Guardian: Go Out Safely During A Pandemic

Project Group Members: Laphon Premcharoen, Yejin Han, Lucy Zhu, Yuhang Liu
INFO 200 | TZ-3 | TA Name: Shravan Seshardi

Table of Contents

Project Brief:

In the midst of the Covid-19 pandemic, business owners and consumers are filled with uncertainty about the situation. Consumers are not comfortable eating out and shopping, and business owners need to be resilient to this ever changing situation. From researching the users' problems and concerns, we have come up with "Guardian", an application that allows consumers and business owners to interact with each other through an interactive map along with collections of useful information including news and articles for both types of users.

Team Members:

Yejin Han
- Proofreading and formatting
- Researching existing solutions
- Responsible for the starting pages including home, login, and dashboard

Laphon Premcharoen
- Logo design
- Leading in user survey including user survey and interviews
- Responsible for accessibility design (home screen overlay) and the news and articles feature.

Lucy Zhu
- Researching existing solutions
- Responsible for designing the map and QR code interfaces.

Yuhang Liu
- Video editing
- Researching existing solutions.
- Responsible for designing the map and QR code interfaces.

Introduction

Our team started out with the concern that the Covid-19 pandemic has drastically shifted the ways people live, work and do businesses. There is a need for both business owners and consumers to shift toward this new norm. In our previous user survey and interview on business owners and customers, we have focused on Thailand, a country where the spread of COVID-19 has been minimized. However, since COVID-19 is yet to be eliminated, businesses and consumers are still cautious and need to prepare for new waves of outbreak at any time. We discovered that although people are mostly comfortable going outdoors now, they still expect high quality prevention measures to ensure their safety. Although there is an application that helps track and notify patients, users still cannot properly give feedback to business owners and see their travel history. Multiple check-in might cause glitches on this application. Consequently, we see the need for our new solution to have well-managed information that is accessible to all. In addition, we are also considering ways to protect user privacy in the new solution as we have seen many other existing solutions that are potentially privacy invading. For business owners, many of them have been losing a significant number of customers. Some are having trouble affording to follow the public health guidelines. We have also heard from a tour manager that tourists are sometimes not updated about the rules and regulations. Overall, our new solution has these following key goals to meet: assisting business owners and consumers during the pandemic, well-structured information features that protect users' privacy.

Solutions Considered

Solution 1: COVID-19 Information Website

This solution is a website (or an app) where users can access economics and business news and information. The home page will consist of overall important information and updates about Covid-19. Users can have specific updates in a specific region by using the filter function. The updates include Covid-19 statistics (i.e. numbers of patients) and economics news and statistics. Business owners can also access business tips and advice according to the types of business they are doing to cope with an economic crisis during a pandemic. For example, if business owners have limitations in establishing social distancing, there is information about alternative ways to reduce the spread of Covid-19. The site also gathers articles about business owners

who successfully cope with their businesses during the Covid-19 crisis where other business owners can look up to them.

Solution 2 A Youtube Channel

This solution is to create a Youtube Channel and upload videos about our experience of hanging out during covid-19. To encourage others to try to go out, we can be a leader. We can create some vlog or videos that show the proper preparation before we go out and what the environment of the shopping mall and restaurant looks like. And we can make a review of that place and give the safety point of that place. Just an idea, it is hard to achieve because it takes a lot of time and effort.

Solution 3 A Tracking Application 1

This solution is to create an app. The app has the ability to locate users. When a user searches for a public place or when a user arrives at a public place, the app would notice the user and show the information of that place. The information is about the safety point of that place and the reviews from other users. Then it will ask if the user wants to get in the public place. It will only record if the user clicks yes so it can protect users' privacy. Also for the business owner, they can post some photos or description of their protection of covid-19 at their area on the app to attract more users to go there.

Solution 4 A Tracking Application 2

The solution is to create smartphone applications: one for business owners and another for consumers. Consumer's app generates a new QR code every 30 seconds which they can use to check into restaurants, cafes, bars, barbershops and hair salons, etc. Consumers can give feedback and rate the entrance process which involves scanning of QR code, hand sanitizing, and measuring temperature. consumers are able to scan QR codes with anyone they interact with to keep track of who they come in contact with. The QR codes will not contain any personal information. These processes are voluntary and the users' private information will not be collected in the central server. Business owners are able to view feedback and rating on how well they are following the guidelines; consumers have access to this information as well.

	Solution 1	Solution 2	Solution 3	Solution 4
Description	A website containing useful business and economic information for business owners to cope with covid-19 as well as consumers to know any updates.	A Youtube channel about hanging out during covid-19. Post some video of protection and environment outside	An app that helps users get information about the public places they want to visit. It aims to help business owners attract more consumers.	An app that generates and scans QR code as well as collects consumers' feedback on businesses' prevention measures. Both business owners and consumers have access to the ratings.
Advantages	- provides a big database. - business owners can access information based on their needs.	- Attractive, entertaining media with easy access	- Business owners and customers can interact with each other. - Business owners can customize their advertisement. - Keeps tracks of people without overly collecting private data and invading privacy - Having a screen overlay for more accessibility	
Disadvantages	- It might not serve consumers that much. - Does nothing to keep track and notify patients. - Not handy.	- Cannot include a lot of places - Takes a lot of time and effort	- Relies on voluntary participation of users. May not be effective if users choose not to participate.	

Selected Solution

According to our user research, we have certain key goals to meet including protecting users' privacy, making consumers feel comfortable going out and helping business owners cope with the economic crisis and maintain their businesses during the Covid-19 pandemic. We have considered that our solution needs to be able to track and notify confirmed individuals while providing other helpful information at the same time. Our solution cannot lack one of them. Consequently, we have considered an application that is a combination of an informative website and a tracking application. An application that comes with a mobile device is definitely better in notifying the user as well as tracking if the user allows the location service. An application can also provide the user with useful collections of news, updates, and articles. As opposed to a YouTube channel or merely an informative website that only allows one way of communication, an application will allow business owners and customers to interact with each other both ways. For instance, customers can rate and review restaurants on COVID-19 prevention measures. In addition, we might expand the user interface to serve more users with lower accessibility such as elders.

Solution Description

Our application aims to reduce concerns that may come up with going back outside during the COVID-19 pandemic. This application will have QR code features which allow users to scan and generate QR codes for safe contact tracing purposes without collecting or storing any personal information. Additionally, the users are able to give and access ratings on how businesses are doing in terms of following public health guidelines and making efforts to minimize the spread of COVID-19 within businesses like restaurants, bars, hair salons, shopping malls, etc.

Users have access to COVID-19 stats and updates in their regions as well as news and articles related to the current situations that are helpful to know. The interactive map feature allows users to locate and look up businesses and what specifically they are doing to minimize the spread. Ratings are also viewable on the map feature. Users are able to switch accounts between consumer and business, change the location, and account information on the "settings" menu. Businesses can edit information displayed on the map feature on the settings as well.

Product Features

Primary Features

QR code features: This smartphone application allows the users to generate and scan QR codes that are used to enter the restaurants, coffee shops, shopping malls, hair salons, etc. QR codes can also be scanned among consumers in order to keep track of who the users have been in contact with. The users are notified when an individual they interacted with decides to notify that he/she has been confirmed with COVID-19; however, the users cannot access their personal information in any way.

Rating businesses: Upon scanning of QR codes at the entrance, the consumers are directed to rate and give feedback on how businesses handle the entrance process. The questions include "Does this restaurant have hand sanitizers available to use?", "Were you able to physically distance yourself from other customers?"

News and articles: This feature allows users to navigate news updates and articles including latest COVID-19 related updates, business models, guides and tips based on their needs by either searching keywords or selecting tags (categories). Both consumers and business owners are able to access this feature. The users are able to get a notification when important updates or articles are posted in their region.
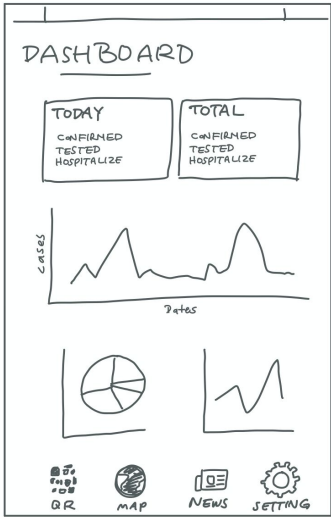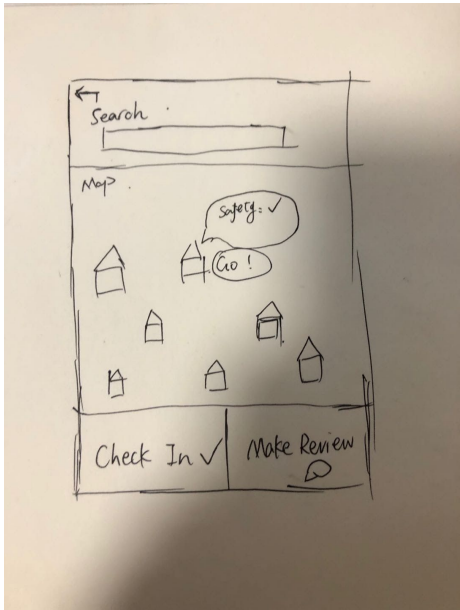
Interactive Map: Users can search places on the map and get the direction to it. It will also include more information about that place and how they handle covid-19. Users could also share their experiences with others by writing reviews.

Secondary Features

Home Screen Overlay: This function is proposed to be an accessible design that serves both general users and the users who are not comfortable or familiar with navigating the app such as elders. This function provides an overlay button on the mobile's home screen where the user can tap and see only important updates about Covid-19 related to their region.

Low Fidelity Wireframes

Brainstorming Stage

Features	Sketches	Comments
Dashboard		Users can easily access COVID-19 stats and updates in their region at a glance. It may be helpful to include location on the top right corner.
Interactive Map		Users can choose any public place on the map to check its safety and check in if they want. They can also make review to the one they select on the map

Articles		Not every article will have a title image, images might not be necessary.

News and articles can be on the same interface, a button should be added on top for users to select either "news" or "articles". |
| Screen Overlay | | Instead of tapping to navigate to the app, we can have a label at the bottom right of each box as a signifier. |

Navigation

Home: Welcome page (register as consumer / business owner, enter region)
1. **Consumer**
    a. Dashboard: COVID-19 stats, generate QR, Scan QR, Map, News/article, setting.
    b. Generate QR: new QR generated when needed

    c. Scan QR: camera pop up, "back" button
        i. After scanning: feedback page pop up (How would you rate this business' entrance procedure?, etc.)
            1. After rating: Thank you! + check mark, "go back to home screen"
    d. Map: Search places on the map by categories and check for more information
    e. News/Article:
        i. news/article main page:
            1. Search bar.
            2. Filter using categories (news/articles) and tags(i.e. business, tips, people).
            3. Favorites (bookmark) and top articles.
            4. Example page of an article.
    f. Settings:
        i. Account
            1. Switch account
                a. Delete account
                b. Change username/password
                c. Language and Region
        ii. Privacy
            1. Location services

2. **Business owner**
    a. Dashboard: Customers statistics, ratings and reviews.
    b. QR code (fixed).
    c. Scan QR: scan customers' QR and check them in.
    d. News/Article:
        i. news/article main page:
            1. Search bar.
            2. Filter using categories (news/articles) and tags(i.e. business, tips, people).
            3. Favorites (bookmark) and top articles.
            4. Example page of an article.
    e. Settings:
        i. Account
            1. Edit profiles
            2. Switch account
            3. Delete account

4. Change username/password
5. Language and Region
ii.   Privacy
1. Location Services

Final Low-Fidelity Wireframes

Welcome Page

When users first launch the Guardian application, they can either sign in with the existing account or sign up by simply creating a user ID and password. Consumers are not required to provide their personal information.
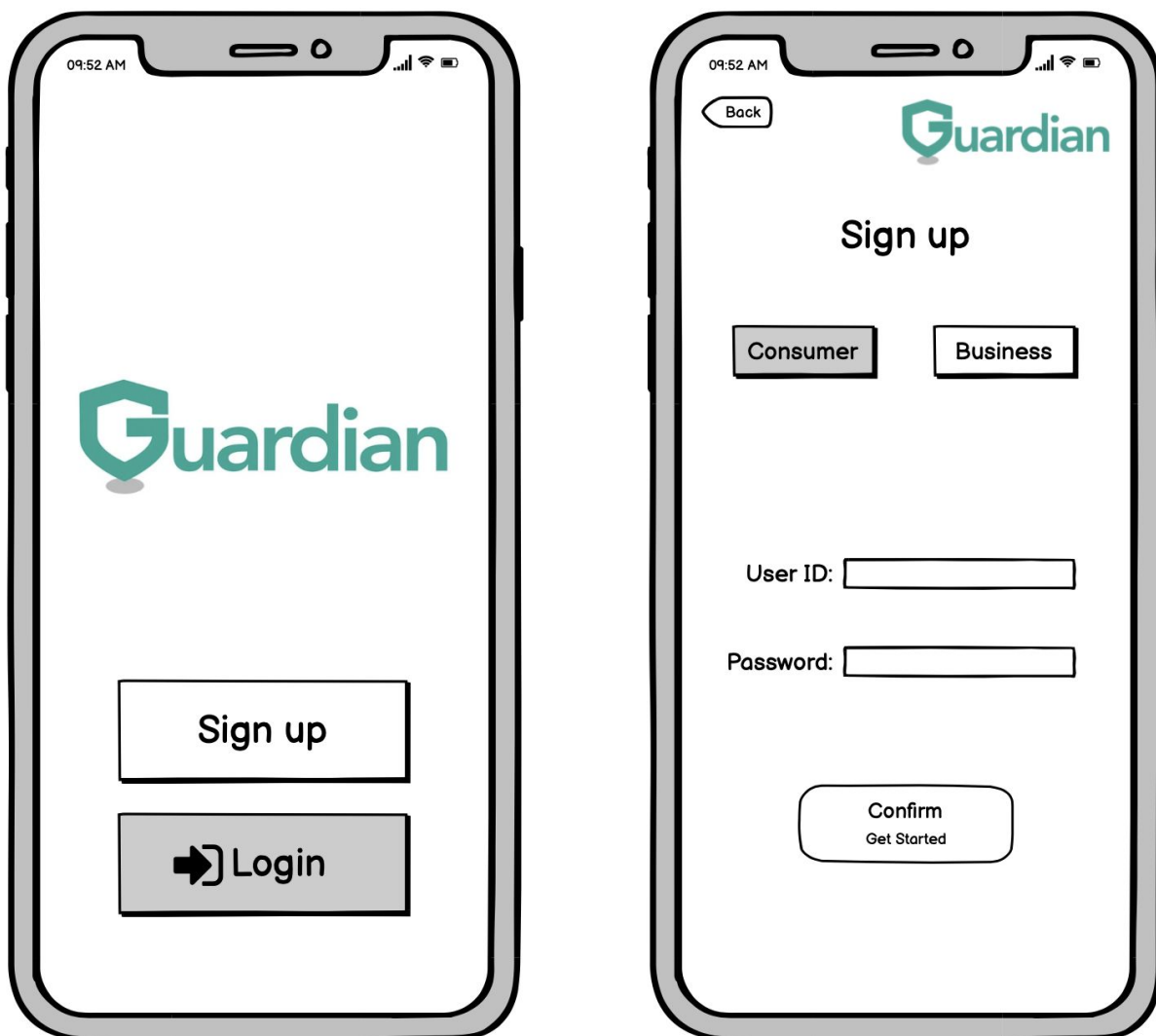

Figure 1 - Launch screen

Interactive Map

This page is the interactive map which provides users with the location of any public places. When the user presses some place on the map, the map will pop up the distance, location and the safety rating of that place. The user can search their destination on the top of the screen and it will show some results like the picture on the right. To protect user's privacy, they can choose if they want the app to locate them on the right top button. The user could get more details and others reviews if they press the "go there" button.

Figure 2 - Interactive Map

My QR Code

This page is the generated QR code of the user. It shows the basic information of the user and a QR code for him. If the user is healthy, then the QR code would be green. It will become red if the user is a confirmed patient of covid-19. On the bottom, the user could download the picture, share to his friend and check the common question.
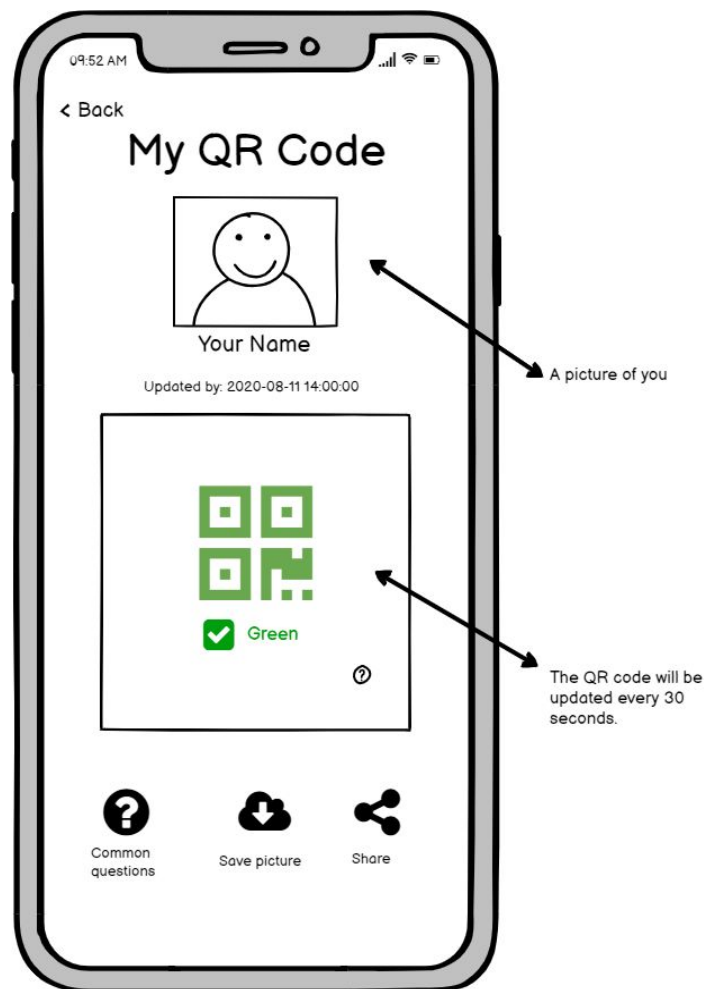

Figure 3 - QR code page

Details and reviews

This page is the specific information of a public place. And it will pop up when the user presses the " go there" button on the interactive map. This page shows the shopping mall 's environment and regulation. Also the user can see the reviews made by other users. And they can check in if they want at the bottom first button. Also they can share the environment of the shopping mall by taking video, photos, or making reviews.
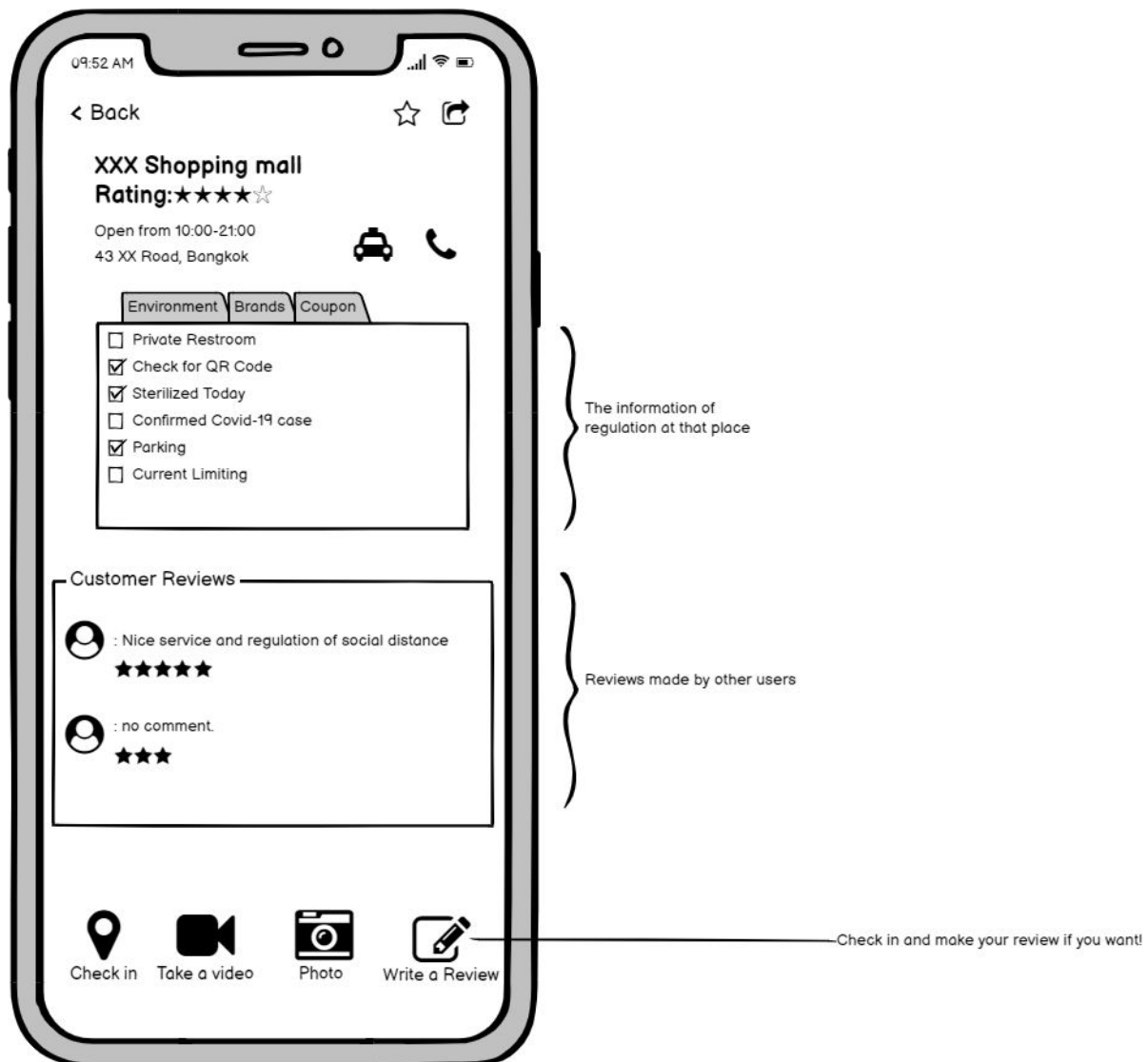

Figure 4 - Review page

News and Articles

This page lets users access helpful news and articles for both business owners and consumers. The articles include business models, guides, and tips for business owners to better cope with their businesses during the Covid-19 pandemic. While this function is intended to primarily help business owners, consumers can also access the articles if they need. This page lets users filter articles by using tags or searching keywords. Otherwise, the default page will display top articles that are the most read by other users.
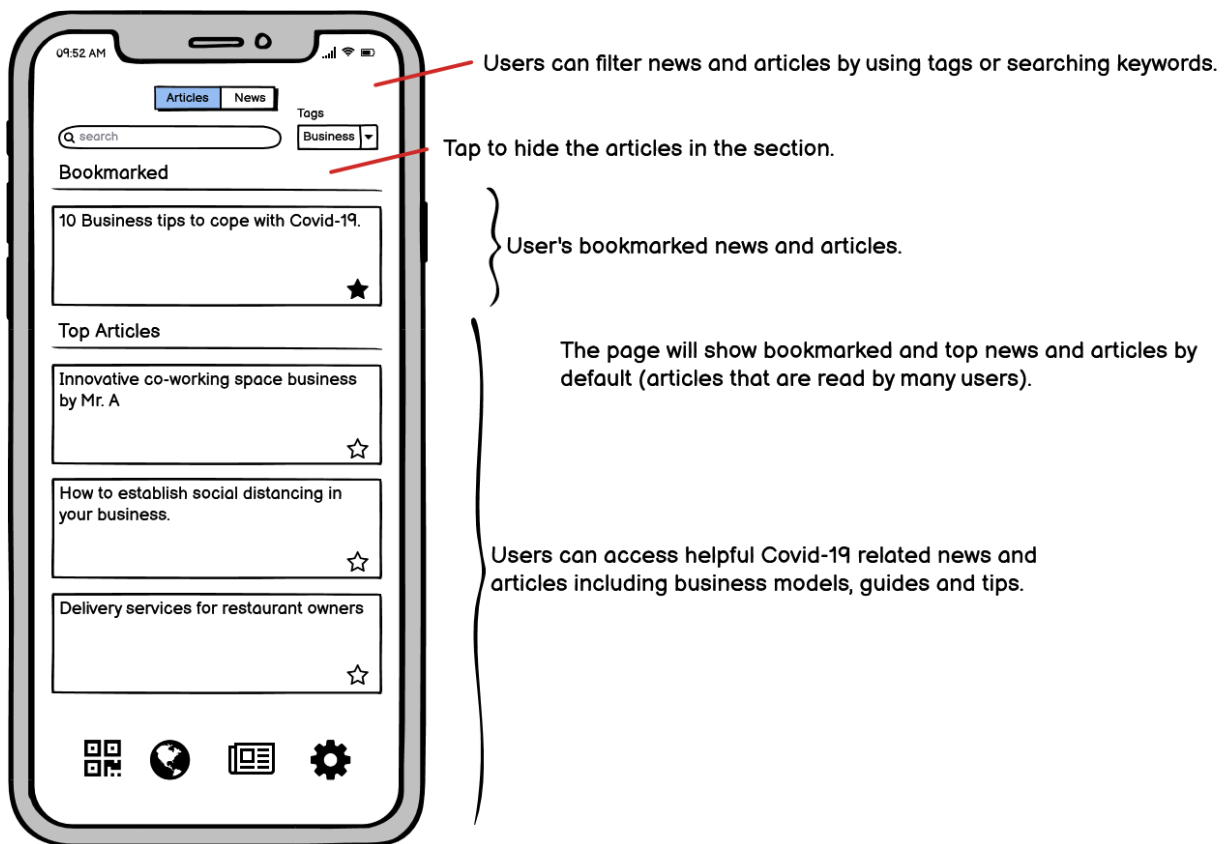

Figure 5 - The starting page with a list of articles

Figure 6 - Example of an article page

Settings

      This page allows consumers to change a region, switch accounts, change the username and password, delete the account as well as enabling location services to let the application track their travel history. Business users are able to access all the consumers' settings but with one additional function to edit their business profiles.
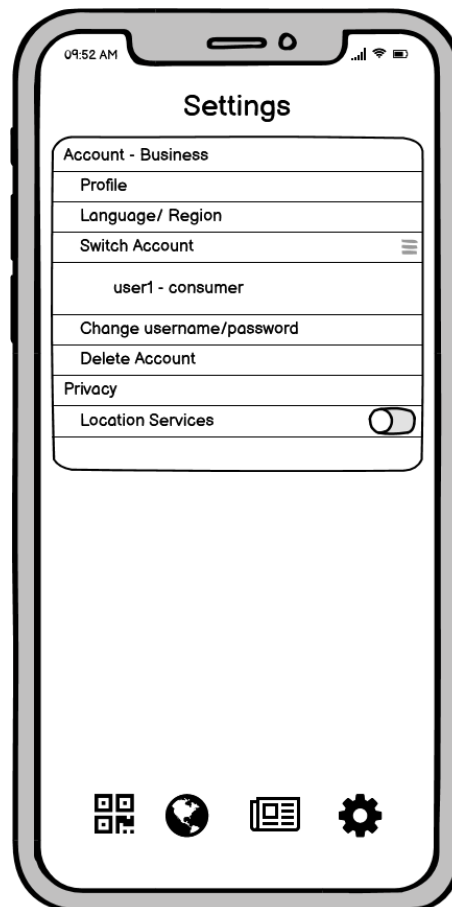

Figure 7 - Settings page

Home Screen Overlay

This app provides users an option to have an overlay button on the home screen for more accessibility. This function is intended to be an accessible design for both users who just want to know important updates without entering the app and users who are not comfortable navigating the app such as elders who are not familiar with technology. When users tap on the overlay button, important updates related to their region will be displayed and the users can tap the box to enter the app and read the complete article.
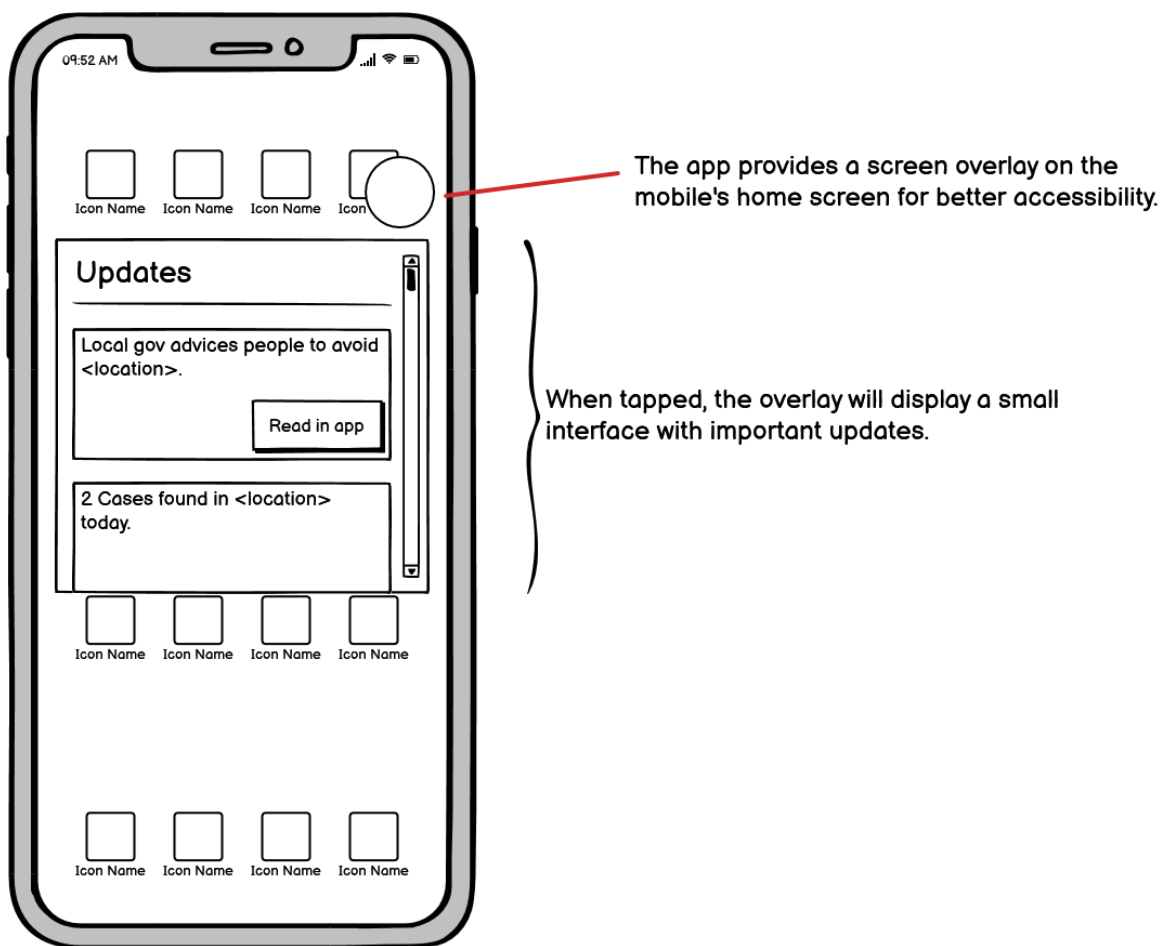

Figure 8 - Home screen overlay

Usage Scenarios

Usage Scenario 1: Edit business information as a business owner

Mr. Thanadol is a 20 year old college student who is responsible for helping out his family's Thai restaurant business. With the reopening of restaurants to the public, Kulawanit family started following strict government guidelines by sanitizing tables, reducing the number of indoor seatings, placing hand sanitizer dispensers, and measuring every visitors' temperature upon entrance. Thanadol wants potential customers to know that they are strictly following the public health recommendations by editing business information on an interactive map. He is able to do so easily using a setting feature while logged in with a business account, allowing the consumers to access as much needed information as possible.

Usage Scenario 2: Choose a safer supermarket

Ms. Pim is a college student in Bangkok and she lives by two supermarkets. Because of covid-19 she would like to go to the supermarket that handles covid-19 better and more strictly. She uses the interactive map in the app Guardian to search for two supermarkets and get the address and direction to them. After she found those markets she clicked into them and got more information about them. By comparing reviews, pictures and ratings she finds out that the other market doesn't check in customers strictly so she picked the other one with more positive reviews. She follows the direction on the map and gets to the market successfully. She is satisfied with the market she goes to and the market pays good attention to health safety. She also rates the market and writes a review with pictures after that on the app.

Usage Scenario 3: A patient is found in the area

Ms. Anchalee is a 74-year-old woman living in Rayong Thailand, an industrial and tourist city. She lives close to a community market where she often goes to do grocery shopping. Recently, there has been an foriegn general who temporarily visited Thailand getting tested positive for Covid-19. The city's economy has shaken from this incident. The app Guardian will notify this patient through the home screen overlay. Although Ms. Anchalee is not familiar with using mobile applications as an elder, she can see the important information right away on her home screen. She can click the

button "read full article" to be linked to this full article in the app right away without having to navigate starting from the home screen. The article informs whether markets, shops or restaurants are closed in some area or not and who are directly affected so she is aware of the situation and able to prepare ahead if the community market is prone to be shut down.

Usage Scenario 4: Trouble with table layout

Mr. Ruj owns a small Japanese restaurant business. As he has been losing too many customers, he has limitations in providing a new table layout for social distancing that will reduce his restaurant capacity. However, he still sees the need to ensure customers' confidence in his restaurant as much as possible. By searching business tips on the application, he found multiple alternative easy solutions to improve his restaurant measures such as putting on plastic shields on handing money using a basket. He also found several delivery services he could use to compensate his customer loss. By using the customizable storefront on the application he could inform customers about his restaurant's safety measures.

Appendix

Survey Results

Link to cleaned datasets and data visualization

https://github.com/laphon/info200_final_project