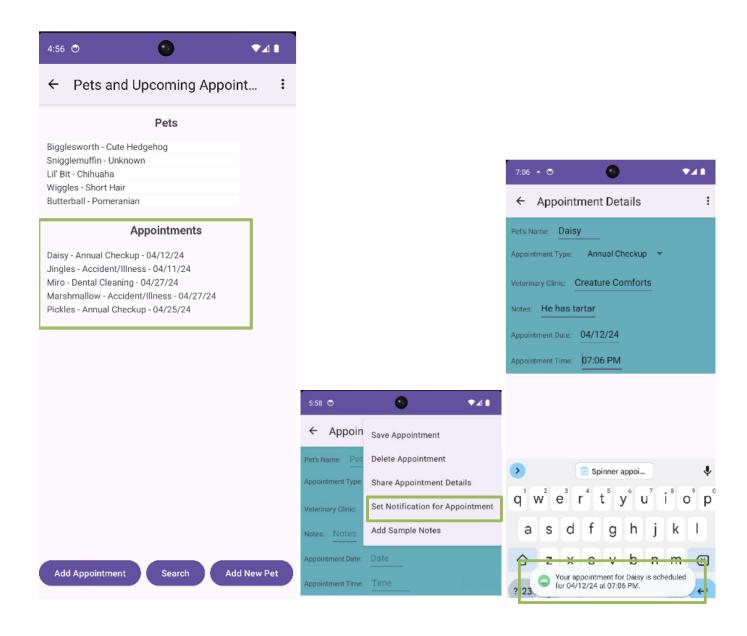
To share information about your pet's upcoming appointment, select the appointment you would like to share from the 'Pets and Upcoming Appointments Page'. This will direct you to the 'Appointment Details' page, where you will find information about your pet's appointment. In the menu, click the 'Share Appointment Details' item, and then select how you would like to share the information (either through notepad, email, or text).





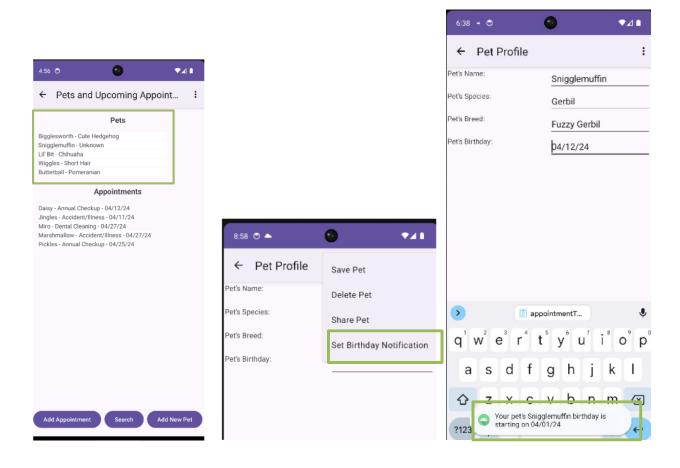
### **Set Appointment Notifications**

With the Pet Health Companion App, you can set notifications for your pet's appointment. Just select your appointment from the 'Appointments' List on the 'Pets and Upcoming Appointments' page, then select the dropdown menu item 'Set Notification for Appointment'. When it's the day of your pet's appointment, you will receive a notification reminding you.



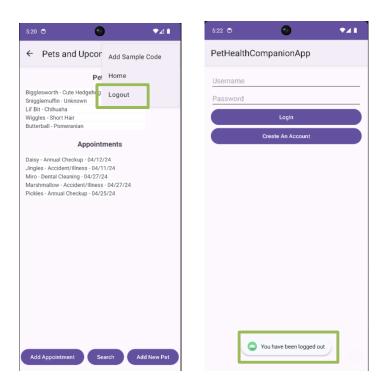
### **Set Birthday Notifications**

With the Pet Health Companion App, you can set notifications for your pet's birthday. Just select your pet from the 'Pets' List on the 'Pets and Upcoming Appointments' page, then select the dropdown menu item 'Set Birthday Notification'. When it's your pet's birthday, you will receive a notification letting you know "Your pet's birthday is starting on today's date." Never forget your pet's birthday again!



## Log Out

When you are all finished using the Pet Health Companion App, you can easily log out so to secure your pet's data. In the 'Pet and Upcoming Appointments' page, simply click on the menu and, in the dropdown menu, select the 'Logout' option. You will be redirected to the Login page and will receive a confirmation message that you have been logged out.



## Panopto Video Link

Name:

D424 Capstone Pet Health Companion Task 3

Link:

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=e3a63597-dcec-4d6c-a6fe-b1550143665e