



UNSW
A U S T R A L I A

COMP 9900 Information Technology project 2023 T2

Eatery Management System

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16 June 2023

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Background

Problem statement

The objective of this project is to develop a website with the primary purpose of assisting eateries in the efficient management and allocation of their vouchers. Our team aims to create a user-friendly platform that provides various essential functionalities to achieve this goal. These functionalities include two main parts. The first function is about registration. Customers should have the capability to register and maintain a public profile that includes their username, date of birth, email address, profile picture, and a phone number (optional).

Similarly, eateries should be able to register and maintain a public profile that includes their business details such as information, profile picture, email address, phone number, operating hours, address, offered cuisines, and menus.

The second function is about vouchers. A subscribed eatery must be able to offer a specific number of discount vouchers within a specified time range for any given day. A discount voucher provides a customer with a percentage discount on their bill for a specified time at the eatery that offered the voucher. Additionally, a motivated lottery function is being considered to provide users with extra discount vouchers.

Existing eatery management system analysis

We looked at three other existing eatery management systems to compare with. The first one is Eat club.

Eat Club

Eat Club (<https://eatclub.com.au/>) is a mobile application that offers users an aesthetically pleasing menu interface. One of the key features of the application is the region setting, which allows users to select their living city and suburb.

The central component of the homepage is the list of eateries, which is accompanied by three primary filters. The first filter is Distance, which allows users to view eateries based on their proximity, ranging from nearest to farthest. This feature enables users to easily locate and explore nearby dining options. The second filter is Best Deal, which presents users with recommendations of renowned eateries within a specific range, typically within a 2km radius. This filter aims to highlight exceptional dining experiences and promotional offers available within proximity to the user. The third filter is New, which directs users to newly registered eateries.

In addition to these three primary filters, the website offers users the flexibility to further refine their search using a variety of sub-filters. These sub-filters encompass additional parameters to cater to the diverse preferences of users seeking specific dining experiences. One such sub-filter is Time, allowing users to select their desired mealtime, be it breakfast, lunch, or dinner. Another sub-filter is Percentage of Discount, enabling users to specify their preference for discounts based on the percentage offered by eateries. Furthermore, the website provides sub-filters for Cuisines, enabling users to refine their search based on their desired culinary preferences. This application incorporates a well-designed interface for showing information about eateries.

Each eatery is accompanied by its own visually appealing image and descriptive tags. These tags effectively convey details to users, including the eatery's cuisine style, service type (such as quick service or casual dining), and other distinguishing features. Notably, if an eatery offers exceptional vouchers or promotions, they are prominently displayed in the top left corner of the respective eatery's image.

Furthermore, the application features a bar located below the main page, offering convenient access to homepage, map, favorite list, and deal history.

The map page displays an interactive map where all registered restaurants are marked accordingly. Users can click on the designated dots representing eateries to view detailed information about them. Open eateries are indicated by red dots, while closed eateries are denoted by grey dots. Additionally, eateries that accept pre-bookings are distinguished by yellow dots, allowing users to identify and plan their dining experiences accordingly.

After careful analysis of this case, we have identified certain drawbacks. Primarily, we have observed an overlap between the functionalities of Distance and Best Deals. To enhance efficiency and user experience, it is advisable to consolidate these two functions into a single, comprehensive feature. Another notable drawback is the lack of a rating and comment system. This problem hinders users from accessing valuable feedback and insights from other patrons regarding the eateries. Another drawback is the somewhat monotonous approach to voucher assignment. To enhance user engagement, it would be beneficial if the website could design a more captivating method for users to access and redeem vouchers.

First Table

First Table (<https://www.firsttable.com.au/sydney/>) is a website. The main page features four primary filters, Dates, Suburbs (based on city), Discover/Top Rate/Near Me, and Time. In addition, on the right-hand side of the page, users have the option to select the cuisine of eateries, further narrowing down their choices according to what they select for the filter. A map is also integrated into the homepage. This interactive map displays eateries that meet the selected filter conditions.

Within the eatery list, the presentation of eatery information is commendable. The displayed details encompass the eatery's name, location, rating stars, and operating hours throughout each day of the week. For each day, a comprehensive depiction of the time of the first table and last table is provided. Notably, when users select their desired mealtime, be it breakfast, lunch, or dinner, the corresponding time range for the first and last table is clearly indicated.

Furthermore, by clicking on this button, users gain access to comments and feedback shared by other patrons about the eatery.

Also, there are certain drawbacks associated with this website. The first one is the absence of discount vouchers for users. It would be advantageous for the website manager to implement a system that enables eateries to assign vouchers to attract customers.

Additionally, there are inconsistencies in certain filters. For instance, users are only able to select either top-rated or near-me options independently. It would be more advantageous to integrate these two functionalities into a cohesive filter.

OpenTable

The third one is OpenTable (<https://www.opentable.com.au/>), which is another eatery recommended website.

The primary filter on this platform is based on time (date and hours within a day) and location. As users scroll down the page, numerous default categories are displayed. These categories include "Available for Breakfast/Lunch/Dinner now," "Outdoor Dining," "New to OpenTable," and restaurants with special menus, among others. Within these categories, eateries are presented in a lined format, showcasing their name, location, rating stars, number of reviews, cuisine type, dollar symbols indicating price levels, and the number of bookings made for that specific eatery on the given day.

Additionally, there is a section dedicated to showcasing random reviews of renowned eateries located within the user's living city.

Upon clicking on a specific eatery, users are presented with detailed information regarding the eatery. This includes interior decoration images, reviews from other users. Additionally, users have the option to bookmark or add the eatery to their favorites list, located in the upper right corner of the page.

Although this website is well-designed and user-friendly, it does have a few existing drawbacks. Firstly, the available filter options are limited. It would be beneficial to expand the range of filters, including options such as ratings, cuisine types, and distance range, among others. Additionally, the absence of voucher offerings is a notable shortcoming. Incorporating voucher functionality would be advantageous for both users and eateries alike.

User Stories and Sprints

Main users for this eatery management system

Customer

Customers are the users that use this system to search eateries and book vouchers. In this system, customers can create account, maintain their profile, search for eatery (by different filters, including time, location, rate rank on leader board), book vouchers of different eateries, apply vouchers for bill, add review and stars for eateries, check the eateries' locations on google map, and get notifications from the website.

Eatery owner

The eatery owners are the users that hold eateries. They can register their own eatery in this system, to customize their eatery profile, customize vouchers (amount, time range, discount value), edit menus, get notifications from the system, check customer reviews, compete on the leader board.

Basic Function

Function1: In the user registration interface, the user can choose to be an eatery or customer through the drop-down menu to register an account, and during the registration process, we provide the option to register by email or phone number.

For customers users, there are some important information need to provide by following features:

- Customers users must be able to register and maintain a profile for themselves that is visible to all system users.
- On the profile page, users need to provide includes the username, birthday, email address, avatar, phone number (optional).
- For eateries users, there are some important information need to provide by following features:
- Eateries users must be able to register and maintain a profile for themselves that is visible to all system users.
- On the profile page, eateries users should include the eatery name, store avatar, email, contact number, business hours, address, cuisines offered, and a menu.

Function2: A subscribed eatery must be able to offer any given number of discount vouchers for any time range of a given day. A discount voucher provides a customer with a percentage discount on their bill for a specified time range at the eatery that offered the voucher.

For eateries users, there are some important information need to provide by following features:

- Eatery users can manage and check each vouchers details including discount, time, code, and corresponding restaurant.
- Eatery users can make the decision to send customers discount vouchers.
- Eatery users can offer discount vouchers for any time frame in the coming week.

For customer users, there are some important information need to provide by following features:

- Customer users also can manage and check their vouchers and book them from eateries.
- Customer users must receive a code after they are claiming the vouchers to make sure they booked successfully.
- Customer users could see the discount, time, code, and corresponding restaurant of each voucher to make sure it is valid for them.

Function3: The system must also allow eateries to specify a repeated weekly schedule, specifically when, what % discount, and how many discount vouchers will appear for each time range the eatery wants to offer discount vouchers for.

For eatery owner, there are some important information need to provide by following features:

- Ability to offer discount coupons for specific time periods in the coming week.
- The ability to manage the number of discount coupons issued during a defined time period.
- For customer users, there are some important information need to provide by following features:
- The ability to view the discount times offered by the restaurant to help them make a decision.
- The ability to view specific information on the number of discount coupons available for a specific time period.

Function4: Customers must be able to find discounts that are available during a specified time range based on location (postcode), cuisine, and (optionally) some keywords that match eatery menu entries. Customers must be able to navigate to any eatery's profile from search results. Once a customer finds an available discount voucher: they must be able to book a voucher (which reduces the available voucher count for that eatery and time period by 1) and see the time range for which their booked voucher is available (each customer must not be able to book a discount voucher if there are none left and can only book 1 voucher per eatery per voucher time range).

For customers users, there are some important information need to provide by following features:

- Customers users must be able to search vouchers based on location (postcode), cuisines, keywords (optional).
- On the vouchers page, customers users are able to check the time range of voucher they book, and each customer can only book one voucher per eatery per voucher time range.
- For eateries users, there are some important information need to provide by following features:
- Eateries users must be able to check the remain number of vouchers.

Function5: When a customer with a discount voucher orders their meal at the corresponding eatery within the voucher's time range, they must be able to use their voucher by showing the

eatery a code that represents the discount voucher. The eatery must then be able to use this code to identify what the % discount should be, to verify that the customer had indeed booked a discount voucher and that this same discount voucher has not been previously used.

For customers users, there are some important information need to provide by following features:

- On the voucher page, customers users must be able to click on the voucher and the code of voucher would be visible to users.
- For eateries, there are some important information need to provide by following features:
- Eateries staffs must be able to check the percentage discount of voucher after scanning the code of voucher.
- Eateries staffs must be able to verify usage status of voucher after scanning the code.

Function6: Customers must be able to add reviews that include some text, and a rating out of 5, for each eatery that they have a discount voucher for. Any customer must be able to read such reviews along with the average rating for any eatery they are thinking of booking a discount voucher for.

For customer users, there are some important information need to provide by following features:

- The ability for customers to submit detailed reviews that include written feedback and a rating out of 5.
- Allow customers to read these reviews and view their average rating before ordering a discount coupon.
- This feature helps increase restaurant transparency and enables customers to make better decisions based on the shared experiences of others.

Function7: Google Map Interaction. Add map interaction where users can click on the geographical location of a business, and it automatically redirects them to Google Maps, displaying the location of the store.

For the customer users, below are the benefits that they have from this functionality:

- When they are redirected to Google Maps, they can save the eatery directly on Google Maps.
- By clicking on the Google Maps icon on eatery property, customers can choose the route to the eatery from their current location.
- For any potential customers, they can find the eateries locations even they never go there.

For the eatery owners, they can benefit from the functionality in the aspects of:

- By checking the view times on Google Maps, the eatery owners can directly see the number of customers check their eateries.

- By inputting the location of the eateries in to eatery profile, the system will automatically link the location to Google Maps, which will make customers easily find the eatery location on Google Maps.

Function8: Leader board System. To foster healthy competition among restaurants, besides the user feedback and rating feature, an additional approach would be to automatically calculate a comprehensive rating based on the number of customers and customer ratings. This overall rating can then be displayed on a leader board.

For the customers:

- A customer can see all ranks of the eateries on the leader board, so that can help them to make decision on where to eat.
- A customer can check the leader board by setting various filters, for example, location.

For eatery owners:

- The function will all the eatery owners to check their ranks which are shown on the leader board.
- The notification function can make sure that the eatery owners receive instant messages when their ranking change.

User Stories (Sprint1)

The user stories based on the base functions are shown in the table below:

Table 1 User Stories for Sprint 1

| Step | User story | Function | Sprints |
|------|--|-----------|---------------------------|
| 1 | As an eatery owner, I want to set up my own account so that I can use this platform to give my customers a better visibility of my eateries. | Function1 | Sprints1 (week3-week5) |
| 2 | As an eatery owner, I want to able to sign up for business user >>click on the “sign up” button to transfer to the account creation page and then click on the for-business button so that I can edit registration information. | Function1 | Sprints1 (week3-week5) |
| 3 | As an eatery owner, I want to be able to set my eatery information >>click on the” create eatery” and navigate to creation page, so that I can set the eatery name, store avatar, email, contact number, address, cuisines offered, and a menu, etc. | Function1 | Sprints1 (week3-week5) |
| 4 | As an eatery owner, I want to be able to set a secure password >>click on the “set password” so that the platform can protect my account. | Function1 | Sprints1 (week3-week5) |

| | | | |
|----|--|-----------|-----------------------------|
| 5 | As a eatery owner, I want to be able to customize my eatery homepage >> Click on the “customize your eatery” button, so that I can create my own menu and description. | Function1 | Sprints1 (week3-week5) |
| 6 | As an eatery owner, I want to be able to edit my eatery information, including: the eatery name, store avatar, email, address, and a menu >> click on “edit my eatery profile” so that it can give my customers a visibility of my eateries. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 7 | As a customer, I want to register my own account so that I can use this platform. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 8 | As a customer, I want to be able to sign up for customer user >>click the” sign up” button and then transfer to the account creation page. So that I can edit my personal information. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 9 | As a customer, I want to be able to set my personal information >>click on the” create” and navigate to account creation page, so that I can set my username address and birthday, etc. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 10 | As a customer, I want to be able to set a secure password >>click on the “set password” so that the platform can protect my account. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 11 | As a customer, I want to be able to edit my personal information, including avatar, name, address, personal description >> click on “edit my profile” so that can let people know about me. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 12 | As a customer, I hope the profile page can save my personal information so that I can see how my profile looks. | Function1 | Sprints1 (Jun 16-Jun 28) |
| 13 | As an eatery owner, I want to check the discount vouchers I have issued >> click “vouchers” button, so that I don't issue duplicate discount vouchers. | Function2 | Sprints1 (Jun 16-Jun 28) |
| 14 | As an eatery owner, I want to offer discount vouchers for any time frame in the coming week >> click “offer vouchers” button, so that | Function2 | Sprints1 (Jun 16-Jun 28) |

| | | | |
|----|---|-----------|-----------------------------|
| | customers can take advantage of the corresponding discounts. | | |
| 15 | As a customer, I want to book a voucher for a restaurant I am interested in >> click the “claim vouchers “button so that vouchers will be added to my account. | Function2 | Sprints1 (Jun 16-Jun 28) |
| 16 | As a customer, I want to receive a notification after claiming a voucher so that I can clearly know whether the voucher is successfully booked. | Function2 | Sprints1 (Jun 16-Jun 28) |
| 17 | As a customer, I want to be able to intuitively see the discount, time, code, and corresponding restaurant of each voucher >> Click and jump to “my vouchers” page, so that It is convenient for me to view and use it. | Function2 | Sprints1 (Jun 16-Jun 28) |

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Backlog

Q ZS HZ A YN Epic Label Type Insights

▼ Sprint 1 16 Jun – 28 Jun (17 issues) 0 0 0 Complete sprint

Completion and implementation of basic functions 1 and 2 of the project proposal

- YRQN-25 [1]As an eatery owner, I want to set up my own account so that I can use this platform to give my customers a better visibili... TO DO
- YRQN-26 [1]As an eatery owner, I want to able to sign up for business user >>click on the “sign up” button to transfer to the account ... TO DO
- YRQN-27 [1]As an eatery owner, I want to be able to set my eatery information >>click on the “create eatery ” and navigate to creation p... TO DO
- YRQN-28 [1]As an eatery owner, I want to be able to set a secure password >>click on the “set password” so that the platform can prote... TO DO
- YRQN-29 [1]As an eatery owner, I want to be able to customize my eatery homepage >> Click on the “customize your eatery” button, s... TO DO
- YRQN-30 [1]As an eatery owner, I want to be able to edit my eatery information, including: the eatery name, store avatar, email, addre... TO DO
- YRQN-31 [1]As a customer, I want to register my own account so that I can use this platform. TO DO
- YRQN-32 [1]As a customer, I want to able to sign up for customer user >>click the “sign up” button and then transfer to the account ... TO DO
- YRQN-42 [1]As a customer, I want to be able to set my personal information >>click on the “create” and navigate to account creation ... TO DO
- YRQN-43 [1]As a customer, I want to be able to set a secure password >>click on the “set password” so that the platform can protect... TO DO

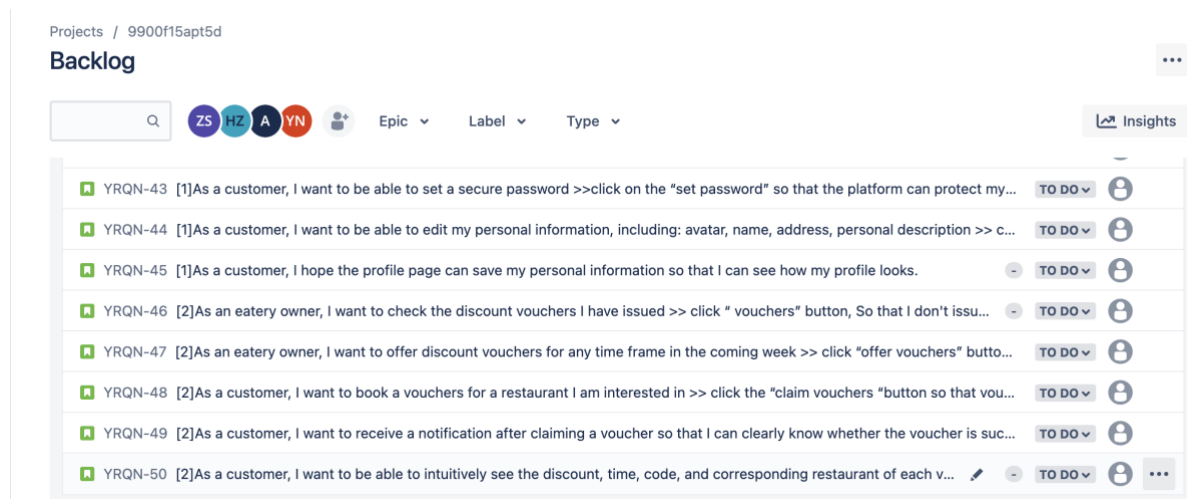


Figure 1 User stories of sprint 1 in Jira.

Novelty

Novel Function

Novel function 1 (Function 7): Google Map Interaction. Add map interaction where users can click on the geographical location of a business, and it automatically redirects them to Google Maps, displaying the location of the store.

Novel function 2 (Function 8): Leader board System. To foster healthy competition among restaurants, besides the user feedback and rating feature, an additional approach would be to automatically calculate a comprehensive rating based on the number of customers and customer ratings. This overall rating can then be displayed on a leader board.

Purpose

The overall purpose of generating the above two novel functions to our web system is to enhance customers' experience. Specifically, the Google Map interactive feature allows customers to intuitively view eatery's locations and the route to them. Furthermore, customers can also observe the distribution situation in a specific area on Google Maps, which will highly enhance customers' experience. In terms of the leader board, this functionality can motivate eateries to actively improve their dishes and services to boost their competitiveness so that they can attract more customers. We believe that such a positive competition mechanism will finally benefit both customers and eateries.

Jira Backlog

All the user stories have been put into Jira and below is a screenshot showing all the issues in the Jira product backlog.

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Backlog

...

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+

Epic

Label

Type

Insights

Sprint 1

16 Jun – 28 Jun (17 issues)

0 0 0

Complete sprint

...

Completion and implementation of basic functions 1 and 2 of the project proposal

| | | | |
|---------|---|-------|--|
| YRQN-25 | [1]As an eatery owner, I want to set up my own account so that I can use this platform to give my customers a better visibili... | TO DO | |
| YRQN-26 | [1]As an eatery owner, I want to able to sign up for business user >>click on the "sign up" button to transfer to the account ... | TO DO | |
| YRQN-27 | [1]As an eatery owner, I want to be able to set my eatery information >>click on the "create eatery " and navigate to creation p... | TO DO | |
| YRQN-28 | [1]As an eatery owner, I want to be able to set a secure password >>click on the "set password" so that the platform can prote... | TO DO | |
| YRQN-29 | [1]As a eatery owner, I want to be able to customize my eatery homepage >> Click on the "customize your eatery" button, s... | TO DO | |
| YRQN-30 | [1]As an eatery owner, I want to be able to edit my eatery information, including: the eatery name, store avatar, email, addre... | TO DO | |
| YRQN-31 | [1]As a customer, I want to register my own account so that I can use this platform. | TO DO | |
| YRQN-32 | [1]As a customer, I want to able to sign up for customer user >>click the "sign up" button and then transfer to the account ... | TO DO | |
| YRQN-42 | [1]As a customer, I want to be able to set my personal information >>click on the "create" and navigate to account creation ... | TO DO | |
| YRQN-43 | [1]As a customer, I want to be able to set a secure password >>click on the "set password" so that the platform can protect... | TO DO | |

Projects / 9900f15apt5d

Backlog

...

ZS HZ A YN

+

Epic

Label

Type

Insights

| | | | |
|---------|--|-------|--|
| YRQN-43 | [1]As a customer, I want to be able to set a secure password >>click on the "set password" so that the platform can protect my... | TO DO | |
| YRQN-44 | [1]As a customer, I want to be able to edit my personal information, including: avatar, name, address, personal description >> c... | TO DO | |
| YRQN-45 | [1]As a customer, I hope the profile page can save my personal information so that I can see how my profile looks. | TO DO | |
| YRQN-46 | [2]As an eatery owner, I want to check the discount vouchers I have issued >> click " vouchers" button, So that I don't issu... | TO DO | |
| YRQN-47 | [2]As an eatery owner, I want to offer discount vouchers for any time frame in the coming week >> click "offer vouchers" butto... | TO DO | |
| YRQN-48 | [2]As a customer, I want to book a vouchers for a restaurant I am interested in >> click the "claim vouchers "button so that you... | TO DO | |
| YRQN-49 | [2]As a customer, I want to receive a notification after claiming a voucher so that I can clearly know whether the voucher is suc... | TO DO | |
| YRQN-50 | [2]As a customer, I want to be able to intuitively see the discount, time, code, and corresponding restaurant of each v... | TO DO | |

Sprint 2

30 Jun – 21 Jul (18 issues)

0 0 0

Start sprint

...

| | | | |
|---------|--|-------|--|
| YRQN-34 | [3]As a customer, I want to search for discount vouchers based on keywords like location, cuisine, time >> Click the "Search D... | TO DO | |
| YRQN-33 | [3]As an eatery owner, I want to set a repeating weekly schedule for the discount vouchers >> Use the "calendar" section to a... | TO DO | |
| YRQN-35 | [3]As a customer, I want to see the time range for which my booked voucher is valid >> Use the " Reminder" section to remind... | TO DO | |
| YRQN-36 | [4]As an eatery owner, I want to be able to update my profile with various info >> Use the "Edit profile" section of My Profile s... | TO DO | |
| YRQN-37 | [4]As a customer, I want to be able to book a discount voucher >> Click the "Restaurant Profile" button to go to the eatery pag... | TO DO | |
| YRQN-38 | [4]As a customer, I want the system to prevent me from violate the booking rules >> When I click on the "book" button, the sy... | TO DO | |
| YRQN-1 | [5]As a customer, I'd like to use my discount voucher when I order a meal at the corresponding eatery within the voucher's time ... | TO DO | |
| YRQN-2 | [5]As an eatery staff member, I'd like to validate the discount voucher presented by a customer >> Click on the "Voucher Val... | TO DO | |
| YRQN-3 | [5]As a customer, I'd like to check my Voucher usage history at any time >> Click on the "Voucher History" tab on my profile ... | TO DO | |
| YRQN-4 | [5]As an eatery owner, I'd like to keep track of all redeemed vouchers at my eatery >> Use the "Voucher Redemption" report... | TO DO | |
| YRQN-5 | [5]As a customer, I'd like to know the exact discount amount I would receive from the voucher >> Check the Voucher Details... | TO DO | |



Figure 2 Jira backlog of all user stories.

Project Sprints

Table 2 Project Sprints

| Sprints | Dates |
|---------|---|
| 1 | Start: Saturday, Jun 16 Week 3 Due: Wednesday, Jun 28, Week 5 |
| 2 | Start: Thursday, Jun 29, Week 5 Due: Wednesday, Jul 19, Week 8 |
| 3 | Start: Thursday, Jul 20, Week 8 Due: Wednesday, Aug 2, Week 10 |

The screen shot below reveals the creation of the Sprint 1

Edit sprint: Sprint 1

Sprint name *

Sprint 1

Start date *

6/16/2023 7:00 PM

End date *

6/28/2023 12:00 PM

Sprint goal

Completion and implementation of basic functions 1 and 2 of the project proposal

Update Cancel

Figure 3 Define Sprint 1 with start and end date, sprint goal.

Interface and Flow Diagram

In this section, all web examples and flow diagram demonstrations are created by us with the tool of Figma.

User Interface

Main Page

The image below depicts the homepage of our eatery management system, which is primarily composed of three sections. The first section is the function area at the top of the webpage, where users can select their region, choose to log in or register, ask questions, and search for restaurants. The second section is the website's slogan and features; by clicking on "Start to browse", users can view all registered eatery information. The third section showcases some of the eateries that have registered on our platform.

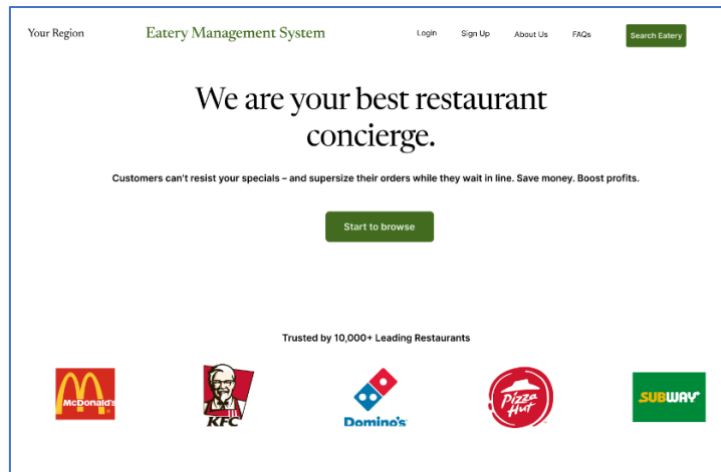


Figure 4 Main page-Home

After user clicks “Login” or “Start to browse”, they will be then navigated to another main page where all available eateries are listed. In this page, users can search for eateries by setting filters such as available dates, locations, in rates order, cuisines, and mealtime. What’s more, the users can search for eateries directly on google map.

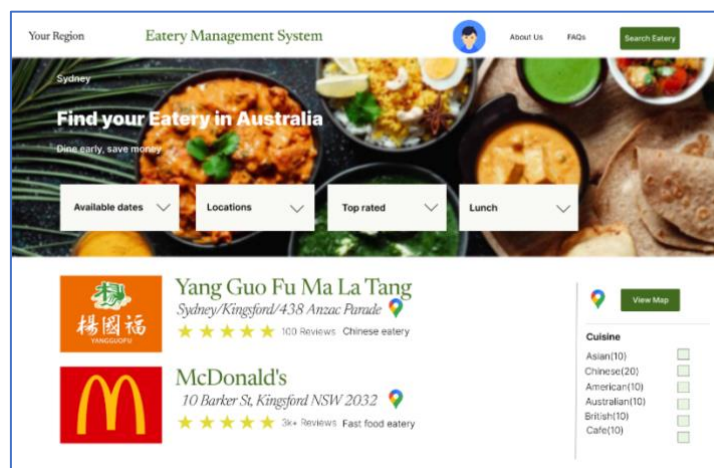


Figure 5 Main page-browsing eateries

Login and Register Pages

When users click on the “Register” button on the homepage, the webpage will redirect to the user registration form page. Users need to input their username, email, and set a password, then choose to register as either a customer or an eatery owner. If registering as a customer, the webpage will redirect to the customer information form page, where they need to provide their birthday, gender, phone number, favourite cuisine, and upload their avatar. If registering as an eatery owner, the webpage will redirect to the eatery owner information form page. Users will need to fill in their contact phone number, business hours, eatery name, address, cuisine, and upload an image of their eatery. If users already have an account, when they click the “Login” button, the webpage will redirect to the login page. After entering their username and password, they can successfully log into the system.

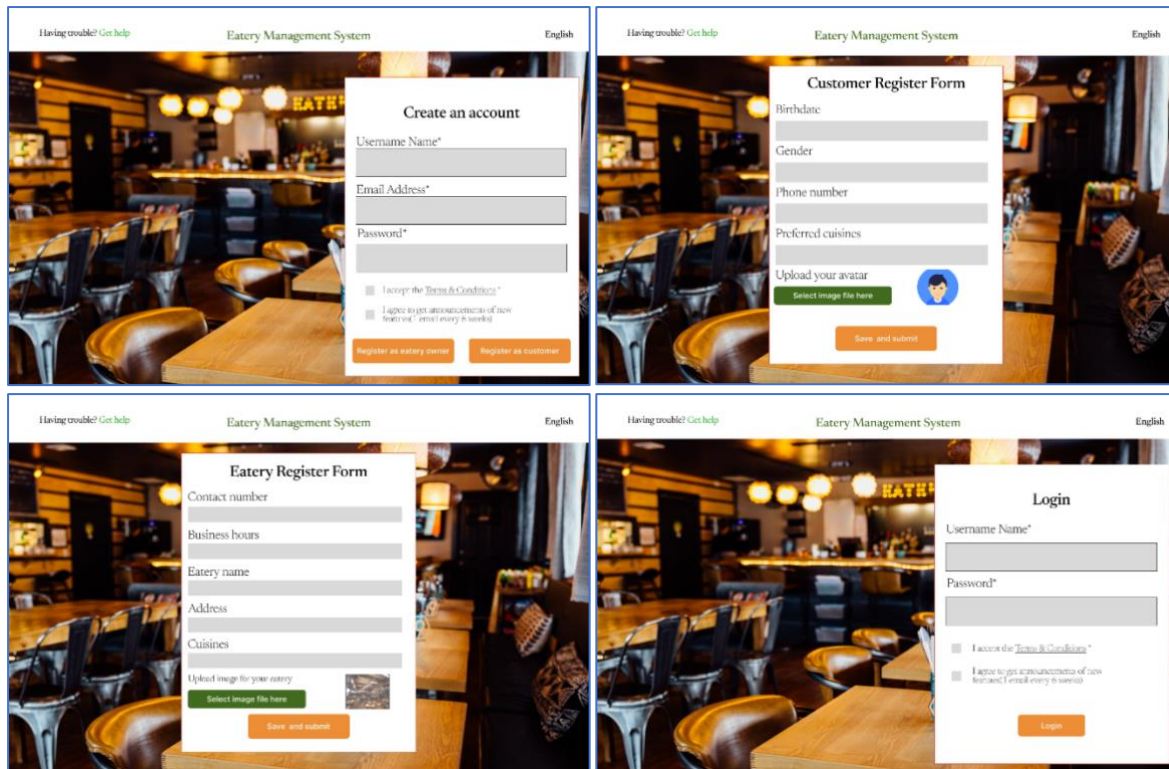


Figure 6 (a) Register page; (b) Customer register page; (c) Eatery register page; (d) Login page.

Profile Pages

We have drawn the eatery's profile page, the customer profile page, the eatery profile editing page, and the customer profile editing page. For the eatery profile page, it shows the rank of the eatery on the leader board, the overview of the eatery, and the staff information. In this page, the eatery owner can edit profile, check vouchers, edit menu, see profit trend, check notification message, etc. For the customer profile page, it shows the customer's account level, his eatery history, and liked eateries. The customer can edit profile, check vouchers, and check notifications.

As for the eatery profile editing page, the eatery owner can edit the eatery name, email, address, contact number, cuisines, business hours, and password. For the customers, they can edit their name, email, address, contact number, address, and password. The images are shown below.

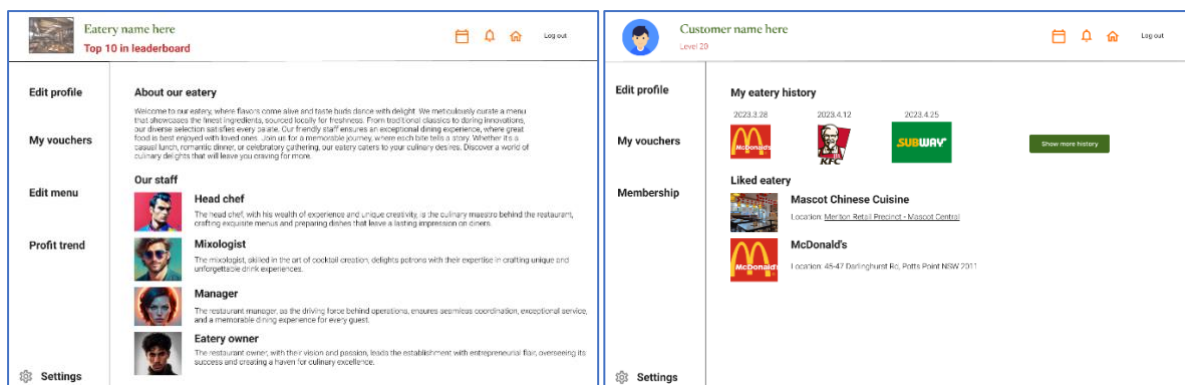


Figure 7 (a) Eatery profile page; (b) Customer profile page; (c) Eatery profile editing page; (d) Customer profile editing page.

Vouchers Pages

For the eatery owner, on his “My Vouchers” page, he can add/delete vouchers. He can edit the voucher’s discount number, amount, and valid time range. Each voucher will be automatically assigned a unique code.

Figure 8 Eatery owner “My Vouchers” page.

For the customer, on his “My Vouchers” page, he can check the amount of, the discount number, the code, the available time range of his vouchers.

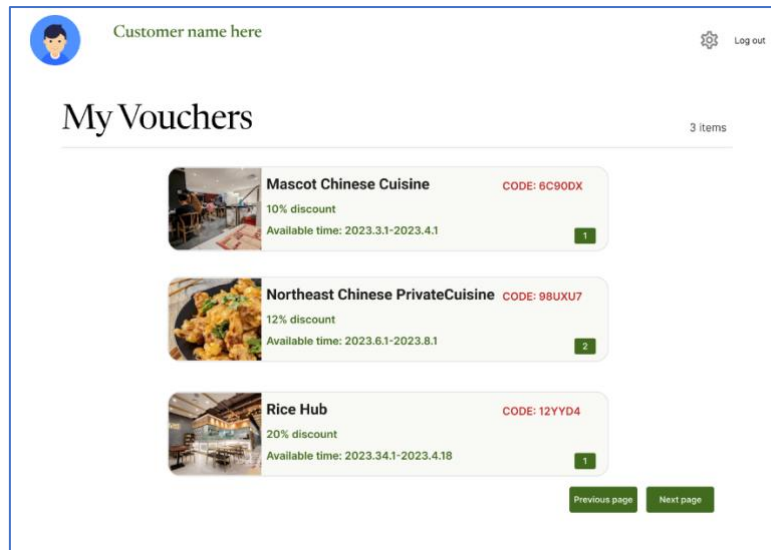


Figure 9 Customer "My Vouchers" page.

Eatery Menu page

In this page, the eatery owner can edit the menus.

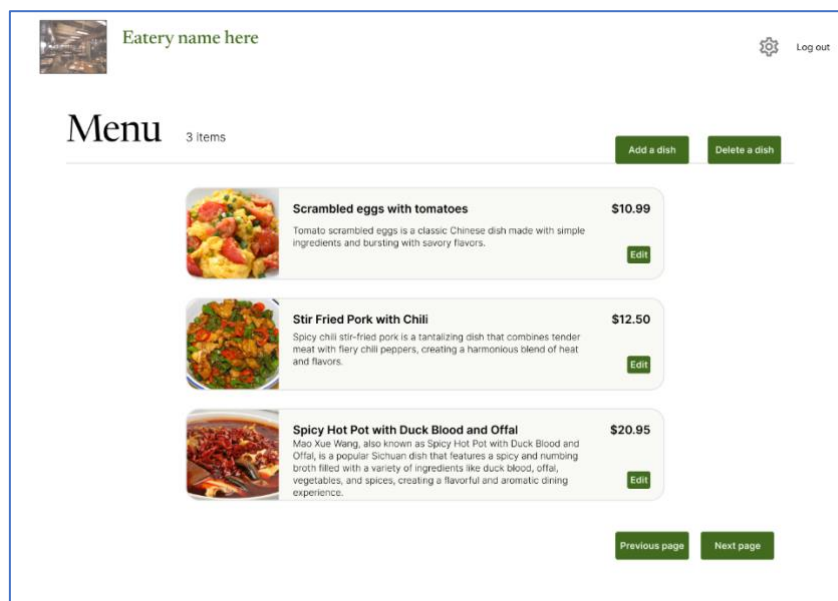


Figure 10 Eatery menu page.

Notification page

Both the eatery owners and customers can check his notification messages in this page.

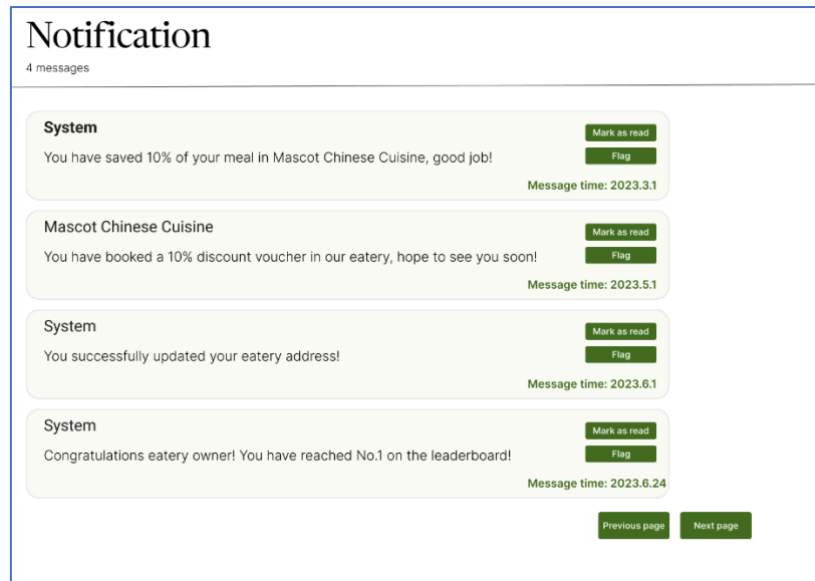


Figure 11 Notification page.

Alert pages

Below are two examples of the system alert message demonstration.

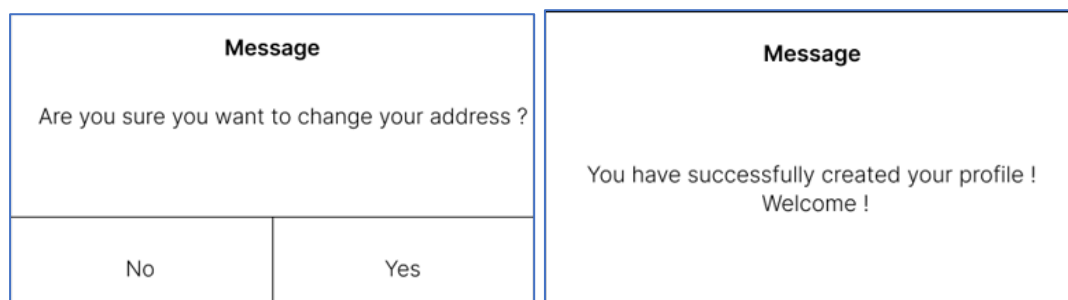


Figure 12 Alert message demonstration.

Review page

This is the review page of an eatery, customers can add reviews and set stars on this page. They can also endorse other customers' reviews.

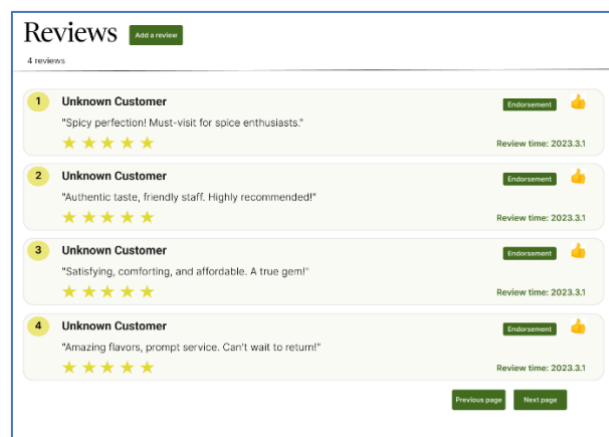


Figure 13 Review page.

Eatery property page (customer view)

When customers click on the eatery that he is interested in, they will be redirected to this page. In this eatery property page, the customers can see the stars and reviews by previous customers. The customers can book a voucher and book a table by inputting a date and time range. They can also check the eatery's address on google map by clicking on the map icon.

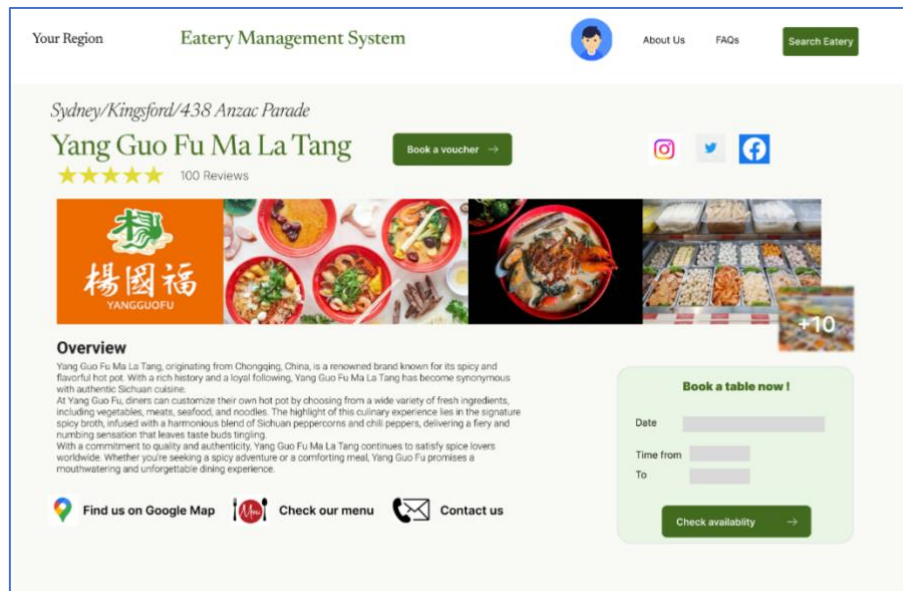


Figure 14 Eatery property page.

Flow Diagram

The image below shows the overall flow diagram, which reflects the storyboards that are related to the user stories in sprint 1, even cover sprint 2 and sprint 3. It clearly shows how a user register as different roles, and how he logs into the system. Furthermore, it shows how will a customer or eatery owner maintain his profile. It shows how can a customer search for an eatery and book a voucher. It shows that users can easily check the reviews of an eatery or add a review by clicking on the review link in the eatery property page. What's more, the diagram shows how an eatery owner customizes his eatery's menu and vouchers.



Figure 15 Overall flow diagram.

System Architecture

We divided the implementation process into two parts, front-end and back-end: the front-end system is a graphical user interface for users to use the Eatery platform more easily; the back-end system, which is not accessible to users, is mainly the implementation of the interface.

Front-end

In front-end development, we mainly use HTML, CSS, JavaScript, and Webpack as the basic tools and technologies.

HTML (HyperText Markup Language) is the standard markup language for creating web pages. We use HTML to build the structure of a web page, defining the relationship of elements and content.

CSS (Cascading Style Sheets) is a language that describes how HTML elements are displayed on the screen. We use CSS to design and beautify pages and enhance the user experience.

JavaScript is a scripting language that is used to create dynamic web pages that increase interactivity. In this project, we use JavaScript for client-side programming to handle user interactions, such as clicking buttons or submitting forms.

Webpack is a module packager that is primarily used for JavaScript applications. We use Webpack to package all the modules into one or more static resources so that they can be loaded and run more efficiently.

We use react, a JavaScript library developed by Facebook, which is used to build user interfaces. We use React to build componentized user interfaces, provide faster page rendering, and deliver a better user experience.

Material-UI (Mui) is a UI framework for React that provides a rich and customizable set of UI components. We use Mui to design and implement user interfaces, reducing development effort while ensuring consistency and aesthetics.

Redux is a JavaScript state management library that is often used in conjunction with React. We use Redux to manage the state of our applications, providing a predictable state management model that makes it easier to track and manage changes in the state of our applications.

Tailwind CSS is a pragmatic CSS framework that provides an underlying, composable set of CSS classes for building customizable designs. We use Tailwind CSS to write styles, and its composability allows us to build interfaces more quickly and flexibly.

These are the main tools and techniques we use in the front-end section, which work together to provide a beautiful, easy-to-use and responsive interface for our users.

Back-end

For our back-end implementation, we primarily use Python as our development language, coupled with various database technologies for data storage and management. Our focus lies in crafting the back-end logic, handling user requests, and interacting with the database among other tasks.

To optimize our development process, we've opted to use Django, a Python framework. Django is a comprehensive and robust framework that includes most modules needed for web development, allowing us to quickly establish a complete web service.

Database

For the database, we chose MySQL, which is used to store and manage data so that when a user or system requests a service, we can retrieve the data from the database and process it as needed.

Conclusion

Our system architecture is meticulously structured into two distinct segments: the front-end and back-end. The contents within each layer are distinctly specified. Furthermore, we provide a thorough description of the roles and responsibilities of external entities and their interaction with our system. Also included is a comprehensive overview of the planned technologies and languages to be utilized.

Front-end:

Develop language: Java script

Basic in use: Html,CSS,Webpack

Technologies in use: React, MUI, Redux,Tailwindcss

Back-end:

Develop language: Python.

Web framework: Django

Database: MySQL

Interface layer: Axios

API layer: Googlemaps, RESTful

Platform layer: Docker container

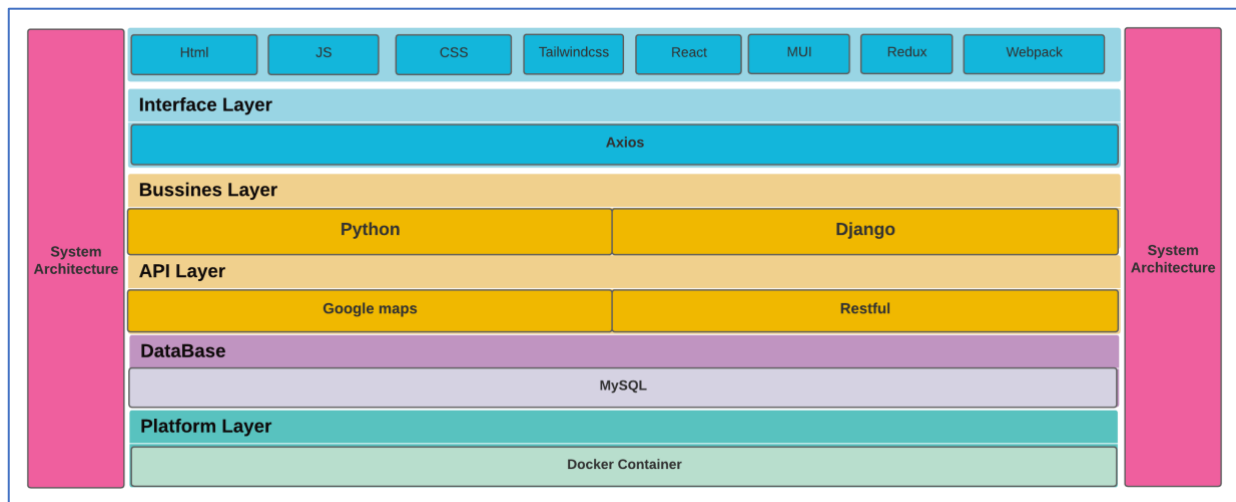


Figure 16 System Architecture.

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