

# **SENG2021 Requirements and Design Workshop**

## **Deliverable 5**

### **Boba Me: The Final Concept and App**



**Boba Me**

**GET BUBBLIN' NOW**

**By The Boba Engineers**

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# Part 1 - The Business Case

## 1.1 Boba Me's Purpose

Our system, Boba Me, is built to provide exposure for bubble tea, the Taiwanese drink, and provide convenience for current and future buyers of bubble tea. The system's construction has been motivated by bubble tea's surging popularity around the world within the last decade. In the future, bubble tea is expected to grow into a \$4.3 billion dollar industry by 2027 globally. The bubble tea industry is currently growing in western markets, like Australia, but has only gained traction in metropolitan areas where there is a high demographic composition of Asian descent and high population density. These two factors highlight a key problem; Bubble Tea lacks local exposure to Australian consumers. We also observed this problem as potential for bubble tea to become a staple in Australian cuisine.

Boba Me's purpose is to address this problem of lacking exposure for bubble tea, by providing a convenient online method to discover the product. The system solves this problem by assisting both long term bubble tea followers, and new inexperienced consumers, to discover new drinks that are continually being produced from variations of pre-existing recipes and ingredients.

On the business end, the system provides two main purposes. Firstly, it solves the exposure problem by providing a platform for the bubble tea industry, so businesses can market bubble tea directly to your local area and connect with existing and new consumers. Secondly, the platform educates the general consumer about bubble tea, and provides a fresh experience for the bubble tea fanatic, to discover more options. Essentially, it's a platform to expose bubble tea to new and existing consumers, while connecting them to more bubble tea businesses in the most intuitive way.

## 1.2 Problem Statements addressed by 'Boba Me'

Boba Me is built to provide exposure for the product, and provide convenience to buyers. However, the way these problems are solved needed to be expressed in more specific, pragmatic problem statements that outline the system's functions and implementations. First, we identified our two generalised two major target demographics: the general consumer and business owner. Our analysis of them reveals the following nuances;

<b>Table 1. Target Audience Groups</b>
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Demographic	Nuances	Why
General Consumer	<p>Age: 20 - 34</p> <p>Two types of general bubble tea consumers: inexperienced and experienced.</p>	<p>According to a <a href="#">case</a> study done by Edge Red, most people within this demographic consume the most bubble tea. Although it does delve more into the specific demographics of this age group, we decided to only limit it to the age, as we are aiming to make a generally good experience for people in this demographic, to find out about bubble tea and enjoy Boba Me, as this age group is more likely too.</p> <p>We also sought to not only entice the attention of current bubble tea drinkers, but new ones as well.</p>
Business Owners/Stakeholders	Bubble Tea franchisees, major bubble tea chains, small bubble tea businesses.	<p>These are mainly the stakeholders which affect the consumer experiences of people buying bubble tea. Designing an app in their interest as well, we can develop beneficial partnerships with these businesses, to keep people on our app, and for them to connect with new customers.</p>

After careful consideration of the target user audience, our Boba-Me system addresses the following problems to provide exposure to the bubble tea product, and convenience for consumers:

- (1) Google search fails to find me, a person experienced with bubble tea, any new bubble tea places in my area.
- (2) Google fails to give me new bubble tea options to try, as a fan of bubble tea.
- (3) There is no all-in-platform to explore new bubble tea places.
- (4) As a bubble tea business owner, my bubble tea business has a hard time connecting to new consumers to try my product
- (5) Google doesn't provide enough information about the ratings of bubble tea drinks to try
- (6) There is no all-in-one platform to find special deals for all bubble tea shops, as a fanatic
- (7) As a general consumer, I can't easily find out exactly what is in my bubble tea drink, as it takes a couple of web searches
- (8) As a general consumer, I cannot find anything new to drink

In terms of our business audience, there are current issues mainly got to do with their current business strategies. The issues are as follows:

- (1) Current marketing strategies only caters to asian more than western audiences
  - (a) Providing discounts to first time drinkers to encourage consumption
  - (b) Marketing via their own apps (e.g. Chatime) and third party apps such as StudentEdge, which only retain on-going customers than new ones
  - (c) Marketing material mainly targeting audiences with prior awareness of such drinks (i.e. more likely asian consumers).
  - (d) No creative marketing to introduce and educate prospective consumers on the drink
  - (e) Utilising branding and language only understood by those within the asian demographic or those closely associated to those cultures
- (2) Dependency on asian populations abroad in western markets, rather than expanding the possible consumer base

These issues are what Bubble Tea vendors currently face for expanding any possible growth in the western market, and are not currently addressed. Although the marketing they did apply in asian markets have seen massive success, it is not good enough for it to be able to adapt to a western market.

So our application is a case where we provide a service, where we pose as a third-party service to break down what Bubble Tea is to a western audience. It essentially is a marketing device which provides an incentive for a consumer to go and engage with Bubble Tea.

## 1.3 Features & User Stories of 'Boba Me'

The listed features below assist the aforementioned target audiences to choose a type of bubble tea, and find directions to a shop that provides it. They take into account two types of users: those that have had exposure to technology and find navigating menus trivial, or those who find technology difficult to adapt to. The Boba Me system features a minimalistic, uncluttered and spacious design, that minimises the number of human actions needed for navigation.

Boba Me utilises the Google Identity Platform API, so that users can log in and out easily with their Google Accounts. Including this, gives the advantage that users will not need to remember another set of login information, while business can gain information for analytics that will go towards improving product offerings. Additionally the system can keep track of purchases, and reward users with coupons.

The system lands on a homepage, from which a user can search for either shops or drinks, or use a randomiser wheel. For consumers who are unsure of what drink they want, the Boba Me system also provides this randomiser wheel if they are feeling adventurous and desire a new drink. If a consumer wants to search instead, they can either search for a drink, or a shop, and find pages for either that contain more information. The results for shops can be filtered by ratings.

The Boba Me system can provide many services related to drinks. The system can provide the following:

- A view of a drink's main ingredients
- The drink's price,
- Display popular or trending drinks on the homepage,
- View a drink's rating, and provide their own

Our system also has many features relating to bubble tea shops. These include:

- Searching for shops,
- Viewing a shop's menu,
- Viewing information related to a bubble tea shop (opening hours, location and the toppings it offers)
- Rating a shop

Using the Google Platform Maps API, we give users the choice to use the location provided for finding directions to a shop.

Our features were chosen to streamline a user's experience for finding their ideal drink and connecting them to shops that they can purchase their choice from. They focus on providing exposure for many drinks, and make the process of finding these drinks more convenient for users.

Feature ID	1
Feature	As a client, I should be able to search for boba shops nearby, so I can find boba shops even in places that I am not familiar with.
Scenario	Search nearby boba shops according to distance from the client
	GIVEN I am on the homepage WHEN I type in a shop name AND I press the "Search" button THEN I should be taken to "result" page THEN I should be able to see shops containing the user input THEN I should be able to see the filter tools on the side AND I can choose to filter the result by distance

	THEN I should be able to see all nearby shops in ascending distance order in grid style.
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Feature ID	2
Feature	As a client I should be able to view the menu of a particular boba shop, so I can preview what I can get from the shop
Scenario	Viewing the drinks offered by a particular shop
	GIVEN I am on the “profile” page for the particular shop THEN I should be able to see a list of drinks with prices offered by the shop.

Feature ID	3
Feature	As a Client I should be able view the location and opening information of a specific shop, so that I don't get lost when I want to go to the shop.
Scenario	Viewing the general information by a particular shop
	GIVEN I am on the “profile” page for a particular shop THEN I should be able to see a picture of that store. GIVEN I am on the “profile” page for a particular shop THEN I should be able to see the opening times of that store. GIVEN I am on the “profile” page for a particular shop THEN I should be able to see the address of that store.

Feature ID	4
Feature	As a Client I should be able view the main ingredients of a particular drink, so I have a brief idea what's inside my drink.
Scenario	Viewing the ingredients contained in a particular drink
	GIVEN I am on the “profile” page for a particular drink THEN I should be able to see list of ingredients contained in the particular drink AND I should be told if common allergy ingredients are used AND I also should be warned to contact shop for detail ingredients

Feature ID	5
Feature	As a client, I should be able to view the trending/popular drinks among other users, so it can help me to make a decision.

Scenario	Viewing the trending drinks among other users when clients can not make a decision
	<p>GIVEN I am on the search result page for drinks      WHEN I click on “Trending” button in the filters section      THEN I should be able to see a list of trending drinks from my search      GIVEN I am on the homepage      WHEN I scroll to the bottom of the page      THEN I should be able to see a list of all trending drinks</p>

Feature ID	6
Feature	As a client, I should be able to rate a drink out of 5, so I can help other users to make decisions when they are purchasing drinks.
Scenario	Clients can rate a drink after they tried it
	<p>GIVEN I am on the “profile page” for a drink      THEN I should be able see the rating of the drink      WHEN I hover my mouse over the stars      THEN I have the options to click and rate the drink myself      IF I am logged in      THEN the overall ratings should change according to my ratings      OTHERWISE I should be prompted to login before rating      IF I provide login information after the login prompt      THEN the overall ratings should change according to my ratings      OTHERWISE I should receive a prompt error.</p>

Feature ID	7
Feature	As a client, I should be able to view the rating for a drink, so I can make a decision based on the ratings.
Scenario	Client can view rating of a particular drink in case client is indecisive
	<p>GIVEN I am on the search result page for drinks      THEN I should be able to see the corresponding ratings next to the search result      WHEN I am on the “profile page” for a drink      THEN I can see the overall rating for the particular drink</p>

Feature ID	8
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Feature	As a client, I should be able to get the website to make a decision for me, so I am not stuck in a dilemma situation.
Scenario	Choose a random drink
	<p>GIVEN I am on the “homepage”</p> <p>WHEN I click on a ‘Randomise...’ button</p> <p>THEN the application will choose a drink from its many options at random AND display a clickable button.</p> <p>WHEN I click on the button</p> <p>THEN I should be redirected to that drink profile page</p>

Feature ID	9
Feature	As a client I should be able to get directions to a particular boba shop, so I can get to the shop when I have made up my mind.
Scenario	Find directions to a particular boba shop.
	<p>GIVEN I know what Boba shop I want to go to</p> <p>AND I am on the Boba shop’s page</p> <p>WHEN I click on the “directions” button of the Boba shop</p> <p>THEN I should be redirected to google map with destination filled in for me.</p>

Feature ID	10
Feature	As a client, I should be able to see the price for any given drinks, so I know how much I am paying.
Scenario	Client can check for price before they commit to it
	<p>GIVEN I am on the search result page for drinks</p> <p>THEN I should be able to see the corresponding price for each drink</p> <p>GIVEN I am on the profile page for a drink</p> <p>THEN I should be able to see the price of the drink for each shop</p> <p>GIVEN I am on the profile page for a shop</p> <p>THEN I should be able to see the corresponding price for each drink</p>

Feature ID	11
Feature	As a client, I should be able to see the range of toppings offered by the shop, so I can make my unique drink to enrich my drinking experience.
Scenario	Client can view the list of toppings offered by the shops to make their own drinks
	<p>GIVEN I am on profile page for a shop</p>

	THEN I should be able to see all the topping options offered by the particular shop.
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Feature ID	12
Feature	As a client, I should be able to login using google accounts so I can utilise the full potential of the website.
Scenario	Client can login using google accounts to rate drinks and perform other actions
	<p>GIVEN I am on ANY page on the web      WHEN I click on the “login” button      THEN I should be able to see a “login” prompt      WHEN I click the “login through google” button      THEN I should be logged in      IF I fail to login      THEN I should receive an error prompt</p>

Feature ID	13
Feature	As a client, I should be able to logout from an account so I can login as other users.
Scenario	Clients can logout from the current account if they wish to.
	<p>GIVEN I am on ANY page on the web      AND I am logged in      THEN I should be able to see the “logout” button in the top right corner      WHEN I click on the “logout” button      THEN I should see a logout prompt      WHEN I click “YES”      THEN I should be logged out      IF instead I click “NO”      THEN I should remain logged in      AND the prompt should disappear</p>

Feature ID	14
Feature	As a client, I should be rewarded for using the website, so I can be convinced to be a long term user for the website
Scenario	Logged in users can be rewarded with free drinks or discount vouchers after they reviewed a certain amount of drink for each month.

	<p>GIVEN I am on “home” page  AND I am logged in  THEN I should be able to see a ‘My Rewards’ button at the top of the page  WHEN I click on the “My Rewards” button  THEN I should see a “Personal coupons” box  AND I should see “Redeem Coupon” button  AND I should see an “Enter Raffle” button  WHEN I click on Enter Raffle button  AND I have reviewed 5 drinks this month  THEN I should be in the draw pool for a chance to get free drinks or a discount voucher  AND I should receive a message that I did enter the raffle.  IF I have not reviewed 5 drinks this month  THEN I should receive a message that I did not enter the raffle.  WHEN I select a coupon inside the “Personal Coupons” box  AND I also click on the “Redeem Coupon” button  THEN I should be sent a code to my google email for my coupon  AND the coupon should disappear from “Personal Coupons”</p>
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Feature ID	15
Feature	As a client, I should be able to rate Boba shops for their services.
Scenario	Rate a shop using a five-star system for their services
	<p>GIVEN I am on the homepage  WHEN I type in a shop name  AND I press the “Search” button  THEN I should be taken to “result” page  THEN I should be able to see shops containing the user input  THEN I should be able to click on the shop  AND I can choose to rate the shop</p>

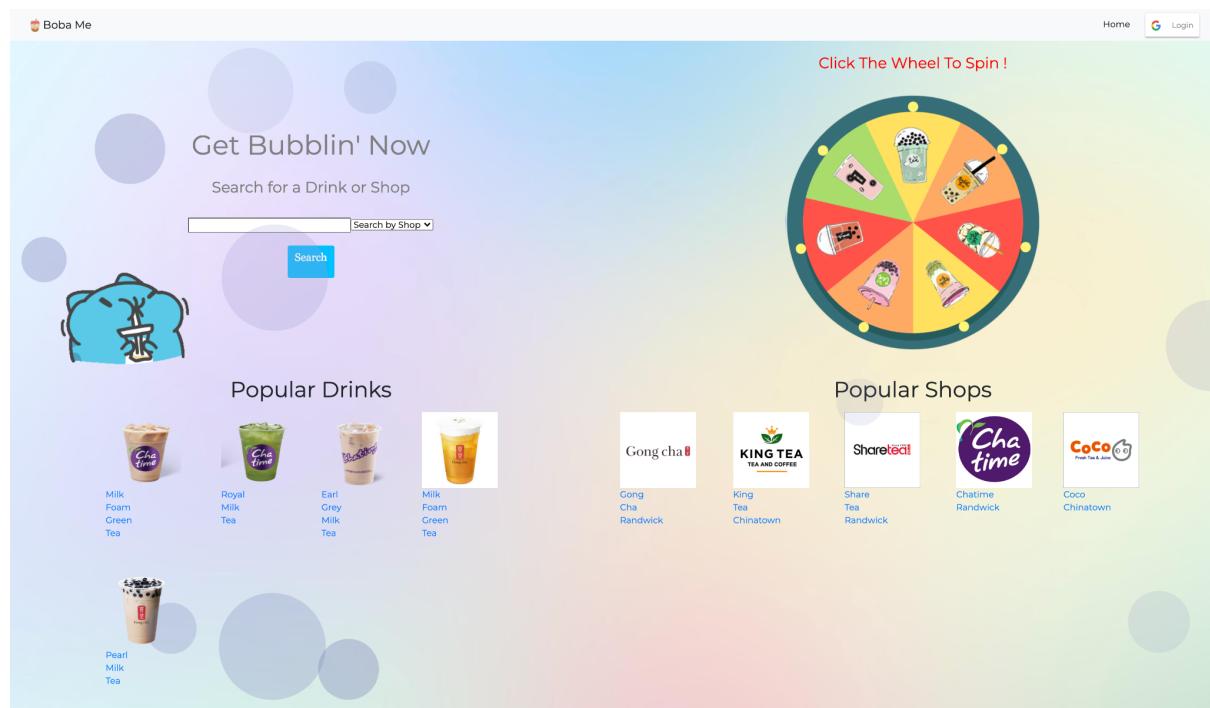
Feature ID	16
Feature	As a client, I should be able to search for boba shops and sort them by rating.
Scenario	Search nearby boba shops according to distance from the client
	<p>GIVEN I am on the homepage  WHEN I type in a shop name  AND I press the “Search” button  THEN I should be taken to “result” page  THEN I should be able to see shops containing the user input  THEN I should be able to see the filter tools on the side</p>

AND I can choose to filter the result by top rated  
 THEN I should be able to see all nearby shops in ascending distance order in grid style.  
 OR I can choose to filter the result by most rated  
 THEN I should be able to see all nearby shops in ascending distance order in grid style.

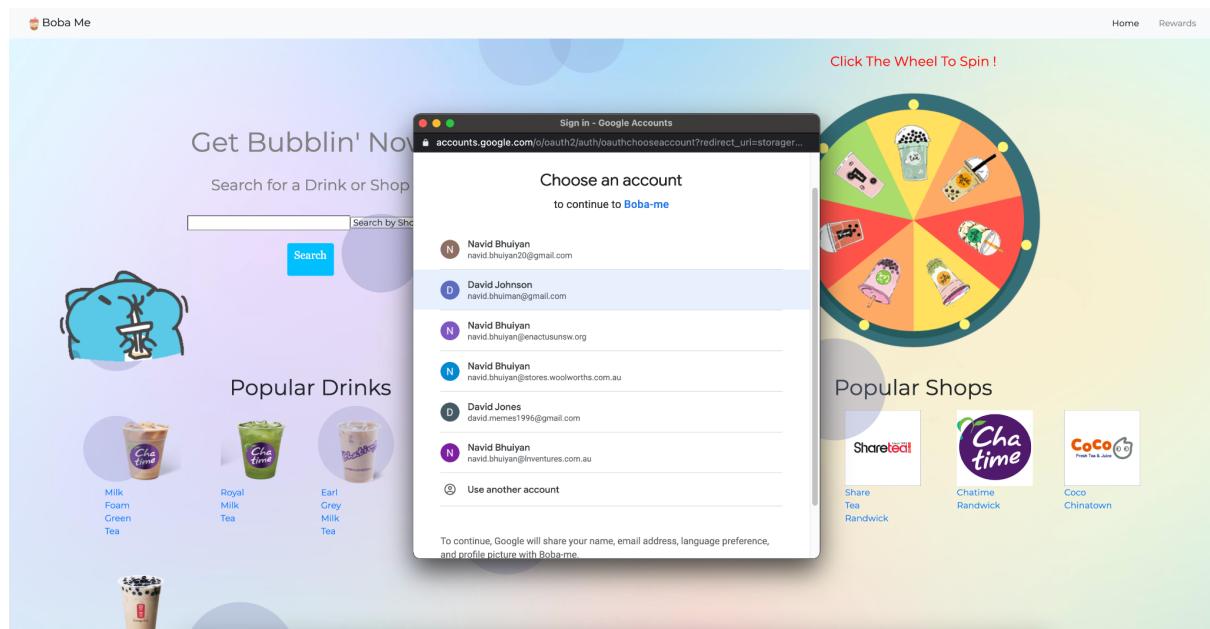
## 1.4 Achievements of Boba Me

With consideration from our problem statement and user stories, Boba Me was created to encapsulate and resolve problems faced by all aspects of bubble tea drinkers. As seen from the user stories, Boba Me includes many features to facilitate all levels of bubble tea clients, while businesses will get use out of the website's extensive database and analytics provided by clients. Although the UI and UX is currently incomplete (which is discussed in Part 2.3 and Part 3), we have achieved an interface which logically represents our user stories. Down below presents the main pages we have developed, with a more in-depth annotation on our interactions later in Part 2.3.

### Homepage



# Login Page



# Drink Search Page



## Shop Search Page

The screenshot shows the Boba Me website's search results page. At the top, there is a navigation bar with a logo, a search bar containing "Boba Me", and links for "Home", "Login", and "Logout". Below the navigation is a search bar with the placeholder "Results" and a blue "Search" button. To the left, a "Sort By" dropdown menu offers options: "Rating" (selected), "Most reviewed", and "Trending". The main content area displays two search results in rounded rectangular boxes with a purple gradient background:

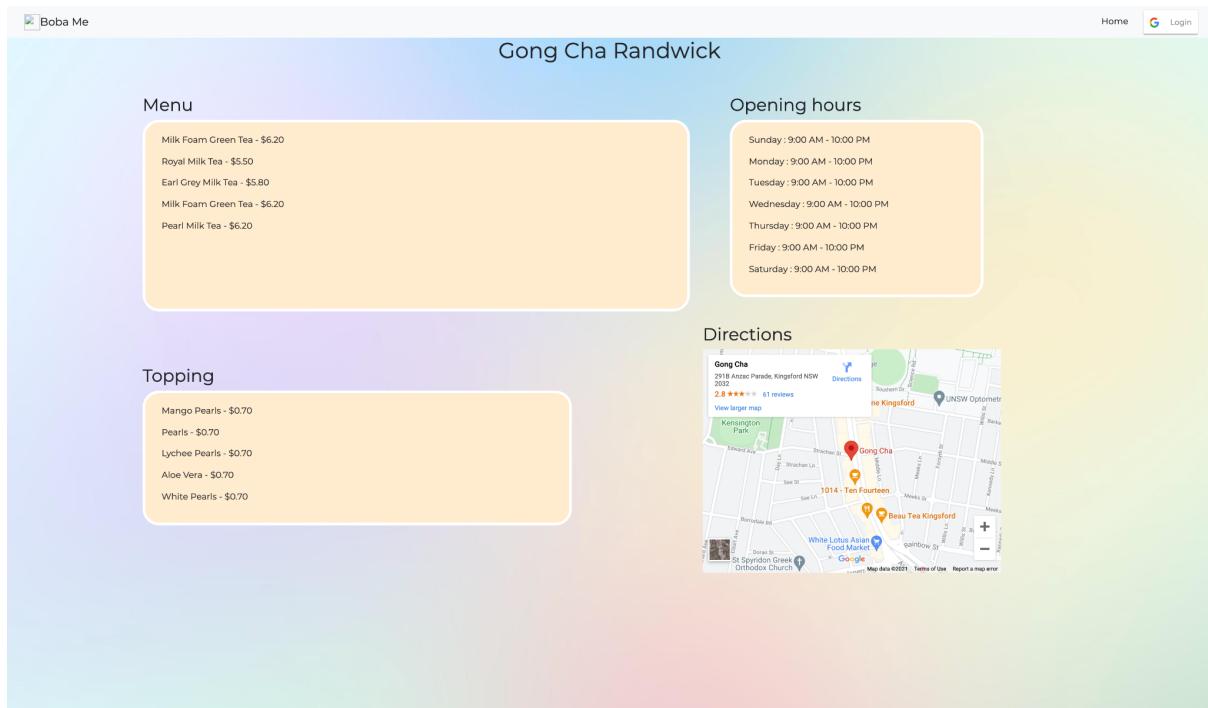
- King Tea Chinatown**: Features the King Tea logo and "TEA AND COFFEE" text.
- Share Tea Randwick**: Features the Share Tea logo and "ShareTea" text.

## Drink Info Page

The screenshot shows the Boba Me website's drink information page for "Milk Foam Green Tea". At the top, there is a navigation bar with a logo, a search bar containing "Boba Me", and links for "Home", "Login", and "Logout". The main content area features a large image of a Chatime iced green tea drink with the Chatime logo. Below the image is a five-star rating bar. To the right, the drink's name is displayed in bold: "Milk Foam Green Tea". A callout box titled "Contains:" lists ingredients: Milk, Caffeine, Egg-free, Gluten-free, and Gelatin-free. Another callout box titled "Allergy Warning:" provides a basic description of ingredients and advises consulting each store for details. To the right, a section titled "This drink is sold at" lists four locations with their logos and prices:

Location	Price
Gong cha	\$6.20 at Gong Cha Randwick
KING TEA TEA AND COFFEE	\$6.20 at King Tea Chinatown
ShareTea	\$6.20 at Share Tea Randwick
CoCo	\$6.20 at CoCo Chinatown

## Shop Info Page



## Part 2 - Designing the App

### 2.1 Updated Design and Information of the Prototype's Implementation

The final product implemented was exactly the same as the prototype proposed previously with the following table overviewing almost all of the components used in the creation of the product.

**Table 2 - Extended Overview of SAD**

Architectural Component	Software Component	Software Details
Cloud Hosting	Amazon Web Services (AWS) EC2	VM service to run our web server on. We used the t2.micro instance.
	Debian 10 OS	Underlying OS for our web server VM. Popular lightweight linux distro, which is compatible with all popular web

		development software.
Frontend	Javascript	<p>Javascript is one of our frontend languages to connect to our flask API and backend.</p> <p>We used the Node.js package manager which runs on ECMAScript 2015 (EC6) which is widely used and compatible with react.</p>
	React	<p>Javascript library to add specific UI functionality to our frontend such as adding animations to our web app.</p>
	HTML	<p>Creates our template web pages which our Javascript will manipulate and manage.</p> <p>We utilised HTML5 for our web app.</p>
	CSS	<p>Styles our web pages and will be managed by our Javascript code to ensure our web app compatibility with multiple screen sizes.</p>
Backend	Flask and Python	<p>This will lay our underlying API and backend architecture to pass on information valuable for our user to the frontend.</p> <p>We will be utilising Python 3.7.3 and Flask 1.2.1 (Debian OS 10 has Python 3.7.3 installed, and although the latest of Python can be installed, to maintain utmost stability and performance, it is best to run with the pre-installed Python package provided by the OS).</p>
	Nginx	<p>Nginx will be the reverse proxy used to redirect requests to Gunicorn (web server) which hosts flask.</p> <p>Nginx version 10.x will be used as it is compatible with Debian 10.</p>
	Gunicorn	<p>Gunicorn will be the web server which serves the flask app to Nginx.</p>

		Gunicorn version 20.1.0 will be utilised (compatible with python3.5+)
	Amazon RDS: PostgreSQL	<p>Amazon RDS will be our database provider as it runs on the cloud, and requires less set-up and toll on our web server.</p> <p>This will also host data we shall scrape about shops.</p> <p>PostgreSQL will be used as it is powerful for post-production servers with in-built functionality we hope to utilise.</p>
External APIs	Google Platform Maps API	<p>One of our features will be to direct people to Bubble Tea shops, so this API can provide an easily injectable map embed.</p> <p>We also will use the API to scrape and build our own database for shop information.</p>
	Google Identity Platform API	This will allow OAuth2 capabilities on our website to generate new account information

Our choice of cloud hosting over physical servers as an alternative, was motivated by cloud hosting's clear advantages. Cloud vendors that follow the Infrastructure-as-a-Service (IaaS) model provide cut costs and agility, by allowing customers to rent virtual computers or computing 'environments' on which they can run computer applications. As a result, Boba Me no longer needs to be run on hardware that requires up front investment in the way traditional physical servers would. Customers instead are only charged for the infrastructure they use, while the third party maintains hardware, software, servers and storages conveniently. Additionally, cloud computing provides solutions to handling sudden traffic spikes by allowing computing capacity to be scaled up or down on demand. Comparatively, physical servers would require more time and investment to handle such an event.

As for a comparison with cloud vendors, we chose AWS over alternatives like Microsoft Azure and Google Cloud because our team has previous experience with the service, and all three provide similar features for cloud hosting in the case of Boba Me. The t2.micro instance we chose, earns 6 credits per hour, with a maximum of 144 credits, has 1 virtual CPU (vCPU) that is a 3.3 GHz Intel Scalable Processor, with a baseline utilisation of 10% that has the option of 'burstable performance'. Azure and Google Cloud have the similar options of it's B1LS and e2-standard-2

offerings in computing and pricing options, so experience became the key factor influencing our choice.

There were many options for front end, including Angular and Vue, but we settled on React, the Javascript library. This choice was motivated by the fact that it is currently the industry standard that has been proven and tested to work, such as with Facebook, Airbnb, and Uber. It has strong community support, tutorials and documentation compared to other frameworks. Compared to Angular, React is not as complex to learn, and with Javascript experience, learning is even easier. React also allows reusable components, creates web pages for both desktops and mobile devices, and builds a robust user experience.

Our backend choice in Flask was due to its reputation for reduced development time, fast debugging, compatibility with the Google Identity Platform API, and because our team is also quite familiar with Python, the language it is written in. Django as an alternative however has a steeper learning curve, cannot handle multiple requests, and is not built for smaller projects. It is monolithic, which means it encourages big, tightly coupled apps, whereas Flask has more dependencies and requires less code to be written.

With Flask, Nginx was chosen as our reverse web proxy server because compared to its alternative, Apache, Nginx has a different design architecture. Nginx uses event driven architecture to handle multiple requests within one thread, whereas Apache's process-driven approach creates a new thread for each request. As a result Nginx therefore handles high amounts of traffic. Nginx upstream server processes also do not get blocked due to its multiple request handling capability, and improves overall performance of back end servers. Compared to Apache, Nginx has been known to serve at ten times more requests per server. Gunicorn was chosen as our Python WSGI HTTP server due it's pre-fork model allowing a master thread to use work threads that handle requests. Gunicorn was selected over alternatives like uWSGI, essentially due to being simpler to set up, despite being fairly close in performance.

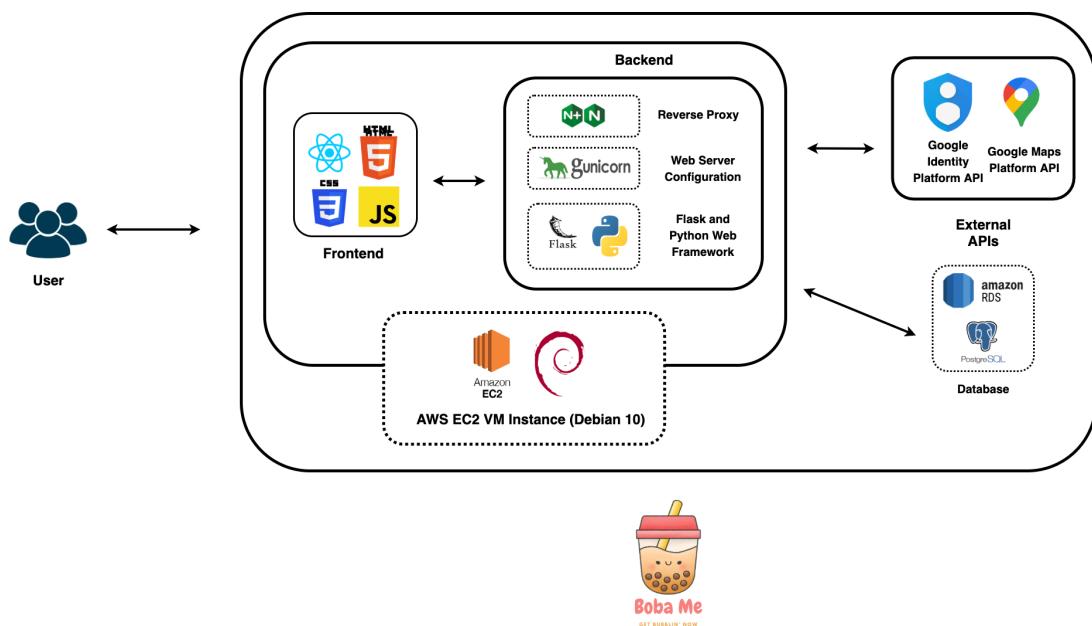
Amazon RDS for PostgreSQL was chosen for the same reason we chose cloud computing; ease of setup, deployment and scaling, and high performance. Compared to installing and running this locally, cloud computing takes care of all set up so we could get into building the product itself. As for database choice, PostgreSQL is feature rich. Alternatives like MySQL or NoSQL databases cannot handle complex queries and huge databases, or define additional data types, index types.

Selecting the Google Platform Maps API was based on factors relating to it's dominant popularity with consumers and its polished service. Compared to alternatives like Mapbox, Bing, Foursquare, Fencer and Yandex, Google Maps

provides both imagery and directions as well as a feeling of familiarity. An added bonus arises when customers notice they do not need to get used to a new format for navigating maps on a web application. The Google Identity Platform API was also selected again due to its familiarity that stems with Google's overall popularity. Hence choosing this API means that customers do not have to remember another unique set of login details. This is better than the alternative where they would have to remember login details stored in the application, just for a trivial act of finding bubble tea to drink.

## 2.2 Final Software Architecture Diagram

Below features the final software architecture diagram used by Boba Me. There was no change between the initial diagram and the one used in the final creation.

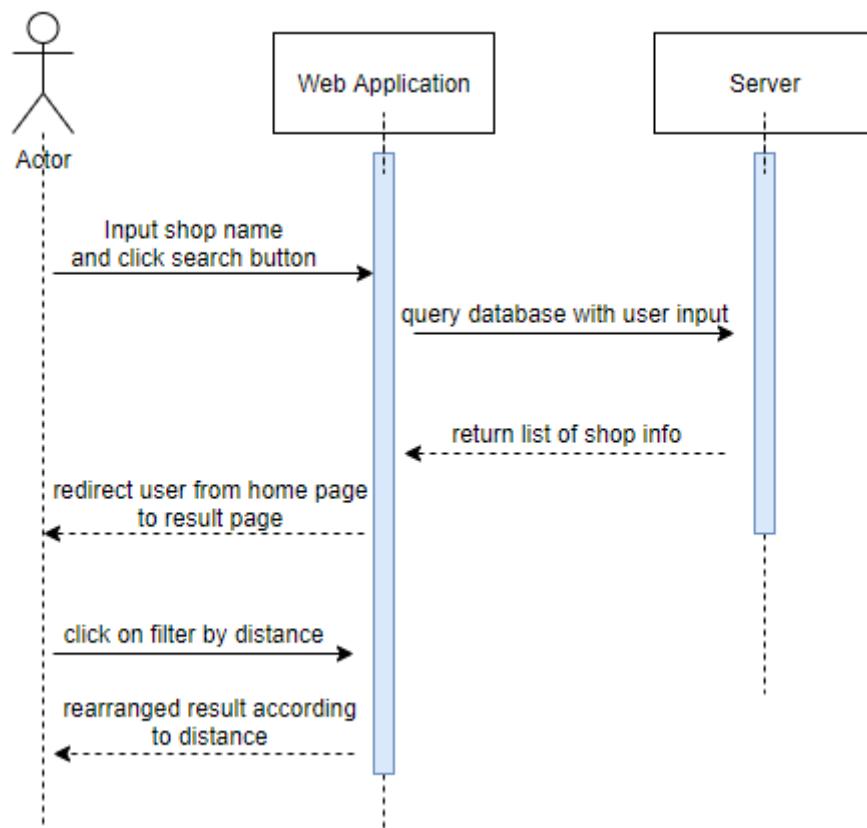


**Figure 1.1 - Software Architecture Diagram (SAD) for Boba Me**

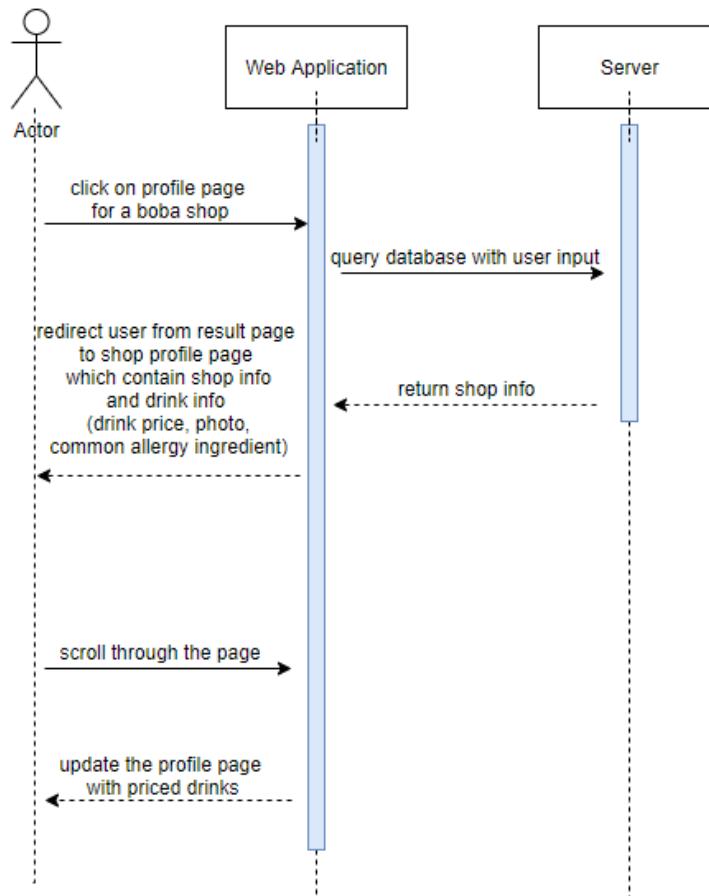
## 2.3 Interaction Diagram for Boba Me's Use Cases

Feature ID	1
Feature	As a client, I should be able to search for boba shops nearby, so I can find boba shops even in places that I am not familiar with.
Scenario	Search nearby boba shops according to distance from the client
	GIVEN I am on the homepage

	<p>WHEN I type in a shop name  AND I press the “Search” button  THEN I should be taken to “result” page  THEN I should be able to see shops containing the user input  THEN I should be able to see the filter tools on the side  AND I can choose to filter the result by distance  THEN I should be able to see all nearby shops in ascending distance order in grid style.</p>
Status	Incompleted feature, as we did not develop a way to trace a user’s location.



Feature ID	2
Feature	As a client I should be able to view the menu of a particular boba shop, so I can preview what I can get from the shop
Scenario	Viewing the drinks offered by a particular shop
	GIVEN I am on the “profile” page for the particular shop THEN I should be able to see a list of drinks with prices offered by the shop.
Status	Completed, as this is seen on the menu tab on the Shop Info Page



Screenshot of the Boba Me application interface showing the Gong Cha Randwick profile page.

**Header:** Boba Me, Gong Cha Randwick, Home, Google, Login

**Menu:**

- Milk Foam Green Tea - \$6.20
- Royal Milk Tea - \$5.50
- Earl Grey Milk Tea - \$5.80
- Milk Foam Green Tea - \$6.20
- Pearl Milk Tea - \$6.20

**Topping:**

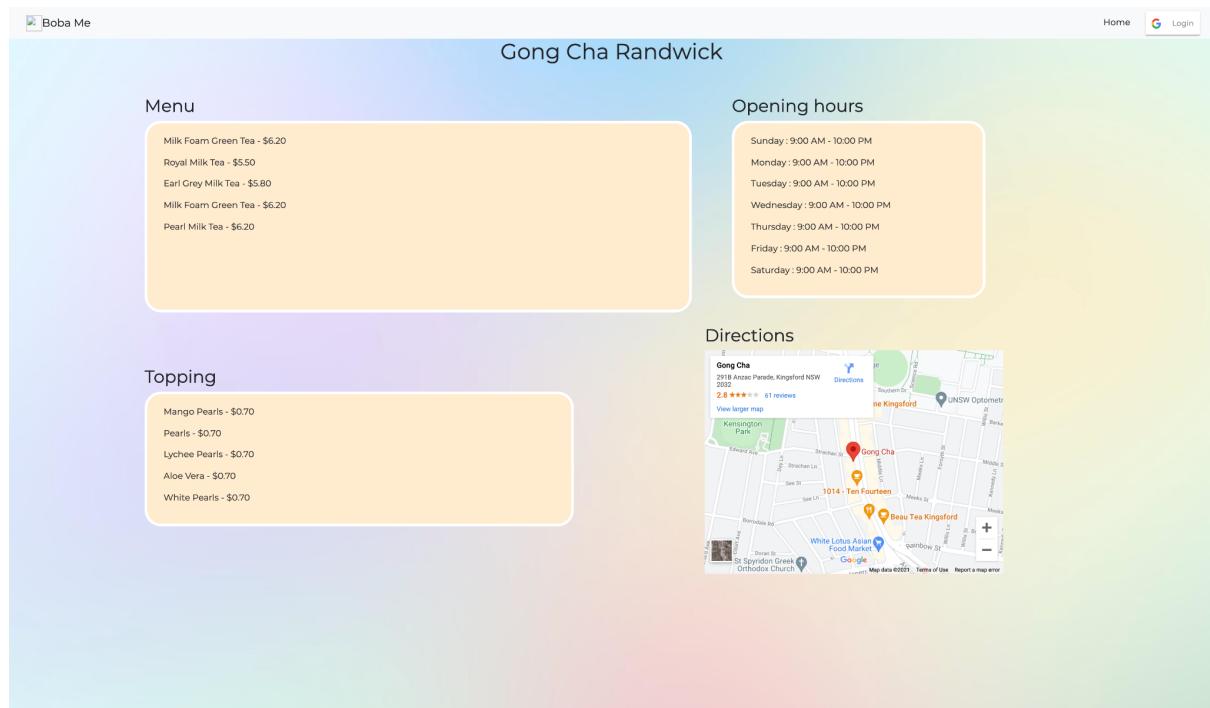
- Mango Pearls - \$0.70
- Pearls - \$0.70
- Lychee Pearls - \$0.70
- Aloe Vera - \$0.70
- White Pearls - \$0.70

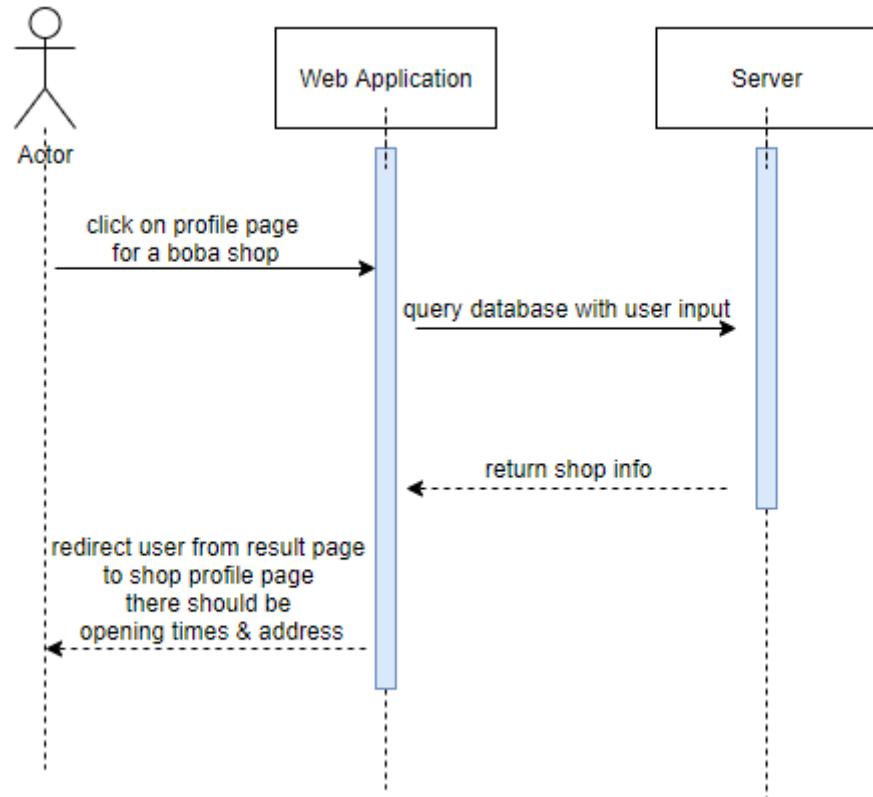
**Opening hours:**

- Sunday : 9:00 AM - 10:00 PM
- Monday : 9:00 AM - 10:00 PM
- Tuesday : 9:00 AM - 10:00 PM
- Wednesday : 9:00 AM - 10:00 PM
- Thursday : 9:00 AM - 10:00 PM
- Friday : 9:00 AM - 10:00 PM
- Saturday : 9:00 AM - 10:00 PM

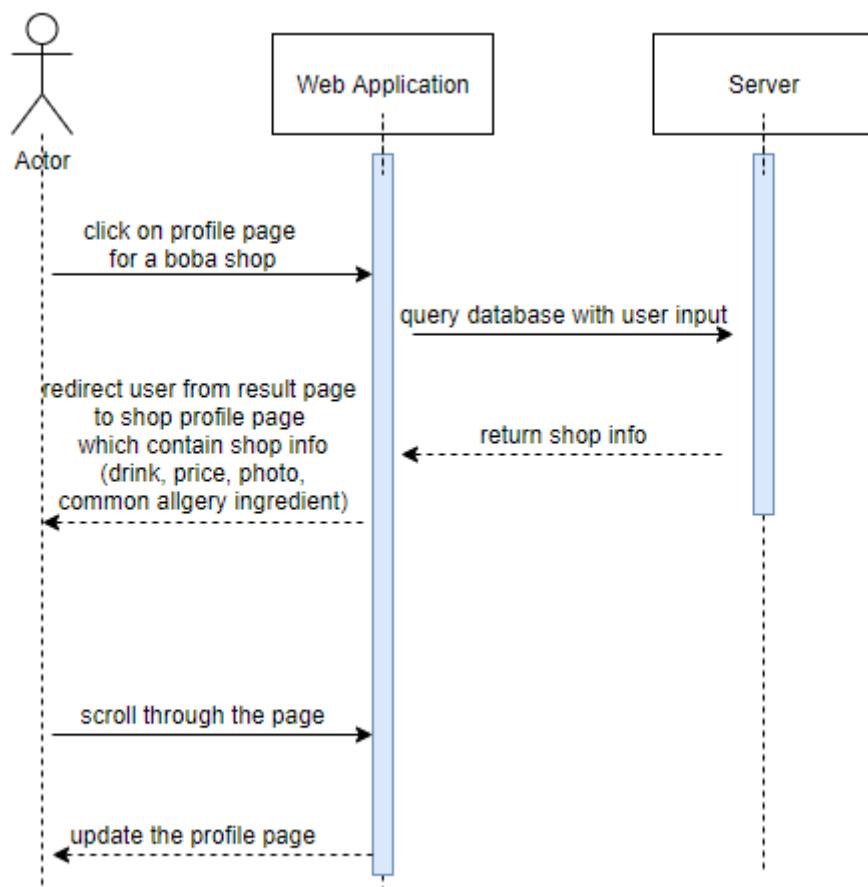
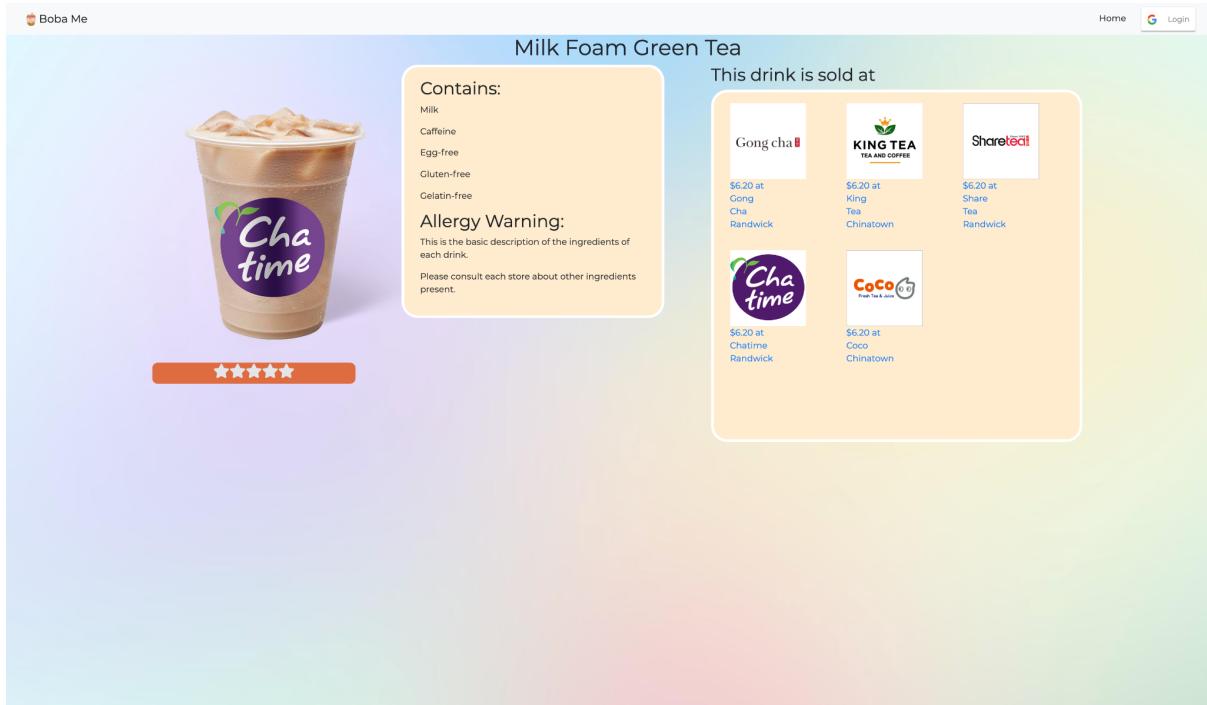
**Directions:**

Feature ID	3
Feature	As a Client I should be able view the location and opening information of a specific shop, so that I don't get lost when I want to go to the shop.
Scenario	Viewing the general information by a particular shop
	<p>GIVEN I am on the “profile” page for a particular shop      THEN I should be able to see a picture of that store.</p> <p>GIVEN I am on the “profile” page for a particular shop      THEN I should be able to see the opening times of that store.</p> <p>GIVEN I am on the “profile” page for a particular shop      THEN I should be able to see the address of that store.</p>
Status	Partial completion, as we have not implemented a picture of the store,. Although we fulfilled the other aspects of this user feature, as the user can use the Google Maps embed and find out the opening times.

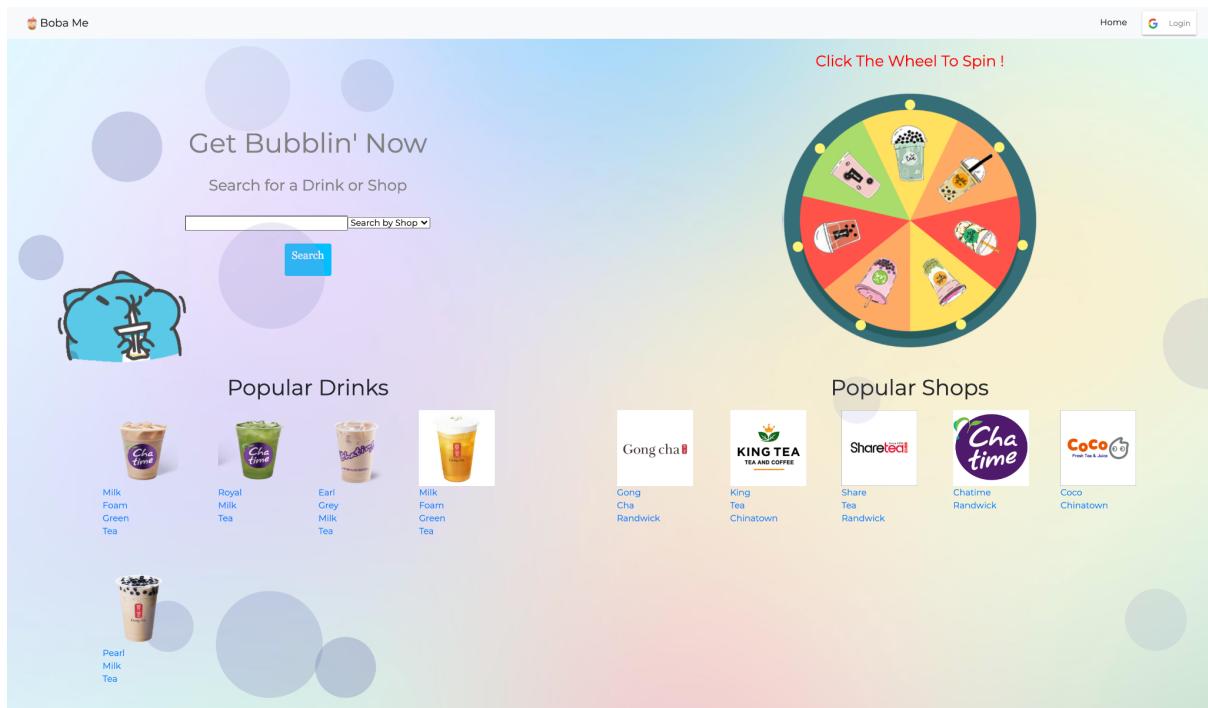


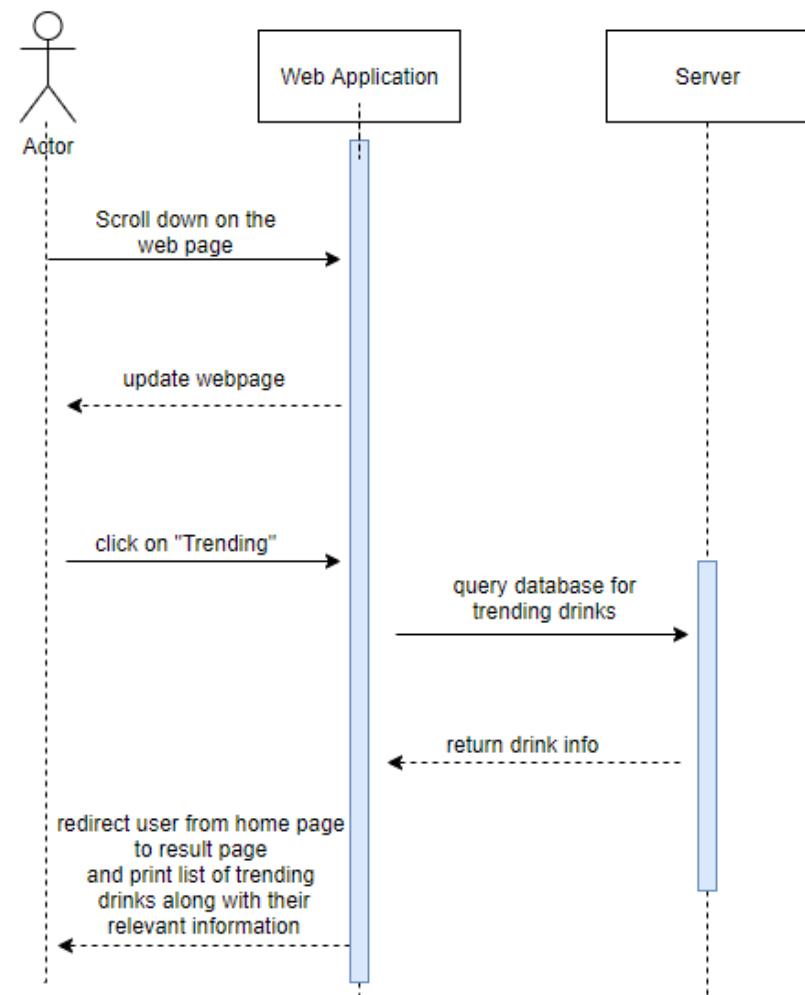


Feature ID	4
Feature	As a Client I should be able view the main ingredients of a particular drink, so I have a brief idea what's inside my drink.
Scenario	Viewing the ingredients contained in a particular drink
	GIVEN I am on the “profile” page for a particular drink THEN I should be able to see list of ingredients contained in the particular drink AND I should be told if common allergy ingredients are used AND I also should be warned to contact shop for detail ingredients
Status	Completed, as the drink page lists the general ingredients and related warnings.

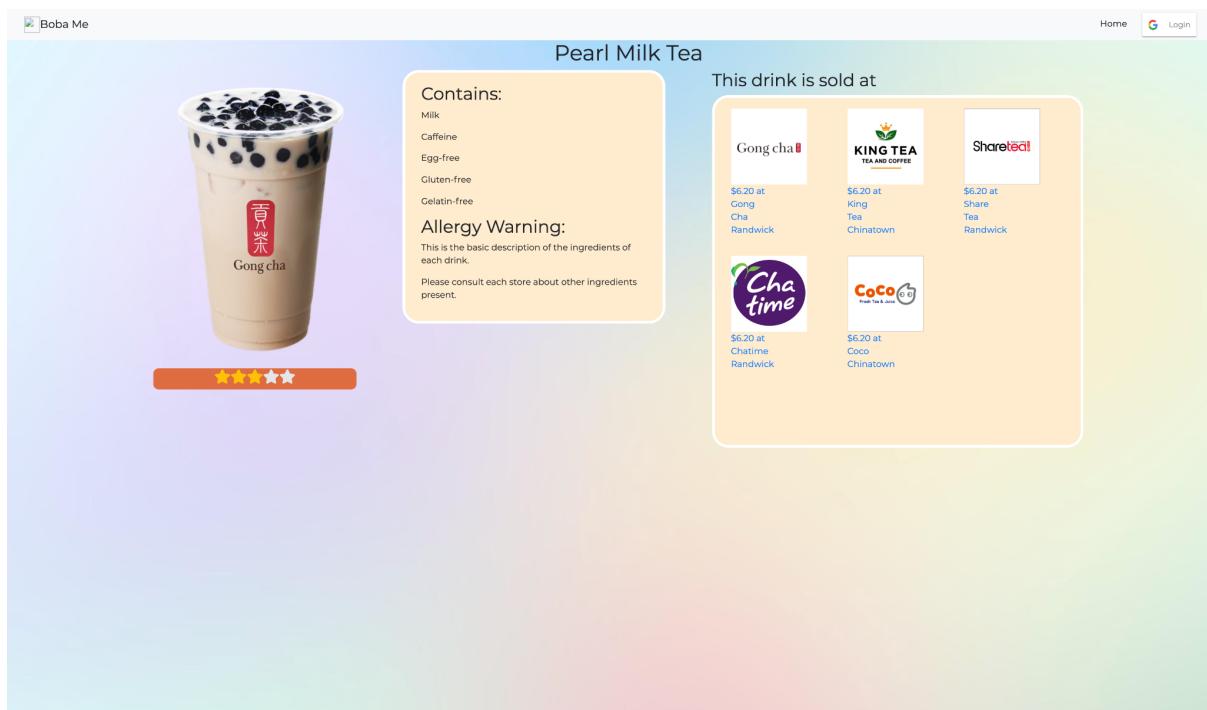


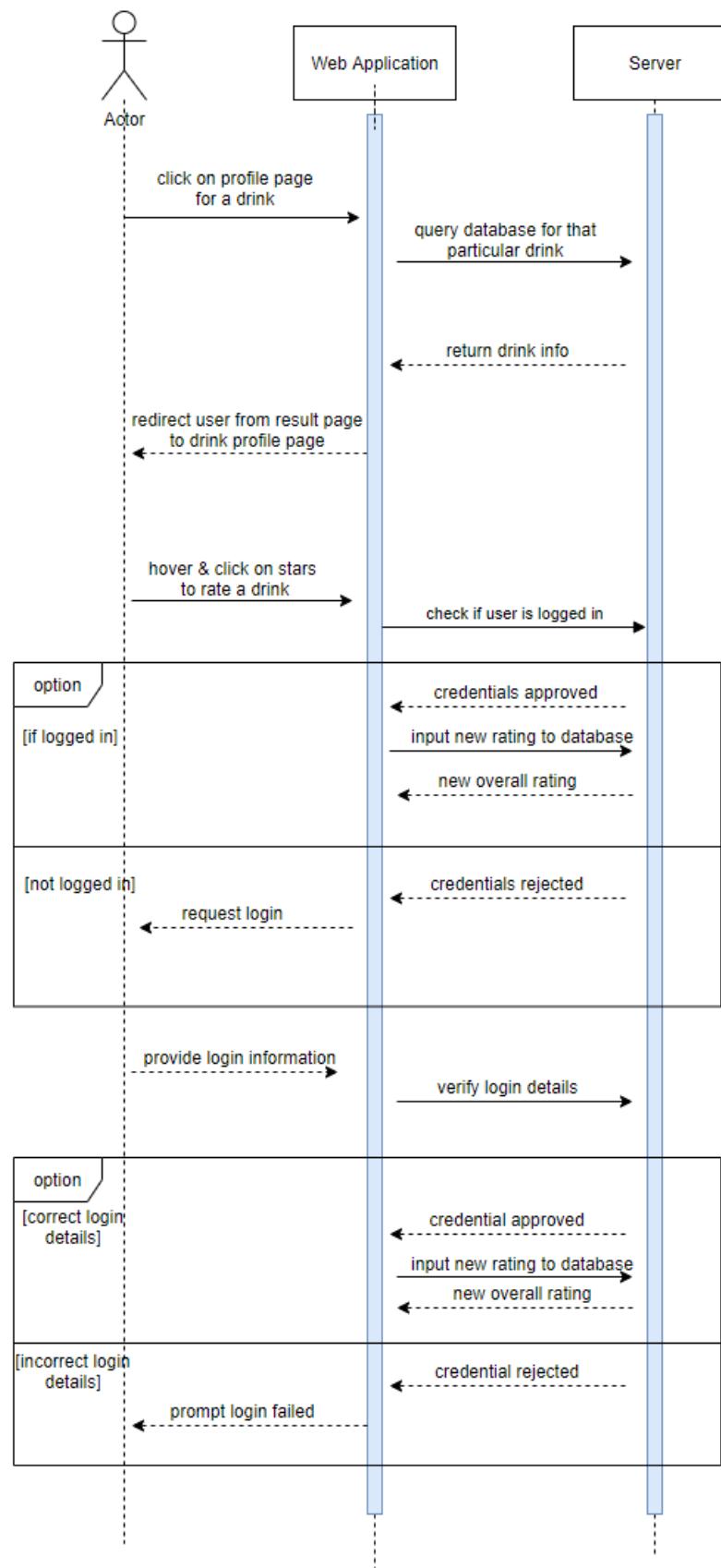
Feature ID	5
Feature	As a client, I should be able to view the trending/popular drinks among other users, so it can help me to make a decision.
Scenario	Viewing the trending drinks among other users when clients can not make a decision
	<p>GIVEN I am on the search result page for drinks      WHEN I click on “Trending” button in the filters section      THEN I should be able to see a list of trending drinks from my search</p> <p>GIVEN I am on the homepage      WHEN I scroll to the bottom of the page      THEN I should be able to see a list of all trending drinks</p>
Status	Partially completed. The search page has the option, but the filter is currently not active.





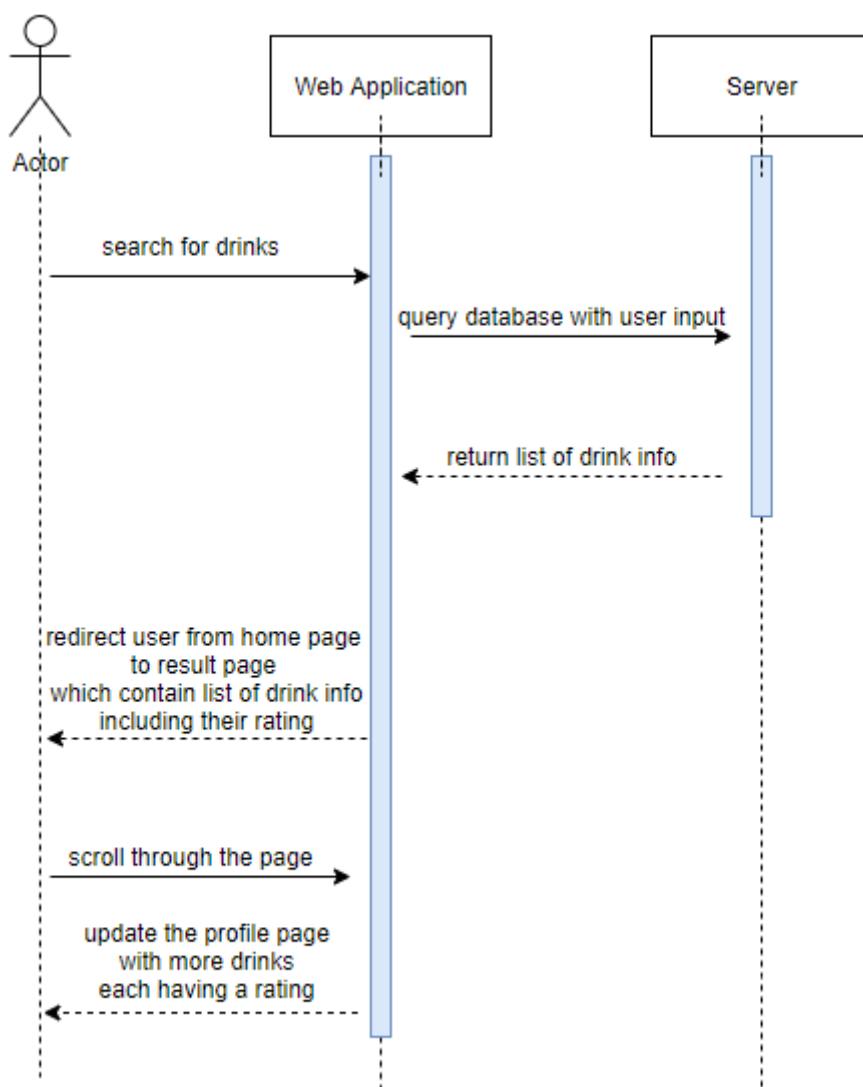
Feature ID	6
Feature	As a client, I should be able to rate a drink out of 5, so I can help other users to make decisions when they are purchasing drinks.
Scenario	Clients can rate a drink after they tried it
	<p>GIVEN I am on the “profile page” for a drink      THEN I should be able see the rating of the drink      WHEN I hover my mouse over the stars      THEN I have the options to click and rate the drink myself      IF I am logged in      THEN the overall ratings should change according to my ratings      OTHERWISE I should be prompted to login before rating      IF I provide login information after the login prompt      THEN the overall ratings should change according to my ratings      OTHERWISE I should receive a prompt error.</p>
Status	Partially completed. Users can update the drink ratings in the database however the error functionality has not been added.



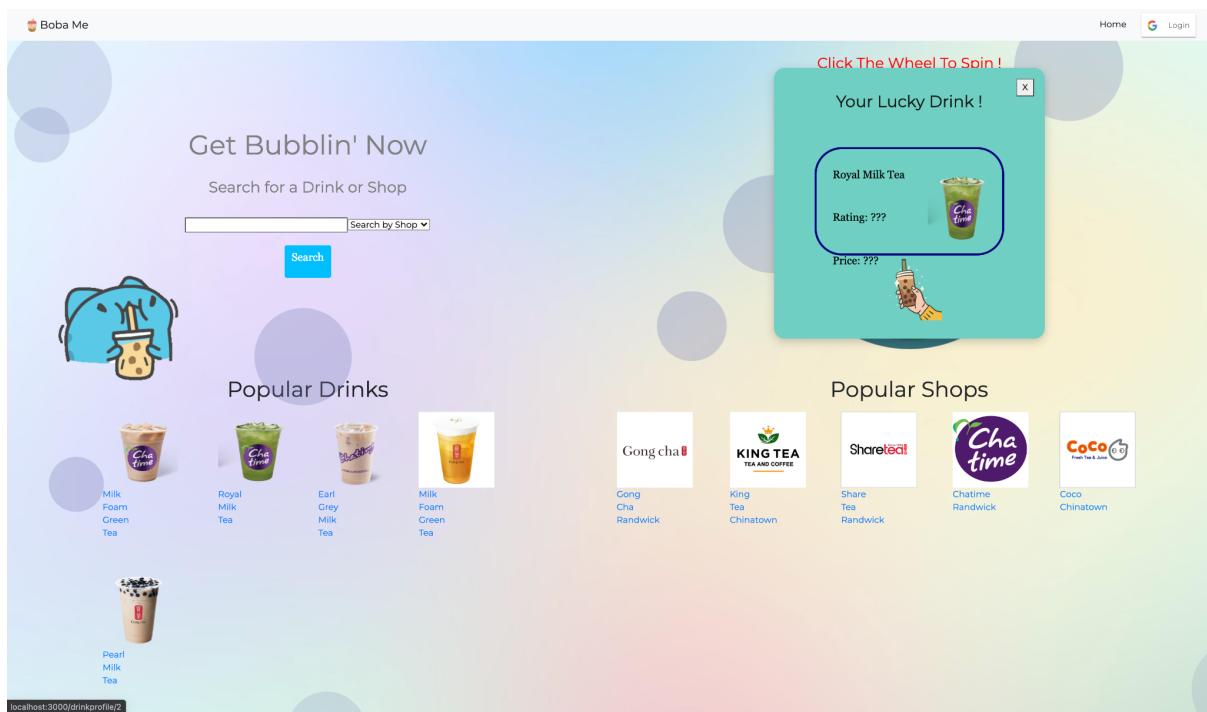


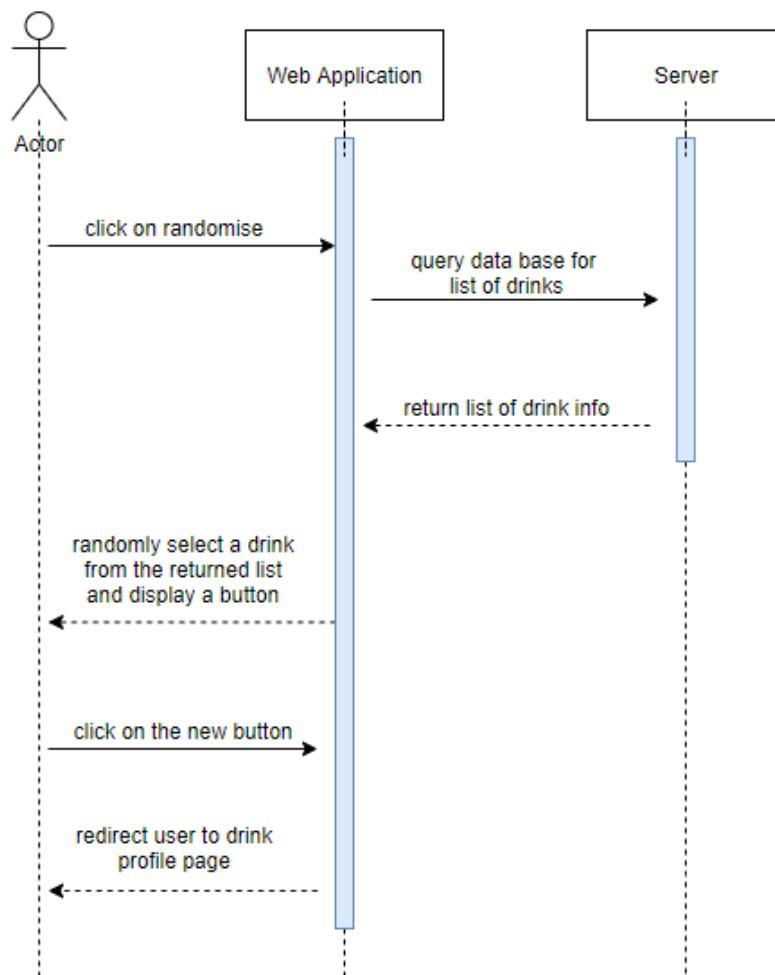
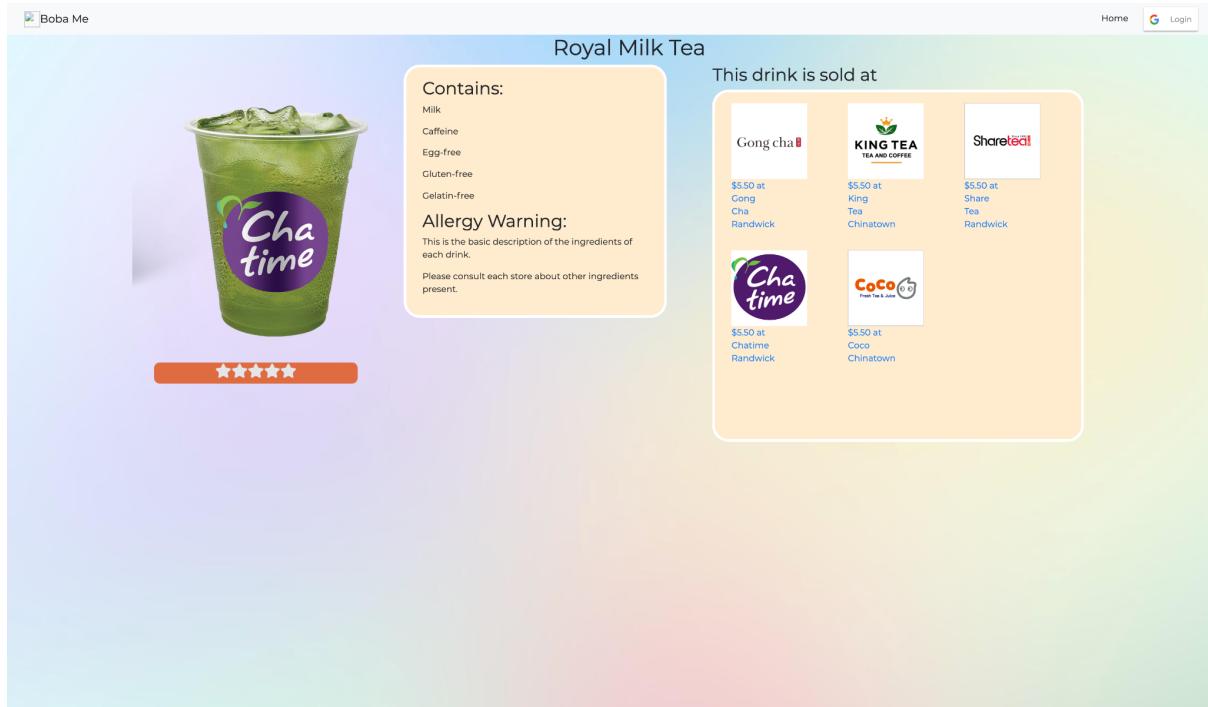
Feature ID	7
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Feature	As a client, I should be able to view the rating for a drink, so I can make a decision based on the ratings.
Scenario	Client can view rating of a particular drink in case client is indecisive
	<p>GIVEN I am on the search result page for drinks</p> <p>THEN I should be able to see the corresponding ratings next to the search result</p> <p>WHEN I am on the “profile page” for a drink</p> <p>THEN I can see the overall rating for the particular drink</p>
Status	Not completed, although ratings have been integrated in the database.



Feature ID	8
Feature	As a client, I should be able to get the website to make a decision for me, so I am not stuck in a dilemma situation.
Scenario	Choose a random drink
	<p>GIVEN I am on the “homepage”</p> <p>WHEN I click on a ‘Randomise...’ button</p> <p>THEN the application will choose a drink from it’s many options at random AND display a clickable button.</p> <p>WHEN I click on the button</p> <p>THEN I should be redirected to that drink profile page</p>
Status	Completed. As you click the wheel, it spins and then suggests a drink, which you can find more about.



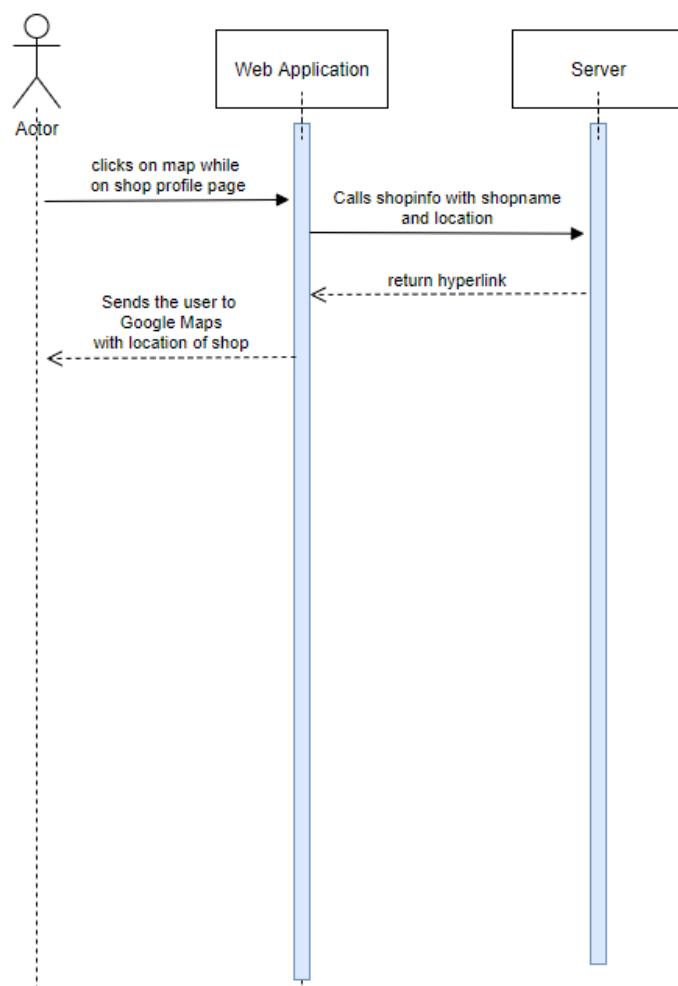
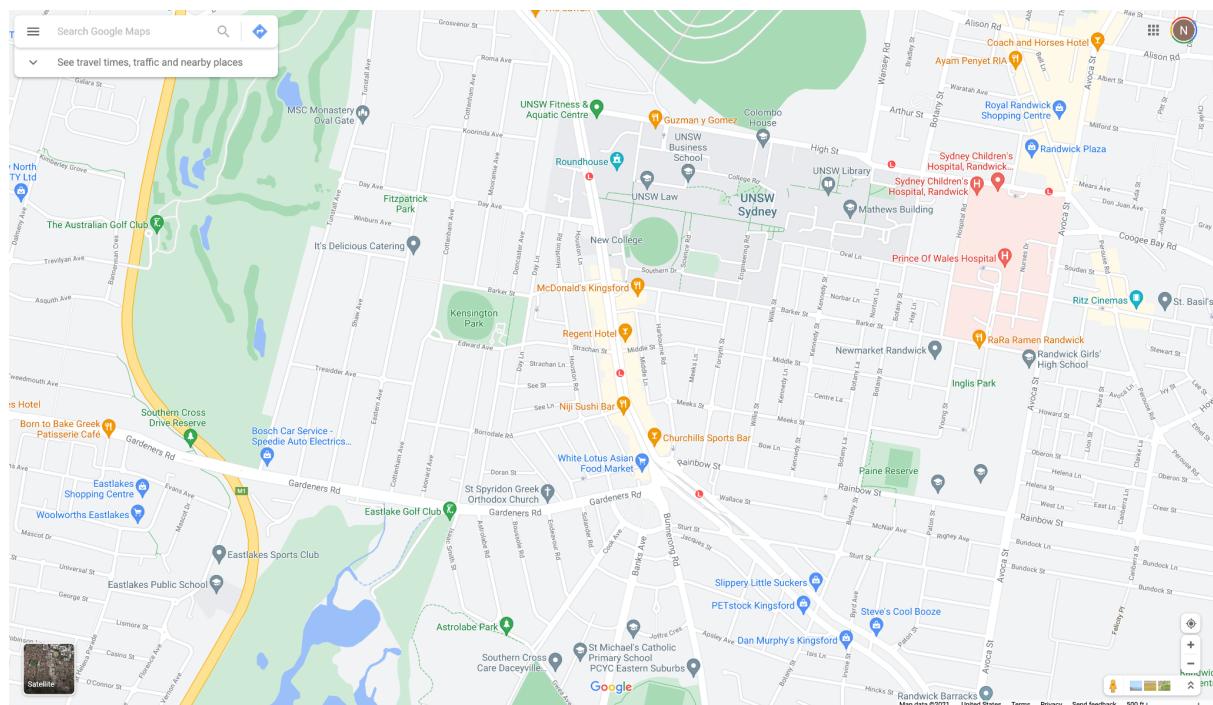


Feature ID	9
Feature	As a client I should be able to get directions to a particular boba shop, so I can get to the shop when I have made up my mind.
Scenario	Find directions to a particular boba shop.
	GIVEN I know what Boba shop i want to go to AND I am on the Boba shop's page WHEN I click on the "directions" button of the Boba shop THEN I should be redirected to google map with destination filled in for me.
Status	Completed. This is achieved via a Google Maps embed (Google Maps Platform API).

The screenshot shows the Gong Cha Randwick page on the Boba Me website. The page has a light blue gradient header with the logo and navigation links (Home, Login). Below the header, there are three main sections: **Menu**, **Opening hours**, and **Directions**.

- Menu:** Lists various milk tea options with their prices:
  - Milk Foam Green Tea - \$6.20
  - Royal Milk Tea - \$5.50
  - Earl Grey Milk Tea - \$5.80
  - Milk Foam Green Tea - \$6.20
  - Pearl Milk Tea - \$6.20
- Opening hours:** Shows daily operating times from 9:00 AM to 10:00 PM, Monday through Saturday.
- Directions:** Includes a Google Map of Kingsford area, highlighting the shop's location at 2918 Aztec Parade, Kingsford NSW. It also shows nearby landmarks like Kensington Park, St Spyridon Greek Orthodox Church, and Beau Tea Kingsford.

On the left side of the main content area, there are two smaller sections: **Topping** (listing toppings like Mango Pearls, Pearls, Lychee Pearls, Aloe Vera, and White Pearls) and **Menu** (repeating the list of milk tea options).



Feature ID	10
Feature	As a client, I should be able to see the price for any given drinks, so I know how much I am paying.
Scenario	Client can check for price before they commit to it
	<p>GIVEN I am on the search result page for drinks      THEN I should be able to see the corresponding price for each drink</p> <p>GIVEN I am on the profile page for a drink      THEN I should be able to see the price of the drink for each shop</p> <p>GIVEN I am on the profile page for a shop      THEN I should be able to see the corresponding price for each drink</p>
Status	Partially completed. The search page does contain a price placeholder, but the information it presents is 'Depends on Shop'.

The screenshot shows a search results page for 'Boba Me'. At the top, there's a search bar with 'Results' and a 'Search' button. On the right, there are links for 'Home', 'Login', and a magnifying glass icon. A sidebar on the left titled 'Sort By' offers options: 'Rating' (unchecked), 'Most reviewed' (unchecked), and 'Trending' (unchecked). The main content area displays five items in a grid:

- Milk Foam Green Tea**: Placeholder image, rating 'No ratings yet', price 'Depend on shops'.
- Royal Milk Tea**: Placeholder image, rating 'No ratings yet', price 'Depend on shops'.
- Earl Grey Milk Tea**: Placeholder image, rating 'No ratings yet', price 'Depend on shops'.
- Milk Foam Green Tea**: Placeholder image, rating 'No ratings yet', price 'Depend on shops'.
- Pearl Milk Tea**: Placeholder image, rating '1', price 'Depend on shops'.

## Pearl Milk Tea



Gong cha



### Contains:

Milk  
Caffeine  
Egg-free  
Gluten-free  
Gelatin-free

### Allergy Warning:

This is the basic description of the ingredients of each drink.

Please consult each store about other ingredients present.

This drink is sold at

Gong cha 

\$6.20 at  
Gong  
Cha  
Randwick

  
KING TEA  
TEA AND COFFEE

\$6.20 at  
King  
Tea  
Chinatown

Sharetea 

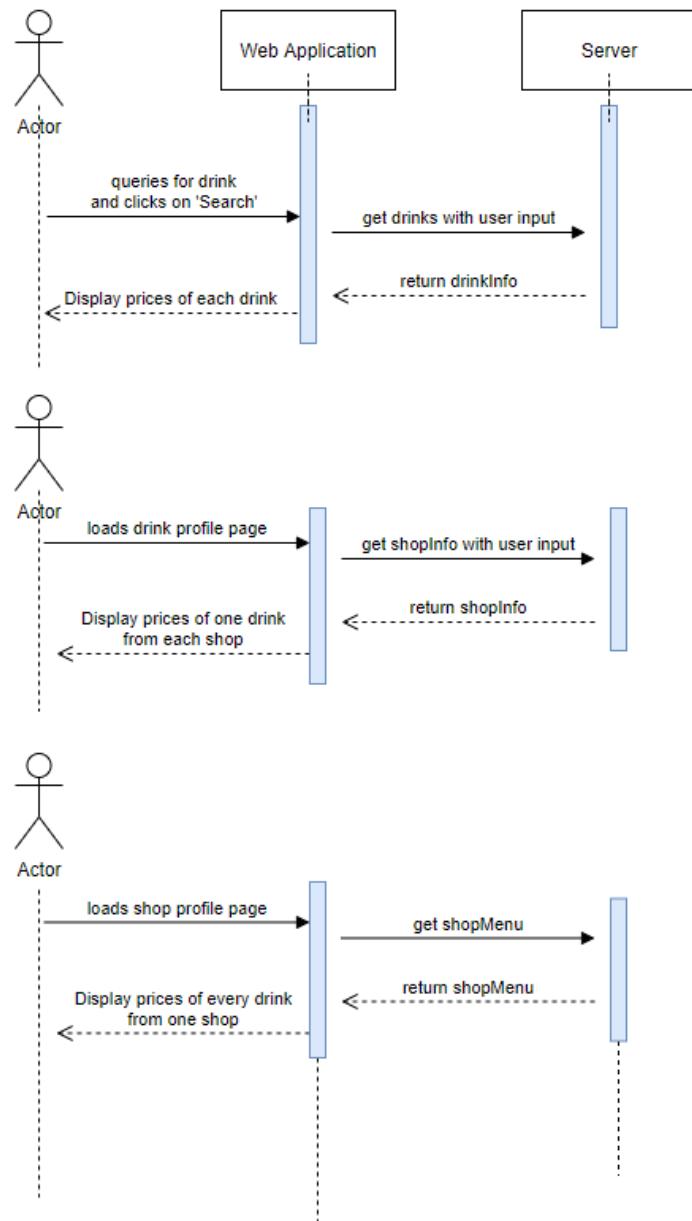
\$6.20 at  
Share  
Tea  
Randwick



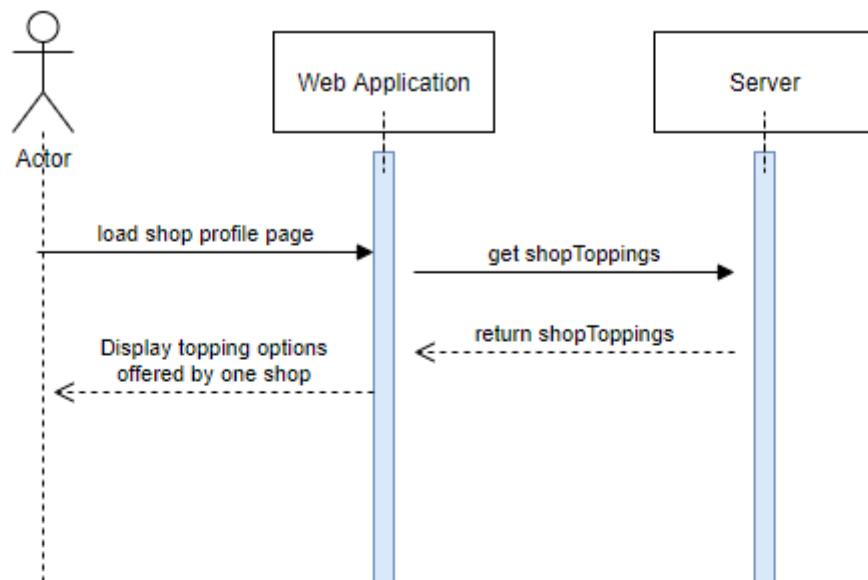
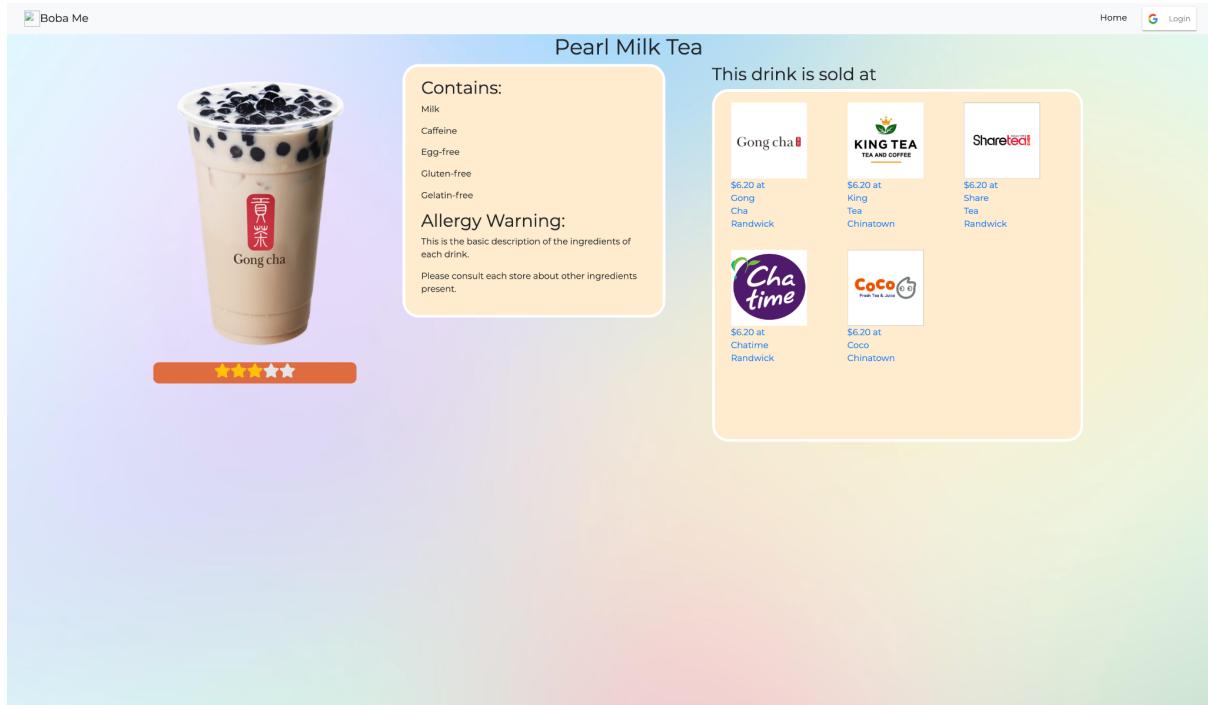
\$6.20 at  
Chatime  
Randwick



\$6.20 at  
Coco  
Chinatown

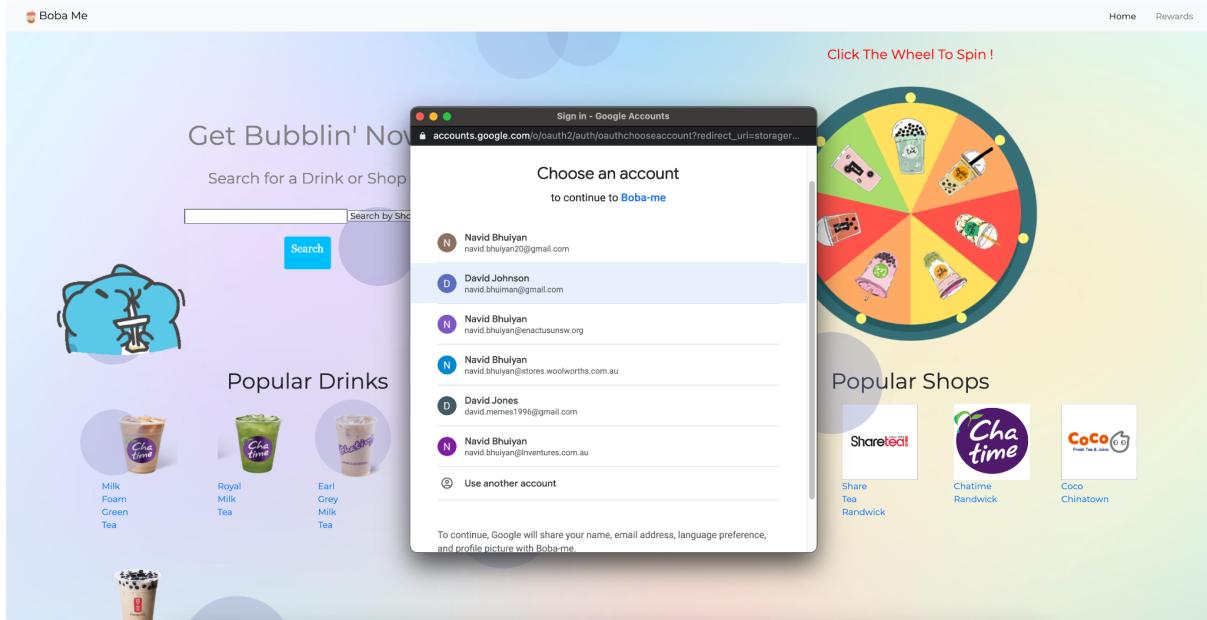


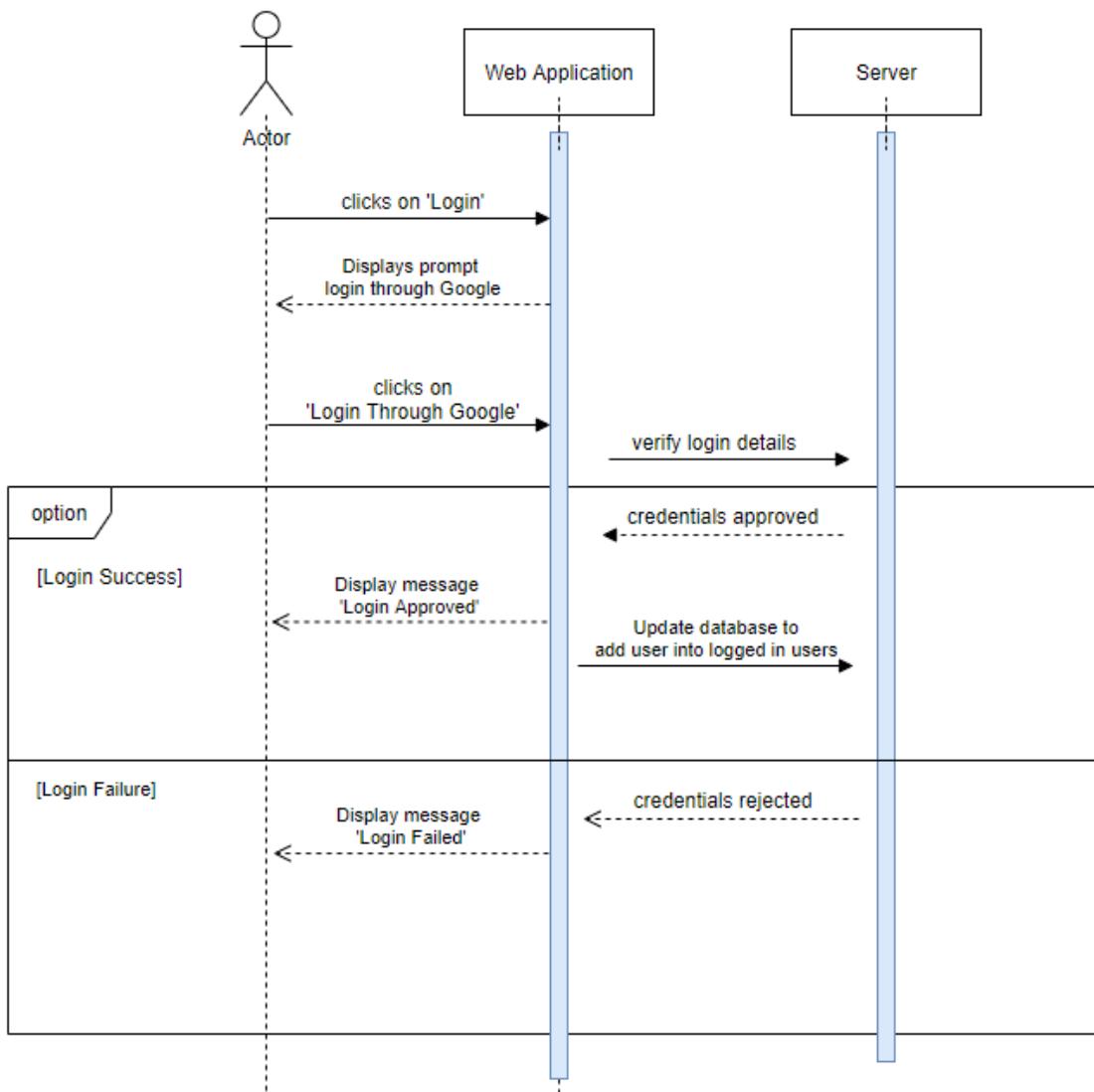
Feature ID	11
Feature	As a client, I should be able to see the range of toppings offered by the shop, so I can make my unique drink to enrich my drinking experience.
Scenario	Client can view the list of toppings offer by the shops to make their own drinks
	GIVEN I am on profile page for a shop THEN I should be able to see all the topping options offered by the particular shop.
Status	Completed.



Feature ID	12
Feature	As a client, I should be able to login using google accounts so I can utilise the full potential of the website.
Scenario	Client can login using google accounts to rate drinks and perform other actions
	<p>GIVEN I am on ANY page on the web        WHEN I click on the “login” button        THEN I should be able to see a “login” prompt</p>

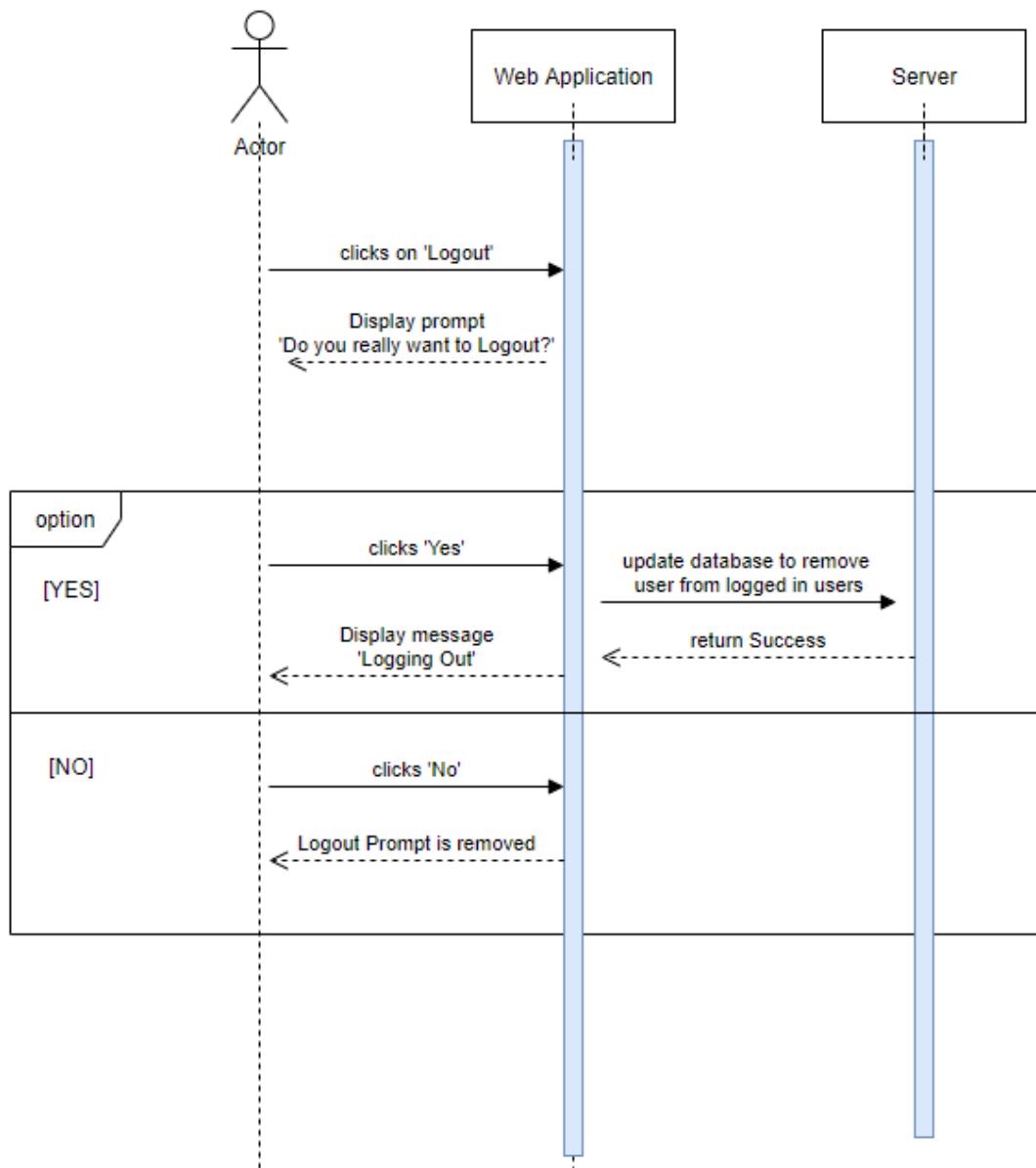
	<p>WHEN I click the “login through google” button      THEN I should be logged in      IF I fail to login      THEN I should receive an error prompt</p>
Status	Partially complete. Although the Google Accounts API does have its own error response, we have not inputted an error response on our app.





Feature ID	13
Feature	As a client, I should be able to logout from an account so I can login as other users.
Scenario	Clients can logout from the current account if they wish to.
	<p>GIVEN I am on ANY page on the web  AND I am logged in  THEN I should be able to see the “logout” button in the top right corner  WHEN I click on the “logout” button  THEN I should be see a logout prompt  WHEN I click “YES”  THEN I should be logged out  IF instead I click “NO”</p>

	THEN I should remain logged in AND the prompt should disappear
Status	Not completed.



Feature ID	14
Feature	As a client, I should be rewarded for using the website, so I can be convinced to be a long term user for the website
Scenario	Logged in users can be rewarded with free drinks or discount vouchers after they reviewed a certain amount of drink for each month.
	<p>GIVEN I am on “home” page  AND I am logged in  THEN I should be able to see a ‘My Rewards’ button at the top of the page  WHEN I click on the “My Rewards” button  THEN I should see a “Personal coupons” box  AND I should see “Redeem Coupon” button  AND I should see an “Enter Raffle” button  WHEN I click on Enter Raffle button  AND I have reviewed 5 drinks this month  THEN I should be in the draw pool for a chance to get free drinks or a discount voucher  AND I should receive a message that I did enter the raffle.  IF I have not reviewed 5 drinks this month  THEN I should receive a message that I did not enter the raffle.  WHEN I select a coupon inside the “Personal Coupons” box  AND I also click on the “Redeem Coupon” button  THEN I should be sent a code to my google email for my coupon  AND the coupon should disappear from “Personal Coupons”</p>
Status	Partially complete. The functionality being attached to a logged in user to get rewards based on the frequency of how much they rate has not been implemented. There is only a page that is only accessible once you are logged in.

Boba Me

Home Rewards

Get Bubblin' Now

Search for a Drink or Shop

Search by Shop ▾

Search

Click The Wheel To Spin !

**Popular Drinks**

- Milk Foam Green Tea
- Royal Milk Tea
- Earl Grey Milk Tea
- Milk Foam Green Tea
- Pearl Milk Tea

**Popular Shops**

Gong cha	KING TEA TEA AND COFFEE	Sharetea	Cha time	Coco Chinatown
Gong Cha Randwick	King Tea Chinatown	Share Tea Randwick	Chatime Randwick	Coco Chinatown

localhost:3000/reward

Boba Me

Home Login

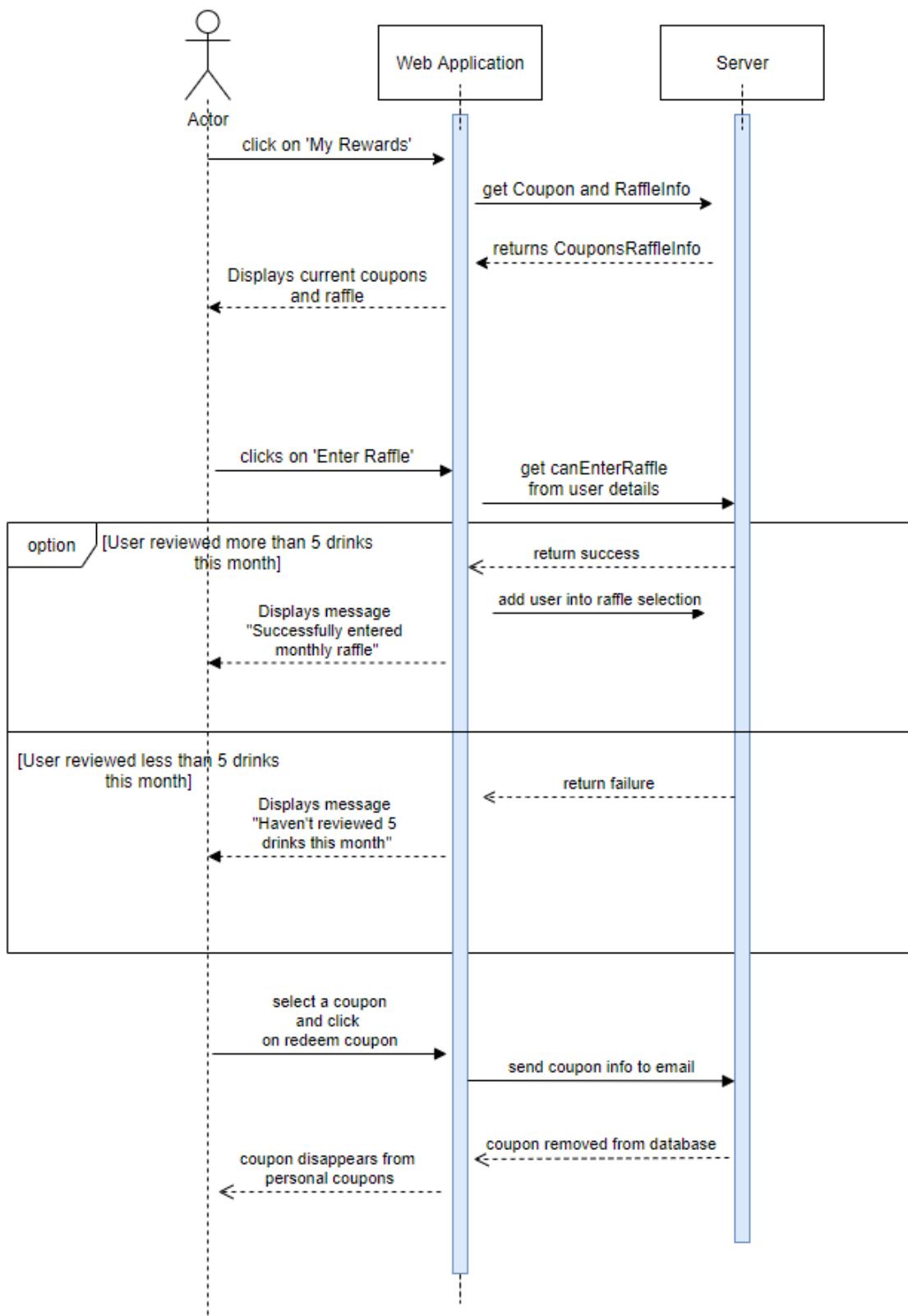
My Rewards

20% at Chatime  
1/2 Price 2nd Drink at Gong Cha  
Free Birthday Drink at Coco  
Buy 2 get 1 free at Sharetea

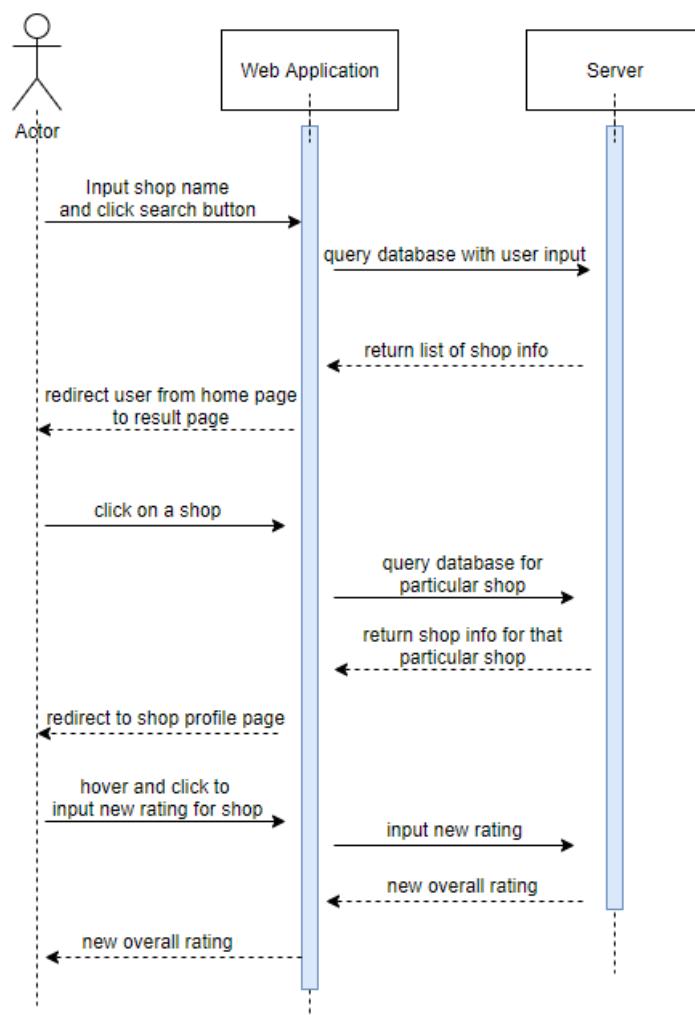
Redeem

You have reviewed 5/5 drinks this month  
You can now enter in the draw pool for a chance to get free drinks!

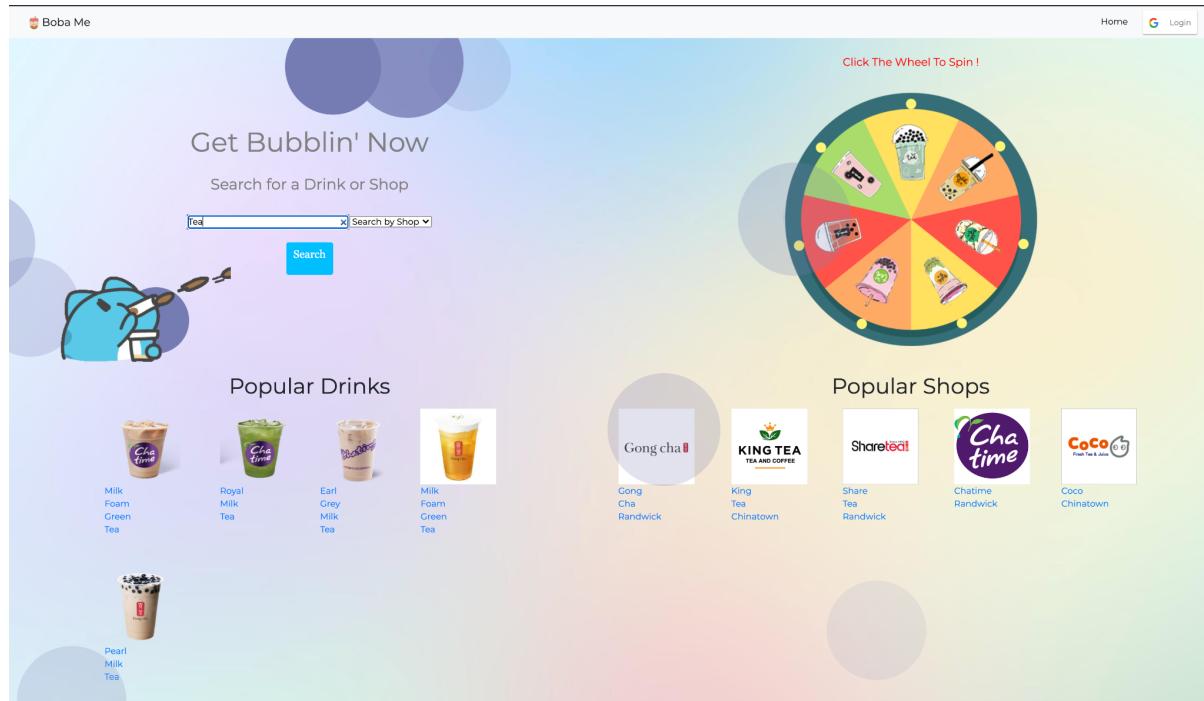
Enter Raffle

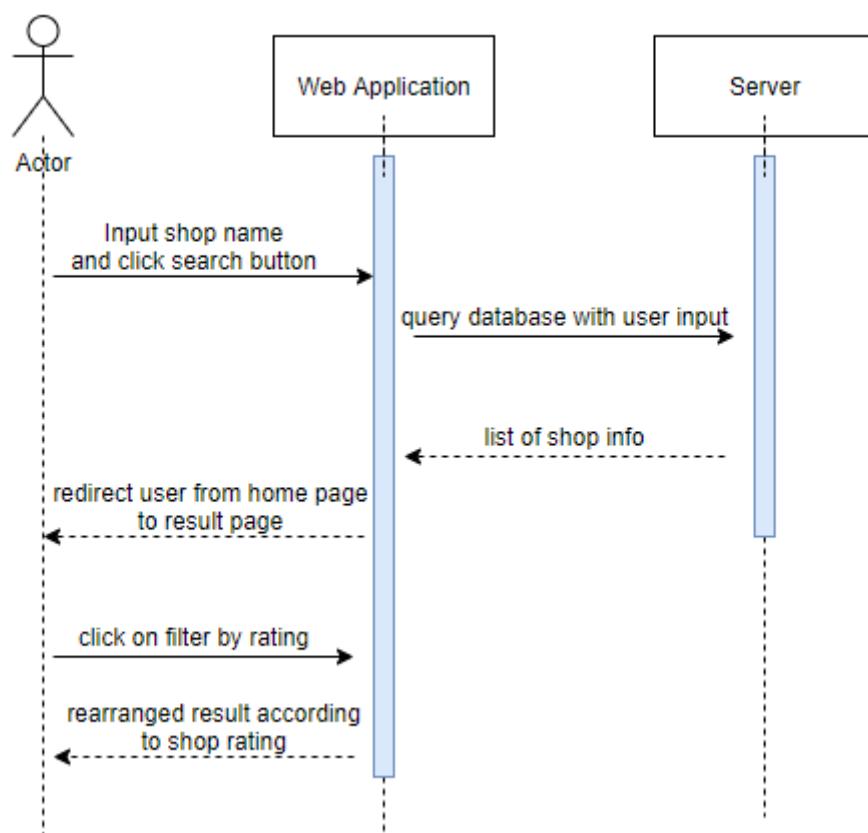
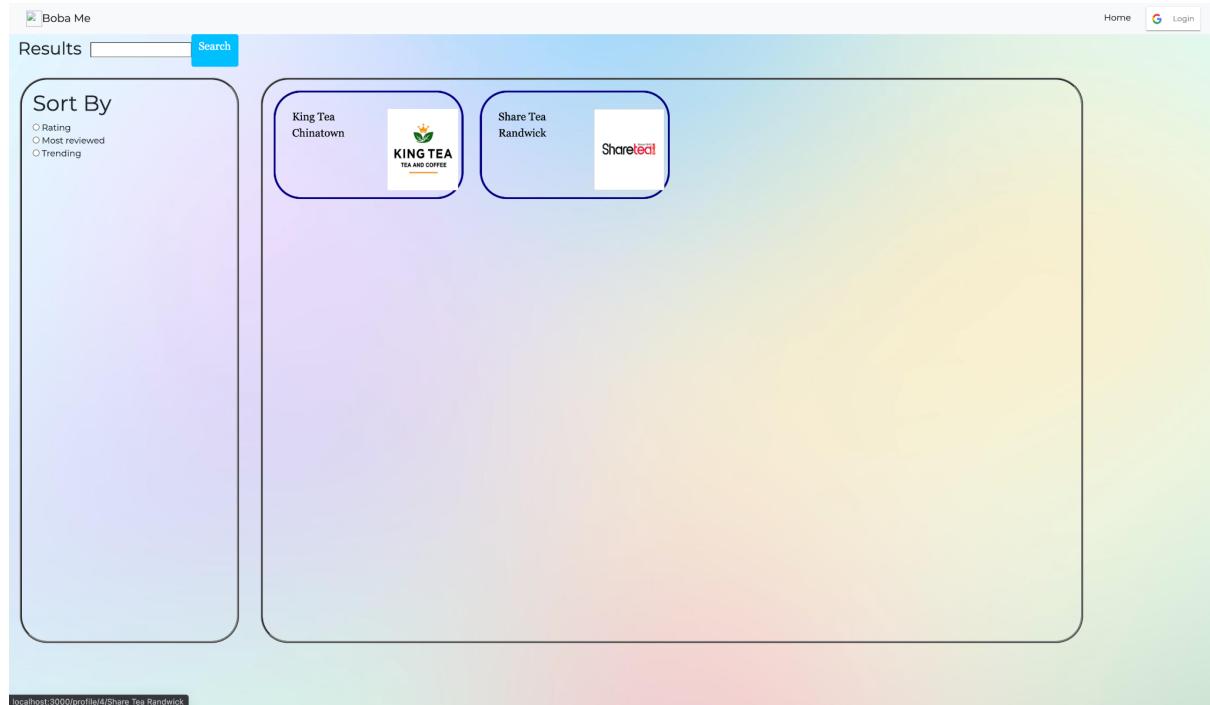


US id	15
Feature	As a client, I should be able to rate Boba shops for their services.
Scenario	Rate a shop using a five-star system for their services
	<p>GIVEN I am on the homepage      WHEN I type in a shop name      AND I press the “Search” button      THEN I should be taken to “result” page      THEN I should be able to see shops containing the user input      THEN I should be able to click on the shop      AND I can choose to rate the shop</p>
Status	Not completed. No revision was made in the backend to implement shop ratings.



US id	16
Feature	As a client, I should be able to search for boba shops and sort them by rating.
Scenario	Search nearby boba shops according to distance from the client
	<p>GIVEN I am on the homepage      WHEN I type in a shop name      AND I press the “Search” button      THEN I should be taken to “result” page      THEN I should be able to see shops containing the user input      THEN I should be able to see the filter tools on the side      AND I can choose to filter the result by top rated      THEN I should be able to see all nearby shops in ascending distance order in grid style.      OR I can choose to filter the result by most rated      THEN I should be able to see all nearby shops in ascending distance order in grid style.</p>
Status	Partially completed. The possibility of the interaction is there with the backend. All that is visible on the frontend is the option. Also to note, as we have not implemented any location tracking, we did not enable any location based features.





## 2.5 Technologies and Benefits of Boba Me's Implementation

The key technologies used to create the product included a wide range of technologies, such as Javascript, Python, hosting through AWS EC2 and a PostgreSQL database. The backend was connected to the frontend via Nginx, Gunicorn and Flask.

A basic template of the frontend was constructed using HTML and CSS to provide a base for the high functionality provided by Javascript's library, React. These three languages and one library created the frontend that provided a high amount of user interaction and communicated with the backend at the same time.

The backend consisted of three main libraries (Flask, psycopg2 and json) which were imported by the python language. The requests between the frontend and backend were handled by the library Flask. For interactions between the backend and frontend we decided to use the JSON format as it was the industry standard, and as such, the Python JSON library was included.

To interact with our PostgresSQL database, Psycopg2 was utilized to read and write to the database on AWS RDS. In terms of its design, some of the uncompleted features would be able to be developed in the future, however not all time. Currently it is designed with drinks being the most interconnected table with other tables being linked to the Drink ID, carrying rating, location and ingredient information. The Shop table interlinks itself with other tables, containing location, menu and picture information. Refer to the [db](#) folder for more information, in terms of our database design.

Other key technologies included using AWS EC2 on Debian 10 to host the server and allow the product to reach users.

## 2.6 Summary of Benefits

Key benefits of the implementation were achieved through the effective planning and design of the product with respect to user stories and problem statements. The benefits of the implementation are split into two sections, frontend and backend.

The frontend involved many benefits of the overall product. It provided a welcoming experience for any user, newcomer to veteran. It also included all necessary information for users in a simplistic and efficient manner. One of the largest main

benefits of the product's frontend is the rewards system, in which a user could redeem rewards after rating enough drinks. This created something somewhat akin to a closed feedback loop, where user's were incentivised to return.

Our backend was notable for its one-of-a-kind bubble tea and boba shops database, encapsulating data from many different shops into one location. This uniqueness provides incentives for both customers and businesses to interact with the product. Businesses could benefit greatly from analytics included in the database, such as how popular their drinks are or the current trends of consumer's interests. Customers are able to locate a wide range of drinks and shops through our product in a single place, improving accessibility and efficiency.

The achievements of the product allowed for it to stand out from its competitors for both boba shops and consumers. The implementation's benefits created security for the product, as they catered for newcomers and existing users. A unique database is the main driving force of the product, providing for both businesses and customers.

## Part 3 - Reflection

### 3.1 Team Structure

The team from conception was structured to match the skills of each member, as we all had varying levels of experience with business case pitching and different technology stacks. Although we all come from the same background, our interests in different forms of development from mobile app, backend, frontend, database and so on, made all of our experiences distinct in different languages. In terms of business case pitching, only few of us had experience in completely constructing case studies which delved into what sort of applications we could build which may see some business potential.

Hence, as displayed by the table below, each role was selected from discussions of our experience, and settled upon an agreement which suited for the best team function for this project.

Table 3. Outline of Roles and Responsibilities			
Person	Role	Why?	Responsibilities
Navid Bhuiyan	Team Lead	Most experience with utilising multiple languages such as C,	Manage the entire team, project and its direction. Heavily

		Python, HTML, CSS and JS. Also has experience with utilising the cloud for small web services using AWS. Previous experience in school and extracurricular group projects.	involved in architecting and approving the entire business and development aspects of the project.  Ensures great team morale and builds an environment for healthy discourse.
Jing Deng	Frontend Lead	Strong interest and some experience in developing frontend applications using HTML, CSS and JS.	Architect and develop the UI and UX of the frontend. This extends to user research, formulating user stories, and translating all of this into a user friendly experience.
Aaron Shek	Backend Lead	Strong interest and some experience in developing Python applications.	Architect and develop the backend of the application. This extends to understanding external services required, database design and API design.
Sahibreet Bassi	Support Member	Strong interest in all aspects of the project, from development to business case pitching.	Flexibly support other team members in architecting and developing the application in any aspect. This also extends to building the overall documentation of the project.
Austin Walsh	Support Member	Strong interest in all aspects of the project, from development to business case pitching.	Flexibly support other team members in architecting and developing the application in any aspect. This also extends to building the overall documentation of the project.

The roles listed were structured in that way, having one leader, with two development leads and support team members, to ensure an acceptable work output from all team members, from those who can do work immediately, to those who want to learn how to do something in this project over time. As for all teams, there will be varying levels of experience, and not every team member will be able to do every task. However, to ensure an inclusive learning and productive experience overall, allowing

people to both flexibly learn and work as they go, builds an environment where an agreed net contribution can be established, and then effectively accomplished.

## 3.2 Performance Evaluation

The team performed well in terms of producing a strong business case, high quality documentation, and pitch for Boba Me in concept, however when it came to executing the development of the application, is an area we need as a team to improve on.

To elaborate on our successes, and why we were successful in working on the concept of Boba Me, is mainly because of how as a team we built the idea. Our discussion and research on the idea was cohesive and productive, because our main strength was collaborating on aspects of the project which did not require any form of technical knowledge on web app development. Our general knowledge on the market of Bubble Tea and current technologies, is what made us strong in developing the concept of Boba Me.

However, just because you have an idea, it is only successful if executed correctly. The poor execution of building the application, particularly translating our user stories to the frontend, is where we failed as a team. Although overall as a team, we had some exposure to frontend development, none of us were particularly coherent in any frontend framework, other than pure HTML and CSS. Although the team was structured in mind for members to both learn and build aspects of the project, the learning curve was not expected to be deep. The main assumption from the beginning was for each team member to flexibly learn at their own pace and contribute. This free form of flexibility did not work in the team's favour, as it provided a bit too much flexibility which temporarily created an uneven loading of work. Not all designated team members were not equally trained in applying React and JS. This then hindered the quality of the frontend as many of us could not fully contribute to fleshing out all of our planned user features. This then hindered how the backend was going to be particularly structured, as it highly depended on what information the frontend needed, and the data format in which it was transported. The overall issue then transformed one where time was mis-managed during the project, due to strained team resources.

On top of this, also during the start of the project, there was a notion to manage the team via management apps such as Trello to keep track of allocated tasks and roles. However the team did not particularly respond to this well, as there was no given incentive for an individual member to commit to write up their progress on tasks. This then really impacted our overall time management of developing the application, as we could not actively track our deadlines nor our progress. In addition our timelines

were formulated around each due date, rather than individual sub-deliverables because of ditching the use of management apps. Finally, this made us all depend on Discord and Messenger to track the project, which has limited features to do so, other than instantly reaching out to our team members.

As observed, the main issue was properly executing the concept of Boba Me, due to providing a layer of flexibility which created temporary discrepancies which affected what the team can focus on at a given moment. This then transformed into a time management issue, but there are possible mitigations which can be taken into place.

### 3.3 - Conclusion

Concluding the project overall, the team created a great concept in theory and documented it well, however when it finally came to execution, failed. However, the key issues recognised was ineffectively balancing flexibility, hence managing our time effectively.

Considerations to do what for next time, have to take the current environment in which this project is being executed, and a better evaluation of allocating team resources. Executing team projects under a schooling environment is often tough, as students have difficulty balancing different course loads and input into each one. Also the general expectations can vary across the duration of the project, initially wanting to achieve high to achieving what is possible. Due to all of this, it is also quite difficult to arrange the team to fully commit to a software development ideology such as Agile or DevOps, which are often effective.

Placing all of this into consideration, what should've been done in the beginning is to put an active motivation for team members to commit to the project on time. To do it completely differently, the team needed to engage in more activity to initiate learning concepts together, rather than learning on our own at our own pace. Combine this with a full timeline of the project with sub-deliverables and formulate more meetings around them, instead of basing our work around individual deliverable deadlines. More active engagement to prove a cohesive team function, rather than just individuals contributing to the project in isolation, is required to ensure better team successes.

Overall, the project went really well as a team in some aspects, as we achieved well in building the concept Boba Me, to assist both Bubble Tea businesses and consumers to meet each other more effectively than the current conventional means. However, our execution of deploying the application was where we mainly fell as a team. However with considerations to shape how we work together, suited to the

environment we are in, shall make the next time we all work in a team again to achieve greater success.