

Project Final Report

UST Restaurant

ISOM3210 - Information Systems Analysis and Design

PROJECT DRIVERS

1. The Purpose of the System and Organizational feasibility

1a. Background of the Company Chosen

HKUST is always packed full with students. From the endless queue in minibus station to the sea of students in the concourse. Similarly, the catering services in HKUST does not seem to meet the needs of students. We have identified three main issues - namely, difficulty to find seats, long waiting time, and the indecision to choose between restaurants.

First, during the peak hours, it is often challenging to look for vacancies in the restaurants. Especially, for those with tight schedule and can only afford ten minutes to grab food. Besides, given a wide variety of restaurants on campus, HKUST students may struggle to choose among them. Lastly, in accordance to a survey on OpenRice, users of this website commented that the promotional material is inadequate or outdated.¹

Since the existing platforms cannot solve these issues, our firm proposed an application called UST Restaurant. Customers have access to only viewing the restaurant information until they register as a member while Members have access to not only the most updated restaurant information, but also online ordering with a payment system, seat reservation by remote queuing, and is also part of the membership loyalty program. We hope that this application would boost the sales of caterers while satisfying the needs of UST students.

1b. Goals of the Project

Since there are **three** major business needs for HKUST's restaurant: hard to find seats, long waiting time (especially during peak hours), and a variety of restaurants causing customers difficult to make choices; the proposed application based on HKUST campus restaurants will be implemented.

Our application will be implement a membership policy. Non-members (Customers) are only allowed to view restaurant information and register as a Member. While Members are able to access additional functions, which includes reserve seat and queue up, order and pay online, and view membership points. By implementing this policy, we believe it will attract more customers and build up the user base for our application. These functions will also help tackle the business needs. Customers no longer have to physically queue up for their meals, which minimizes their waiting time and is easier for them to find seats.

Restaurant staff and managers can update restaurant information and generate reports respectively through the application. This ensures all information is updated and accurate, and improvements are constantly made which will increase customer satisfaction.

¹ <https://www.wjx.cn/mobile/statnew.aspx?activity=1947008#1>

As a whole, the application is expected to tackle the three business needs identified. The operation of restaurants are expected to be more efficient due to the reduced the difficulties for customers when having meals. Customers will have better dining experiences, increase their satisfaction towards the restaurants, and boost the restaurant's sales.

1c. Organizational Feasibility

The groups that are involved will mainly be Customers and Members (composed of mainly students), Restaurant Staff and Managers. As there are lots of similar mobile application that is for reserving seats in restaurants, Customers and Members should be familiar with its functions. Since the application is free, anyone with a mobile device would be able to access it. The application allows the users to access the updated campus restaurant information, so they are very likely to adopt the system.

Managers only require to generate reports through the application. The steps are simple and they should be experienced in generating reports in other information systems; therefore, they also are likely to adopt the system. For Restaurant Staff, they are responsible for updating restaurant information and providing assistance for Customers and Members. The possible risks are that some Restaurant Staff are not experienced to working with information systems, so they may be unfamiliar with this new application; however, job duties are simple and repetitive and training will be given before implementation of the application, which as a result they are also likely to adopt this system.

Some concerns are raised when implementing this application. To register as a Member, personal information will be collected and saved in the database. Privacy issues and leakage of personal information may be the concerns of this application. But to clarify, only information like name, phone number and email address will be collected and stored in database for the purpose of generating reports, and only Managers are allowed to access the database. Due the limited access to the database, the chance of information leakage is reduced.

Another concern is cultural concern. Currently only two languages are supported - Chinese and English - which may cause concerns about insufficient language options. Since the application is only applicable for HKUST, these two languages are the common languages for most Customers and Members, and they will not have any difficulties to use this application.

2. Actors of the System

There are a total of nine actors in the UST Restaurant application - **Customer, Member, Restaurant Staff, Email Server, Restaurant Reservation System, External Queueing System, Existing Online Ordering System, Payment System, and Manager**. Customer and Member are the main users of the application, while Restaurant Staff and Manager will use the application for maintenance purposes such as generating reports and updating the restaurant information. Email Server, Restaurant Reservation System, External Queueing System, Existing Online Ordering System, and Payment System are external systems that will facilitate the use of the application.

<i>Actor Specification</i>
Actor Name: Customer
Role Description: Customer is one of the main users of the application. However, Customers are limited to viewing restaurant information and registering as Member. With this identity, Customer does not have many roles involved in our system as we try to provide more functions to Members instead of Customers. Customer can access more functions after they have registered as Members.
Actor Goals: Being a Customer only, this kind of actor may just want to view the restaurant information before they choose to dine in the restaurants. Customer may also want to register as Member so as to gain access to more functions for their further actions.
Use Cases Involved with: UC-002 (View Restaurant Information), UC-003 (Register as Member)

<i>Actor Specification</i>
Actor Name: Member
Role Description: Member is considered as the main actor of the application. Members have more access to the different functions of the application after registered. Besides viewing the restaurant information, they can also reserve a seat, enjoy online payment service, and also are enrolled in the membership loyalty program. After logging in, the extra functions are accessible for the Members.

Actor Goals:

Members want to have a better experience through the system. Besides viewing the restaurant information, Members can also enjoy more function in our application. First, they can reserve seats before arriving at the restaurants to shorten the waiting time or minimize the chance of facing full booking. Next, they can also conveniently order food and pay online, which can be done on the mobile application. Lastly, they can also enjoy a membership loyalty program to accumulate points to exchange for discounts.

Use Cases Involved with:

UC-002 (View Restaurant Information), UC-004 (Reserve Seat), UC-005 (Queue Up), UC-006 (Order Online), UC-007 (View Membership Points), IUC-001 (Verify Login), EUC-001 (Use Membership Points)

Actor Specification

Actor Name: Restaurant Staff

Role Description:

Restaurant Staff is involved in two functional requirements. They mainly have a support role by providing assistance to other users, especially Customers and Members. Restaurant Staff are responsible for updating their own restaurant information, such as menu and photos. With the updated information, users can know more details of the restaurant before they make a choice. Restaurant Staff can also view the updated information to provide assistance to Customers.

Actor Goals:

As an actor with a supportive role, this actor aims to provide service to other users mainly by updating restaurant information from time to time. By providing updated restaurant information, Customers and Members may have a higher chance of dining at the restaurant

Use Cases Involved with:

UC-001 (Update Restaurant Information), UC-002 (View Restaurant Information)

<i>Actor Specification</i>
Actor Name: Email Server
Role Description: Email Server is a secondary actor that is involved in only one use case. After the Restaurant Staff clicked “Forget Password” in the login page and failed to verify their account for 5 consecutive tries, the Email Server will send an email that includes the new password to Restaurant Staff.
Actor Goals: As a secondary actor, it aims to assist Restaurant Staff reset their password if they failed to login. Restaurant Staff must login to their email account so to get their new password. By sending it to their email address, it minimizes hacking and ensures that Restaurant Staff is the only one who gets the new password.
Use Cases Involved with: UC-001 (Update Restaurant Information)

<i>Actor Specification</i>
Actor Name: Restaurant Reservation System
Role Description: Restaurant Reservation System enables Member to make reservations through the application. After Member selected restaurant and inputted the reservation details, the application system will then sends details to Restaurant Reservation System for verification. Once it is verified, a reservation successfully made.
Actor Goals: The main purpose of this secondary actor is to assist Member make reservations successfully. By sending the reservation details to Restaurant Reservation System for verification, it avoids wrong reservation time selected and overbooking occurred.
Use Cases Involved with: UC-004 (Reserve Seat)

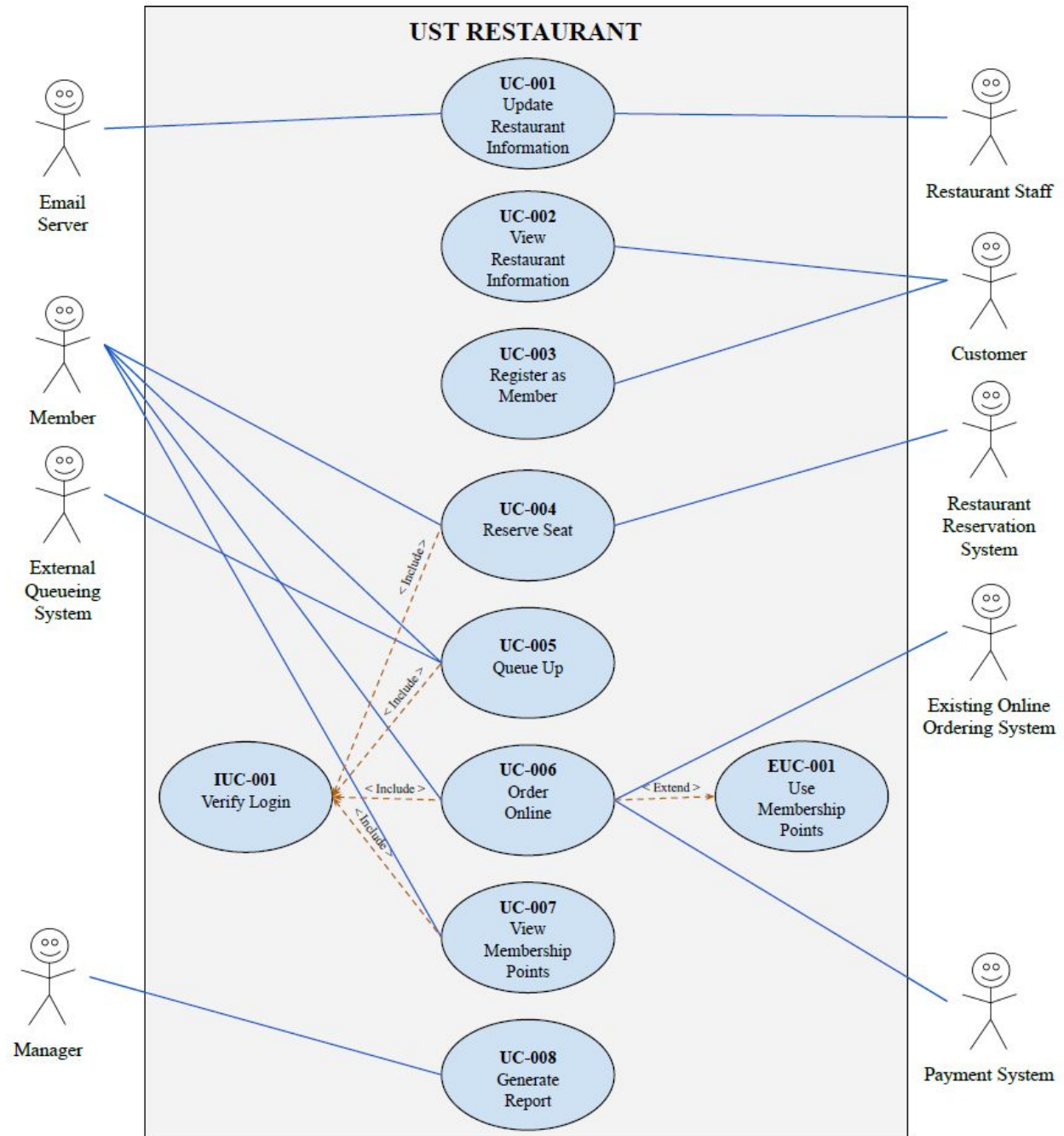
<i>Actor Specification</i>
Actor Name: External Queueing System
Role Description: External Queueing System is a secondary actor that allows Member gets ticket and queue up for seats. Once they enter the number of seats through the application, the application system will send a queuing request to External Queueing System. Member's queueing position will then be shown to them.
Actor Goals: By integrating External Queueing System with the application system, Member no longer have to queue up for seats physically; they can do it anywhere, which minimizes their time waiting in the restaurant. It also enables Member to check for their current queueing position through the application.
Use Cases Involved with: UC-005 (Queue Up)

<i>Actor Specification</i>
Actor Name: Existing Online Ordering System
Role Description: Existing Online Ordering System is a system which facilitates the use of the application. It involves in only one user case. It enables Member to connect with the restaurant by showing the food menus so that members can select items through this system.
Actor Goals: As a secondary actor, the main purpose of this actor is to provide Member with the online menu and make an online food orders. With the provision of this information, member can know more about the food items while having a faster transaction.
Use Cases Involved with: UC-006 (Order Online)

<i>Actor Specification</i>
Actor Name: Payment System
Role Description: Payment system is involved in one user case only. It allows Member to pay for their online orders through debit card and credit card. It enables Member to transfer their money from their accounts to the restaurants in order to pay.
Actor Goals: As a secondary actor that help Member to achieve their business needs, it aims to assist Member to make an online payment after ordering online in order to complete the transactions.
Use Cases Involved with: UC-006 (Order Online)

<i>Actor Specification</i>
Actor Name: Manager
Role Description: Manager is associated with one functional requirement. They are the primary actor who utilize the system to generate report for analysis purposes. After using the system, they can choose the type of report being generated. The system obtains corresponding data from the database and shows the corresponding report that is requested by the Manager.
Actor Goals: Manager wants to generate report in a more convenient and comfortable way after using the system. They can retrieve data from the database to generate corresponding report that they choose automatically.
Use Cases Involved with: UC-008 (Generate Reports)

3. The Scope of the System



4. Functional Requirements

4a. Elaborated Use Case Descriptions

Use Case ID	UC-001
Use Case	Update Restaurant Information
Actors	Restaurant Staff [P] , Email Server [S]
Description	Restaurant Staff is the primary actor of this Use Case. Restaurant Staff can update restaurant information - opening hours / days, location, menu, and photos. Customer, Member, and Restaurant Staff will be able to View Restaurant Information (UC-002) when information is updated.
Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none">1. Restaurant Staff clicks "Login" and enters the Login page2. System prompts Restaurant Staff for username and password3. If Restaurant Staff forgets password<ol style="list-style-type: none">3.1 Restaurant Staff clicks "Forget Password"3.2 System prompts Restaurant Staff to input Username and Email address3.3 Restaurant Staff inputs his / her Username and Email address3.4 If System cannot verify and confirm Username with the Email address after 5 consecutive tries<ol style="list-style-type: none">3.4.1 System locks Restaurant Staff account for 24 hours3.4.2 Exit Use Case3.5 System resets the password and sends new password to Restaurant Staff's Email address3.6 Back to Step 24. Restaurant Staff enters username and password and clicks "Login"5. System authenticates Restaurant Staff6. If username and password do not match<ol style="list-style-type: none">6.1 System notifies Restaurant Staff and prompts for another try6.2 Restaurant Staff enters his / her Username and Password and clicks "Login"

	<p>6.3 If username and password do not match for 5 consecutive tries</p> <p>6.3.1 System locks Restaurant Staff account for 24 hours</p> <p>6.3.2 Exit Use Case</p> <p>7. System notifies Restaurant Staff of successful login and displays the home screen of the UST Restaurant</p> <p>8. Restaurant Staff clicks the “Update Restaurant Information” button</p> <p>9. System retrieves the corresponding Restaurant information from the Restaurant database</p> <p>10. System displays the information of the corresponding Restaurant that the Restaurant Staff works in</p> <p>11. Restaurant Staff clicks the “Upload Restaurant Information” button</p> <p>12. Restaurant Staff retrieves the file from his / her computer drive and press “Upload”</p> <p>13. If the file format is not compatible</p> <p>6.1 System notifies Restaurant Staff that the file format is not compatible to the system</p> <p>6.2 Go back to Step 10</p> <p>14. System updates information into the Restaurant database</p> <p>15. System notifies Restaurant Staff that the file is successfully uploaded and the information is updated.</p>
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	<p>1. The restaurant staff forgets password</p> <p>2. Username and Password do not match</p> <p>3. The file format is not compatible to the system</p>
Priority	High
Non-Functional Requirements	<p>1. The information updated should be viewable by all users instantly</p> <p>2. Each restaurant’s information can only be updated by its own restaurant staff</p> <p>3. Excel file is accepted to input the information</p>
Assumption	<p>1. Restaurant staff should have his or her own username and password</p>

Use Case ID	UC-002
Use Case	View Restaurant Information
Actors	Customer [P]
Description	<p>Customer can all view restaurant information. Customer is the primary actor because they will interact most with this function. Customers are only limited to this function until they register as a Member (Members can also view restaurant information as the role of the Customer).</p> <p>Restaurant Information will include the Restaurant's opening hours / days, location, menu, and photos.</p>
Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> 1. Customer clicks "Restaurant Information". 2. System retrieves all restaurant information from the Restaurant database 3. A variety of Restaurants is displayed. 4. System asks Customer to select a Restaurant. 5. Customer selects the restaurant to view. 6. System retrieves the selected Restaurant's information, then displays the Restaurant's opening hours / days, location, menu and photos. 7. Customer clicks "Return to Home Screen".
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	NA
Priority	High

Non-Functional Requirements	<ol style="list-style-type: none"> 1. This function is available for 24 hours 2. Our system is bilingual (Both Chinese and English) 3. The system must respond within 5 seconds
Assumption	NA

Use Case ID	UC-003
Use Case	Register as Member
Actors	Customer [P]
Description	<p>Customer is the primary actor of this User Case. Customer could choose to register as a Member and be able to access a variety of functions, such as Reserve Seat (UC-004) and Queue Up (UC-005), Order and Pay Online (UC-006), and View Membership Points (UC-007). Currently Customer is limited to only View Restaurant Information (UC-002) if they choose not to register as a Member. To register as a Member, Customer will enter their information and confirm their registration. The ITSC System is used to verify students before registration.</p>
Pre-Condition	<p>System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.</p>
Flow of Events	<ol style="list-style-type: none"> 1. Customer clicks the "Register" button 2. Customer enters their ITSC email 3. If the ITSC email is either already used <ol style="list-style-type: none"> 3.1. System notifies Customer the ITSC email is either already used 3.2. Customers clicks the option to "Retry" 3.3. Back to Step 2 4. Customer clicks "Next" to proceed to the next stage 5. Customer enters their First Name and Last Name 6. Customer enters their username 7. If the username is taken by others <ol style="list-style-type: none"> 7.1. System notifies Customer the username is taken

	<p>7.2. Customer clicks the option to “Retry”</p> <p>7.3. Back to Step 10</p> <p>8. Customer enters their password</p> <p>9. Customer clicks the “Finish Registration” button</p> <p>10. System inserts Member’s information (ITSC email, Username, Password, First Name, Last Name) into the Member database</p> <p>11. System notifies Customer that the Member registration is completed successfully</p>
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	<p>1. The ITSC email is used</p> <p>2. The Username is taken</p>
Priority	High
Non-Functional Requirements	<p>1. This function is available for 24 hours</p> <p>2. Our system is bilingual (Chinese and English)</p> <p>3. The system must respond within 5 seconds</p> <p>4. Members can only access their own personal information</p>
Assumption	<p>1. Students enter valid ITSC email for registration</p> <p>2. Students enter their own ITSC email</p>

Use Case ID	UC-004
Use Case	Reserve Seat
Actors	Member [P], Restaurant Reservation System [S]
Description	Member logs in, selects Reserve Seats, chooses the corresponding restaurant (China Garden, UniBistro&Bar and UniQue), enters the date, time and number of people, reserves seat, and confirms the reservation.

Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> 1. Include IUC-001 Verify Login 2. Member clicks the "Reserve Seats" button 3. System retrieves the Restaurant that are available for reservation from the restaurant database (China Garden, UniBistro&Bar, Unique) 4. Member selects the Restaurant, system prompts Member to enter the date, time, and number of seats to be reserved 5. Member enters date, time, and number of seats and press "Submit" 6. If the reservation time is not in restaurant service hour <ol style="list-style-type: none"> 6.1. System prompts an error - "Not in restaurant service hour" 6.2. Back to Step 4 7. System inserts reservation information to the reservation database 8. System displays the selected time and sends to the Restaurant Reservation System for verification 9. If the restaurant is full during the selected time <ol style="list-style-type: none"> 9.1.1. System prompts an error - "Restaurant is full, please select another time" 9.1.2. Back to Step 4 10. Reservation successfully made 11. System notifies member of successful reservation request 12. Member logs off the system
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	<ol style="list-style-type: none"> 1. Time selected is not in restaurant service hour 2. Restaurant is full during the selected time
Priority	Medium
Non-Functional Requirements	<ol style="list-style-type: none"> 1. The reservation information is sensitive and therefore should be encrypted

	<ol style="list-style-type: none"> Reservation information should be updated instantaneous (within 3 seconds)
Assumption	<ol style="list-style-type: none"> Only China Garden, UniBistro&Bar and Unique available for seats reservation 40% of seats available for seats reservation, while the rest are reserved for walk-in 2 hours are reserved for each reservation

Use Case ID	UC-005
Use Case	Queue Up
Actors	Member [P], External Queueing System [S]
Description	Member logs in, selects Queue Up, gets ticket and queues up for seat of respective restaurants, and shows the queuing position of the Member. The Queueing System is to help facilitate the use case. Since there is existing queuing system in some restaurants there will need to be integration with that system with the application.
Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> Include IUC-001 Verify Login Member clicks the "Queue Up" button System retrieves the Restaurant (China Garden) that are available for queueing from the restaurant database Member selects the Restaurant If the Restaurant is not in service hour <ol style="list-style-type: none"> System prompts an error - "Not in restaurant service hour" Exit Use Case Members enters the number of seats

	<ol style="list-style-type: none"> 7. Member clicks “Get Ticket” and system sends queueing request to the restaurant queueing system (China Garden Queueing System) 8. System inserts queue information (number of seats and queueing position) into queue database 9. System notifies member of successful queueing request 10. System shows the queueing position of Member 11. Member logs off the system
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	1. Not in restaurant service hour for queueing
Priority	Medium
Non-Functional Requirements	<ol style="list-style-type: none"> 1. Queueing position should be updated instantaneous (3 seconds)
Assumption	<ol style="list-style-type: none"> 1. Only China Garden available for queueing 2. Member can only take one ticket

Use Case ID	UC-006
Use Case	Order Online
Actors	Member [P], Existing Online Ordering System [S], Payment System [S]
Description	Member can order food and pay online for Passion, American Diner and Hungry Korean. The external systems help facilitate this function. The application will have to integrate with Existing Online Ordering System of the applicable restaurants to allow Member to order food. One membership point is given to the member each time. The Payment System is used to complete the transaction when Member makes an online order.

Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member's Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> 1. Include IUC-001 Verify Login 2. Member clicks the "Order Online" button 3. System retrieves the Restaurant that are available for ordering online from the restaurant database (Passion, American Diner and Hungry Korean) 4. Member selects the Restaurant 5. System retrieves the menu from the corresponding Restaurant database and displays it to Member. 6. Member selects the food from the menu to order 7. Member presses "Confirm Order" and inserts order to the Order database 8. If Member wants to make payment using Membership Point, extend to EUC-001 9. System sends the order information and total charges to Payment System for payment process 10. Member finishes the payment in Payment System 11. System displays "Transaction Completed" and generates a receipt number 12. Receipt number is displayed to Member 13. System sends the order to the corresponding Existing Online Ordering System. 14. System notifies the member that the order is confirmed 15. Member log off the system.
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	NA
Priority	High

Non-Functional Requirements	<ol style="list-style-type: none"> 1. The payment information is sensitive and therefore should be encrypted 2. System can record the transaction within 15 seconds.
Assumption	<ol style="list-style-type: none"> 1. Only the restaurants during service hours is available 2. The food lists update with real-time data. 3. The credit card used by the members is valid 4. There are no typos made by the customer

Use Case ID	UC-007
Use Case	View Membership Points
Actors	Member [P]
Description	Member logs in, selects the “Member’s Area” button, the system retrieves the membership data from member database and shows the membership points.
Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member’s Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> 1. Include IUC-001 Verify Login 2. Member clicks the “Member’s Area” button 3. System retrieves the Membership Points from the Member database and displays it to Member 4. Member logs off the system
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	NA

Priority	High
Non-Functional Requirements	<ol style="list-style-type: none"> 1. Accrued Membership Points should be updated after 24 hours of initial transaction 2. Displayed Membership Points should be instantaneous (3 seconds)
Assumption	NA

Use Case ID	UC-008
Use Case	Generate Reports
Actors	Manager [P]
Description	Manager logs into the system and generates a set of reports based on the time frame selected. These reports include “Most Popular Restaurant Reservation”, “Revenue Generated of each Restaurant through Online Payment”, “List of Restaurant Reservations”, and “Total Number of Members”
Pre-Condition	System screen displays the home screen of UST Restaurant with a variety of buttons available - Login, Register, Member’s Area, Restaurant Information, Reserve Seats, Queue, Order Online.
Flow of Events	<ol style="list-style-type: none"> 1. Manager clicks the “Login” button 2. System prompts Manager for username and password 3. Manager enters username and password and clicks “Login” 4. If Manager forgets password <ol style="list-style-type: none"> 4.1 Manager clicks “Forget Password” 4.2 System prompts Manager to input Username and email address 4.3 Manager input his / her Username and Email address 4.4 If System cannot verify and confirm Username with the email address after 5 consecutive tries <ol style="list-style-type: none"> 4.4.1 System locks Manager account for 24 hours

	<p>4.4.2 Exit Use Case</p> <p>4.5 System resets Manager's password and sends new password to Manager's email address</p> <p>4.6 Back to Step 2</p> <p>5. System authenticates Manager</p> <p>6. If username and password does not match</p> <p>6.1 System notifies Manager and prompts for another try</p> <p>6.2 Manager enter his / her Username and Password and clicks "Login"</p> <p>6.3 If username and password does not match for 5 consecutive tries</p> <p>6.3.1 System locks Manager account for 24 hours</p> <p>6.3.2 Exit Use Case</p> <p>7. System notifies Manager of successful login and display the home screen of the UST Restaurant</p> <p>8. Manager selects "Generate Report"</p> <p>9. System retrieves data from Member, Reservation, Queue, Order databases and generates a set of reports</p> <p>10. Manager logs off the system</p>
Post-Condition	System screen displays the home screen of UST Restaurant
Alternative Flows	NA
Priority	High
Non-Functional Requirements	<ol style="list-style-type: none"> 1. Manager is logged out after the system is left idle for 1 minute 2. Generated reports are in PDF format 3. Generate reports times should be less than 30 seconds 4. Restaurant Staff cannot access Manager accounts to generate report
Assumption	<ol style="list-style-type: none"> 1. Manager should have his or her own username and password

Use Case ID	IUC-001
Use Case	Verify Login

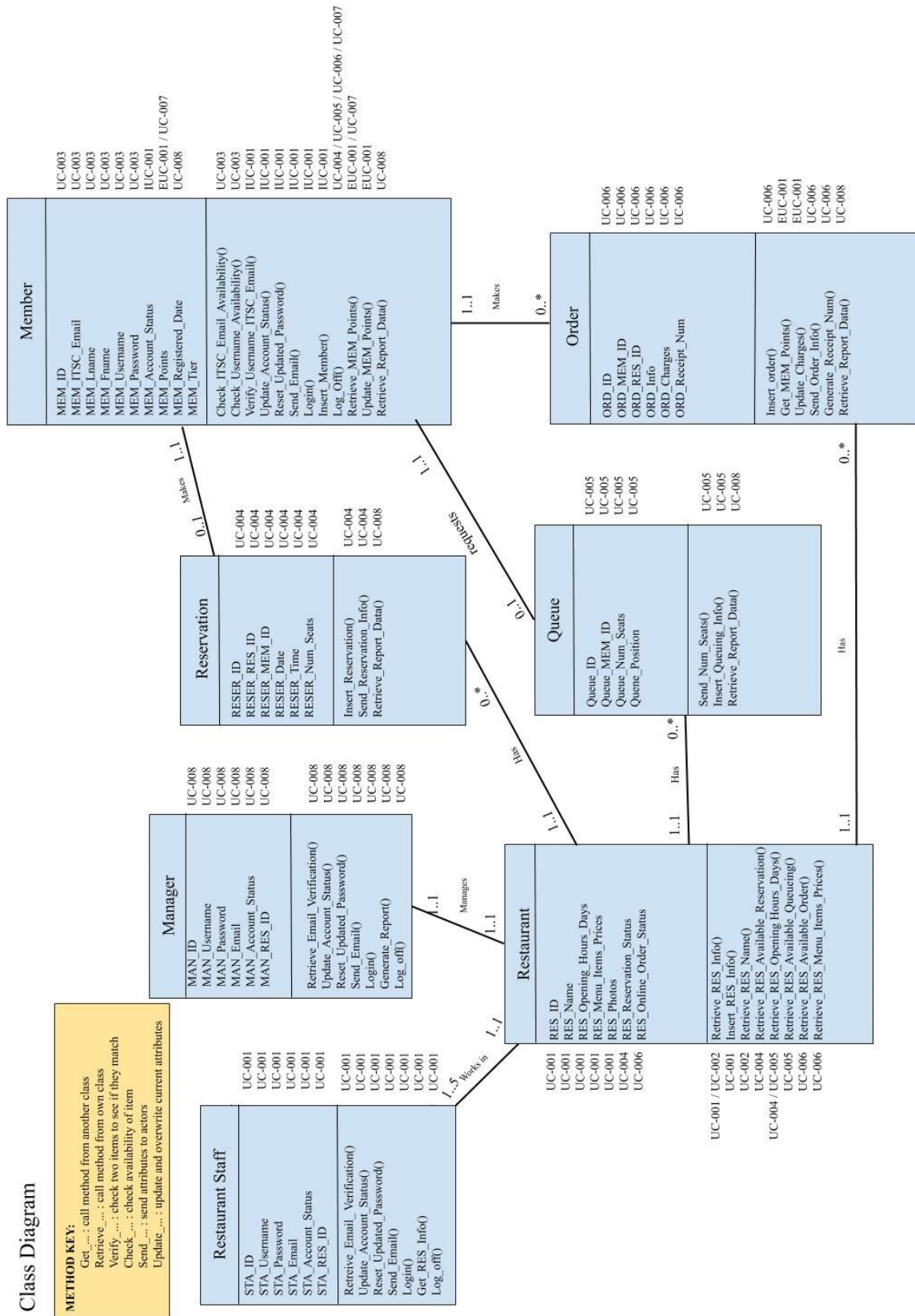
Description	Customer logs into the system and gets authenticated
Including Use Cases	UC-004 Reserve Seat ; UC-005 Queue Up ; UC-006 Order Online ; UC-007 View Membership Points
Flow of Events	<ol style="list-style-type: none"> 1. Member clicks the “Login” button 2. System prompts Member for Username and Password 3. If Member forgets Password <ol style="list-style-type: none"> 3.1 Member clicks “Forget Password” 3.2 System prompts Member to input Username and ITSC email address 3.3 Member input his/her Username and ITSC email address 3.4 If System cannot verify and confirm Username with the ITSC email address after 5 consecutive tries <ol style="list-style-type: none"> 3.4.1 System locks Member account for 24 hours 3.4.2 Exit Use Case 3.5 System resets Member password and sends new password to Member’s ITSC email address 3.6 Back to Step 2 4. Member enters Username and Password and clicks “Login” 5. System authenticates Member 6. If username and Password does not match <ol style="list-style-type: none"> 6.1 System notifies Member and prompts for another try 6.2 Member enter his / her Username and Password and clicks “Login” 6.3 If Username and Password does not match for 5 consecutive tries <ol style="list-style-type: none"> 6.3.1 System locks Member account for 24 hours 6.3.2 Exit Use Case 7. System notifies Member of successful login and display the home screen of the UST Restaurant
Alternative Flows	<ol style="list-style-type: none"> 1. The user forgets his / her password 2. The username and password does not match
Priority	High
Non-Functional Requirements	<ol style="list-style-type: none"> 1. Authentication should take place within 20 seconds after password entered

Assumption	NA
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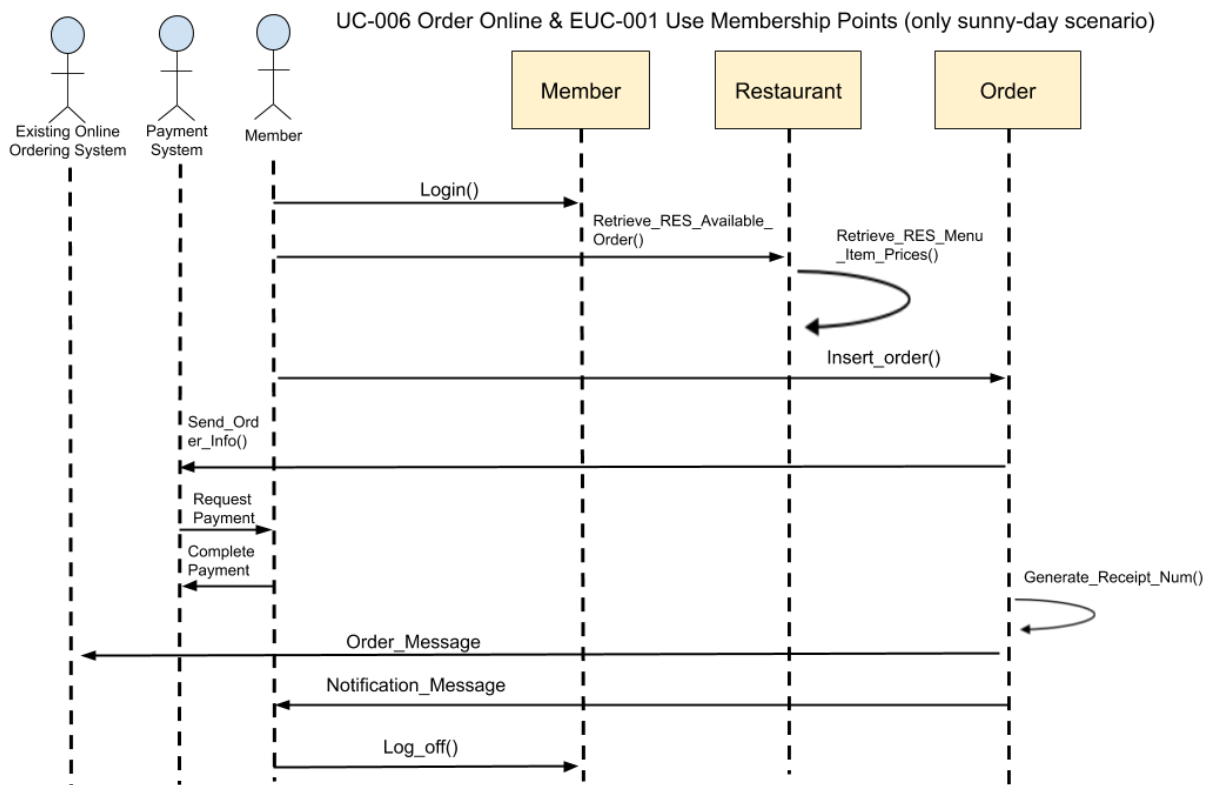
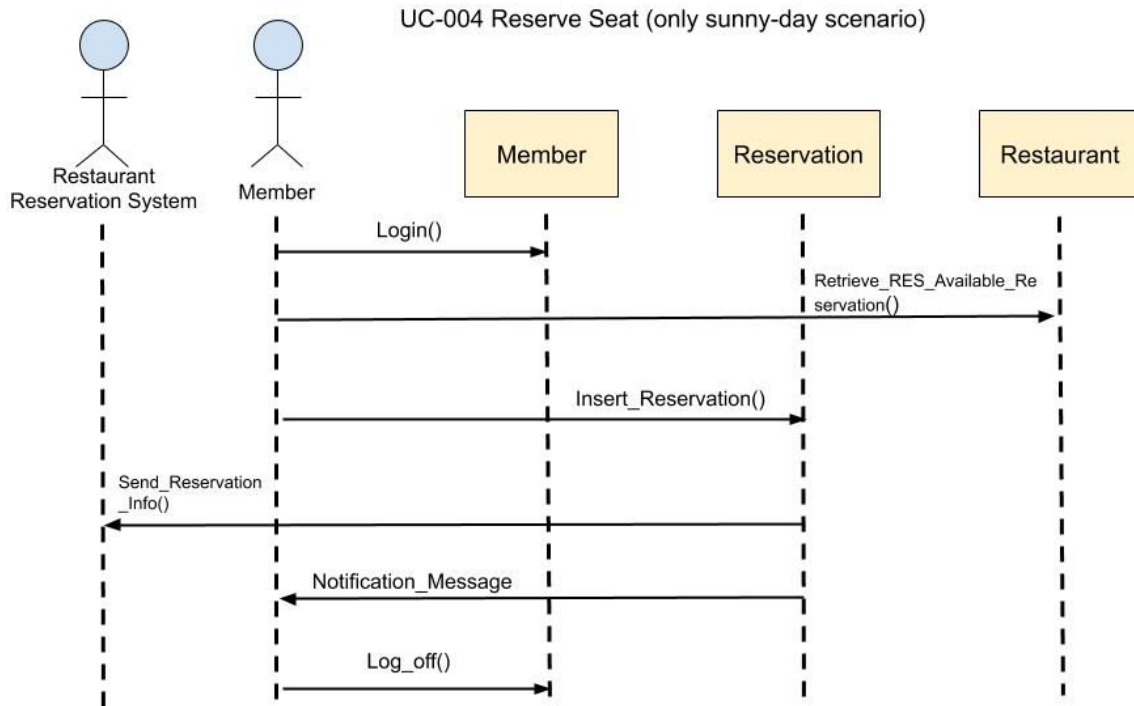
Use Case ID	EUC-001
Use Case	Use Membership Points
Actors	Member [P]
Description	Member chooses to use the membership points to pay for the items that are selected in food orders. Upon choosing this option, system uses member's membership points for the payment.
Use Cases being extended	UC-006 Order Online
Flow of Events	<ol style="list-style-type: none"> 1. Member clicks "Use Membership Points" in the payment page 2. System retrieves the amount of membership points from the member database 3. System displays the amount of Membership Points Member has 4. If Member does not have enough Membership Points <ol style="list-style-type: none"> 4.1 System notifies Member does not have enough Membership Points 4.2 Exit Extended Use Case 5. System prompts Member to choose how many Membership Points to use 6. System prompts Member to confirm the use of Membership Points 7. System updates the amount of money charged after the usage of Membership Points 8. System updates the earned and/or spent Membership Points to the member database
Alternative Flows	<ol style="list-style-type: none"> 1. Member does not have enough membership points to enjoy the discount
Priority	Medium

Non-Functional Requirements	NA
Assumption	NA

4b. Class Diagram



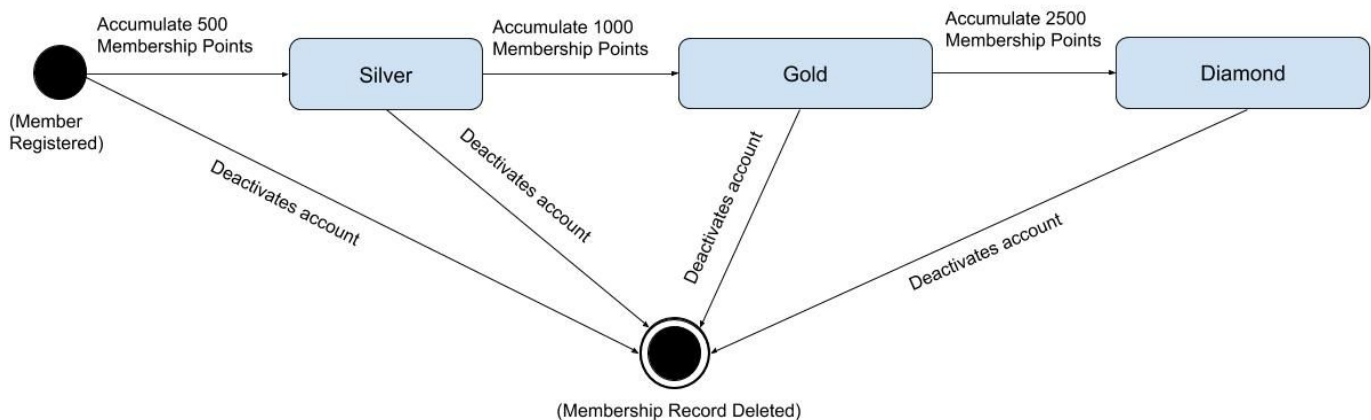
4c. Sequence Diagrams



4d. Behavioral State Machine Diagram

After Customers register as Members, they can accumulate Membership Points. When they reach 500 Membership Points, they would get Silver Membership; when they reach 1000 Membership Points, they would get Gold Membership; when they reach 2500 Membership Points, they would get Diamond Membership. Members could choose to deactivate their accounts at any time. If they do so, their membership record from the Member database will be deleted.

Membership Tier	Points Accumulated
Silver	500
Gold	1000
Diamond	2500



5. Nonfunctional Requirements

a) Performance Requirements

i) **UC-007** - View Membership Points

(1) Accrued membership points should be updated after 24 hours of initial transaction.

- Members cannot use or redeem the membership points they attained on the same day. It will take the Membership database 24 hours after transaction to update the accrued membership points. The member can check his/her cumulative membership points after 24 hours.

b) Operational Requirements

i) **UC-001** - Update Restaurant Information

(1) Excel File is compatible as the input for the system

- Restaurant Staff has to use the Excel File as the only compatible file type to input the restaurant information. There is a format provided to the Restaurant Staff, so they only have to complete an Excel file with the restaurant information that needs to be updated. Once the Excel File is uploaded with correct format, the restaurant information will be uploaded in the corresponding places of the Restaurant Information page.

c) Security Requirements

i) **UC-003** - Register as Member

(1) Members can only access their own personal information

- To ensure the security of the system and personal data, the private and confidential information of Members can be accessed by themselves only. Customers, Restaurant Staff and Managers have no access to the member database.

ii) **UC-003** - Register as Member

(2) System switches back to the home screen if it is left idle for 5 minutes

- If a Member has logged into the system and left idle for 5 minutes, the system will automatically log them off the system and switch the system back to the home screen

d) Cultural and Political Requirements

i) **UC-002** - View Restaurant Information

(1) Our system is bilingual: Chinese and English

- To meet the users with different cultural backgrounds, all the user interface must be bilingual: Chinese and English