

## **COMP 3059 – Capstone Project I**

### **Software Requirements Analysis and Design Assignment**

This assignment is an overview to gather the software needs with requirements analysis and help to proceed with the design.

The requirements analysis helps to break down functional and non-functional requirements to a basic design view to provide a clear system development process framework. It involves various entities, including business, stakeholders and technology requirements.

The design is the activity following requirements specification and before programming. Software design usually involves problem solving and planning a software solution.

To work on this assignment you could use the references and a sample template given below. The sample template can be customised to suit the nature of your project.

Reference Readings/Example:

[http://www.uacg.bg/filebank/acadstaff/userfiles/publ\\_bg\\_397\\_SDP\\_activities\\_and\\_steps.pdf](http://www.uacg.bg/filebank/acadstaff/userfiles/publ_bg_397_SDP_activities_and_steps.pdf)

[www.cse.msu.edu/~chengb/RE-491/Papers/SRSEExample-webapp.doc](http://www.cse.msu.edu/~chengb/RE-491/Papers/SRSEExample-webapp.doc)

Reference template:

[www.tricity.wsu.edu/~mckinnon/cpts322/cpts322-srs-v1.doc](http://www.tricity.wsu.edu/~mckinnon/cpts322/cpts322-srs-v1.doc)

## **1.0 Introduction**

Handling customer data is a crucial business function in the digital age. Many restaurants still have no way of effectively collecting and storing basic customer information. Because of the covid pandemic, restaurants are now required to store ever more customer data. Our program is designed to efficiently collect customer information and make it helpful to both the customer as well as the restaurant owner. The customer benefits by saving time with every future visit. The restaurant benefits by having an integrated reservation and contact tracing system that will store customer information for future use.

### **1.1 Purpose**

Passport Meals aims to provide effective information storage as well as other functionality to make the restaurant experience better for both customers as well as operators. For customers, Passport Meals will be a convenient companion app that makes their restaurant experience smoother and quicker. For operators, Passport meals will offer an integrated system to store customer information and handle reservations. This will help restaurant owners keep track of contact tracing and vaccination information.

### **1.2 Scope**

Passport meals will handle customer information collected with the customer's consent. This includes contact tracing information such as name, contact information, and vaccination status. On the restaurant side, Passport meals will handle reservation scheduling and allow the operator to view reservation and customer information on request. Passport meals will also host the menu of the restaurant for the customer to view via scanning a QR code.

Passport Meals will not handle taking orders or any payment processes. Passport Meals is primarily concerned with the handling and storing of customer data.

## **2.0 System Overview**

The System Overview section introduces the system context and design.

### **2.1 Project Perspective**

This system will replace existing systems the restaurant may have already as well add new functionality and features. Passport Meals aims to replace the current reservation system, contact tracing system as well as vaccine verification system. It will be a new digital integrated system that replaces the old analog systems. New functionality includes the ability to create and view customer profiles and search all of the information gathered.

## **2.2 System Context**

The System Context describes the resulting software within the business case, including strategic issues in which the system is involved or which it specifically addresses.

## **2.3 General Constraints**

The following represent known project constraints:

- Project funding sources are limited, with no contingency.
- Due to liability concerns customers must present physical or digital proof of vaccine to staff.
- Changing legal landscape regarding vaccines and covid restrictions.
- Customer privacy concerns.
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## **2.4 Assumptions and Dependencies**

Passport meals is based on some assumptions. For the operator side, the restaurant will provide QR code for the menu, proof of vaccine must be presented to staff by customers, and operators will abide by privacy regulations. The project team assumptions are that they will adhere to the communication plan and all project participants will abide by the guidelines identified within this plan. We also assume the legal landscape regarding covid and vaccinations will be still in place.

## **3.0 Functional Requirements**

### **3.1 Functional Requirements**

The system must store customer information such as name, contact information and vaccination status. This will be organized into profiles. The system must handle reservations and scheduling reservations. All information must be searchable. The system also must have views for customers in the form of menu view as well as input forms and for operators.

## 3.2 Use Cases

### 3.2.1 Save profile information

<b>Use Case Name</b>	Save profile information
<b>Trigger</b>	A customer is prompted to save personal information to profile.
<b>Precondition</b>	Contact tracing form is presented.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. The customer enters information (name and telephone/email).</li><li>2. The system validates information for formatting.</li><li>3. The customer chooses whether to save information and submits the form.</li></ol>
<b>Alternative Paths</b>	<p>If the customer has saved profile information in the past, their information will be auto completed and they will not be prompted to save profile information.</p> <p>Error messages will be shown if invalid information is inputted and prevents progression.</p>

<b>Postcondition</b>	System records entry and adds form to database. The information is added to a profile if the customer chooses to save the information.
<b>Exception Paths</b>	The customer may choose to exit at any time.
<b>Other</b>	Information is only saved to profile if the customer chooses to do so. Otherwise, information can only be used for contact tracing.

### 3.2.2 Make reservation

<b>Use Case Name</b>	Make reservation
<b>Trigger</b>	The customer selects to make a reservation.
<b>Precondition</b>	The user accessed the reservation page.
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The system presents a calendar view and shows available time slots.</li> <li>2. The user may select a valid time slot</li> <li>3. The user is prompted to enter reservation details (name, contact information).</li> <li>4. Information is validated for format.</li> <li>5. Information is submitted</li> </ol>

<b>Alternative Paths</b>	<p>In step 3, if the user has a profile, their information will be auto filled after the full name is inputted.</p> <p>In Step 1, if a reservation time slot has been locked by another user after this user enters the Calendar screen, selecting that time slot will refresh the page and give a warning message.</p> <p>Error messages will be shown if invalid information is inputted and prevents progression.</p>
<b>Postcondition</b>	System records the entry and sends a notification with the reservation details to the restaurant and customer. The time slot on the calendar is blocked off.
<b>Exception Paths</b>	The customer may choose to exit at any time.
<b>Other</b>	Customers may only make a certain number of reservations at once.

### 3.2.3 View menu

<b>Use Case Name</b>	View menu
<b>Trigger</b>	After the user submitted contact information for contact tracing and is redirected to the view menu page.
<b>Precondition</b>	View menu page.

<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. User chooses whether to view the menu.</li> <li>2. Dynamic menu is presented to the user.</li> <li>3. Expandable sub sections may be accessed by the user to show more information about certain items.</li> </ol>
<b>Alternative Paths</b>	Users may access the menu with a direct link via QR code or the website.
<b>Postcondition</b>	Menu is received.
<b>Exception Paths</b>	The Reader may exit at any time. In step 3, users may be redirected to a different page to view other information.
<b>Other</b>	The menu can be accessed by anyone.

### 3.2.4 Dashboard Live Update Reservation

<b>Use Case Name</b>	Dashboard Live Update Reservation
<b>Trigger</b>	The reservations appear live on the dashboard.
<b>Precondition</b>	Dashboard page must be loaded to be able to get live update of reservations

<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The system live updates the reservations from the database.</li> <li>2. The reservations are presented on dashboard</li> </ol>
<b>Alternative Paths</b>	None
<b>Postcondition</b>	The Dashboard updates automatically while it's the active page after a reservation is made.
<b>Exception Paths</b>	The Restaurant employees may exit the dashboard page at any time.
<b>Other</b>	None

### 3.2.5 View Customer Profile

<b>Use Case Name</b>	View Customer Profile
<b>Trigger</b>	The Restaurant Employee selects on profile.
<b>Precondition</b>	Restaurant Employee must be on profile list page
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. A searchable, filterable list of users who've made reservations are presented.</li> <li>2. Employee selects profile</li> </ol>



<b>Alternative Paths</b>	A Restaurant Employee can also access the profile of a walk-in customer to confirm their details comply with government regulations.
<b>Postcondition</b>	Employee receives Customer Profile
<b>Exception Paths</b>	Employees may abandon the search anytime.
<b>Other</b>	None

### 3.2.6 Add Restaurant

<b>Use Case Name</b>	Add Restaurant
<b>Trigger</b>	Restaurant owner selects to add their restaurant.
<b>Precondition</b>	The restaurant owner has accessed the Restaurant Manager screen.
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The owner chooses to add their restaurant to app database</li> <li>2. The system prompts a form for the owner to fill out that provides necessary information</li> <li>3. The system reviews and an administrator either accepts or declines the restaurant to be published on the app.</li> </ol>

<b>Alternative Paths</b>	If any field is left blank while the owner is filling out the restaurant form, the owner is prompted to provide a valid entry. Validation for some fields are made.
<b>Postcondition</b>	The restaurant has been added to the apps database.
<b>Exception Paths</b>	The owner may abandon the process at any time.
<b>Other</b>	<p>The restaurant information includes name*, location*, description*, profile picture*, hours, contact information, and menu.</p> <p>A * means those are required to be entered.</p>

### 3.2.7 Update Restaurant

<b>Use Case Name</b>	Update Restaurant Information
<b>Trigger</b>	Restaurant owner selects to update their restaurant
<b>Precondition</b>	The restaurant owner has accessed the Restaurant Manager screen.

<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The restaurant owner is prompted with a form consisting of their restaurant's current profile.</li> <li>2. The owner updates the information in the form.</li> <li>3. The system validates the information in form</li> </ol>
<b>Alternative Paths</b>	If any of the required fields are left empty the owner is prompted to provide an entry. Validations are made for some fields.
<b>Postcondition</b>	The restaurant page has been updated in the app's database.
<b>Exception Paths</b>	The owner can abandon the process at any time.
<b>Other</b>	This use case is only used to update restaurants, not to add them to the database.

### 3.2.8 Record Customer Information

<b>Use Case Name</b>	Record Customer Information
<b>Trigger</b>	Restaurant owner selects store customer information.

<b>Precondition</b>	The restaurant owner has accessed the Customer Manager screen and customer has given consent to their information being stored
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The system provides a form for customers to enter their information</li> <li>2. The customer provides their contact information</li> <li>3. The system checks to make sure that the information is valid and not already in the customer database.</li> <li>4. The restaurant owner then chooses to store the customers information in a database of customers that have visited their restaurant</li> <li>5. The system checks to make sure that the customer information isn't already in the restaurant customers database.</li> </ol>
<b>Alternative Paths</b>	If any fields are left blank while the customer is filling out information they are prompted to provide an entry. Information is validated and checked for duplication
<b>Postcondition</b>	The customer information has been stored in the restaurant's customer database.
<b>Exception Paths</b>	The customer may choose to not have their information stored in the database.
<b>Other</b>	The customer information includes name and contact information.

### 3.2.9 Access Contact Tracing Report

<b>Use Case Name</b>	Access Contact Tracing Report
<b>Trigger</b>	Restaurant Employee selects a Date to request a contact tracing report
<b>Precondition</b>	The Restaurant Employee has accessed the contact Tracing screen.
<b>Basic Path</b>	<ol style="list-style-type: none"><li>1. System presents a calendar with selectable dates, as well as a scroll box alternative if they wish to enter the date manually.</li><li>2. The Employee selects the date to receive a report for.</li><li>3. The System creates a contact tracing report in table form that the Employee can filter or sort.</li></ol>
<b>Alternative Paths</b>	None, the system will not allow the user to enter an invalid date.
<b>Postcondition</b>	The contact tracing report is downloaded to the client machine.
<b>Exception Paths</b>	The employee may abandon the search at any time.
<b>Other</b>	The contact tracing data will be a combination of data pulled from user profiles, and contact tracing data stored about users who don't create profiles.

### 3.2.10 Publish Announcement

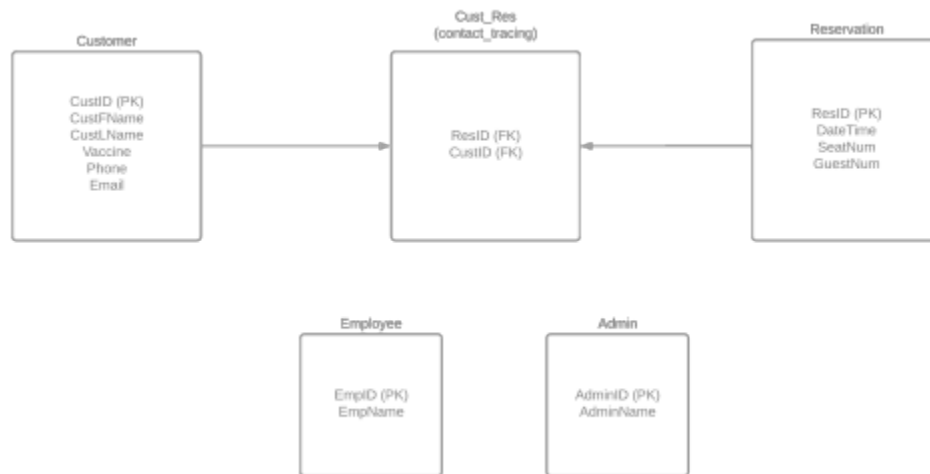
<b>Use Case Name</b>	Publish Announcement
<b>Trigger</b>	The Administrator selects to post an announcement to the App
<b>Precondition</b>	The Administrator has accessed the Create Announcement main screen.
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The Administrator fills out the create announcement form and selects which categories of users the announcement is for Restaurant/Customers/All</li> <li>2. The Administrator clicks submit</li> </ol>
<b>Alternative Paths</b>	<p>In step 1, the Administrator can choose to upload a document to use as the content for the announcement.</p> <p>If the Administrator attempts to submit an announcement missing a required field they will be unable to do so.</p>
<b>Postcondition</b>	Users will receive an announcement from the Administrator with an icon showing there are new announcements visible in their navigation tab on all screens, as well as displayed on the home screen after logging in..
<b>Exception Paths</b>	The Administrator may abandon the announcement screen at any time.
<b>Other</b>	There may be format restrictions on documents used as announcements.

### 3.2.11 Remove User

<b>Use Case Name</b>	Remove User
<b>Trigger</b>	The Administrator selects to remove a user
<b>Precondition</b>	The Administrator has accessed the User Management screen.
<b>Basic Path</b>	<ol style="list-style-type: none"> <li>1. The System creates a searchable, filterable list of users</li> <li>2. The administrator brings up the admin version of the user profile of the troublesome user by clicking on their name.</li> <li>3. The administrator selects delete user.</li> <li>4. The administrator selects confirm delete user and must enter a mandatory reason.</li> </ol>
<b>Alternative Paths</b>	None
<b>Postcondition</b>	A users account is marked to deleted status, unable to access any of the apps features, although attempting to login will provide them access to a screen stating that their account has been deleted which displays the reason why.
<b>Exception Paths</b>	The Administrator may abandon the process at any time.
<b>Other</b>	The process makes no distinction between restaurant employees and restaurant customers or other types of users, beyond listing them as a filterable field in the list of users.

### 3.3 Data Modelling and Analysis

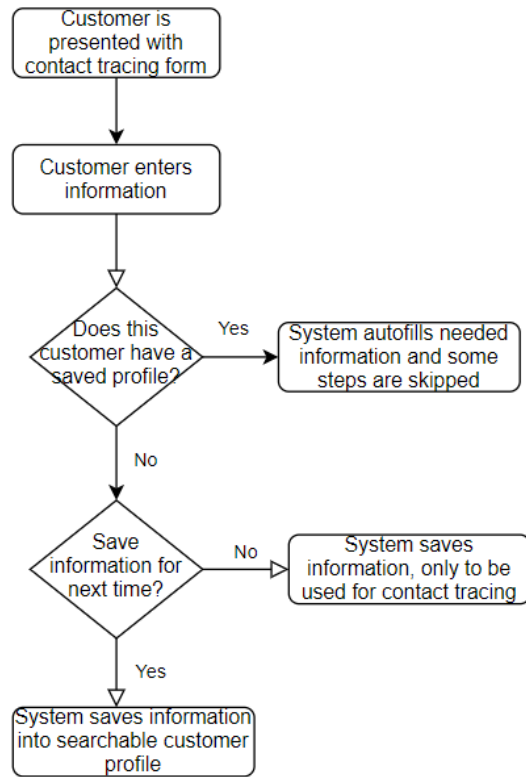
- Normalized Data Model Diagram



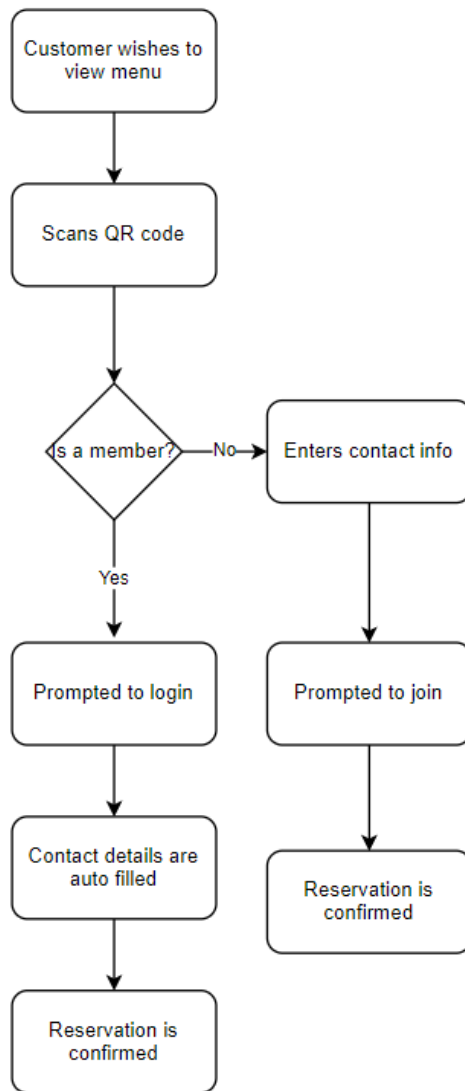
#### 3.3.2 Activity Diagrams

##### 3.3.2.1 Save profile information

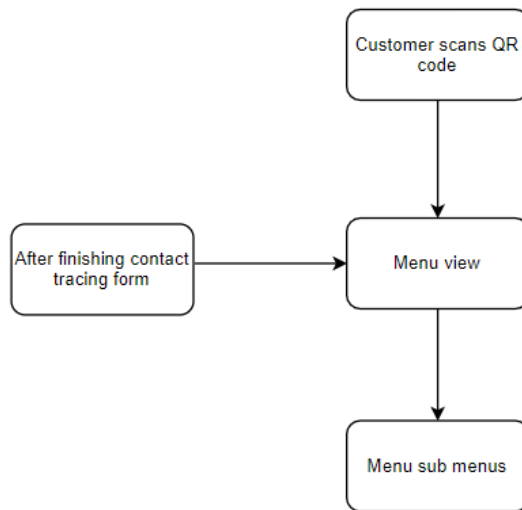




### 3.3.2.2 Make reservation

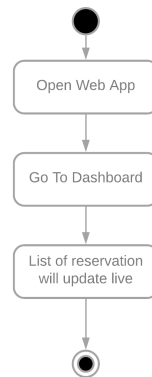


### 3.3.2.3 View menu



#### 3.3.2.4 Dashboard Live Update Reservation

Dashboard Live Update Reservation

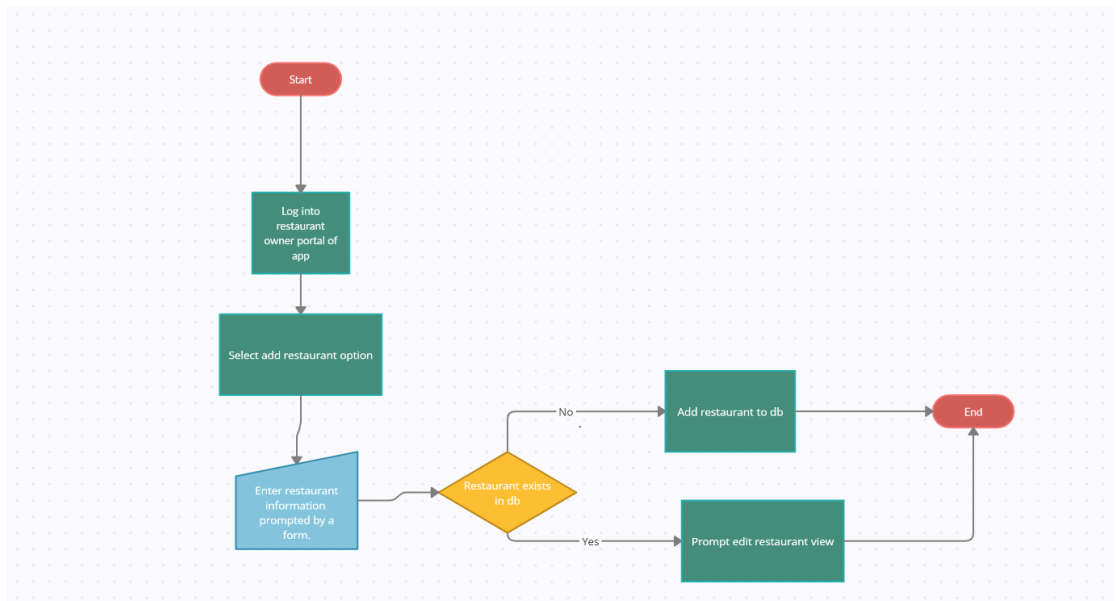


#### 3.3.2.5

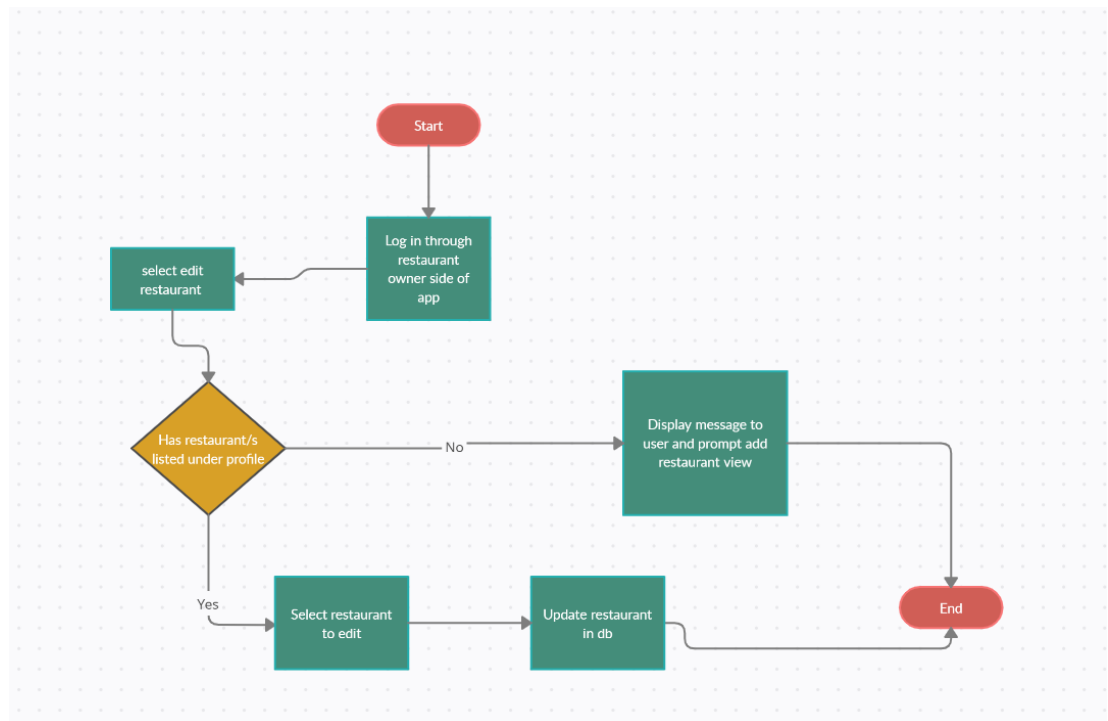
### View Customer Profile



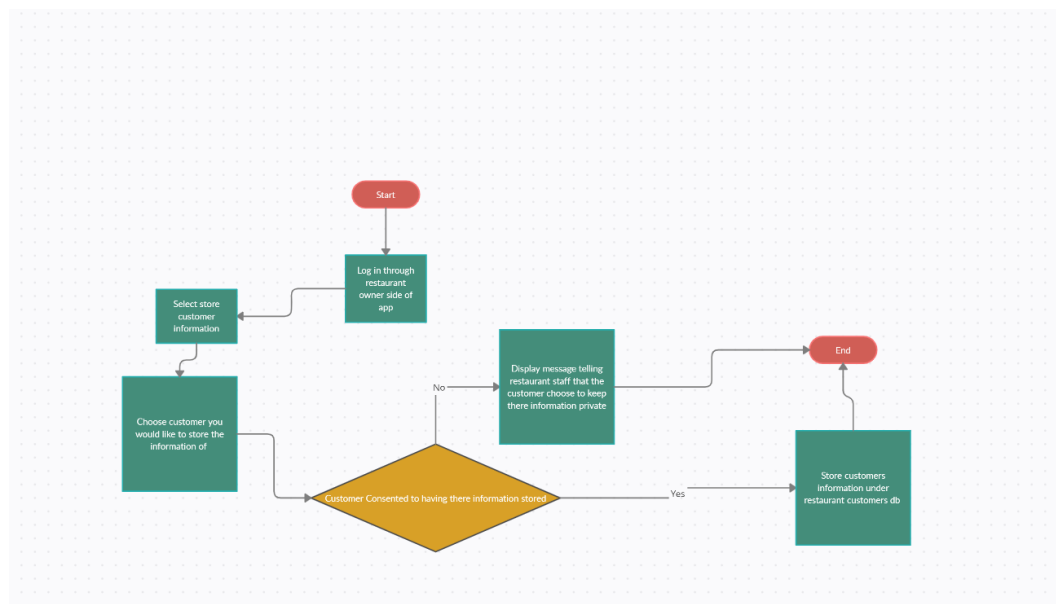
### 3.3.2.6 Add Restaurant



### 3.3.2.7 Update Restaurant Information



### 3.3.2.8 Store Customer Information



### 3.3.2.9

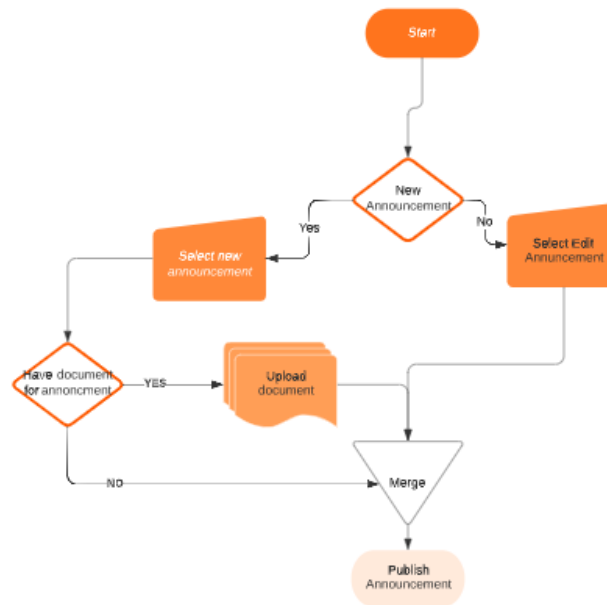
#### Access Contact Tracing Report



#### 3.3.2.10 Publish Announcement

## Publish Announcement

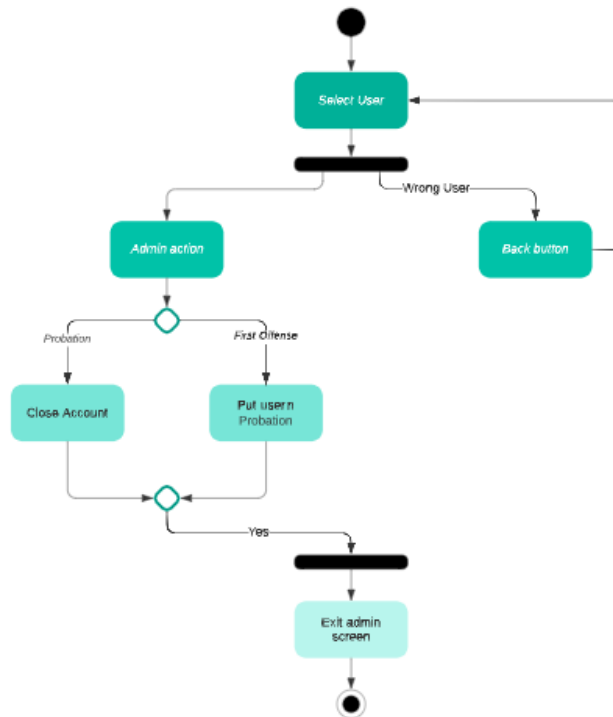
Jeremy Buchanan | November 9, 2021



### 3.3.2.11 Remove User

## Remove User

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### 3.3.3 Sequence Diagrams

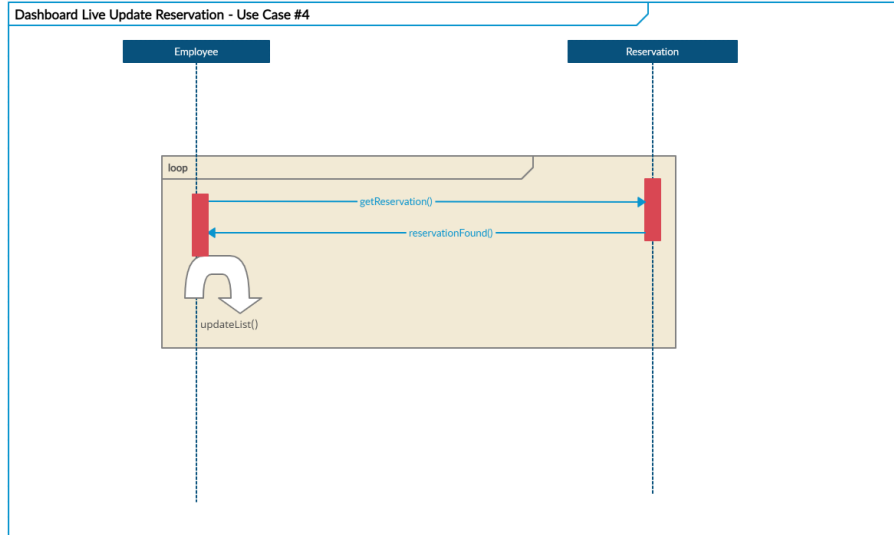
3.3.3.1

3.3.3.2

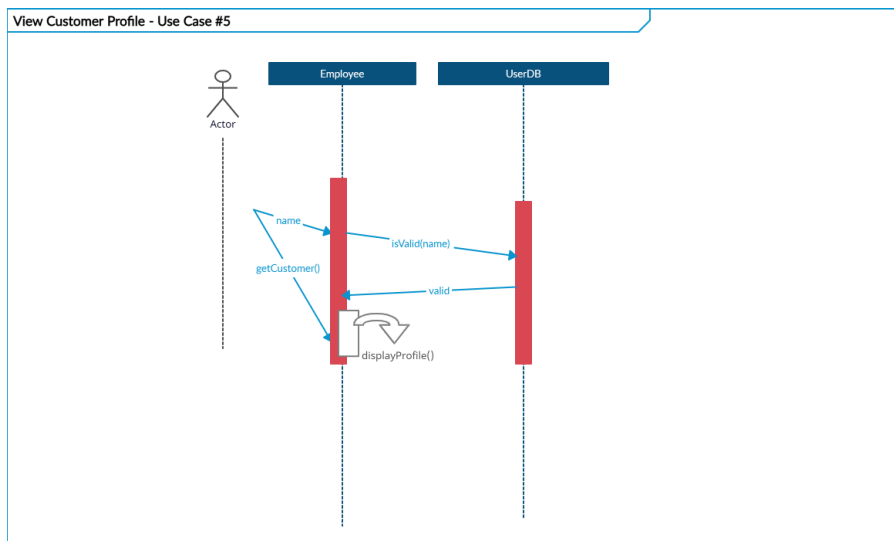
3.3.3.3

3.3.3.4

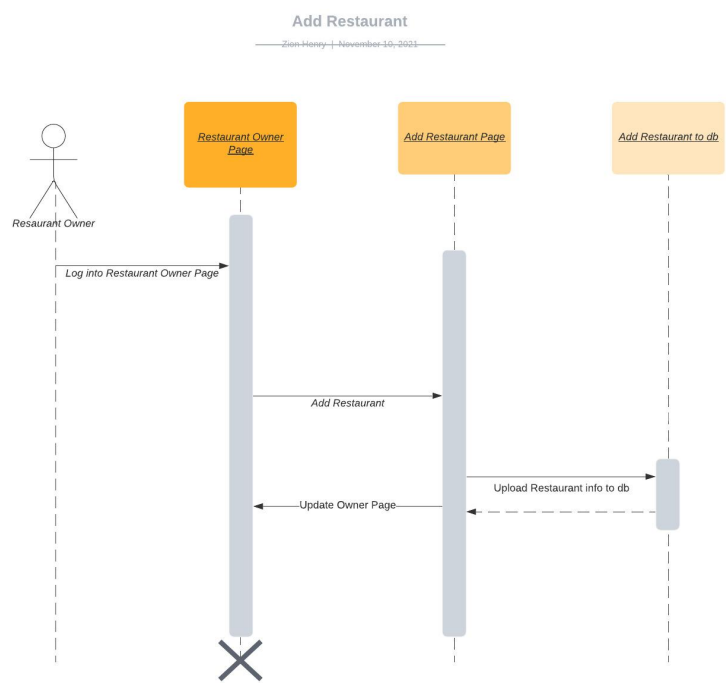




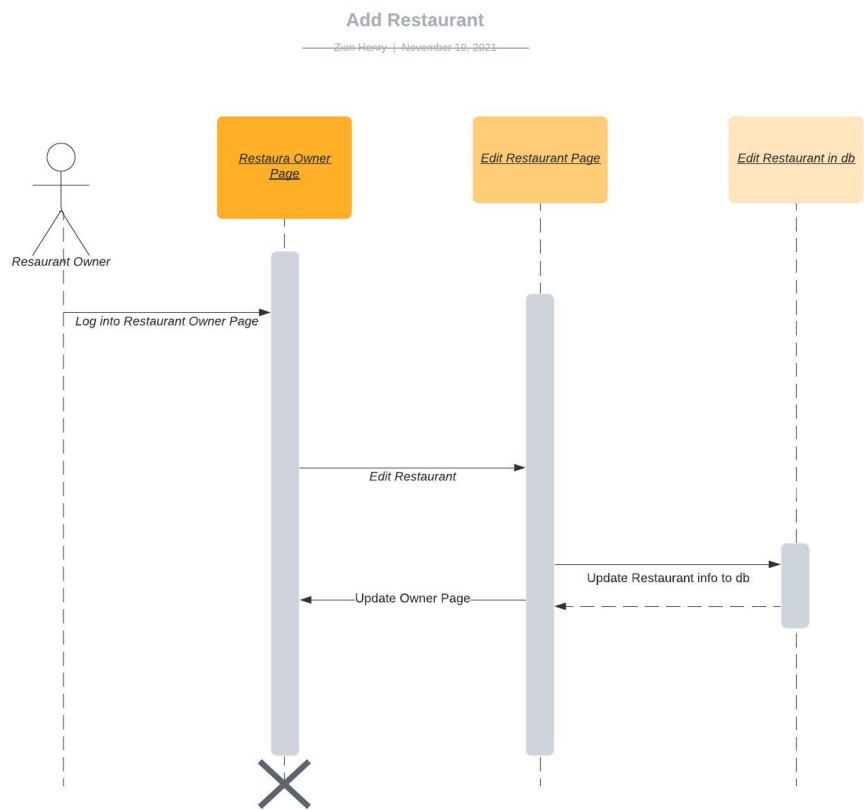
### 3.3.3.5



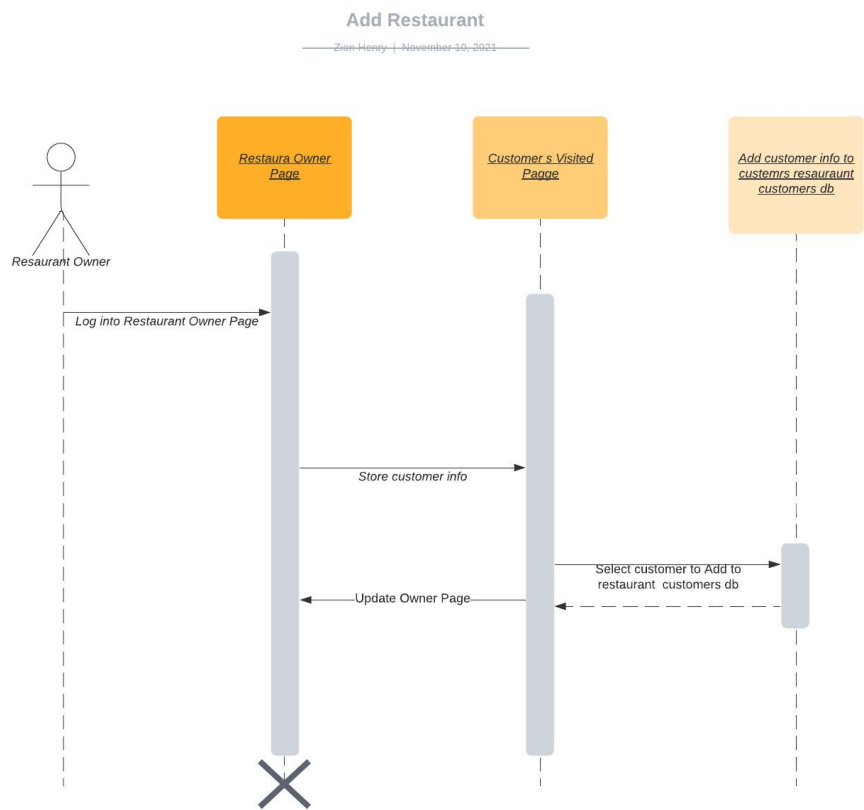
3.3.3.6 Add Restaurant



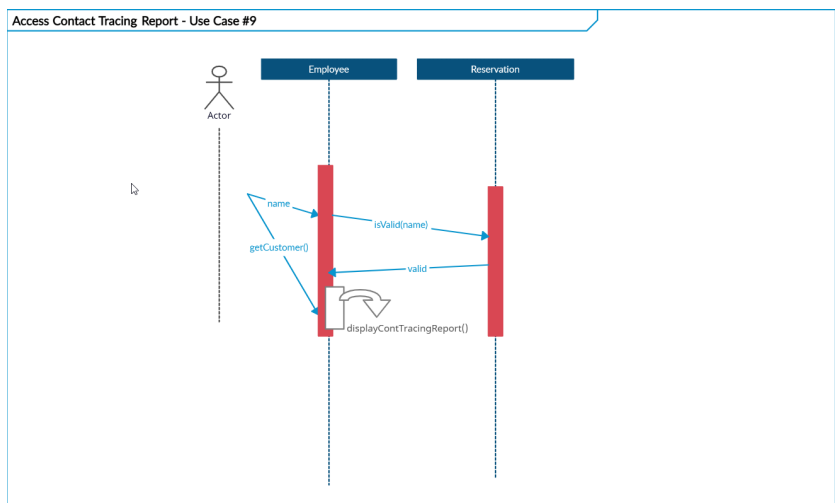
3.3.3.7 Update Restaurant Information



3.3.3.8 Store Customer Information



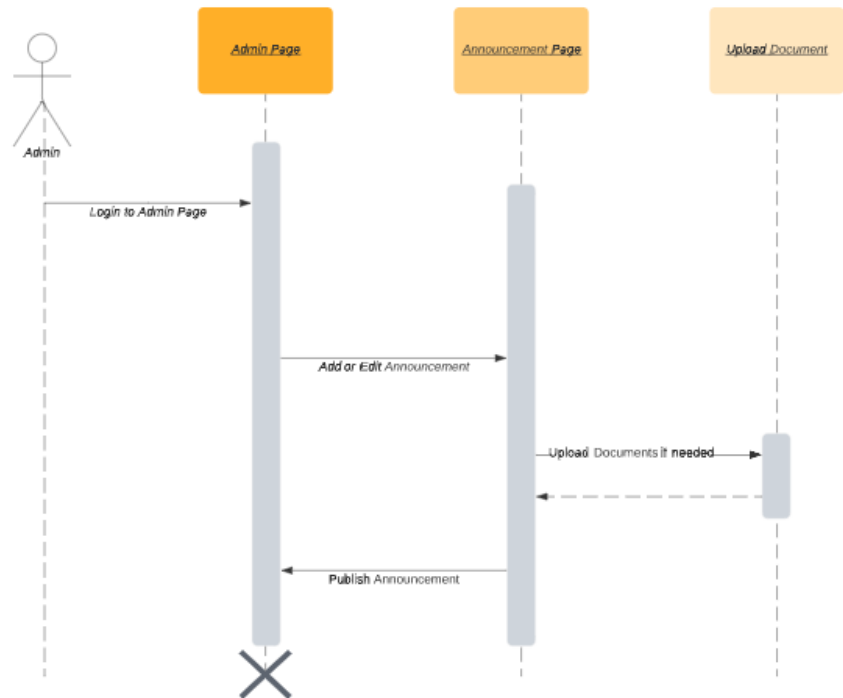
3.3.3.9



3.3.3.10 Publish Announcement

### Publish Announcement

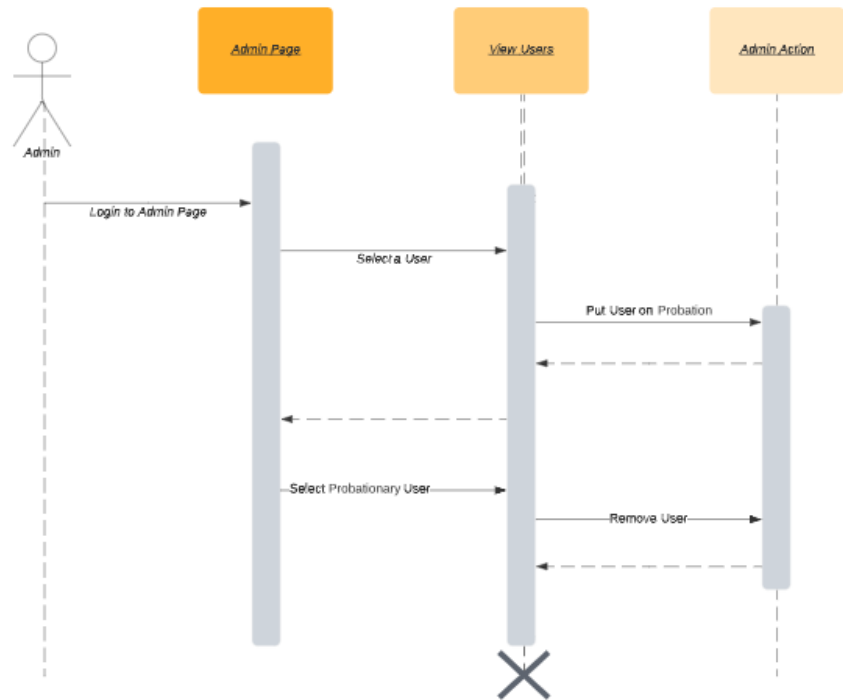
Jeremy Buchanan | November 9, 2021



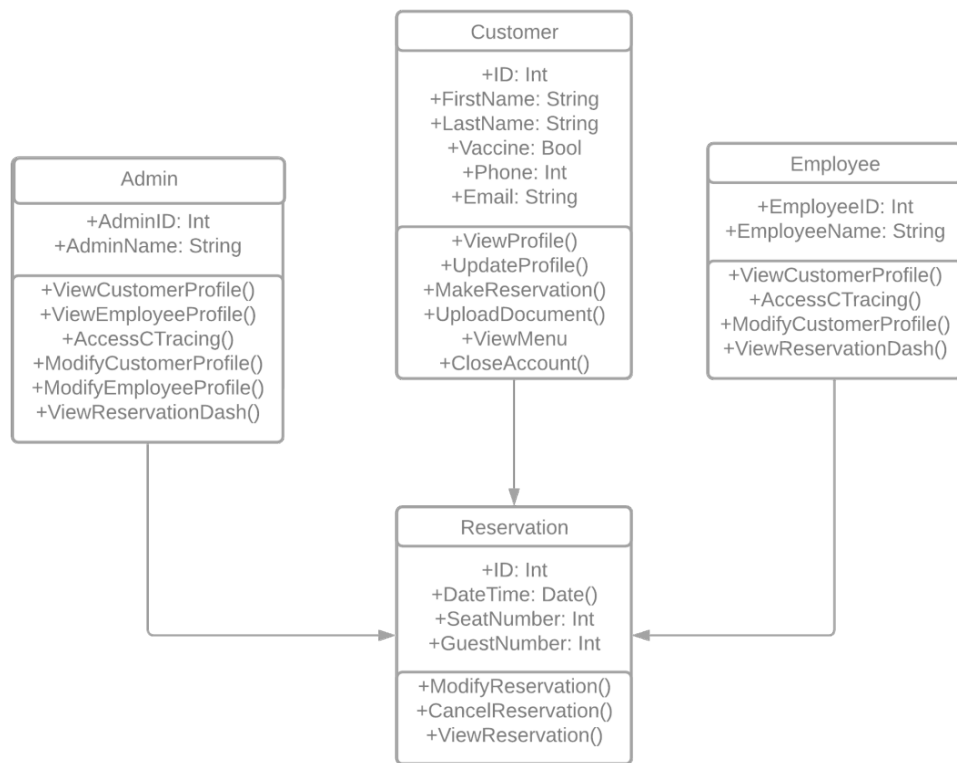
#### 3.3.3.11 Remove User

## Remove User

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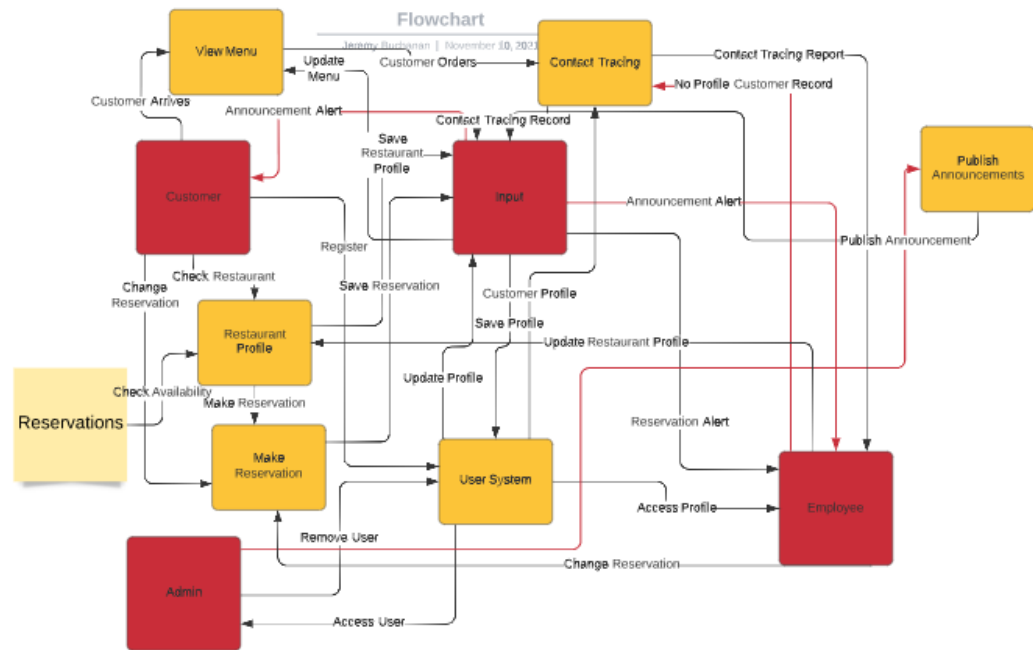


## UML Class Diagram



### 3.4 Process Modelling

- Data Flow Diagram



## 4.0 Non-Functional Requirements

- Performance:
  1. The landing page supporting 2500 users per hour will render in under 10 seconds, including text and image in a chrome browser, under an LTE connection.
  2. The app will render new pages in under 10 seconds.
  3. Databases will be able to store 1000 restaurant profiles and 5000 customer profiles.
- Portability and Compatibility
  1. Users and restaurant staff must have access to wifi, a web browser, and a smart device.
- Security
  1. All user data stored will be hashed into databases to be protected from data breaches.



2. Privacy of information, the export of restricted technologies, intellectual property rights, etc. should be audited.
- Localization
    1. The date format will always be in the format specified by the web browser or operating system user is on.
    2. The app will only show restaurants in the area that the user is using the app from, using location based services.
  - Usability
    1. The error rate for users submitting reservation requests cannot be higher than 10 percent.
    2. Users should be able to move from one operating system to another and information will still be there.

## 5.0 Logical Database Requirements

A database of customer information will be used. This database will be populated by data collected with the permission of customers. It will be entered via a form where the customer inputs basic contact details as well as vaccination status. This information is stored securely in the database where only authorized users may access it. The operator of the restaurant may search for customer information when needed. For privacy reasons, personal health information such as vaccination status will be erased after a given time.

## 6.0 Other Requirements

This program must operate within the law and must follow privacy protection regulations.

## 7.0 Approval

The signatures below indicate their approval of the contents of this document.

Project Role	Name	Signature	Date
	Armen Levon Armen	A.L.	11/2/2021

	Chun-Chen Lu	<i>Chun Chen Lu</i>	11/9/2021
	Zion Henry	Z.H	11/10/2021
	Jeremy Buchanan	J.B.	11/10/2021