Bystander

Software Requirements and Design Documentation
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0. Change History

Date	Description	Author	Version
12 February 2016	**Initial Edits**	**Amy Chockley**	**1.0**
14 February 2016	**Added Glossary**	**Amy Puente**	**1.0.1**
14 February 2016	**Added Functional Requirements**	**Brian Burns**	**1.0.2**
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7 March 2016	**Revised document to fix all known faults**	**Brian Burns**	**1.2.0**
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2 April 2016	**Updated Class Diagram**	**Brian Burns**	**1.4.1**

1. Introduction

1.1. Purpose

This document seeks to outline and describe the software requirements for the police recording application (PRA). This document supplies a development team with a summary of the functional and nonfunctional requirements of the PRA, along with diagrams detailing the architecture and functionality of the PRA.

1.2. Scope

This police recording application will allow users to create audio and video recordings and upload them to a remote location, using a broadcast style of upload. The PRA will also feature a section outlining the legal rights a person possesses when making audio and video recordings of 3rd parties in public and private locations. The PRA will provide an easy-to-use interface and will offer users a modern and quick way to create and ensure the preservation of their recordings, while also supplying them with a clear overview of their legal rights.

1.3. Overview

The remainder of this document will be organized in the following manner: Section 1.4 will contain definitions of terms relevant to the PRA. Section 2 will provide a general description of the PRA, and Section 3 will describe the functional and nonfunctional requirements of the PRA, in addition to an overview of the necessary interfaces for the PRA.

1.4. Glossary

User Account: the user's Google account

Authentication: Logging into a user's account using OAuth 2.0.

Broadcast: Stream a live video currently being captured by the device's camera to YouTube.

Settings: A view where users can customize the functionality that they want from the app, including their state, their user account, whether they want to broadcast their recordings and whether they want their broadcasts to be public or private.

OAuth 2.0: Provides a way for the user to login to their Google account without exposing their password to the application.

2. General Description

2.1. Project Perspective

In recent years, many citizens have sought to make video recordings of citizen-police encounters, which they observe or are a party to. However, officers often confiscate cell phones which they believe hold evidence, resulting in the possible loss of the video footage. This problem could be avoided if citizens had an easy and automatic way to upload their videos to a secure location.

2.2. Product Goals

2.2.1. Create Audio and Video Recordings

The system will provide the user with an interface to make audio and video recordings. The user will access the system on their Android device.

2.2.2. Save Audio and Video Recordings Locally

When a user creates a video recording, the system will save the recording to the user's Android device.

2.2.3. Upload Audio and Video Recordings

If the user submits their account data to the PRA and indicates in the PRA settings that they want to upload their in-app recordings to YouTube, the PRA will broadcast video live and upload completed videos onto YouTube. YouTube will require that the user adheres to YouTube's rules for broadcasting, the user is responsible for what is broadcast to their own account. If the Android device does not have network connectivity, it will still save the video locally while cancelling the upload attempt.

2.2.4. Legal Rights Section

The PRA will include a section outlining the legal rights of the user, based on their current state, which is determined by their location or which state the user has selected. These rights will inform the user on the legality of their recordings in each state.

3. Requirements

3.1 Functional Requirements

3.1.1. Add Google Account

3.1.1.a. Introduction

The PRA will authenticate the user's Google account information.

3.1.1.b. Inputs

User Account Name: The user's Google account name

User Account Password: The user's Google account password

3.1.1.c. Processing

The application will use OAuth 2.0 to verify the user's account information and retrieve a certification token to use the YouTube Data API (v3) within the app.

3.1.1.d. Outputs

The user will receive a success message regarding the addition of their account information.

3.1.1.e. Error Handling

If the Android device does not have a network connection, the app will prompt the user to try again later.

If the authentication fails, the app will prompt the user to enter correct data.

3.1.2. Change App Settings

3.1.2.a. Introduction

The user will be able to customize their settings within the app.

3.1.2.b. Inputs

Automatic Uploading: The user's preference for recording upload

Public or Private Broadcast: The user's preference for public or private broadcasts

State: The user's state, which will allow the app to personalize the legal rights section

Google Account: allows the user to add or remove their Google account

3.1.2.c. Processing

The app will adjust the settings according to the user's specifications.

3.1.2.d. Output

The app will alert the user that their changes have been saved.

3.1.2.e. Error Handling

If the user attempts to add an invalid account, the app will prompt them to re-enter their information.

If the app fails to save the changes, it will notify the user.

3.1.3. Check Legal Rights

3.1.3.a. Introduction

The user will be able to read over their legal rights regarding video and audio recording for any state in the United States within the app.

3.1.3.b. Inputs

The user can select their state within the app's settings view, or they may select another state from the legal rights screen.

3.1.3.c. Processing

The user's state's legal information is printed on the legal rights view, and the user may select any other state they want to view information for.

3.1.3.d. Output

The app will give the user legal information pertinent to their location or their selected state.

3.1.4. Make Video Recording

3.1.4.a. Introduction

The app will allow the user to make a video recording.

3.1.4.b. Inputs

Initial Button Press: the user will press a button to begin the video recording.

Final Button Press: the user will press a button to end the recording.

3.1.4.c. Processing

The app will take a video recording until the user presses the button to stop recording.

The app will save the video locally, and if the user has the automatic upload setting enabled, the video will be broadcasted to YouTube.

3.1.4.d. Outputs

The app will notify the user of their upload and save status.

3.1.4.e. Error Handling

If the user's device does not have a network connection, the device will continue to record and to save the video locally.

If the app is unable to open the device's camera app, it will notify the user.

If the app is unable to successfully save the video, it will notify the user.

3.1.5. Make Audio Recording

3.1.5.a. Introduction

The app will allow the user to make an audio recording.

3.1.5.b. Inputs

Initial Button Press: the user will press a button to begin the audio recording.

Final Button Press: the user will press a button to end the recording.

3.1.5.c. Processing

Until told to stop by the user, the app uses the mobile device's microphone to make an audio recording.

3.1.5.d. Output

The audio is saved to the device's local storage.

3.1.5.e. Error Handling

If the application does not have access to the microphone or the device's local storage, an error message will be displayed informing the user.

3.1.6 Offline Use

The PRA should function when the device is offline, and the PRA should save audio and video recordings locally.

3.1.7 Broadcast Recordings

It will be necessary that, when the device has network connectivity and the broadcast setting is selected, videos can be broadcast to YouTube as they are being recorded.

3.2. Use Case Diagram

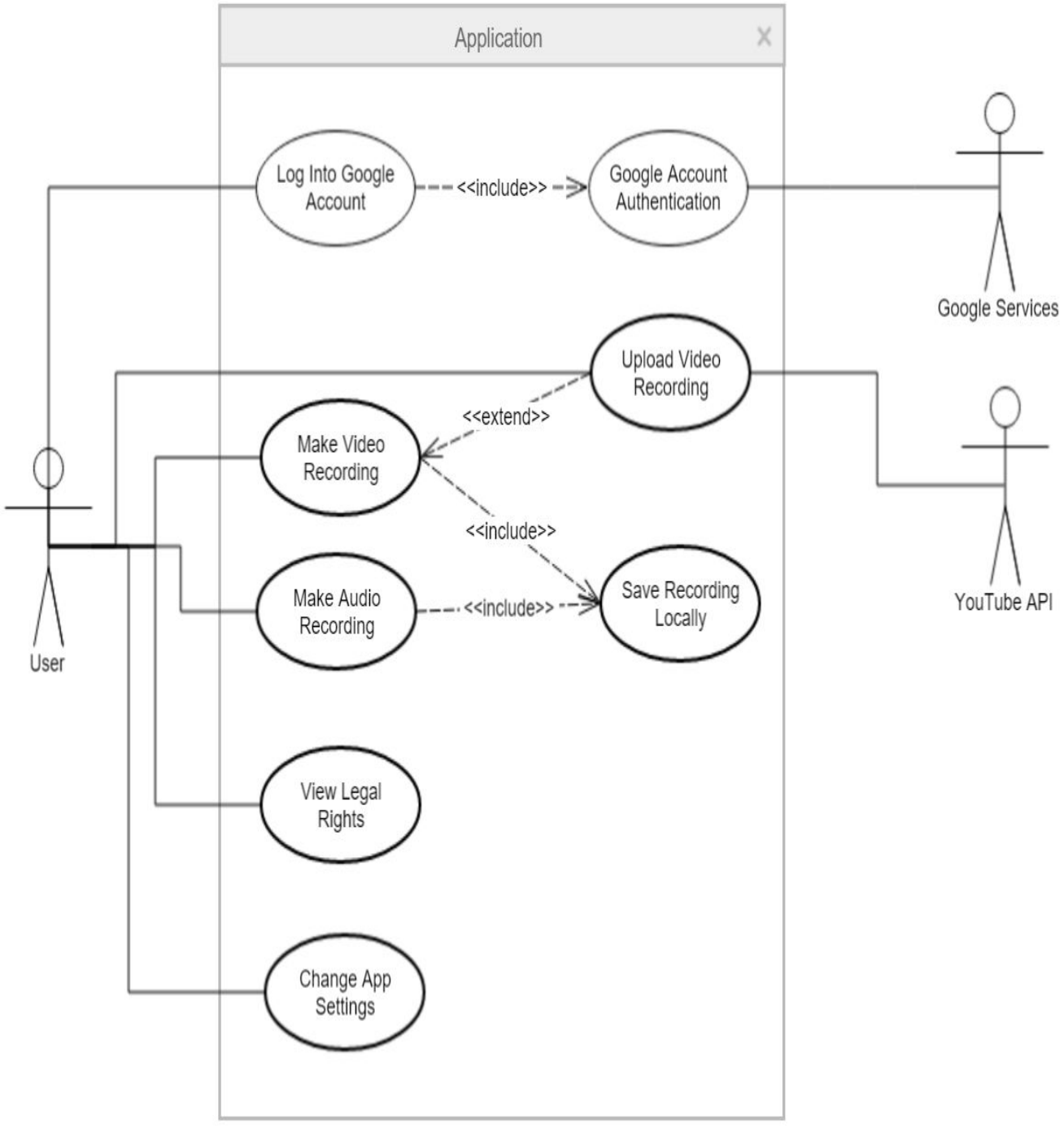


Figure 1: A use case diagram for the recording application

3.2.1 Description

This use case diagram shows the interaction of the user with the application. Users will be able to connect their personal Google and Youtube accounts. The user will also be able to record both video and audio using the application and change the settings to their own personal preferences. The user will also be able to view the rights in regards to recording police officers in the state which they are currently located as well as their home state.

3.3. Activity Diagrams

3.3.1. Log Into Google Account

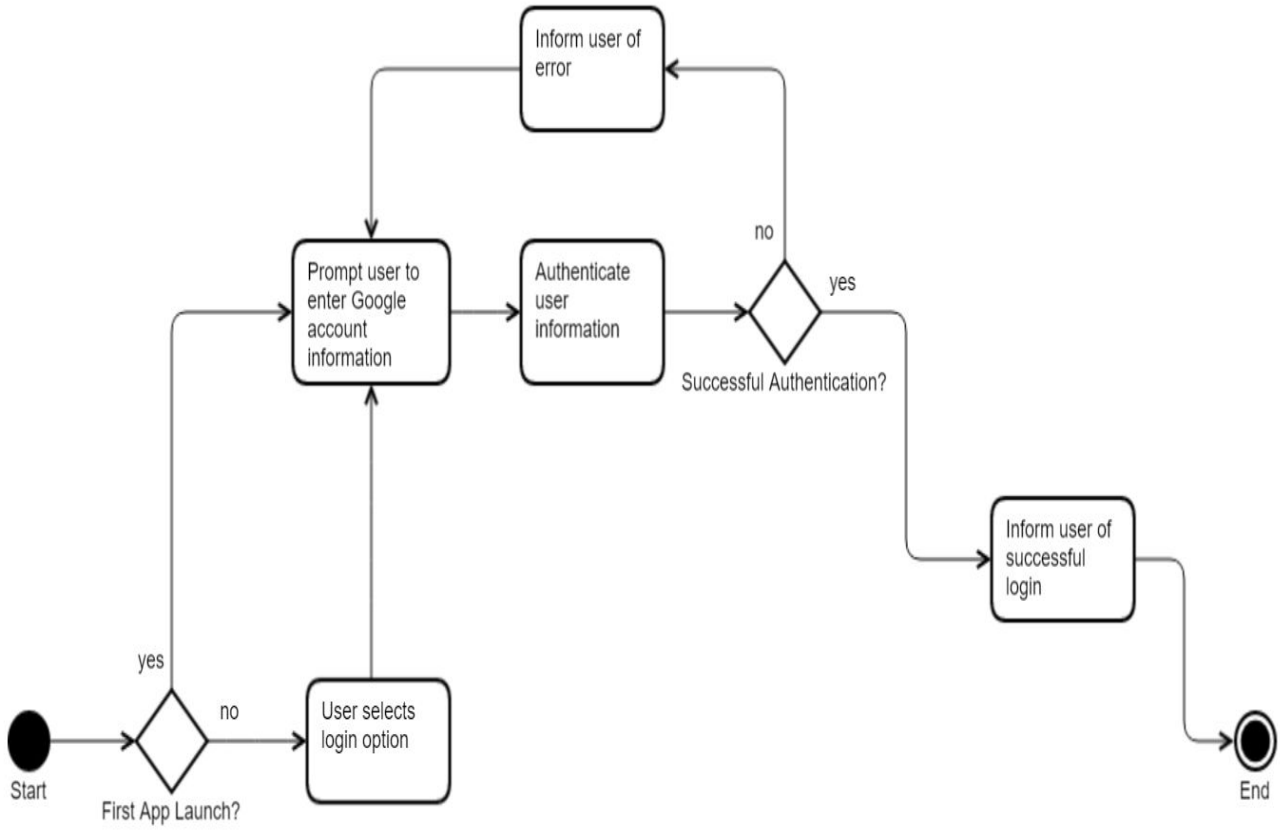


Figure 2: Activity Diagram for the "Log Into User Account" use case

3.3.1.a. Description

This activity diagram represents a user logging into a Google account for uploading and broadcasting services. At first app launch, the user is automatically prompted to enter their account credentials. The user can also select to login at any time through the settings. The account credentials entered are verified through Google OAuth 2.0 authentication. The user is informed of success or failure.

3.3.1.b. Functional Requirement

This activity diagram fulfills functional requirement 3.1.1, allowing login to a Google account for the use of YouTube services.

3.3.2. Make Video Recording

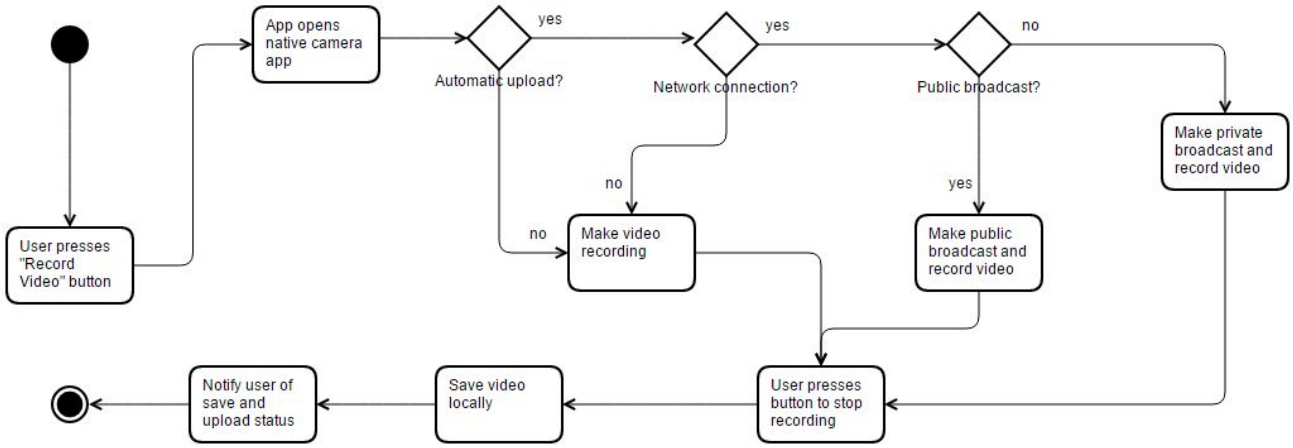


Figure 3: The activity diagram for the "Make Video Recording" use case

3.3.2.a. Description

This activity diagram represents a user making a video recording. The user begins the process by pressing a button, and then the software checks the user's upload settings. If the user has not selected the automatic upload setting, the app makes a video recording and saves it locally. If the user has selected the automatic upload setting, the app checks the device's network connection and the user's broadcast setting. The app makes a private YouTube broadcast if the user selected private broadcasts and a public one if he or she selected public broadcasts. In both cases, the video is saved locally. If the device does not have a network connection, then the device makes a video recording and saves it locally. The software will then notify the user of the video's save and upload statuses.

3.3.2.b. Functional Requirement

This activity diagram fulfills functional requirement 3.1.4, allowing a user to make a video recording.

3.3.3. Make Audio Recording

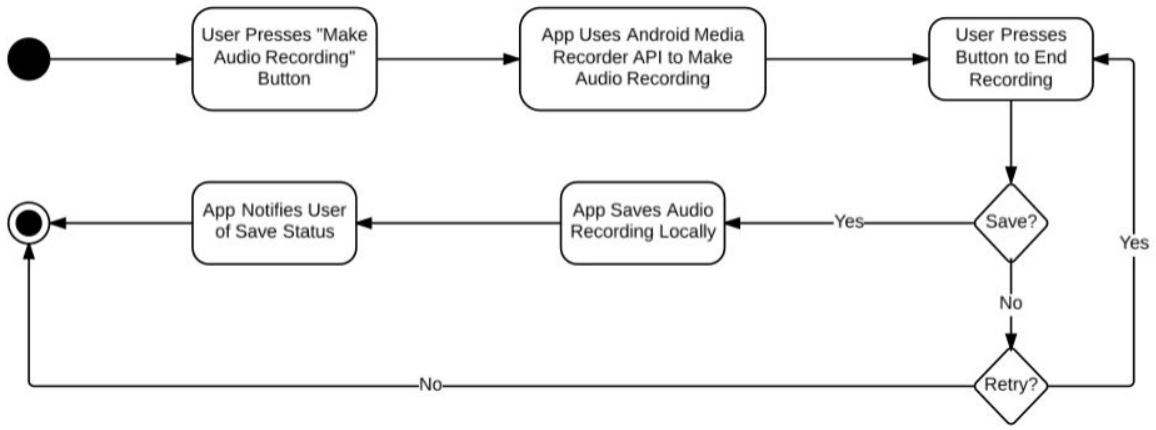


Figure 4: The activity diagram for the "Make Audio Recording" use case

3.3.3.a. Description

This activity diagram represents a user making an audio recording. The user begins the process by pressing a button, and then the software makes the recording and saves it locally when the user presses a button to stop recording.

3.3.3.b. Functional Requirement

This activity diagram fulfills functional requirement 3.1.5, allowing a user to make an audio recording.

3.3.4. View Legal Rights

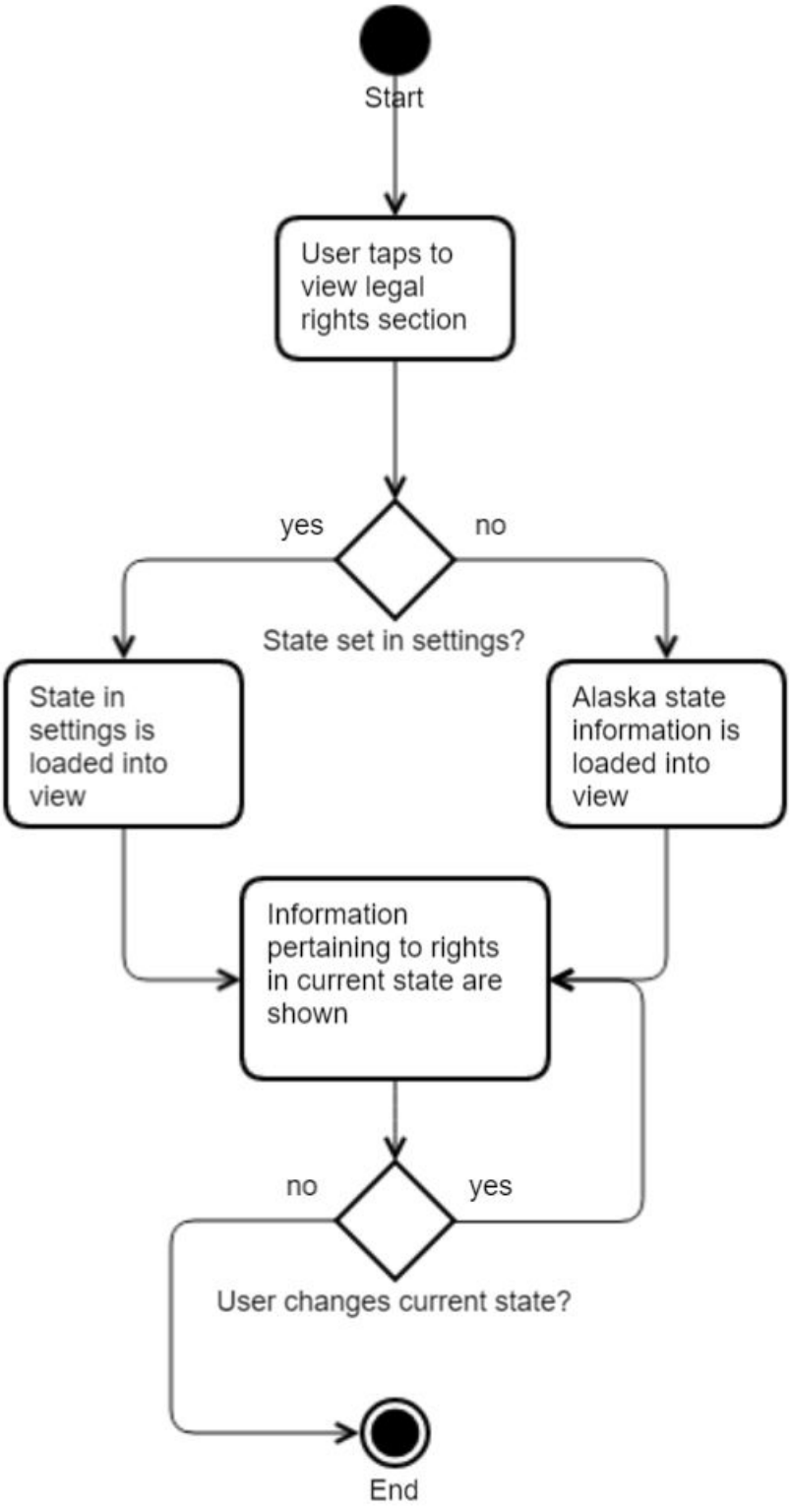


Figure 5: The activity diagram for the "View Legal Rights" use case

3.3.4.a. Description

This activity diagram shows the implementation of the "View Legal Rights" use case. The user indicates that they wish to view a state's legal rights information by tapping the appropriate section. If the user has set a state as their home state in the settings view, that state's information is loaded into the legal rights view. If not, Alaska's state information is loaded since it is first in the alphabet. The user can change which state they are viewing via a dropdown menu.

3.3.4.b. Functional Requirement

This activity diagram fulfills functional requirement 3.1.3, allowing a user to check their legal rights within the application.

3.3.5. Change App Settings

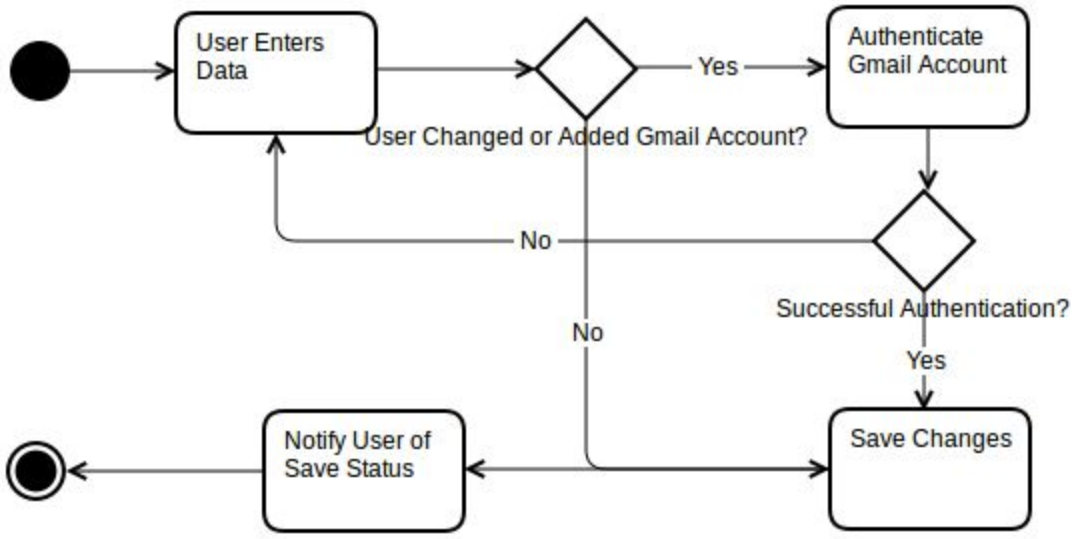


Figure 6: The activity diagram for the "Change App Settings" use case

3.3.5.a. Description

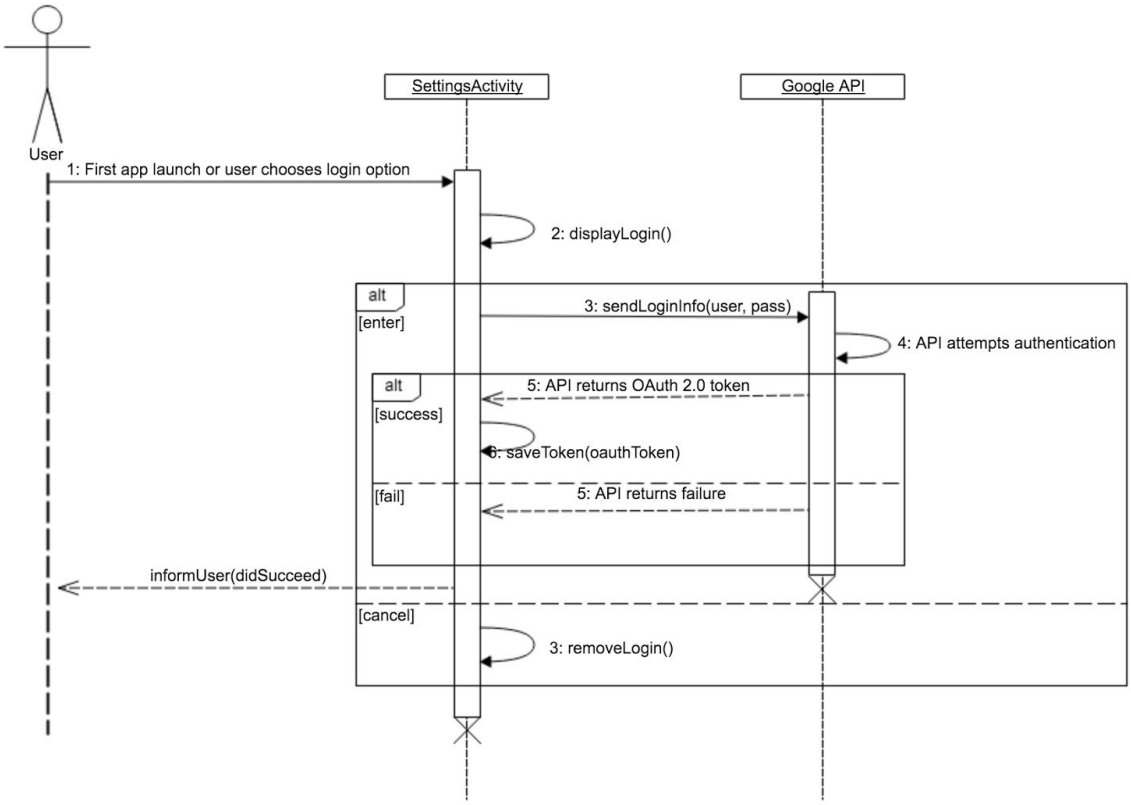
This activity diagram represents a user changing the app settings. The enters the data they wish to save. If the user has changed or added a Google account, the app authenticates it using OAuth 2.0 authentication. If unsuccessful, the app prompts the user to re-enter their account information. The app then saves the updated settings.

3.3.5.b. Functional Requirement

This activity diagram fulfills functional requirement 3.1.2, allowing a user to change their desired settings.

3.4 Sequence Diagrams

3.4.1. Log Into Google Account



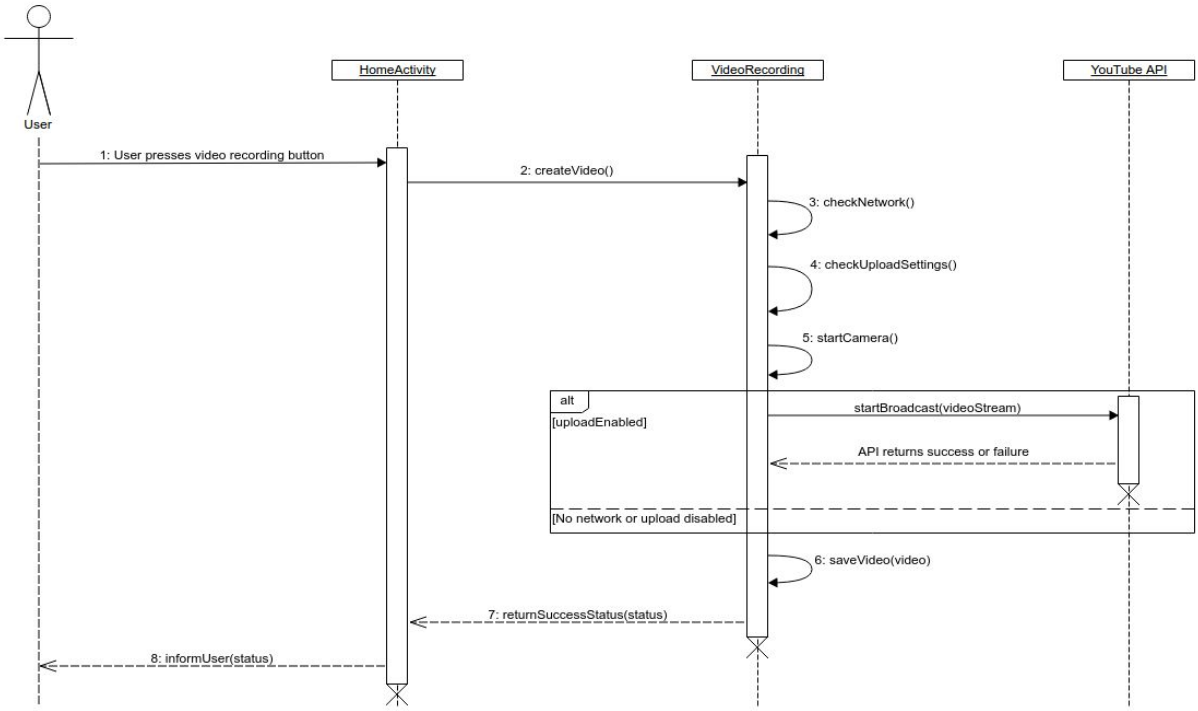
3.4.1.a. Description

This sequence diagram represents a user logging into their Google account for the purposes of accessing the YouTube broadcasting feature. The user can either log in through the settings screen in the application, or they can log in at the prompt presented when the application is first launched after being downloaded. When the user attempts to login, the displayLogin method is called to show the Google login screen, where the user can enter their Google email and password. This information is sent to the Google API, which authenticates it and either sends back an OAuth 2.0 token in the case of success or a failure message in the case of failure. In the case of success, the application saves the user's account token for later use in broadcasting videos to YouTube. In the case of failure, the application informs the user that the login failed. Finally, if the user clicks cancel before sending their login information to the application, the removeLogin method is called to remove the login overlay from the settings screen.

3.4.1.b. Functional Requirement

This sequence diagram fulfills functional requirement 3.1.1, allowing login to a Google account for the use of YouTube services.

3.4.2. Make Video Recording



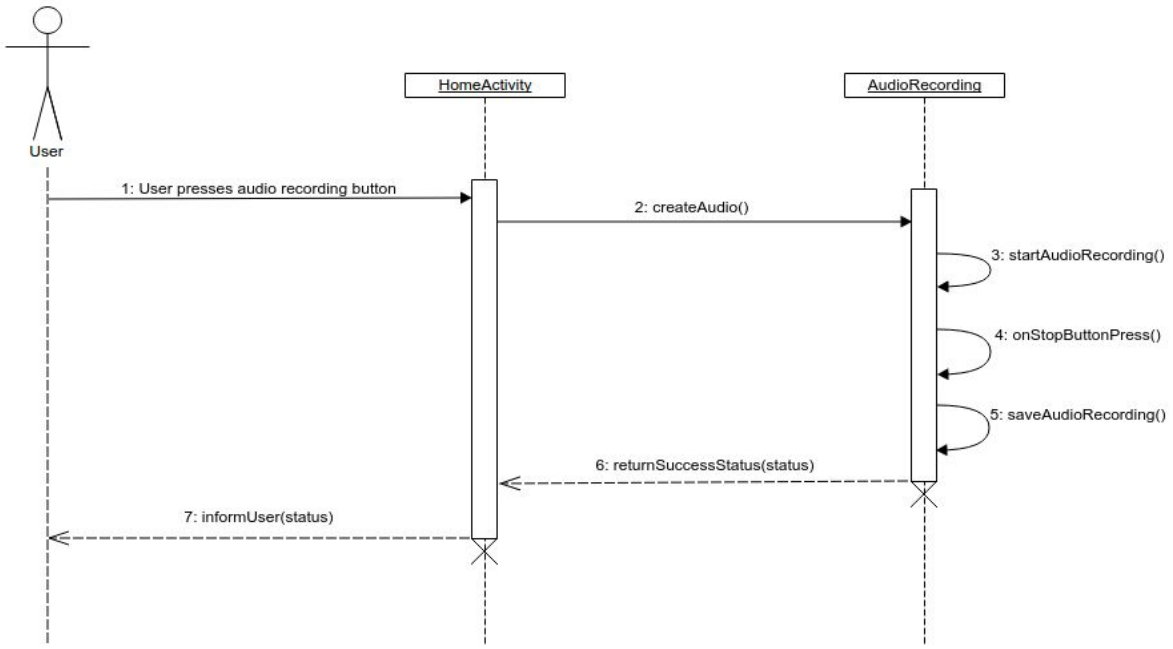
3.4.2.a. Description

This sequence diagram represents a user using the police recording application to make a video recording. When the user presses the video recording button, a new instance of the VideoRecording class is created. The object first checks the device's network connection, and then checks to see whether the user has indicated that they want video broadcasting to be automatic. With these settings in mind, the video then opens the native camera interface and begins recording. If broadcasting is enabled and supported, the video stream is broadcast to YouTube as the video is being recorded. Enabled or not, the video is saved locally to the device after recording is completed. The user is then informed of whether or not the video broadcasting and saving was successful.

3.4.2.b. Functional Requirement

This sequence diagram fulfills functional requirement 3.1.4, allowing a user to make a video recording.

3.4.3. Make Audio Recording



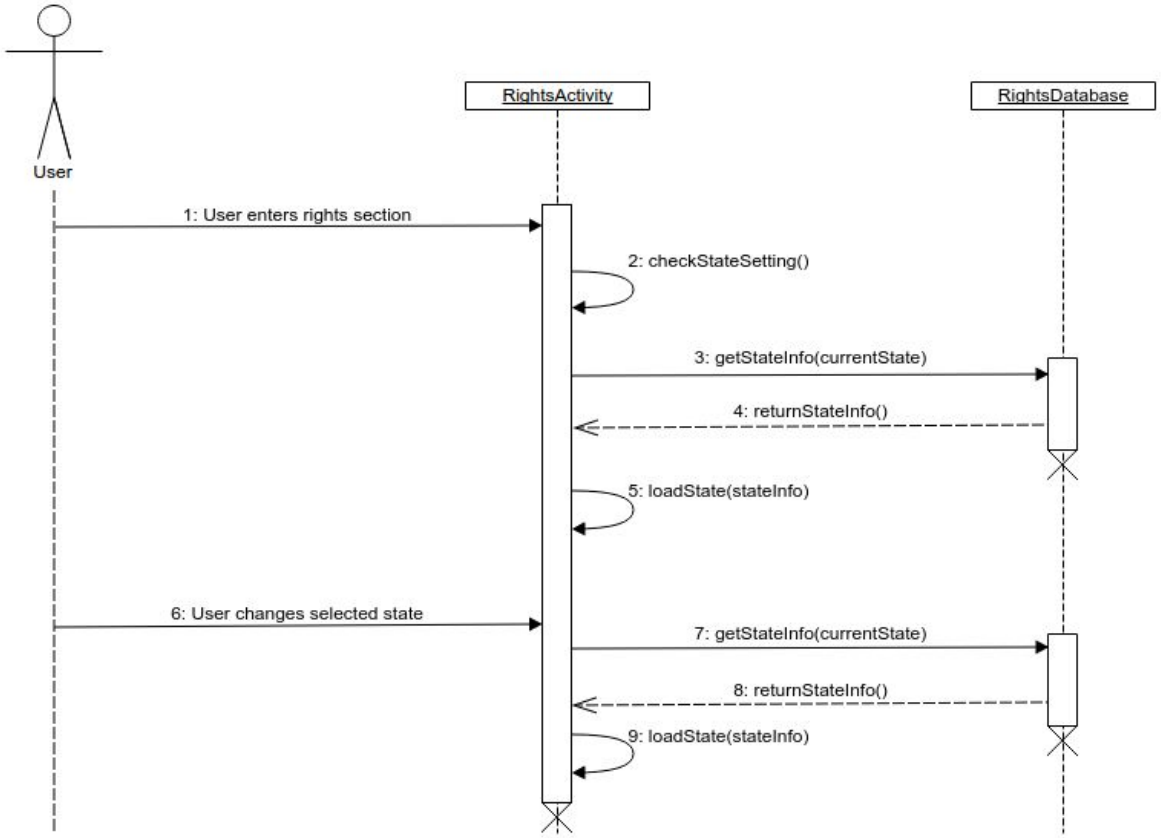
3.4.3.a. Description

This sequence diagram represents a user making an audio recording with the police recording application. From the MainActivity, the user may press the button to start an audio recording. When this happens, the application immediately starts using the device's microphone to record audio, until the onStopButtonPress method is triggered when the user presses a button to stop recording. Then, the audio recording is saved in the device's local storage, and a success or failure message is sent to the user.

3.4.3.b. Functional Requirement

This sequence diagram fulfills functional requirement 3.1.5, allowing a user to make an audio recording.

3.4.4. View Legal Rights



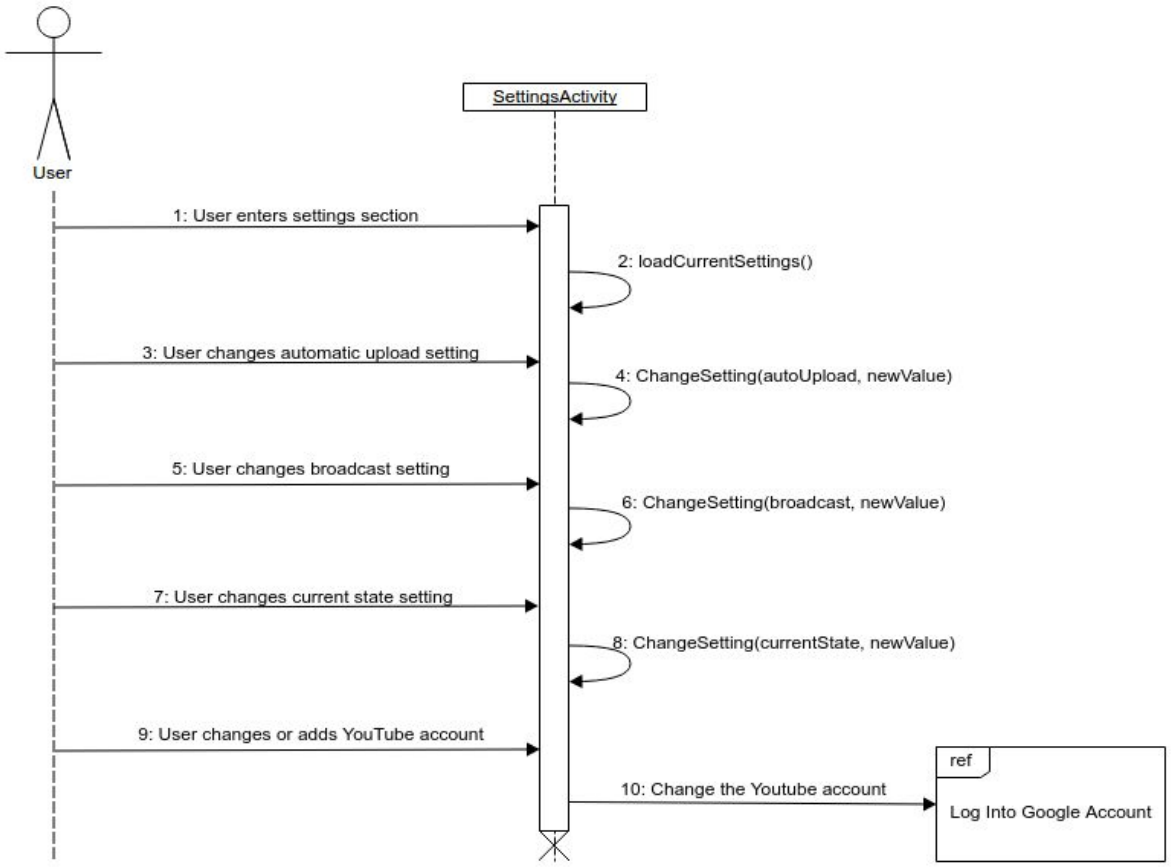
3.4.4.a. Description

This sequence diagram represents a user using Bystander to view a state's legal rights on recording. When the user enters the legal rights section, the application checks to see whether a default state is set in the application's settings. It either retrieves that state's information from the rights database (which contains rights information for all 50 states), or retrieves the data for Alaska if a state has not been set in the settings. The user can then view that state's rights, or change the current state from the activity. If the state is changed, another database query is sent to retrieve the newly-selected state's information from the database.

3.4.4.b. Functional Requirement

This sequence diagram fulfills functional requirement 3.1.3, allowing a user to check their legal rights within the application.

3.4.5. Change App Settings



3.4.5.a. Description

This sequence diagram represents a user changing the application settings. Within the SettingsActivity, the user can change the automatic upload setting for video recordings, the public broadcast setting for video recordings, the default state shown in the rights view, and the Google account associated with the application. If any of these settings are changed, the state variables corresponding to them are updated immediately within the application, and the user can confirm their changes simply by looking at the settings view. If the Google account setting is changed, the Log Into Google Account sequence diagram gives a full description of what occurs.

3.4.5.b. Functional Requirement

This sequence diagram fulfills functional requirement 3.1.2, allowing a user to change their desired settings.

3.5. High Level Class Diagram

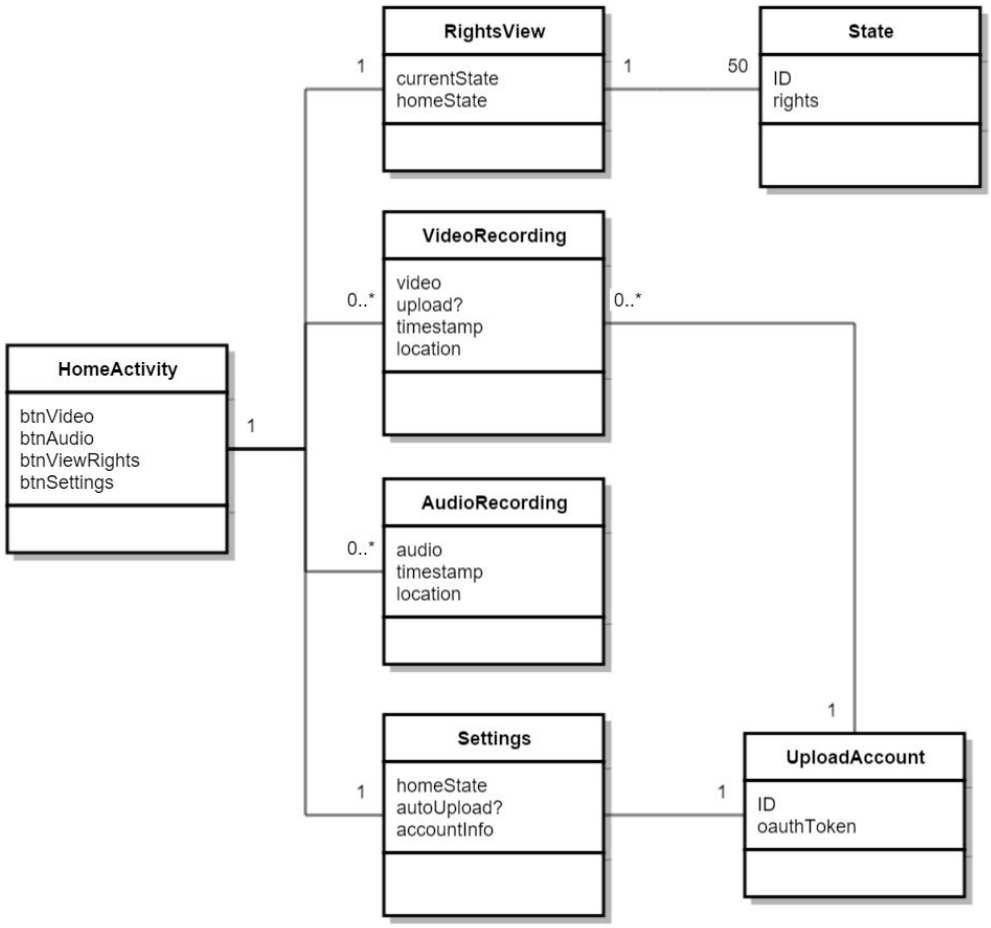
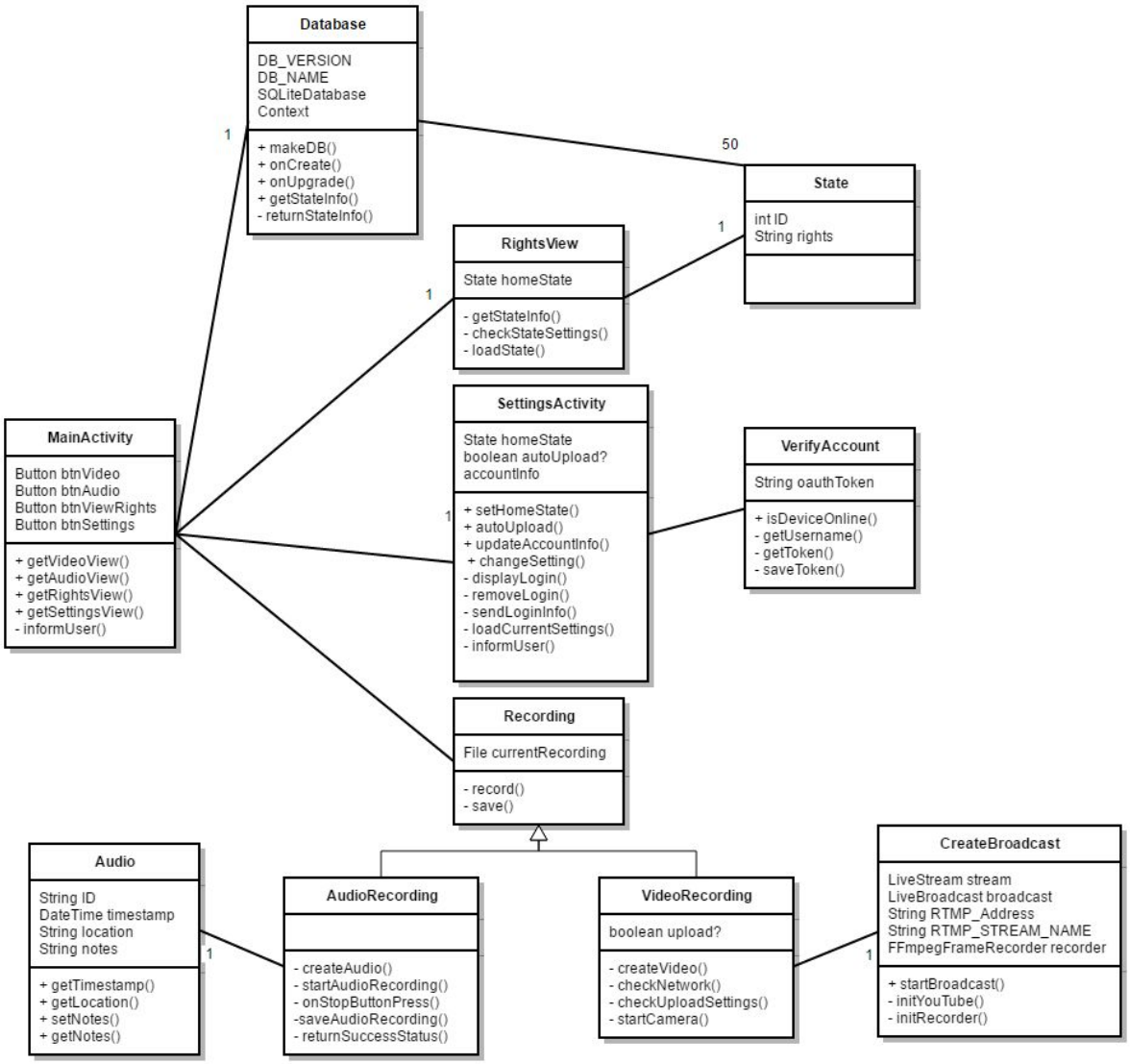


Figure 7: The class diagram for the PRA

3.5.1 Description

This high-level class diagram represents the police recording application system. Everything is accessible from the home activity. The rights activity will hold info on all 50 states and remember which state the user prefers. The settings activity will hold the Google account information for the user, if they are logged in through the application.

3.6 Detailed Class Diagram



3.6.1 Description

This detailed class diagram represents the police recording application system's class structures. Everything is accessible from the home/main activity. The rights activity will be able to display info on all 50 states, which is stored in the SQLite database, and remember which state the user prefers. The settings activity will hold the Google account information for the user, with the corresponding Auth token stored in the SQLite database, if they are logged in through the application.

3.7. External Interface Requirements

3.7.1 User Interfaces

3.7.1.a Main User Interface

A main user interface will be implemented, from this screen there will be options to choose from to change settings, view the Know Your Rights section, make an audio recording, make a video recording and view previous recordings.

3.7.1.b Know Your Rights Interface

This interface will provide information regarding a user's legal rights to record police and broadcast those police recordings.

3.7.1.c Audio Recording Interface

This interface will be used to save, delete and broadcast audio recordings.

3.7.1.d Video Recording Interface

This interface will be used to save, delete and broadcast video recordings.

3.7.1.e Settings Interface

This interface will contain information relating to the app and user, it is where users can decide whether the app will broadcast their recordings to their YouTube account or simply save the recordings locally. It will also be where users can change the personal information associated with their account including the YouTube account where their videos are broadcasted or uploaded.

3.7.2 Hardware Interfaces

This application will need to interact with several other parts of the device, including the microphone and camera for recording purposes. Additionally, the application will need to use the device's file storage in order to save and store the recordings locally, so that they can be retrieved later. It will also need to use the device's internet connection in order to broadcast the recordings.

3.8. Nonfunctional Requirements

3.8.1 Security

The user's Google account information will be retrieved using OAuth 2.0. The account information will be securely stored within the application so that the user only has to login once.