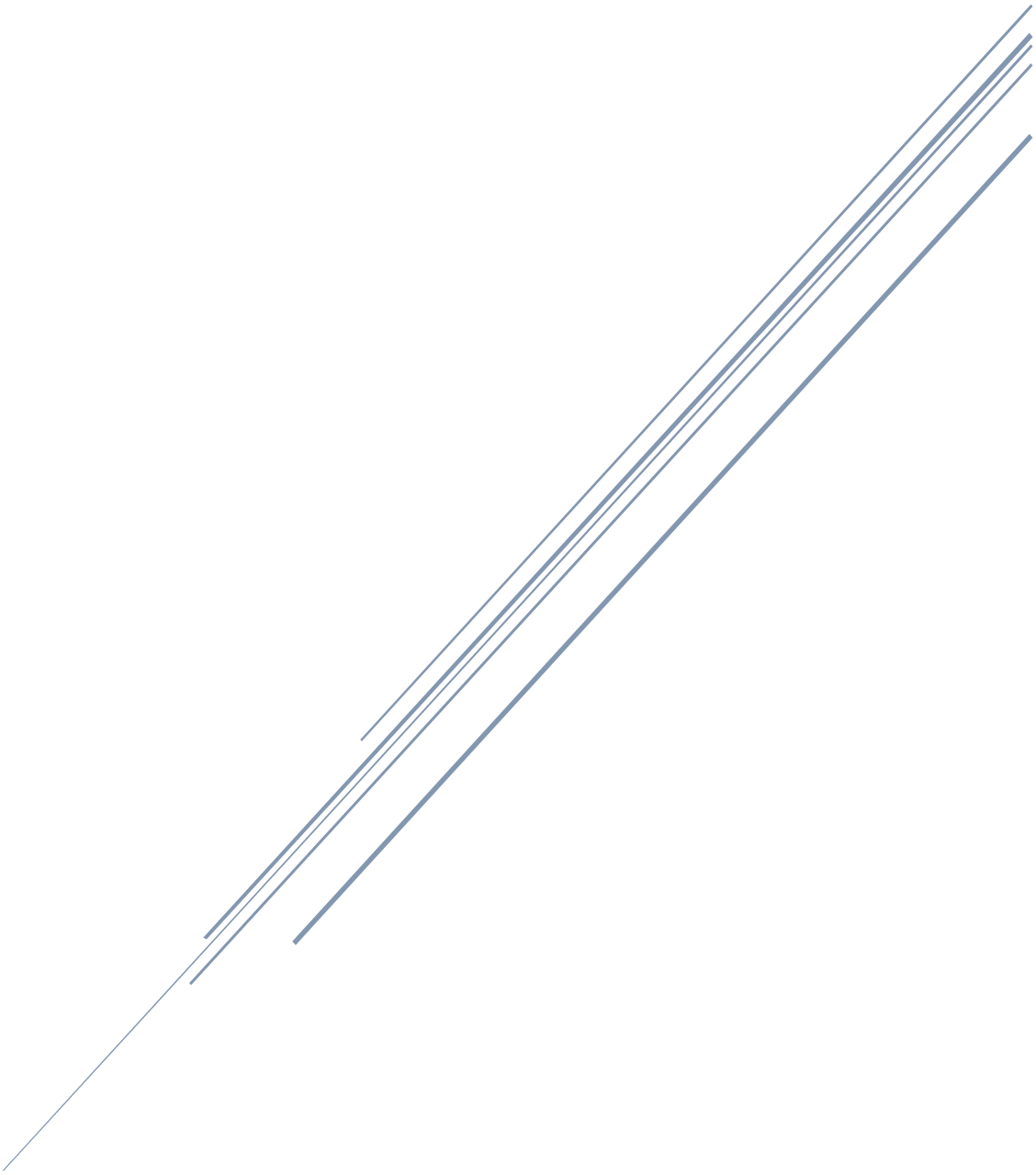
INTERFACE ASSIGNMENT

IT705 Human Computer Interactions



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Contents

Introduction

For this project, I have created a design for a COVID 19 Contact Tracing Mobile Application, called **NZ COVID19 Tracker**. This app was originally conceived at the start of the New Zealand Level 4 Lockdown, when everyone was stuck in isolation and I was considering a way to allow people to track where they had been after lockdown, recording the locations and allowing people to keep a history. Since I use my phone on a day to day basis, and usually always have it on me, I decided that a Mobile Application available on Android and iOS would be the ideal system to track my previous locations. Since we left Level 4, there has now been a New Zealand official COVID19 Contact Tracing Application released by the Ministry of Health as well as several other competing apps, which I have analysed within this assignment.

The main aim of this application is to allow people to scan QR Codes, allowing them to check-in and out of stores and locations, recording on their phone when and where they have been. This information is kept secure on the phone and is only transmitted to an external party (the Ministry of Health) with explicit consent from the user. The user has full control of their information on the app at one time, allowing them to easily remove their previous check-in and checkouts from the app.

This app also acts as a centralised COVID19 app by containing information such as the number of the current cases, and the latest Ministry of Health Press Releases within the App. This information is fetched automatically when the app is open and connected to the internet.

Aim of the Application

Check-in & Check-out of locations

The main purpose of this application is to allow people to scan QR Codes that will record their current check-in and check-out time of being at a location such as a business or local park.

Within this app, there has also been the functionality built into this app to manually input locations that a user is visiting which do not feature the QR Code. This can be inputted by entering details of the location, or by recording the GPS position of the user at the time of their manual check-in.

The user of the mobile app can also see the previous locations that they have checked in/out of, with the ability to send their personal information and their previous locations to a designated Ministry of Health personnel.

There is also the functionality built into the application for the user to clear the previous history of their locations, as well as the ability to make changes to their personal details which are stored in this mobile app.

1. Screenshot of the Home Page of NZ COVID19 Tracker

All of this information is stored inside of the application, allowing the user to look up and see where they have been if asked to retrace their steps by Contact Tracers or Medical Authorities.

Latest COVID19 Information

There is also built into this mobile application the ability to see the latest information regarding COVID 19 in New Zealand, such as the current COVID 19 cases (filtered by the South or North Island, and then by the selected District Health Board)

There are buttons within this application which also allow the user to easily visit the New Zealand Fight against COVID19 Website (https://COVID19.govt.nz), as well as a button which will allow the user to visit the Ministry of Health Press Releases related to COVID 19.

Competing Markets

Originally when this app was first conceived (during the Level 4 Lockdown) there were no similar apps on the marketplace. However, at this current time of submission, there are several competing apps, such as the official NZ COVID Tracker app *released by the Ministry of Health*, the Rippl App *released by Paper Kite Ltd*, and SIT COVID-19 Check-In *released by the Southern Institute of Technology*. All these similar apps have the same feature of allowing people to record their locations by scanning QR Codes or other methods.

NZ COVID Tracker (Ministry of Health)

On the 20th May 2020, the New Zealand Ministry of Health released the NZ COVID Tracker app, which was released for Android and iOS Devices.

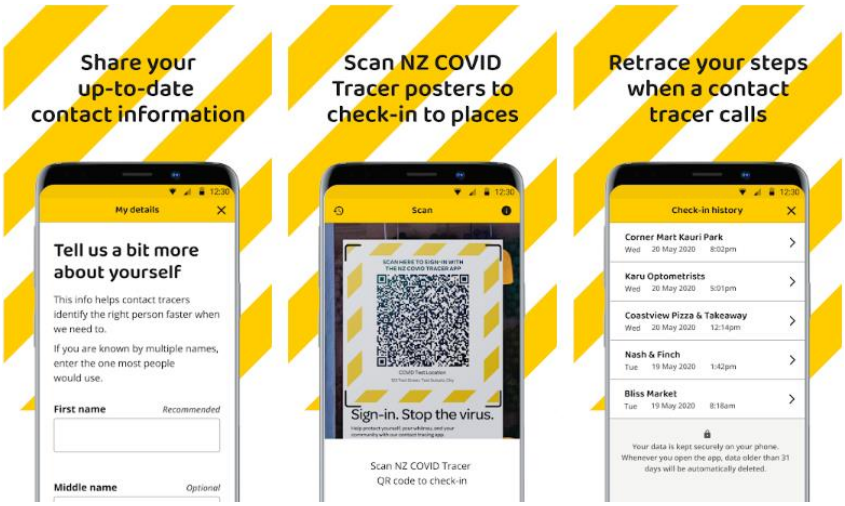


Figure 2. Screenshot of the Images of the NZ COVID Tracker App from the Google Play Store

The NZ COVID Tracker app allows the user to check into locations through unique QR Codes, recording the time that the user checks into the location. With this app, it is more designed towards business and organisations due to how the NZ COVID Tracker's QR Codes are generated and created based on the unique Business ID Number, an NZBN number (New Zealand Business Number).

Whenever a user opens the app, any check-in's which are older than 30 days are automatically deleted and removed from the app, ensuring that the information is still up to date.

For the NZ COVID Tracker application, the Intended and main stakeholders of the Application is the general public, where members of the public in New Zealand will download the app and record their details. The secondary stakeholders within this application are the businesses who put up the QR Codes, while the facilitator is the New Zealand Ministry of Health.

Ripple App (Paper Kite Ltd)

On the 11th May 2020, the Rippl App was released on the Apple and Google Play Store by Paper Kite Ltd.

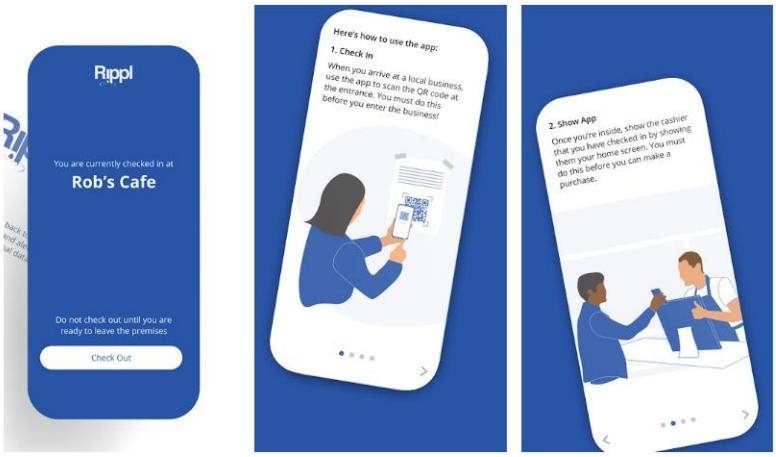


Figure 3. Screenshot of the Images of the Ripple App from the Google Play Store

Another similar app to the NZ COVID Tracker App, the Rippl Application allows users to check-in and check out of the application to record a history of their locations in case they are requested for their history by the Ministry of Health Contact Tracers.

Unlike the NZ COVID Tracker App, Rippl does not ask customers for any personal information. Instead, the app keeps an anonymous private digital log of their visit, where health authorities can send a message using the Rippl System to inform customers whether they have been exposed to a potential case of COVID 19.

Just like the NZ COVID Tracker application, the Intended and main stakeholders of the Rippl Application is the general public, where members of the public in New Zealand will download the app and record their check-in and check-out details. The secondary stakeholders within this application are the businesses who put up the QR Codes, while the facilitator is the New Zealand Ministry of Health (medical authorities) and Kite Ltd (the developers of the app).

SIT COVID 19 Check-In App (Sothern Institute of Technology)

On the 21st May 2020, the Southern Institute of Technology released the SIT COVID 19 Check-In Application which was available as a Power App within the Microsoft Power App Store, an external application store which is accessible through the Microsoft Power App.

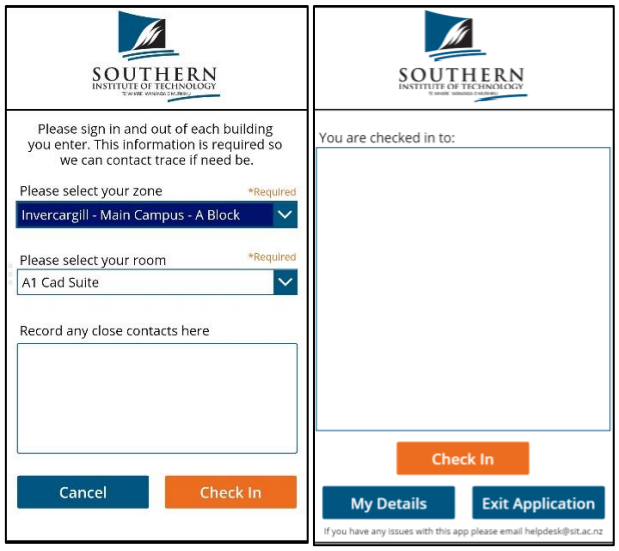


Figure 4. Screenshots of the SIT COVID 19 Check-In App

Similar to the other COVID 19 Contact Tracking Apps mentioned the SIT COVID 19 Check-in application allows students and tutors to check-in and out of different rooms and blocks at the Eight different SIT Campuses. This is easily done by selecting the location & block (the zone), and then the room.

A user can then check-in, and once they leave that room they can check out. There is a notes section, allowing the user to record any close contacts that they may associate with, and the application will automatically check-out the user from a room at midnight that night if they haven't checked out.

To be able to use this application the user must have a SIT Email Address and corresponding password that allows them to access the SIT Network (either a Student, Tutor or Member of Staff).

Information is stored securely on the SIT Network, which can be accessed by SIT Management and Health Authorities on request. From the user point of view, there does not appear to be the ability to see their previous check-ins.

With this application, the intended and main stakeholders of the SIT COVID Check-In App are the Students and Tutors at the different Southern Institute of Technology Campus. Unlike the other applications previously discussed, this application is restricted to members of the Southern Institute of Technology due to how the user is required to sign in, and all the locations are SIT buildings and classrooms. The Secondary stakeholders of the application are the management of SIT and the Ministry of Education/Health, while the Southern Institute of Technology's Helpdesk is the facilitator (the developers).

NZ COVID19 Contact Tracer Application (my app)

These other competing apps provide similar features to my designed app, allowing users of the app to check-in and out of locations by scanning QR Codes that are displayed in the windows of businesses. These apps allow users to see their previous locations as a list, just like my designed application.

However, the app I have designed have expanded on some of these features, such as the check-in and check-out feature.

Manual Check-In's

While my application allows users to check-in through QR Codes similar to the other apps, users can manually add entries to their history, allowing records to be added for businesses or locations which do not have a QR Code displayed for the user to scan in. This helps to improve the usability of the application, with how businesses are not required (however are recommended) to generate and print the QR Codes. Users can record a Manual Entry by selecting the **Manual Check-in** button on the Scan Screen, which will launch the appropriate screen.

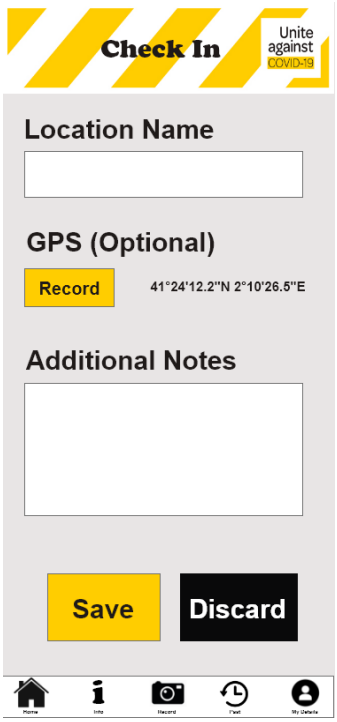


Figure 5. Manual Check-In

This screen allows the user to manually enter the Location Name and Additional Notes (such as the name of an accompanying person) into the application, or the application can try to retrieve the GPS location from the phone, using a Google Maps API to try to determine the GPS location of the user's phone at the time.

This GPS Location is completely optional to the user – they do not need to use it as they can instead enter the name of the location they are visiting manually. By implementing this feature, this helps to improve the usability and interactivity with the application, due to how users can easily check-in to locations without needing to enter a lot of information. It also helps to improve the reliability and integrity of the data by allowing the user to enter a GPS location, allowing the app to record the approximate location of the user when they checked in.

Competing applications do not allow this ability at this current time, requiring users to scan the QR Codes to check-in and out.

Check-Out Reminder Notifications

Once checked in (manually or via the QR Code) the user can then check out of the app, recording the time that they arrived and left the business.

If the user does not checkout within 2 hours a notification will appear using the Android or IOS Notification Service to remind the user that they are still checked in to that location. This notification will remain present after this 2 hour and can not be dismissed until the user selects to checkout (or checks out inside the application).

*6. Reminder Notification about a Check-in. The user can click the **Checkout** Button and they will be checked out.*

This provides a superior feature than the other COVID 19 mobile application due to how most mobile applications only allow the user to check-in, recording the time that they arrive at the business. With these other apps, there is no exact tracking of when a user leaves a business, and by providing a signifier through a reminder notification to the user they are reminded to checkout, ensuring that the information stored is still reliable.

Latest News and Information

The NZ COVID19 Tracker also provides a centralised location for the latest news and press releases of the current cases of COVID 19 in New Zealand. Some of the information (Current Cases) is retrieved and updated every time the application is launched, while other information is hosted through an external website such as the Ministry of Health Website (https://www.moh.govt.nz).

The information about current cases is cached locally, allowing the user to view the downloaded information while offline. When the user opens the application, the current cases are retrieved from an JSON file on a server, reading the raw file to retrieve the current COVID19 case numbers.

Information about current cases is first selectable by selecting which island, either the North or South Island. There is a button on the screen which allows the user to also see the Current Cases combined, resulting in the total New Zealand Cases.

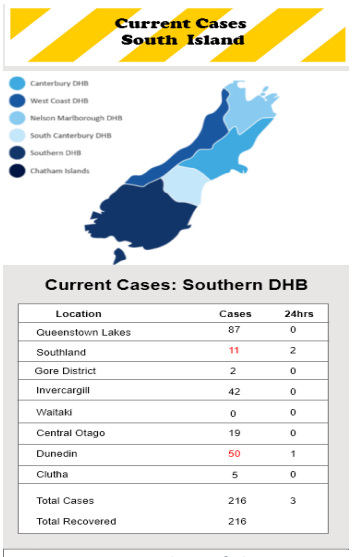


Figure 7. Screenshot of the Current Cases Screen (filtered through District Health Board

Cases can then be filtered down even further by selecting the relevant District Health Board, such as the Southern District Health Board as seen in the screenshot above. Depending on the information that the District Health Board shows, this could be split up into regions or just a combined total number.

Other applications do not offer features similar to this in regards to the UpToDate news section. Most of the other applications only provide buttons to external websites, such as the Ministry of Health or Fight Against COVID19 Website. By providing this information within the application, it allows the information to be accessed offline (which could be slightly out of date), while also allowing the information to be seen in one centralised area.

Design Decisions

During the Development and creation of the NZ COVID19 Contact Tracer Application I considered several Design Decisions:

Colour Scheme

The Application is composed of a Yellow, Grey and Black Colour Scheme as shown in the below Colour Scheme

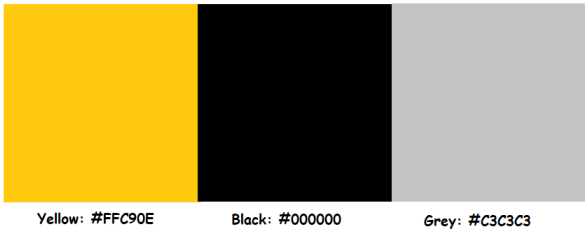


Figure 8. Colour Scheme used in the App

There is the user of the yellow colour in the header image located at the top of the screens, which has been located off the Unite Against COVID 19 Website (https://www.COVID19.govt.nz), as well as the buttons present within the application. The Black colour has been used in the Text and Icons present throughout the application, while the application has a mild grey background. Yellow was chosen as the prominent colourful colour due to how it is often associated with happiness (such as Summer) and is the colour scheme of the Unite Against COVID 19 Graphics sourced from the Unite Against COVID New Zealand Website (https://www.COVID19.govt.nz).

Navigation Bar

During the design of the application, I chose to place the Navigational Bar at the bottom of the screen, increasing the usability of the application on large mobile devices due to how it will be easily accessible. Bottom Navigation Design is well used in existing mobile applications such as **Snapchat, Reddit** and most Messaging Applications.

Figure 9. Navigational Bar

As explained by Arthuras of Smashing Magazine, Bottom Navigational Design is becoming more of a trend due to screen size, and the placement of handles. Extra Spacing can be added in applications at the bottom of the screen to avoid clashing of swipe handles on phones such as the Apple iPhones. ("Bottom Navigation Pattern On Mobile Web Pages: A Better Alternative?", 2019)

By having a Bottom Navigational Bar, this helps to increase the accessibility of the application with how the options are clearly accessible to the user.

Signifiers Below Icons and Images

Signifiers have been incorporated within my application below icons and images, allowing users to understand what the desired action of the icon is, while not telling them what they should select.

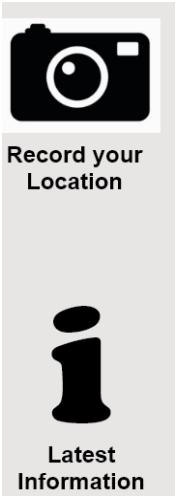


Figure 10. Signifiers are shown on the Home Screen, below the Home Screen Icons

By implementing signifiers, this has helped to increase the usability and user experience of the application with how it helps to explain the purpose to the user.

Consistent Buttons

Another design feature I have implemented in the application is to ensure that all of the buttons within the application have a consistent colour scheme of yellow buttons, while less desired buttons such as **Discard** options are in a different colour to warn the user.

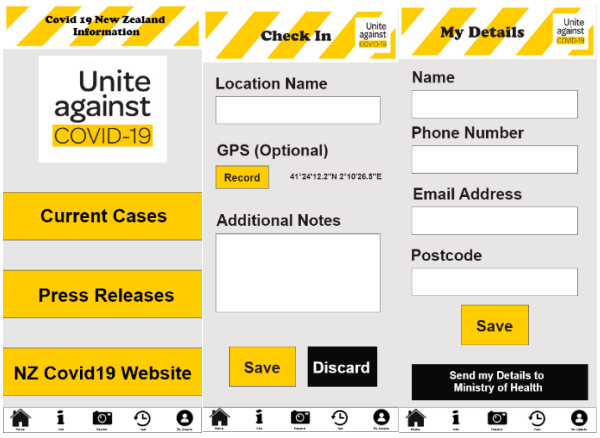


Figure 11. Screenshot of the different types of Buttons in the Application

Options which are less likely to be used, or to have a more important action such as **Discard** and **Send my Details to the Ministry of Health** are in the opposite colour scheme as the other buttons (in Black & White opposed to Black and Yellow), to draw attention to it. The Yellow Background is carrying on the consistent colour theme of Yellow shown on many of the different screens of the application.

Contrasting Colours

As previously discussed, the application uses contrasting colour schemes of Yellow, White, Grey and Black to allow devices with different colour modes to be seen. Devices such as Greyscale and High Contrast are easily able to see the difference between the colours, as shown in the below screenshots:

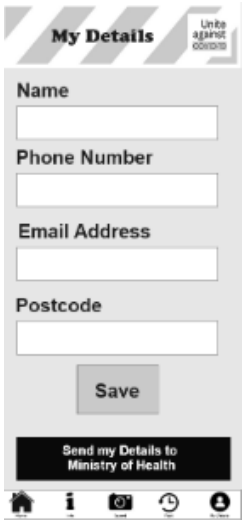


Figure 12. The My Details Screen as seen in Greyscale. All Elements on the page can be seen

By incorporating contrasting colours, this helps to avoid colours from blending in and confusing the user.

Use of Visual Imagery

Instead of just having a lot of text on all of the screens, I have used supporting visual imagery within this application to ensure that it is easily able to be read by those that have difficulty reading large passages of text. This can be seen in the below screenshot where there is an Image showing the Current cases in the South Island, shown in the image as well as the table below it.

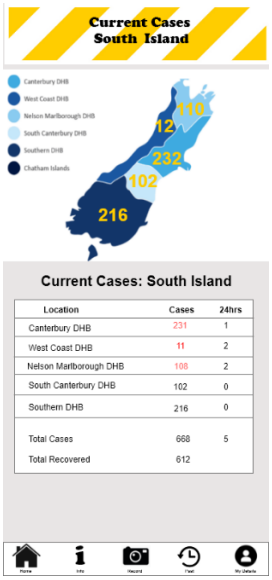


Figure 13. Current Cases South Island - Use of Visual Imagery

Target Users of the Application

General New Zealand Public

The main target users of the *NZ COVID19 Contact Tracer Application* are the general New Zealand Public, due to how the general public will be using this app to check-in and out of locations. The Application would be available on Android and iOS devices, supporting a large range of different models and versions of devices. Due to how the application only requires a device which has a GPS and Camera, the most suitable device to use would be a Mobile Phone. Most people in New Zealand own one and carry it with them most of the time. By creating a mobile application that can be run on Android and iOS, resulting in allowing a large range of customers to use the application, allowing more and more people to record their check-in and check out locations, thereby improving the accuracy and reliability of the information.

Medical Authorities/Ministry of Health Personnel

Another important user of this mobile application will be Medical Authorities including Ministry of Health Personnel as well as nurses and doctors.

These people would be key users of the application (and system), due to how they would use the information submitted from people to build a map and use this to track the history of probable and confirmed COVID19 cases. By using the information recorded in this application, they would be able to release information, informing other people about the potential locations where they could have been infected by COVID19 Patients while they were symptomatic and infectious.

Developer/Administrators of the App

Developers and administrators of the application are also another important target user of the application.

These people would be important due to how they would be ensuring that the application is bug-free, allowing users to easily access and use the application with no difficulties. Any potential bugs or issued in the application would be fixed by them, while they would also be responsible for implementing new features in the applications such as enhanced ways to check-in and out (e.g. RFID tags).

Depending on how the application is deployed, this would be either internally done (where the developers work within the Ministry of Health or another Government Department to create and develop the application), or externally where the developers are contracted and hired to create and develop the application for the Ministry of Health.

Stakeholder Profiles

Main Stakeholder

The main stakeholder of this mobile application will be the general New Zealand Public, with how they will be the main customers of the application, using it daily to record their check-ins and check-outs of businesses

Context of Use

The main motivation of the user is to be able to record and track where they have been, allowing them to build a map if asked to by Medical Authorities. The only real motivation of the application is to build up a sense of community spirit by helping to record their location, increasing accountability if they were to get COVID 19.

Users would need to use this application daily, and frequently depending on how many locations and businesses they visit. Due to how the application is simple to use with a simple interface, the user shouldn't need a refresher on how to use the application if they don't use it for a period of time. The customers in this application are a beginner, with how they won't have used an application like this before. However, due to how this is not a high-pressure situation, errors won't have life-threatening consequences such this application would only be supplementary to existing contract tracer methods.

The Technical Environment for this application is an offline and online environment, due to how this application can be used online and offline. Information such as the name and location of the businesses are stored in the QR Code and will be able to be read offline. Some areas such as the latest information can be viewed offline, however, it may not be the latest UpToDate information.

Cognitive Ability

Due to how this is a mobile application the user will need to have limited computer experience, such as how to install, open and navigate through the application. The user will need to know how to use the camera and on-screen keyboard within the application, to enter information in.

Physical Ability

Due to how this app is heavily focused on visual design, to be able to use the application the user will need to be able to see the display. Due to the design of the application, it has a good contrast of colours, allowing High Contrast Mode to be used within the application, increasing accessibility. The text within the application will be able to be increased in size (using the systems built-in font settings), increasing accessibility for those far or nearsighted. All of the icons on the screen have supplementary text below them and alternative text, allowing voice overs to be used within this application.

Unfortunately, this application won't be supported for those that mobility or haptic disabilities due to how the application is interacted and used through a touch screen device.

Secondary Stakeholder

The secondary stakeholders of this application will be business owners, who will be using a supplementary tool to generate create and display QR Codes for users to check-in on the application with.

Context of Use

The main motivation of the business is to provide the ability for their customers to check in on the COVID 19 Contact Tracer Application, improving the usability of the application. Depending on the current laws and guidelines it could be mandatory for businesses to provide QR Codes to be open to the public, which would be another motivation to display the QR Code.

Businesses would probably only need to use the QR Code Generation Tool once, to generate the appropriate QR Code for the business. Due to this, depending on the current laws and regulations it might be a high-pressure situation whether the user uses the tool or not, as it could affect their business reopening time.

The Technical Environment for this tool would be an online environment, due to how the business owner (or a designated staff member) would use an online wizard to generate the QR Code to be displayed at the business's entries.

Cognitive Ability

The Cognitive Ability of the business owner would need to be high enough to be able to use an online wizard to generate and create a QR Code. This wizard would need to be accessed through a computer connected to the internet, using a Web Browser.

Physical Ability

The only Physical Ability for this tool would be for the business owner to be able to access and use a Digital Printer to print off their QR Code.

Facilitator

The Facilitator of this application would be Medical Authorities such as Healthline Personnel and Ministry of Health Officials with how they would use the information submitted by confirmed COVID19 patients to make a map of the history of COVID19 Patients, allowing them to track where they have been.

Context of Use

The main motivation for Medical Authorities to use this application is to help improve contact tracing techniques, by improving accountability and reliability of the information provided by the user.

The Technical Environment for the NZ COVID19 Contact Tracker application would be a supplementary application that allows medical personnel to retrieve and access information submitted by patients with COVID19.

Cognitive Ability

Due to how the Facilitators of this application would be Medical Authorities, they would have an understanding of medicine and conditions, allowing them to understand the risk of public transmission depending on where people have been. Due to this, they should understand how to use this system, whether it is through training and support provided by management.

Physical Ability

Medial Authorities would have sufficient physical ability to use this application, as it would be part of their job.

Indirect Stakeholders

The indirect stakeholders of this application would be the developers of the application and system, whether they are an internal (part of the Government) or external developers (e.g. Developer Company).

Context of Use

The main motivation of using this application would be to create the COVID Tracer App, as part of their job and a sense of pride for creating a key component to help New Zealanders to recover from the COVID Pandemic.

Cognitive Ability

Due to how the developers would be creating the application, they would need to understand the Software Development Lifecycle, as well as how to develop applications for Android and iOS (the target platforms). They would also need to have an understanding of how to store this information securely, such as understanding of the development of an SQLite Database (where the information will be stored securely on a device), and how the information will be transmitted and retrieved from medical authorities.

Physical Ability

The Developers might not have any physical abilities which affect their use of the application; however, they would need to ensure that they understand the different factors and disabilities that users might have which are using the application.

Information Required for the App

The main component of information that is required for the NZ COVID19 Contac Tracker application is for businesses to create QR Codes using a supported tool that is supplementary to this application, easily allowing people to record the locations and businesses they have visited by scanning these QR Codes. These QR Codes would be unique, allowing each business to have one displayed at their business. A business would only need one QR Code unless they had multiple entries to the business, which they would display multiple copies of the same QR Code at each entry. While this information is important, for businesses which do not have the QR Code displayed, users will still be able to manually record their details. However, by providing QR Codes this would speed up the User Interaction, and improving the User Experience.

Another important piece of information that would be needed during the use of this application would be UpToDate information about the latest COVID cases in New Zealand. This would need to be released regularly (such as after the daily Ministry of Health Press Conferences), and stored in a file publicly which the application can access to retrieve the latest information and display on the application (such as in an JSON File). This information is important with how it would ensure that the features of the latest information is shown, providing reliable and accurate information. Without this information the application would easily get out of date, becoming unreliable and inaccurate,

Interaction between the user and the application

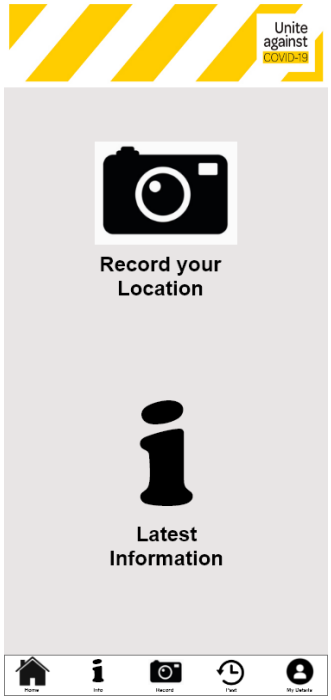
Navigation Bar

Most of the application is driven through form-based interaction, where the user is selecting and tapping icons or options to navigate through the application. This interaction is accessed through a touch screen interface due to how the target platform for the application are Android and iOS devices with touch screens.

14. Screenshot of Application Navigation Bar

As it can be seen in the screenshots above, the main interaction between the user and the application is through the use of tapping icons and buttons on the screen. On all screens of the application, there is the consistent navigation options at the bottom of the screen, where the user can tap to go to the **Home**, **Info**, **Record**, **Past** and **My Details** screens by clicking the appropriate icons. These have signifiers through the form of visual text, helping to inform the user of what the icons can do, but not telling them what they should do (as in what area they should go to).

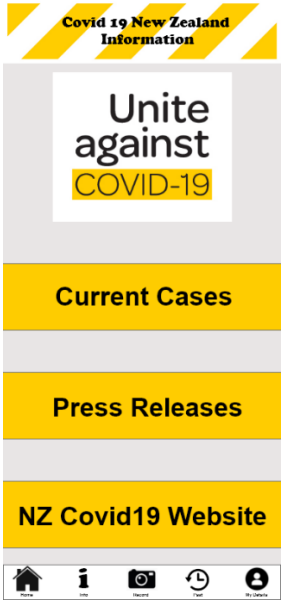
Home Screen



15. Screenshot of Application Home Screen

On the home screen, the main two areas of the application can be accessed by tapping the **Record your Information** or **Latest Information** icons, which will load the **Check-in/Check-out** and **COVID 19 New Zealand Information** screens, respectively. These also have appropriate signifiers through the form of text below the icons, helping the user to understand what the icon will direct them to.

Information Screen



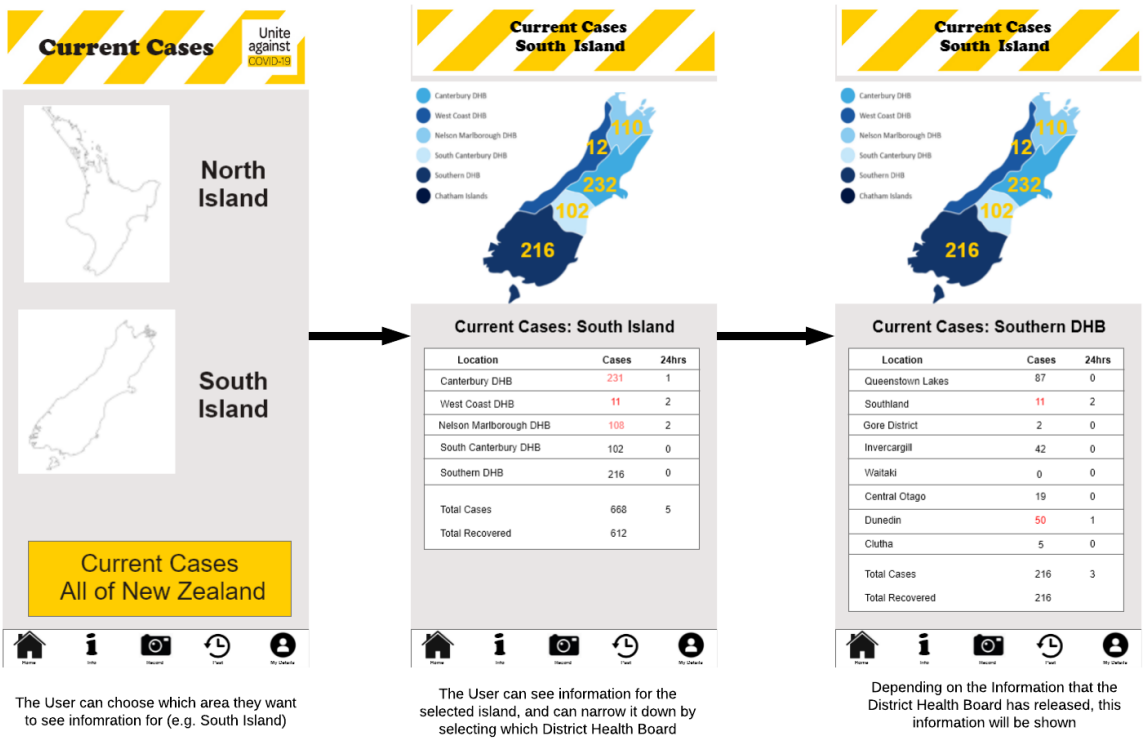
16. Information Screen

On the Information Screen, most of the interaction is through Buttons, a navigational visual element. If the user chooses the Current Cases Button, this will load the Current Cases Button. If the user selects the Press Releases button, this will open externally the Ministry of Health Press Releases Webpage (https://www.health.govt.nz/news-media/media-releases). If the user selects the image or the **NZ COVID19 Website**, this will open externally the Fight Against COVID19 Website (https://COVID19.govt.nz). All of these external links will open in the default web browser, and depending on the operating systems these will be through a WebView Object (a slimmed-down version of the Web Browser, which the Web Browser can be opened separately).

Current Cases

17. Screenshot of Application Current Cases Screen

On some screens, the content will load depending on what is tapped, such as the **Current Cases** screen. When the user first goes to the screen, they are asked to select what information they want to view – **South Island**, **North Island** or **All of New Zealand**. The user can select the image or text of the islands to access the screen. The text acts as a Signifier, informing the user but not prompting them of what action to perform. If the user selects to view the South Island, this loads the information for all the South Island, which can then be filtered down by District Health Boards as seen in the screenshots on the next page.



18. The Interaction of the Current Cases Screen

This information is retrieved from an JSON File when the device is connected to the internet, while if the device is not connected it retrieves the information from a cached data store.

Check-in/Check Outs

Check-In

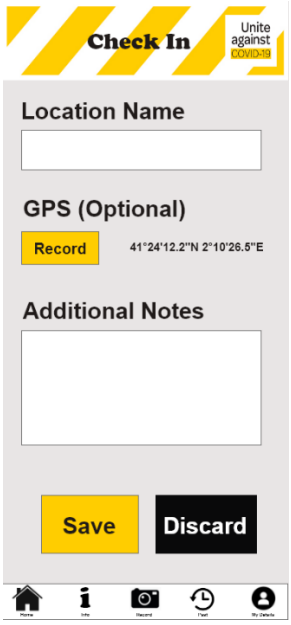
Interaction with the application is also different when it comes to Manual Check-Ins. By default, the interaction is activity-based, where the user is prompted to scan the QR Codes by opening the camera in the application and reading the QR Codes. This screen is shown by selecting to Check-In by either clicking the Record Icon in the navigation bar or the icon on the home screen.

19. Screenshot of Check-In Screen

Once the QR Code is scanned, a message is shown to inform the user of the details of the business scanned in.

20. Successful Check-In Screen

If the user is unable to Check-In using a QR Code, a manual check-in can be performed by selecting the **Manual Check In** button. On this screen, the user can input the details of the location that they are checking in, with an optional GPS Location. They can also decide to just check in with the GPS Location, which will retrieve information about the location using a Google Maps API.



21. Manual Check-In Screen

Once checked in Manually this will show the Same Screen as the QR Check-In, as shown in figure 13.

Check Out

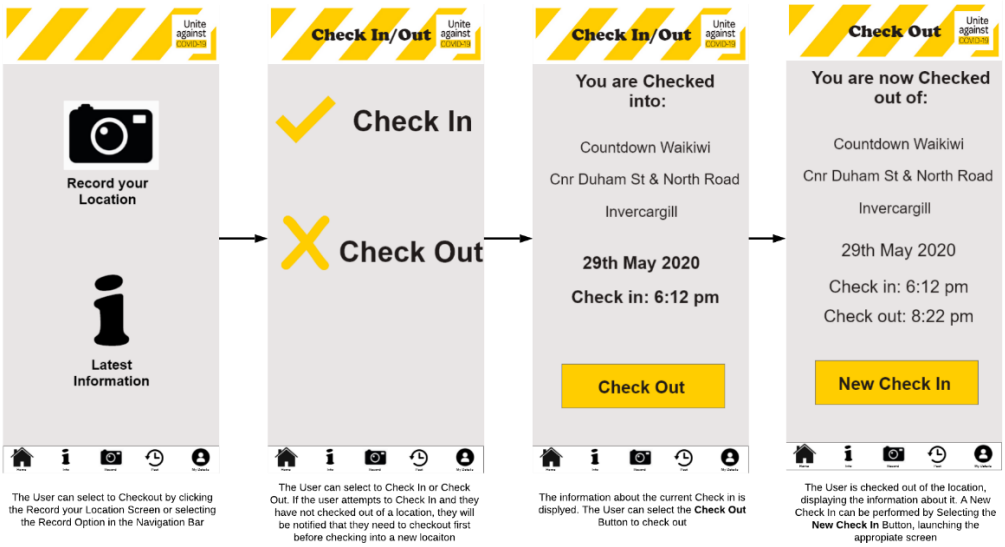
After 2 hours of being checked into a location, the user is prompted to checkout through a notification which cannot be dismissed.

22. Checked In Reminder Notification

This notification can not be dismissed unless the user check's out of the location. If the user chooses to tap to check out of the location, the following checkout screen will be displayed

23. Screenshot of Checked Out Screen

The user is also able to check out of a location by selecting to check out through the application, as shown in the below screenshots. If a user is currently checked in and attempts to check in to a new location a Toast Notification Popup will display informing them they need to check out



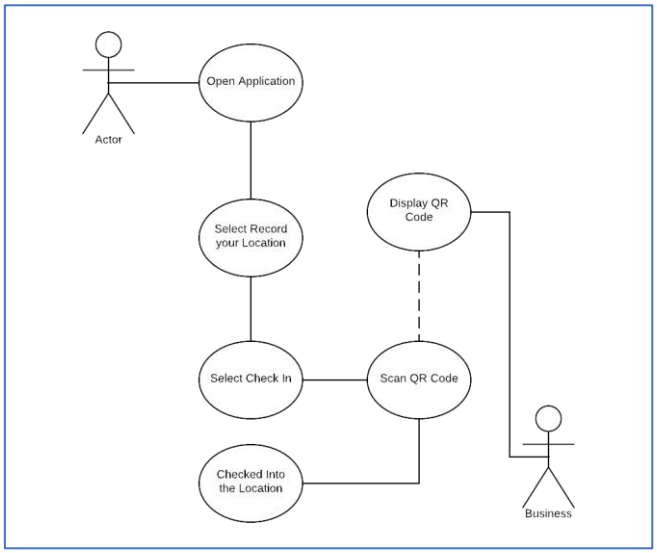
24. Interaction of Checking Out

Use Case Diagrams

For several Interactions within the Mobile Application, I have created the following Use Case Diagrams:

Checking into Location

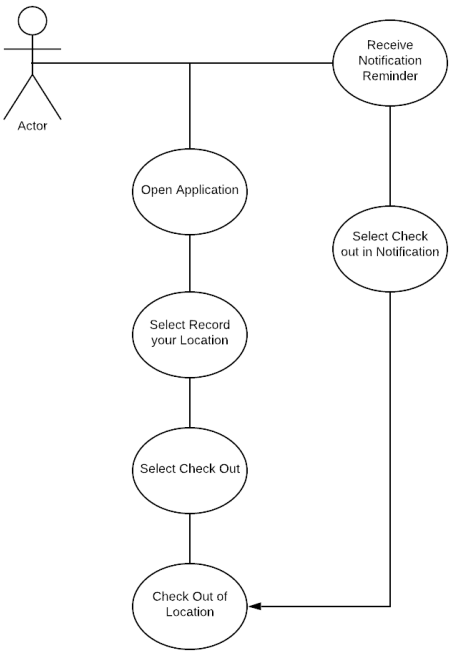
The below Use Case Diagram shows the interaction of a user checking into a Location by Scanning a QR Code



25. Check-In UML Use Case Diagram

Checking Out of Location

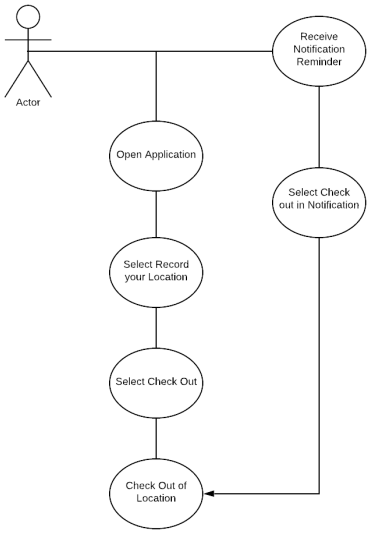
The below Use Case Diagram shows the interaction of a user checking out of a Location through either the Reminder Notification or opening the application



26. Check-Out UML Use Case Diagram

Viewing Previous Check-Ins

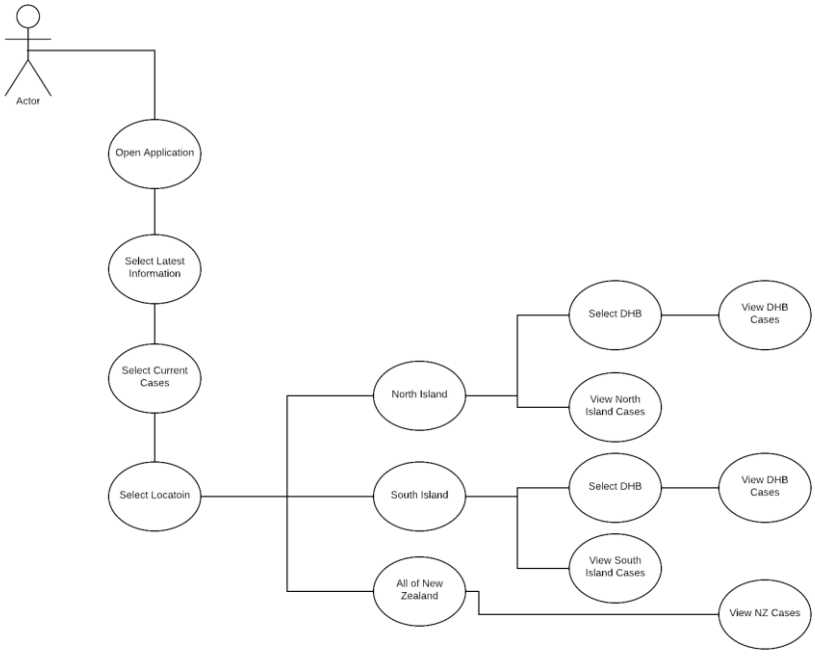
The below Use Case Diagram shows the interaction of a user viewing their previous check-in locations on the application



27. Previous Check-In's UML Use Case Diagram

Viewing Latest COVID 19 Cases Information

The below Use Case Diagram shows the interaction of a user viewing the latest COVID 19 Cases within the Application



28. Latest COVID19 Cases UML Use Case Diagram

If the NZ COVID19 Contact Tracker application is connected to the internet it will retrieve the latest information automatically when the application is launched. If the application is offline, it will use the cached information about the COVID19 cases.

Task Analysis

Check-In to Location

One of the main tasks that will be performed in the NZ COVID 19 Contact Tracer Application will be checking into a location, storing the information within the application.

Goal

To Check into a Location using the NZ COVID 19 Tracer Application, ensuring that the record of check-in is stored in the application.

Plan

To open the application, enter the information of the location and successfully check into the location, recording the check-in details.

Information

- User Signed into the COVID 19 Application
- QR Code Displayed
- Name/Details of the Business

Objects

- Mobile Phone with the COVID19 Application signed into.
- COVID Tracker QR Code for the location

Methods

- Scan the QR Code (Preferred Method due to simplicity)
- Manually enter the location details
- Use the GPS to record the location details

Objectives

- Unlock Mobile Phone Device
- Open COVID 19 Tracker Application
- Select to Check In
- Check into the Location

Procedures

- Check-Out of the location

Contingences

- Manually Enter the Location Into the application
- Use the GPS to record the location check-in.

Check-Out of location

Another main task that will be performed in the NZ COVID19 Contact Tracer Application will be checking out of locations which are currently checked into, storing the information within the application.

Goal

To Check out of a Location using the COVID 19 Application, ensuring that the record of the check-out is stored in the application.

Plan

To open the application and select the check-out option for the currently checked-in location.

Information

- User Signed into the COVID 19 Application

Objects

- Mobile Phone with the COVID19 Application signed into.

Methods

- Open the application and check-out of the application

Objectives

- Unlock Mobile Phone Device
- Open COVID 19 Tracker Application
- Select to Check Out
- Check Out of the currently checked in location

Procedures

- N/A

Contingences

- N/A

View Latest COVID19 Cases

Another main task that will be performed in the NZ COVID 19 Contact Tracer Application will be viewing the latest COVID19 Cases.

Goal

To view the latest COVID19 cases within the application, such as viewing the latest COVID 19 Cases in the Southern District Health Board

Plan

To open the application, select to view the latest information, select **current cases**, filter to the South Island and then the Southland District Health Board

Information

- User Signed into the COVID 19 Application
- User Connected to the Internet to retrieve the latest information

Objects

- Mobile Phone with the COVID19 Application signed into.
- Mobile Phone connected to the Internet through Wi-Fi or Mobile Data

Methods

- Opening the Application (preferred method)
- Visiting the Ministry of Health Website (https://www.moh.govt.nz)
- Visiting the Coivd19 NZ Website (https://www.COVID19.govt.nz)
- Visiting a local News Website (e.g. https://www.stuff.co.nz)

Objectives

- Unlock Mobile Phone Device
- Open COVID 19 Tracker Application
- Select Latest Information
- Select Current Cases
- Select the Appropriate Island (South Island)
- Select the Southland District Health Board

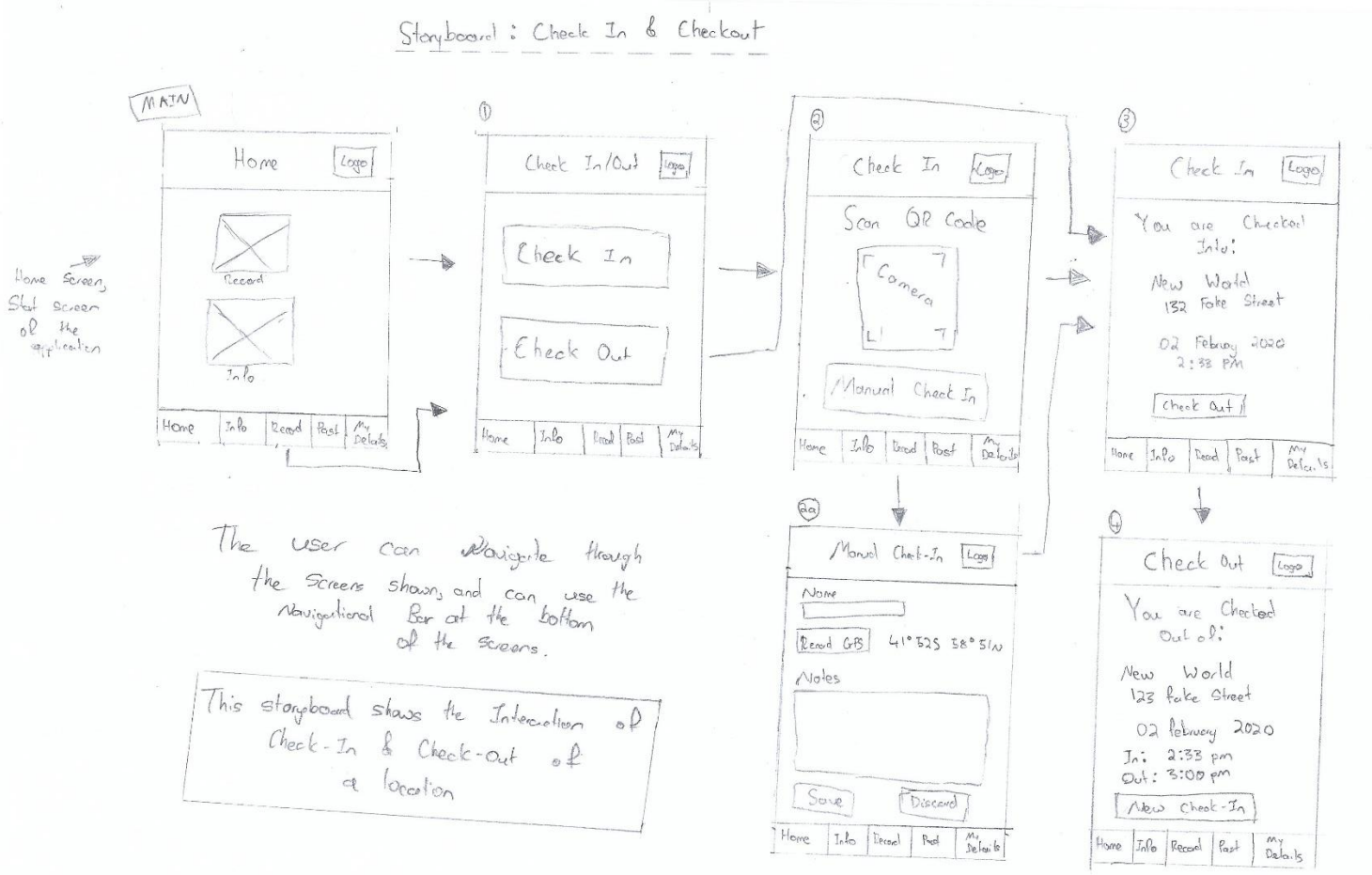
Procedures

- Viewing other current COVID-19 Cases Information

Contingences

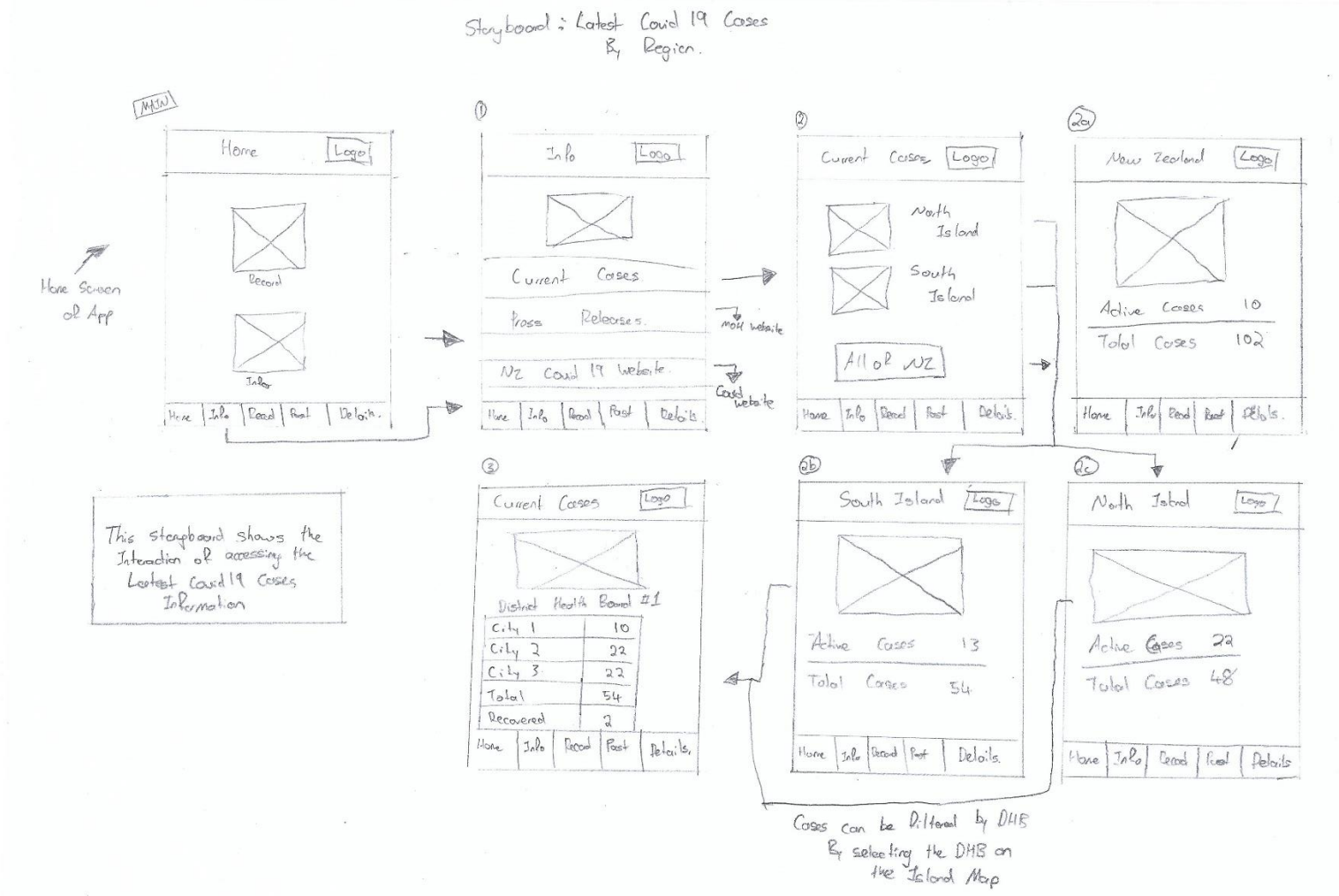
- Viewing the cached (offline) information
- Visiting the Ministry of Health Website (https://www.moh.govt.nz)
- Visiting the Coivd19 NZ Website (https://www.COVID19.govt.nz)
- Visiting a local News Website (e.g. https://www.stuff.co.nz)

Storyboard: Check-in & Checkout



This Storyboard shows the interaction of the screens in the application,
of how to check-in and out of a location.

Storyboard: Latest COVID 19 Cases Shown By Region

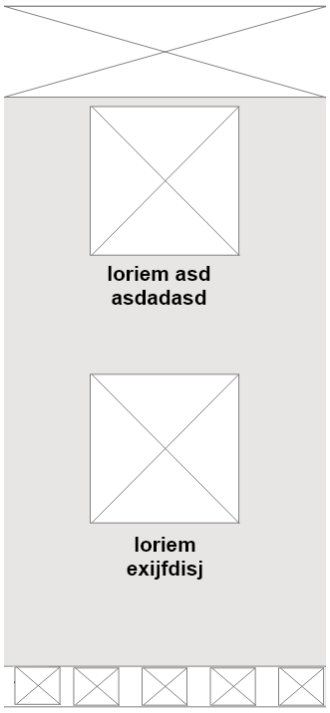


This Storyboard shows the interaction and flow of the screens in the application of seeing the latest COVID 19 Cases shown by region.

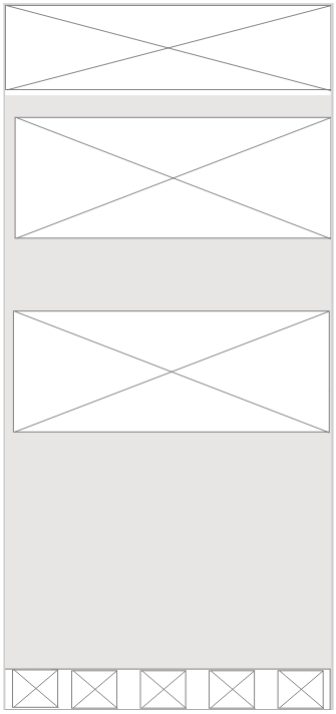
Prototype Images

Basic Wireframes & Prototypes

Throughout the creation of this app design, I have created some basic wireframe and basic prototype images of some of the main screens of the application:



29. Home Screen Prototype



30. News & Check-in/Out Screen

31. Check-in Screen

In these prototype screenshots, it can be seen that I had already decided that the main navigation of the application would be through a navigational panel at the bottom of the application, as shown in Figures 19 - 21. Figure 19 shows the Home Screen Layout, where I decided to use icons on the screen to allow the user to navigate through the application. At this point, I was considering using either Icons or Pictures and decided to use Icons due to how they are more appropriate for navigational elements. Figure 20 shows the news and Check-in/Out Selection screen, where I originally thought about using buttons to navigate the user to the appropriate check-in/out screens.

Figure 21 shows the Check-In Screen, where I originally chose to use having the user input the location details through a selection of TextBoxes. However, I decided to repurpose this design into the Manual Check-In Screen, allowing the user to manually check into locations where there is no QR Code available for the user to scan. I decided to simplify the Check-In Process by scanning QR Codes, increasing the usability of the application.

Final Prototype

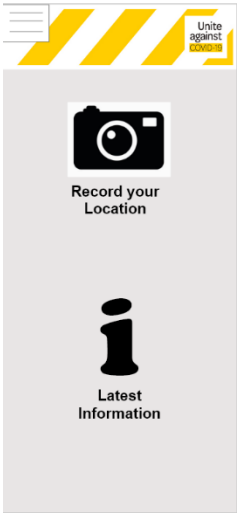
The Final, fully functional Prototype of the application can be viewed at https://xd.adobe.com/view/087e99f8-f743-4d11-4e58-93d6d8cfd477-7e4f/. This prototype was created in Adobe XD, and a copy of the file has also been attached in the submission files for this project. Images of the Application are attached in Appendixes A.

Development Ideas (Brainstorming & Experimenting)

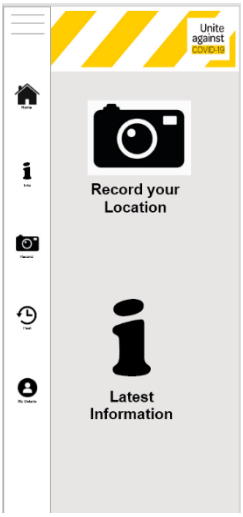
Throughout the conceptualisation of this application, I have brainstormed a few different ways of designing the interaction between the application and the user.

Sidebar

One idea that I considered was having a sidebar which could become visible and invisible by selecting the Hamburger Icon at the Top Right of the Application as seen in the screenshot below



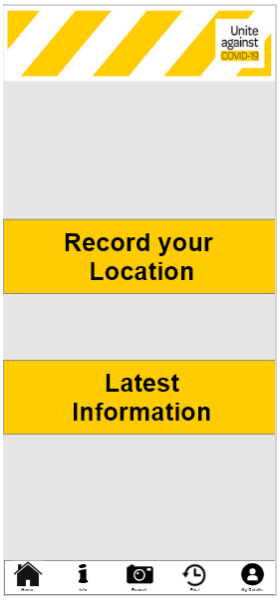
33. Sidebar Invisible



32. Sidebar Visible

By having a sidebar which could become visible and invisible, this would help increase screen space, allowing more content to be displayed on the screen. There would be the consistent hamburger at the top right of the application, allowing the user to access the sidebar and navigate through the application. However, I decided not to implement this design due to how the Hamburger Icon at the top right was not the prettiest and would overlap content on the screen. By also having the Navigation Bar at the side temporarily, this would mean that more screen space would also be occupied (when the navbar was visible), obscuring content on the screen.

Buttons instead of Icons on the Home Screen



34. Buttons instead of Icons

Another design I considered implementing within my application was to have big yellow buttons on the home screen, allowing the user to go to the relevant screens. This would increase the usability and consistency with the application, with how the buttons would resize for the appropriate screen space to match the width, allowing people to easily select them. This would also ensure similarity, with how each button would be the same colour, and the same height & width.

However, I decided to not implement this design due to how it wasn't as visually pleasing as using Icons. Icons provide a Visual Aid to the user of the function that they perform, allowing the user to easily understand what the action of the icon does when selected. These icons would also adjust their size to ensure that it is compatible with the different screen sizes of the mobile devices it might be run on.

Brainstorm

A Mindmap of some of the Development Ideas created within this project can be viewed online at https://mm.tt/1548819820?t=1LIoPcRaCU

Bibliography

A. (2019, August 29). Bottom Navigation Pattern On Mobile Web Pages: A Better Alternative? Retrieved from https://www.smashingmagazine.com/2019/08/bottom-navigation-pattern-mobile-web-pages/

Budiu, R. (2015, November 15). Basic Patterns for Mobile Navigation. Retrieved from https://www.nngroup.com/articles/mobile-navigation-patterns/

Home. (n.d.). Retrieved from https://covid19.govt.nz/

Roy, N. (2020, May 11). Here's our Media Release with posBoss, launching Rippl on 11 May 2020. Retrieved from https://www.paperkite.co.nz/blog/2020/05/rippl-app-launch/

A. (2016, November 02). The Golden Rules Of Bottom Navigation Design. Retrieved from https://www.smashingmagazine.com/2016/11/the-golden-rules-of-mobile-navigation-design/

Image/Icon References

Covid 19 Logo and Header Image:

https://uniteforrecovery.govt.nz/updates-and-resources/posters/

Navigational Bar Icons:

https://freesvg.org/img/Originuum---Vetor---Plano---Camera-Fotografica---1.0.0.png

https://freesvg.org/img/abstract-user-flat-4.png

https://commons.wikimedia.org/wiki/File:OOjs_UI_icon_reload_flipX_time.svg

https://freesvg.org/img/dynnamitt_home.png

I Icon – Comic Scans I Letter

New Zealand Images:

New Zealand: https://i.pinimg.com/originals/22/56/c0/2256c0d7a017b6cd6c8ca6b80ce00433.gif

South/North Island (Cropped):
https://i.pinimg.com/originals/22/56/c0/2256c0d7a017b6cd6c8ca6b80ce00433.gif

District Health Board Map:

https://canterburywestcoast.midwife.org.nz/wp-content/uploads/sites/2/2018/11/cdhbmap1-800xauto-c-f.png

QR Code Example:

https://www.health.govt.nz/sites/default/files/images/our-work/diseases-conditions/covid19/qr-poster.png

Appendix

Appendixes A: Prototype Photos

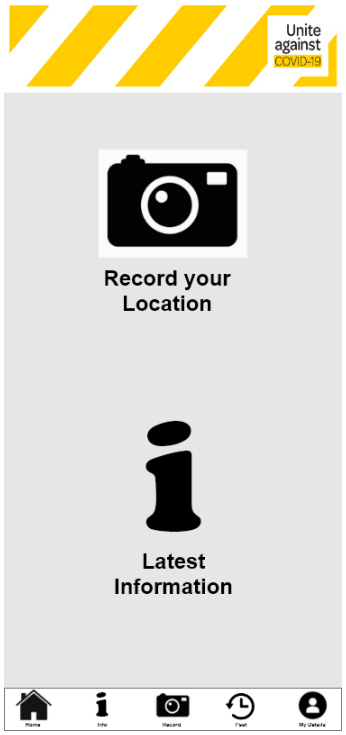


Figure 35. Home Screen

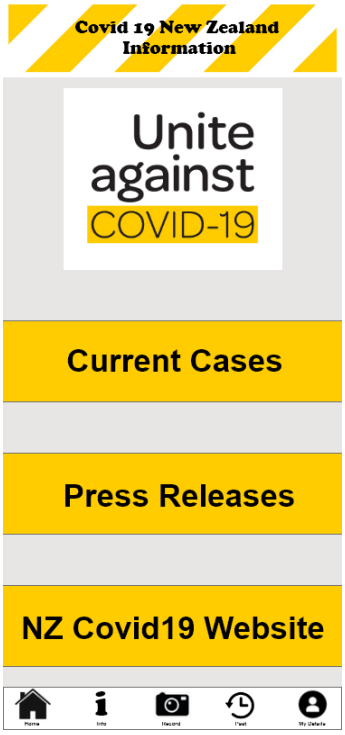


Figure 36. Information Screen

Figure 37. Information Selection Screen

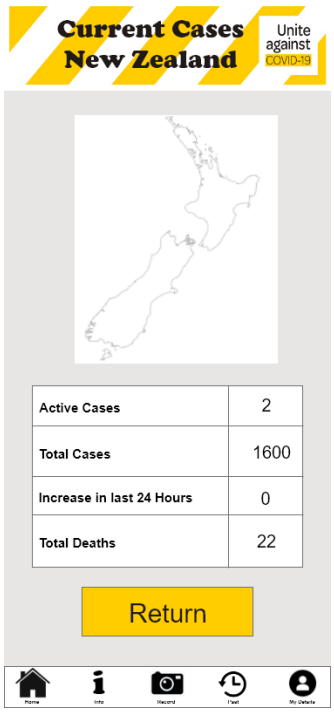


Figure 38. All of NZ Cases

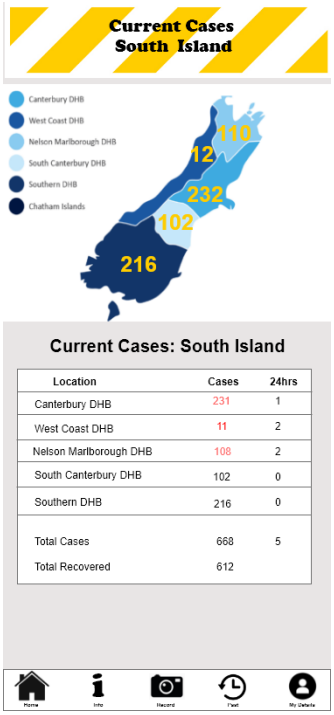


Figure 39. South Island Cases Screen

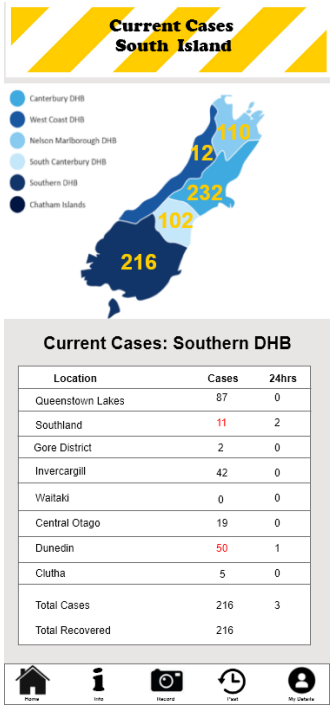


Figure 40. District Health Board Cases Screen

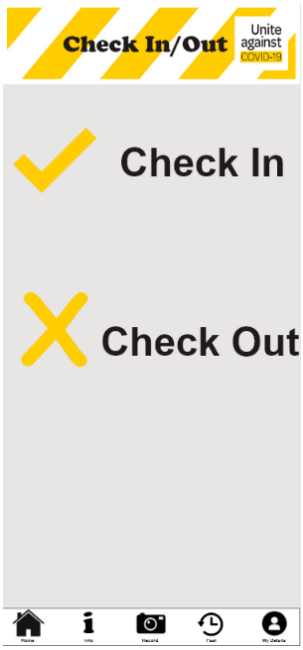


Figure 41. Scan Selection Screen

Figure 42. QR Code Check-In Screen

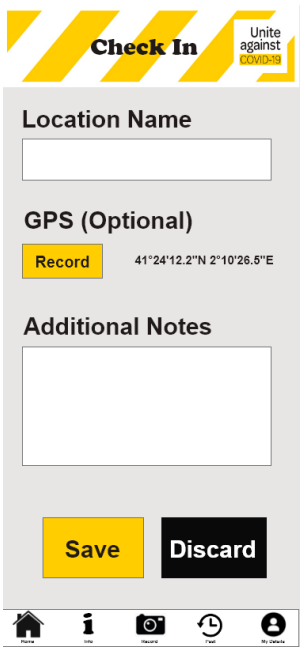


Figure 43. Manual Check-in Screen

Figure 44. Current Checked-in Screen

Figure 45. Checked Out of Screen

Figure 46. Reminder Notification

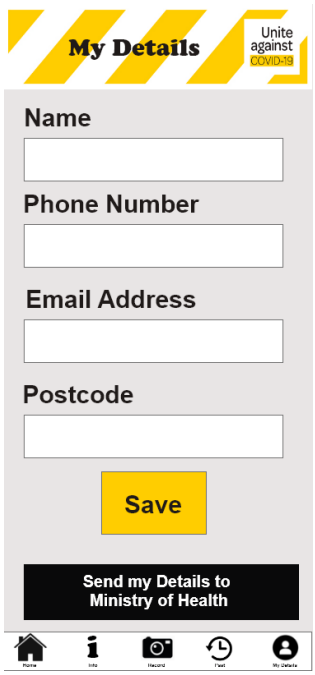


Figure 47. My Details Screen

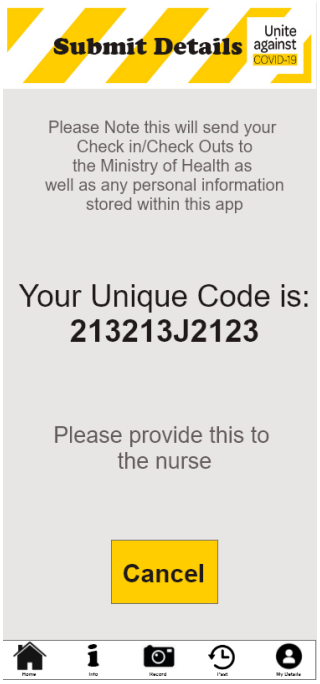
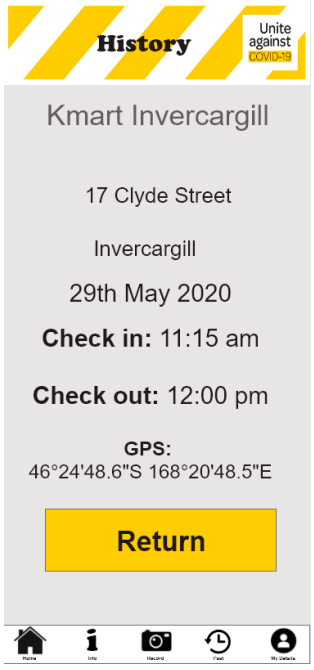


Figure 48. Send to MOH Screen

Figure 49. Previous Check in's Screen



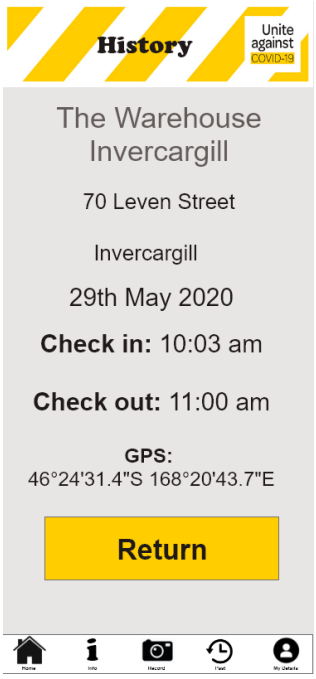


Figure 50 & 45. Previous Check-in Detailed Screen

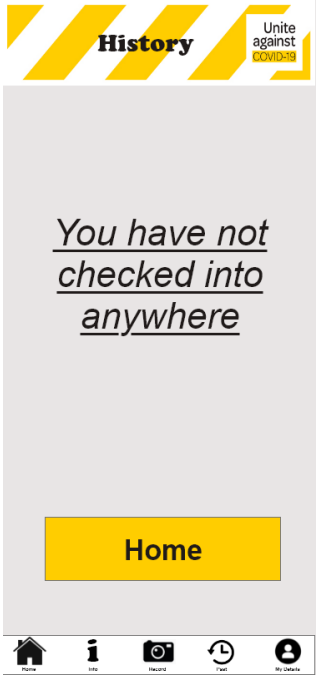


Figure 46. Check-in's Cleared Screen