

SCSJ3323: Software Design and Architecture

Software Design Document

Restaurant Dine In Online Ordering and

Management System

Version 1.0

9 June 2022

School of Computing Faculty Engineering

Revision Page

a. Overview

This is the first version of the SDD. It record the system details design including data design and user interface design.

b. Target Audience

Developer of the system

c. Project Team Members

Ricky A/L Karunakaran

d. Version Control History

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Ricky	SDD Creation	9 June 2022

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1. Introduction

1.1 Purpose

This SDD describes the software architecture and the detailed design of the FoodVerse System. It contains the architecture of the system and the details design include the package diagram, class diagram of the subsystem.

1.2 Scope

The software product that will be produced is called foodverse. The system is a generic product which design for restaurant to manage their service. It is also a centralized application which allows the user to access any restaurant that registered in the application. For the restaurant, the system will allow them to manage menu which will be displayed to the customer or visitor. Besides, the restaurant will get notification once customer check in to the restaurant. They can either accept the check in or reject the check in. Once the check in is accepted, the customer will be bind to the table they checked in. The order made by the customer will be handler under that table. Moreover, the restaurant could view the feedback submitted by the customer and reply the feedback.

For the restaurant, the system will allow them to view any registered restaurant's menu from the application. They only can access to the service once they check in to the restaurant by scanning the QR code. Once they scan the QR code and their check in is accepted by the restaurant, the services will be unlocked. The customer can add order to the cart. If multiple customer scanning a same QR code, their order will be displayed into the same cart. The customer will then can submit the order in cart to the restaurant and the restaurant can start to prepared it. The system also provide feature for the customer to call waiter when they need. Besides, the user will be checked out automatically from the system once they clear the bill either using cash or using credit/debit card. The customer will be allowed to send feedback to the restaurant they visited within three days. They will also allow to feed the reply of the feedback if the restaurant add reply or update response to the feedback.

1.3 Definitions, Acronyms and Abbreviation

SDD-Software Design Documentation

SRD- Software Requirement Specification

1.4 References

Specify complete list of references using a standardized reference format.

1.5 Overview

This SDD contains five sections which is introduction, system architectural design, system details design, system data design and system user interface design. The architectural design discuss the higher view of the system where the details design discusses the class diagram, package diagram of the subsystem. The data design gives further explanation on the system data show in the class diagram. The last section of this document is the user interface design which discusses the user screen interface layout.

2. System Architectural Design

2.1 Architecture Style and Rationale

The architecture style chosen for the system is Model-View-Controller (MVC) architecture. This architecture is chosen because it separates the presentation logic, controller logic and the model logic. It makes the system easy to be managed and updated.

2.2 Architecture Model

Figure 2.1 below show the architecture model of the system. Every subsystem of the system should be designed as the model.

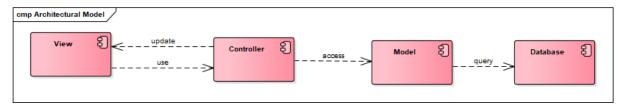


Figure 2.1: Architecture Model of FoodVerse

2.3 Use Case Diagram

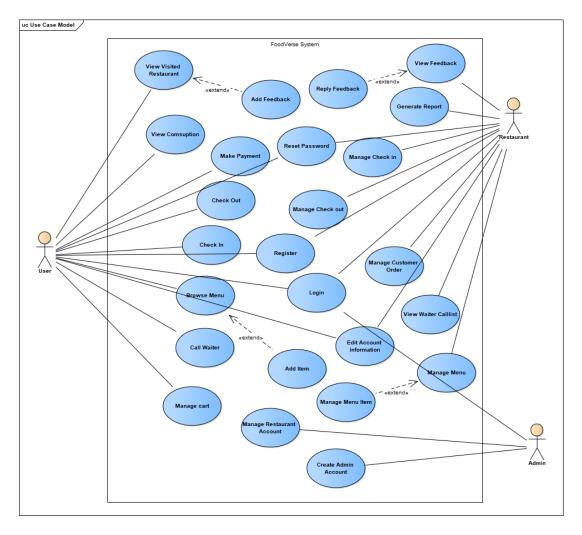


Figure 2.2: Use Case Diagram of FoodVerse

3. Detailed Description of Components

In this chapter, the detailed design of the system is documented.

3.1 Complete Package Diagram

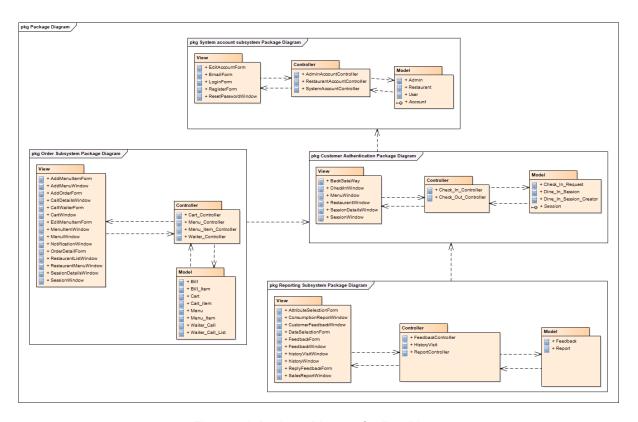


Figure 3.1: Package Diagram for FoodVerse

3.2 Component Model

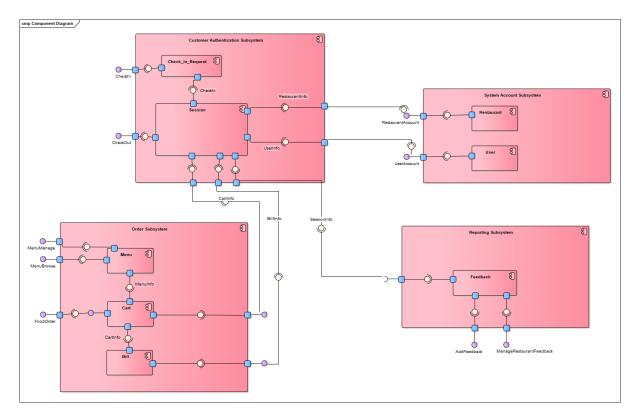
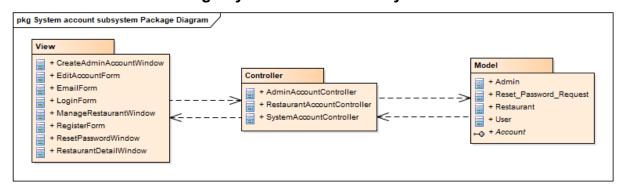


Figure 3.2: Component Diagram of FoodVerse

3.3 Detailed Description

3.3.1 System Account Subsystem

3.3.1.1 P001: Package System Account Subsystem

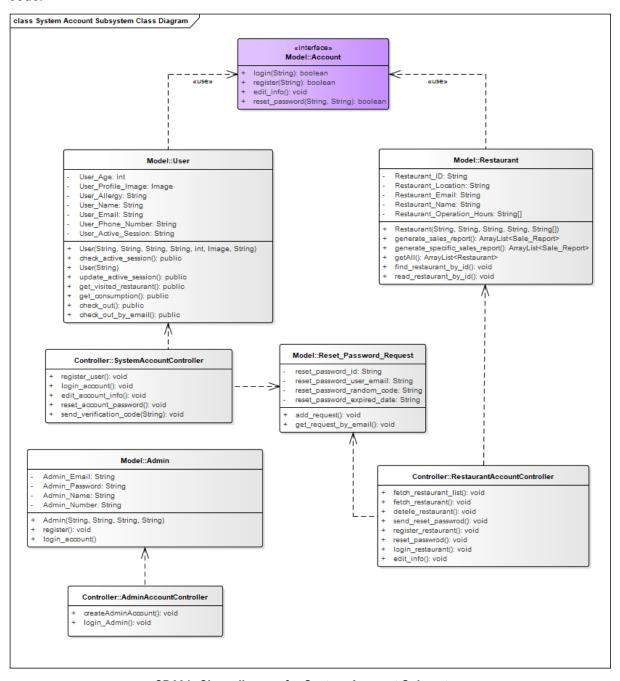


P001: Pacakge Diagram for System Account Subsystem

3.3.1.2 Class Diagram

The figure below shows the class diagram of the system account subsystem. All the getter and setter of the class Is excluded in the diagram for clarity purpose. Besides, the method of

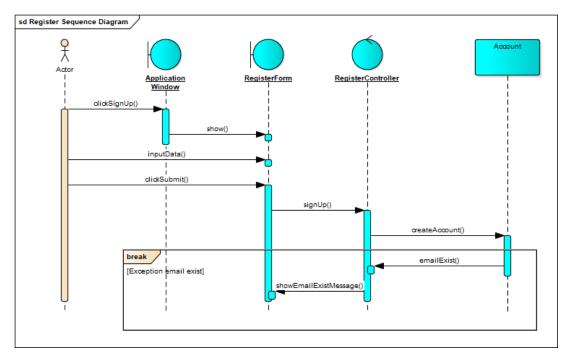
the model which used by other subsystem is not listed in the table below for method's pseudo code.



CD001: Class diagram for System Account Subsystem

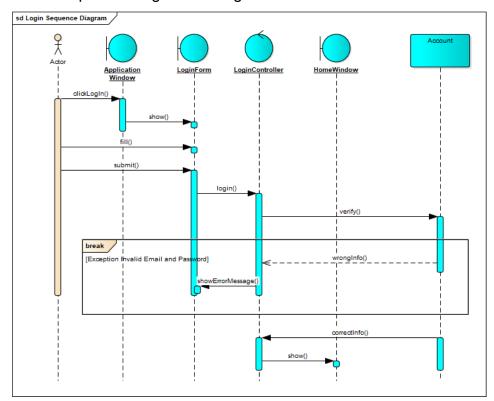
3.3.1.3 Sequence Diagrams

a) SD001: Sequence diagram for Register



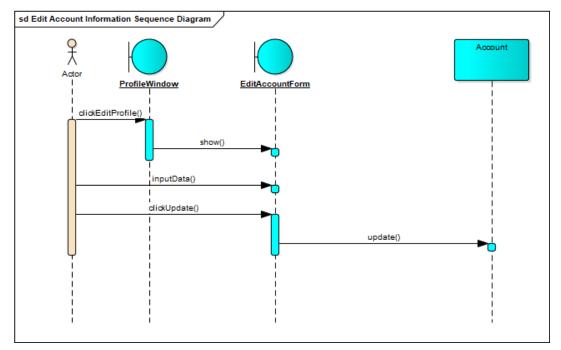
SD001: Sequence Diagram of Register

b) SD002: Sequence diagram for Login



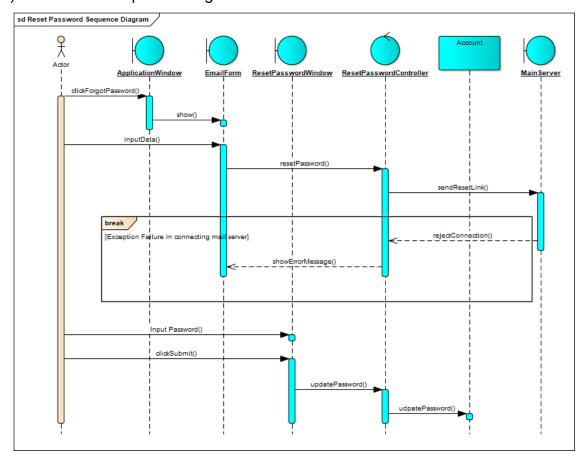
SD002: Sequence Diagram of Login

c) SD003: Sequence diagram for Edit Account Information



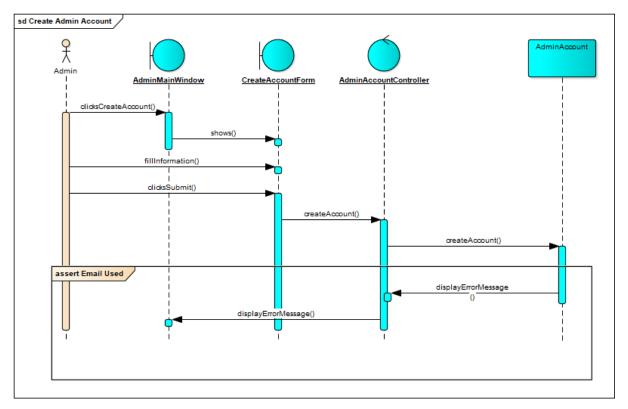
SD003: Sequence Diagram of Edit Account Information

d) SD004: Sequence diagram for Reset Password



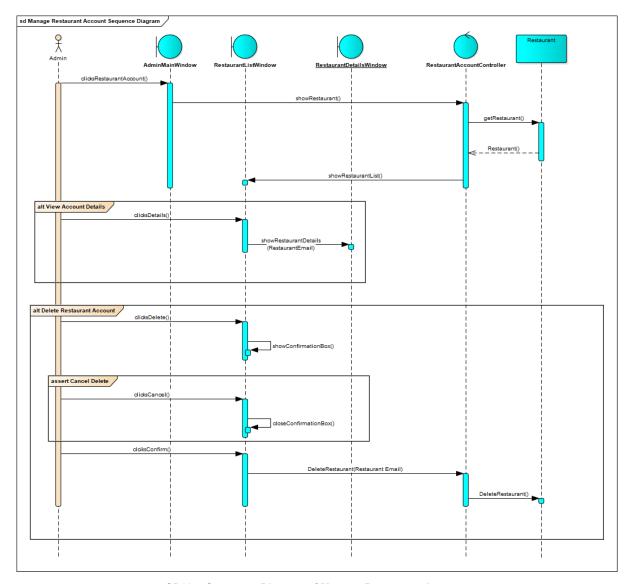
SD004: Sequence Diagram of Reset Password

e) SD024: Sequence diagram for Create Admin Account



SD024: Sequence Diagram of Create Admin Account

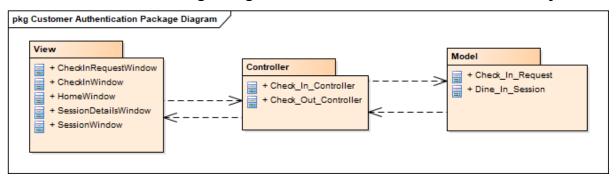
f) SD025: Sequence diagram for Manage Restaurant Account



SD025: Sequence Diagram of Manage Restaurant Account

3.3.2 Customer Authentication Subsystem

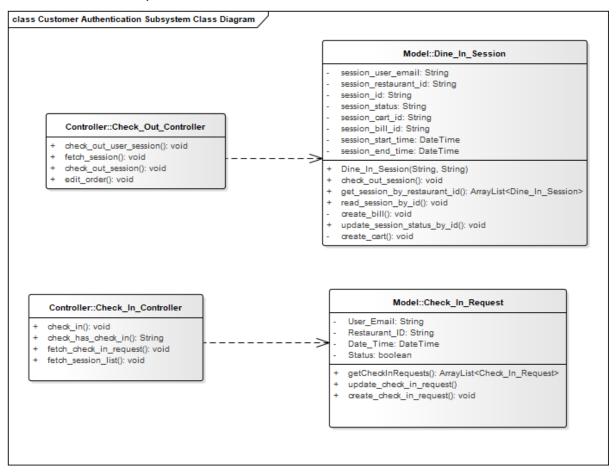
3.3.2.1 P002: Package Diagram for Customer Authentication Subsystem



P002: Package Diagram for Customer Authentication Subsystem

3.3.2.2 Class Diagram

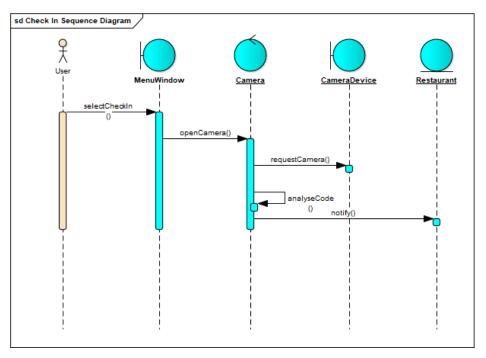
The figure below shows the class diagram of the system account subsystem. All the getter and setter of the class Is excluded in the diagram for clarity purpose. Besides, the method of the model which used by other subsystem is not listed in the table below for method's pseudo code.



CD002: Class Diagram for Customer Authentication Subsystem

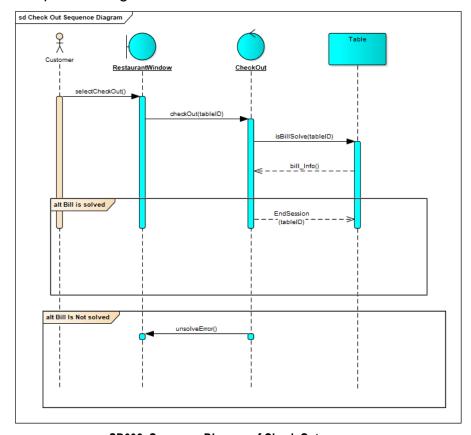
3.3.2.3 Sequence Diagrams

a) SD005: Sequence Diagram for Check In



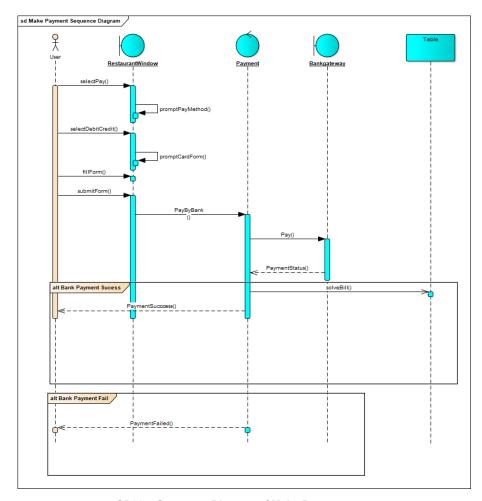
SD005: Sequence Diagram of Check In

b) SD006: Sequence Diagram for Check Out



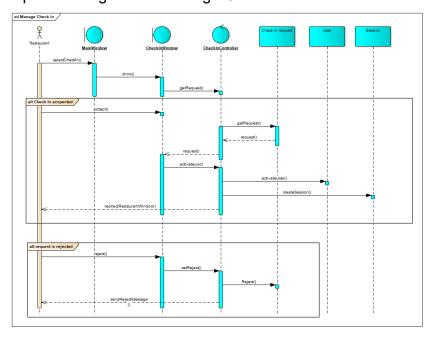
SD006: Sequence Diagram of Check Out

c) SD007: Sequence Diagram for Make Payment



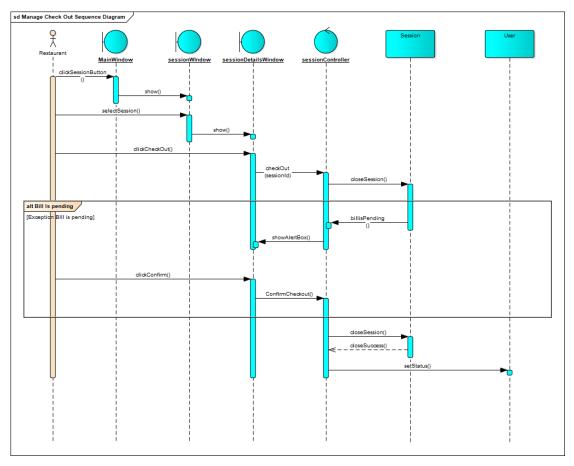
SD007: Sequence Diagram of Make Payment

d) SD008: Sequence Diagram for Manage Check In



SD008: Sequence Diagram of Manage Check In

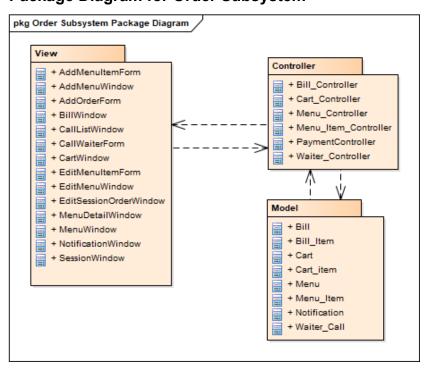
e) SD009: Sequence Diagram for Manage Check Out



SD009: Sequence Diagram of Manage Check Out

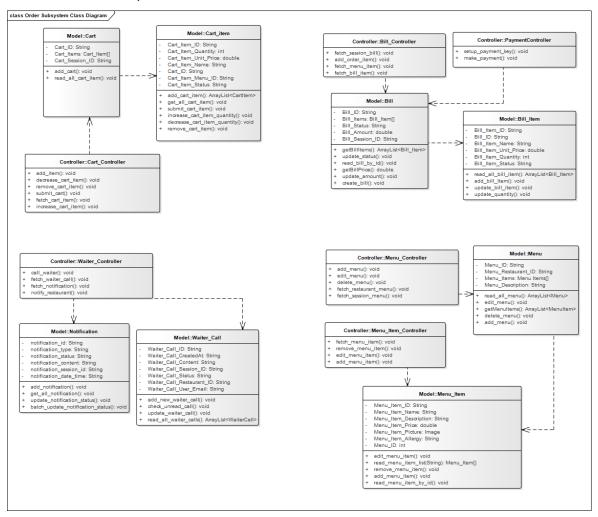
3.3.3 Order Subsystem

3.3.3.1 Package Diagram for Order Subsystem



3.3.3.2 Class Diagram

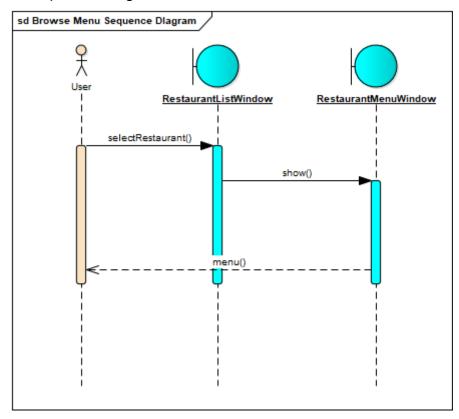
The figure below shows the class diagram of the system account subsystem. All the getter and setter of the class Is excluded in the diagram for clarity purpose. Besides, the method of the model which used by other subsystem is not listed in the table below for method's pseudo code.



CD003: Class Diagram for Order Subsystem

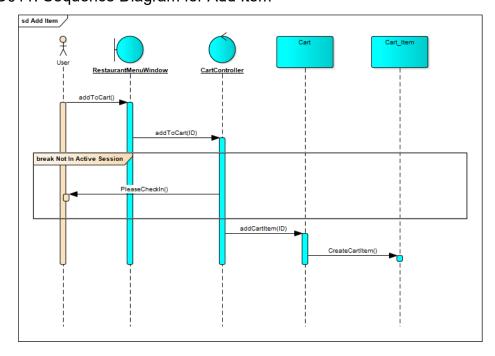
3.3.3.3 Sequence Diagrams

a) SD010: Sequence Diagram for Browse Menu



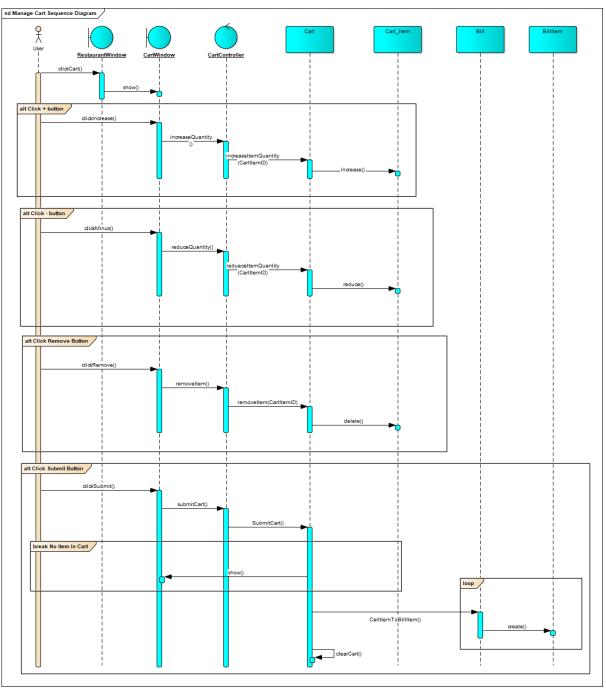
SD010: Sequence Diagram for Browse Menu

b) SD011: Sequence Diagram for Add Item



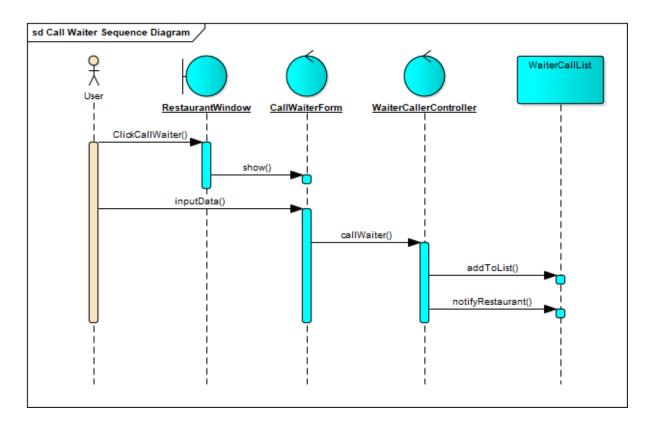
SD011: Sequence Diagram for Add Item

c) SD012: Sequence Diagram for Manage Cart



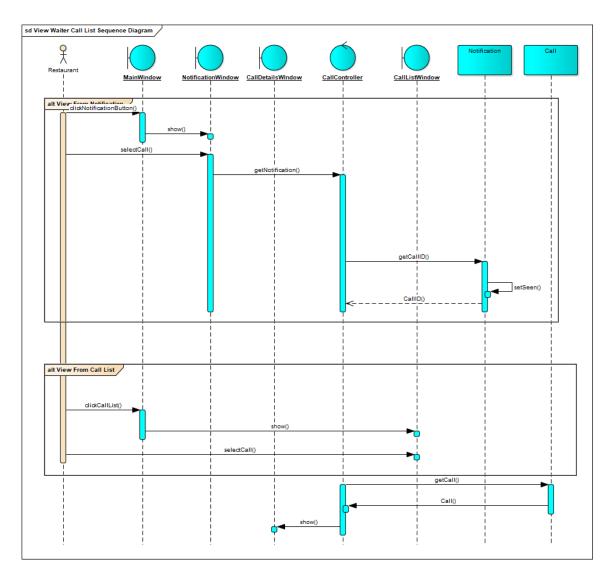
SD012: Sequence Diagram for Manage Cart

d) SD013: Sequence Diagram for Call Waiter



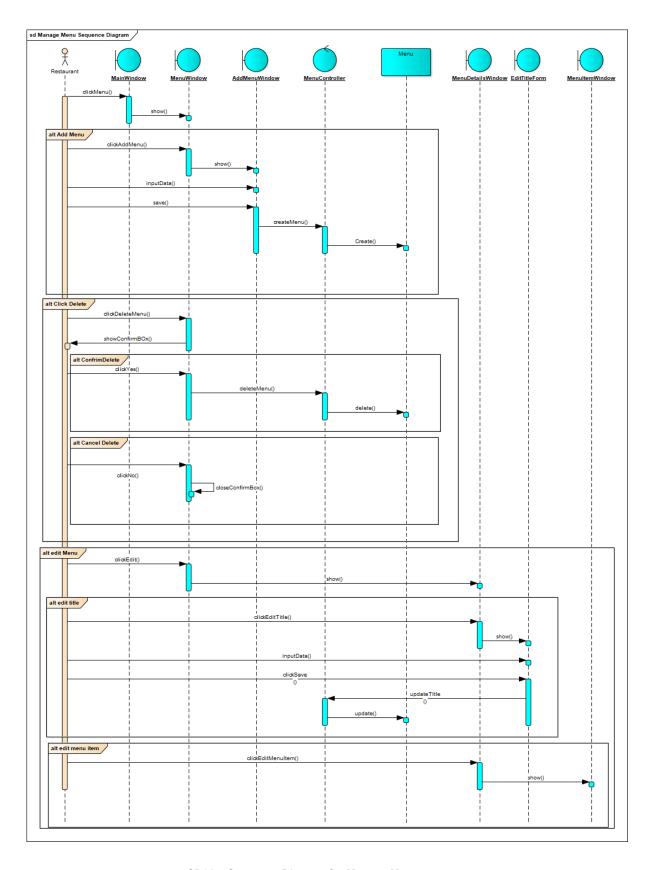
SD013: Sequence Diagram for Call Waiter

e) SD014: Sequence Diagram for View Waiter Call List



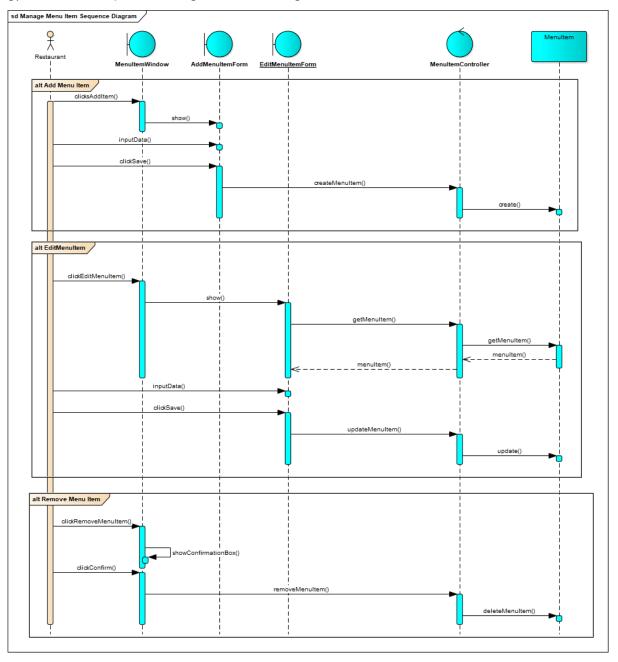
SD014: Sequence Diagram for View Waiter Call List

f) SD015: Sequence Diagram for Manage Menu



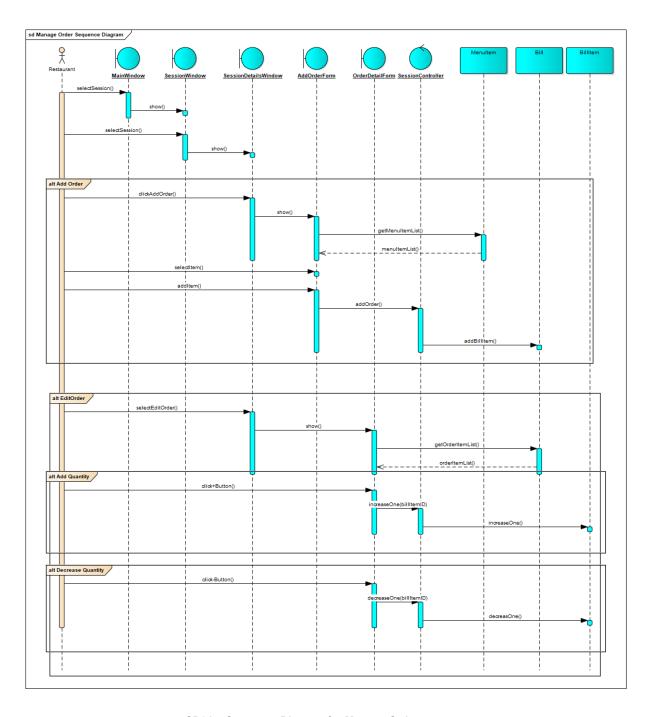
SD015: Sequence Diagram for Manage Menu

g) SD016: Sequence Diagram for Manage Menu Item



SD016: Sequence Diagram for Manage Menu Item

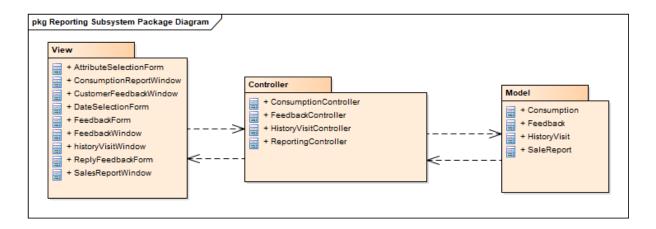
h) SD017: Sequence Diagram for Manage Order



SD017: Sequence Diagram for Manage Order

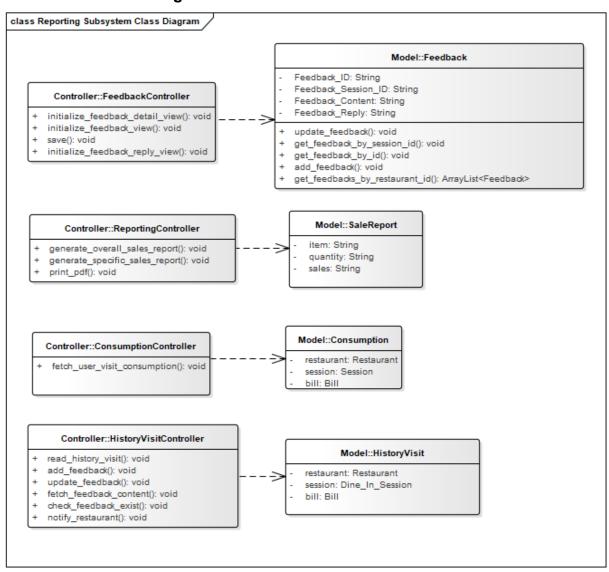
3.3.4 Reporting Subsystem

3.3.4.1 Package Diagram of Reporting Subsystem



P004: Package Diagram for Reporting Subsystem

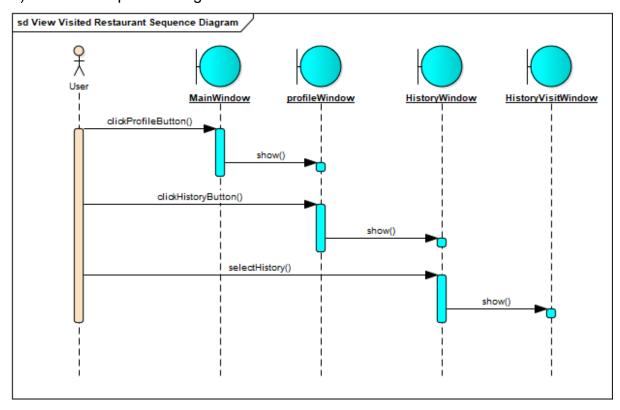
3.3.4.2 Class Diagram



CD004: Class Diagram for Reporting Subsystem

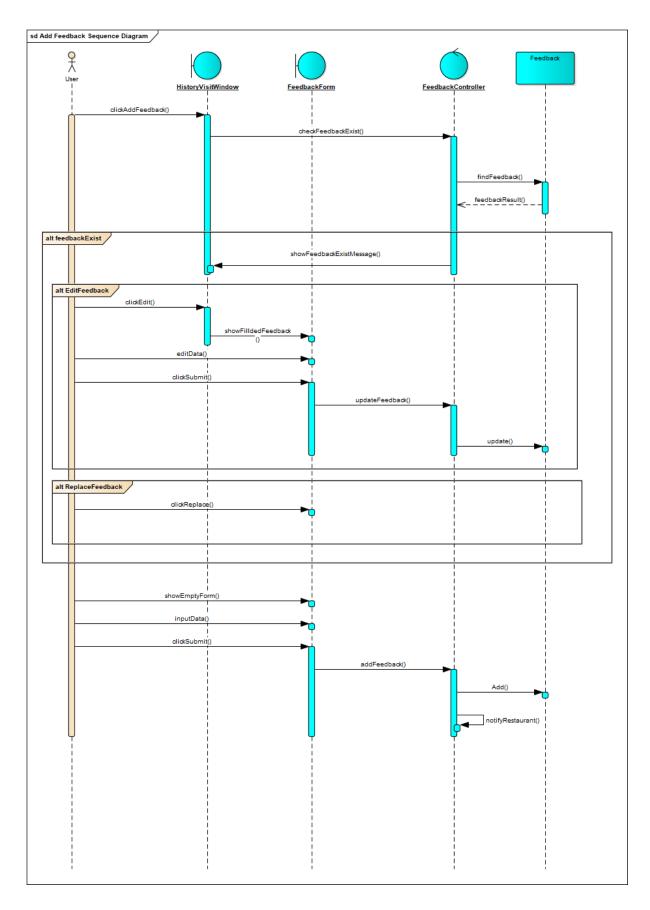
3.3.4.3 Sequence Diagram

a) SD018: Sequence Diagram for View Visited Restaurant



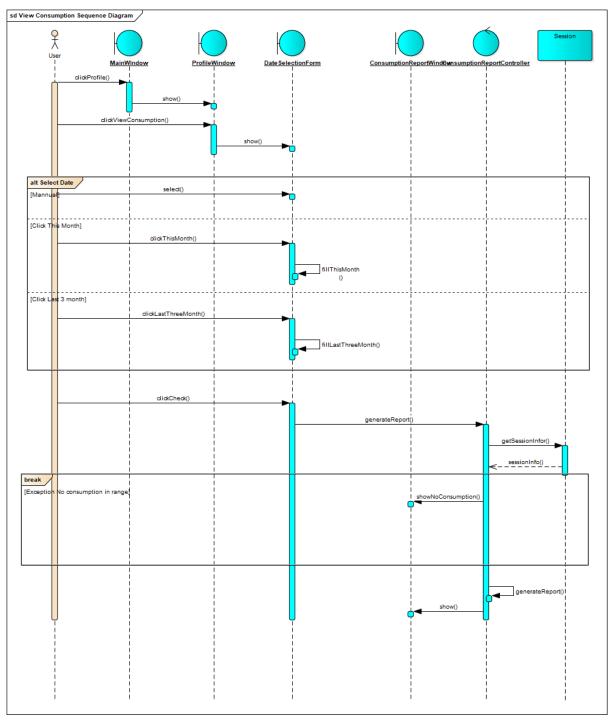
SD018: Sequence Diagram for View Visited Restaurant

b) SD019: Sequence Diagram for Add Feedback



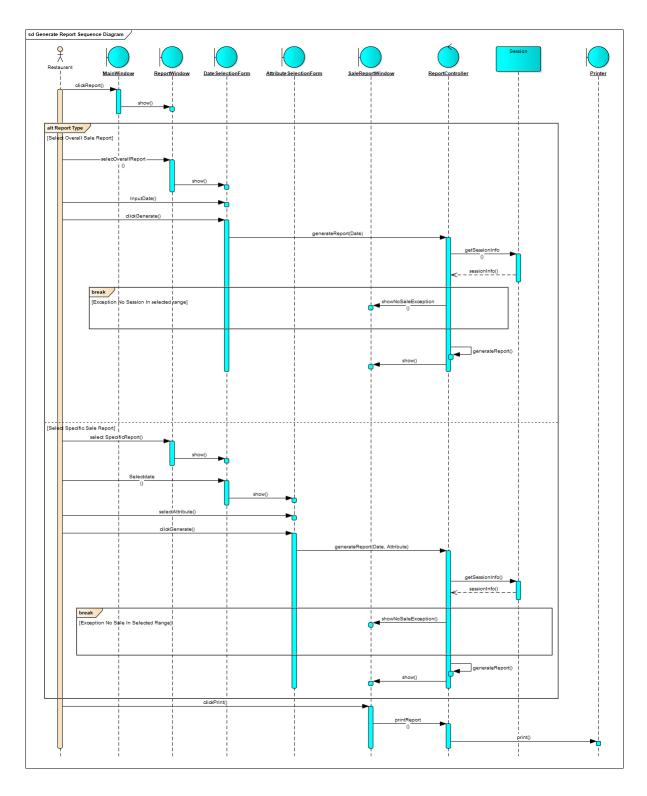
SD019: Sequence Diagram for Add Feedback

c) SD020: Sequence Diagram for View Consumption



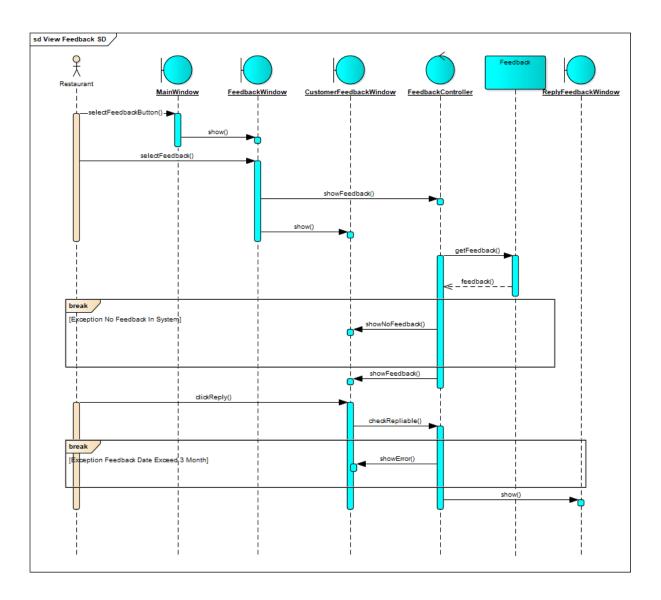
SD020: Sequence Diagram for View Consumption

d) SD021: Sequence Diagram for Generate Report\



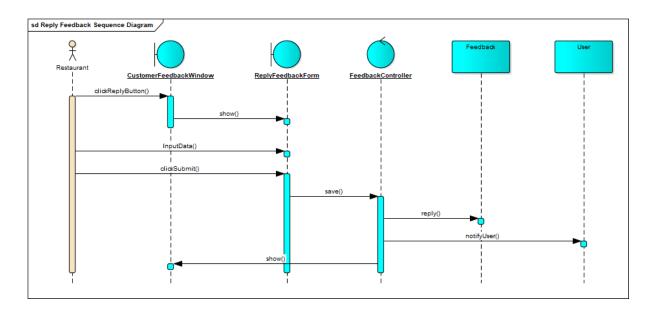
SD021: Sequence Diagram for Generate Report

e) SD022: Sequence Diagram for View Feedback



SD022: Sequence Diagram for View Feedback

f) SD023: Sequence Diagram for Reply Feedback



SD023: Sequence Diagram for Reply Feedback

4. Data Design

4.1 Data Description

Model	Description
User	Store User or customer information
Restaurant	Store restaurant information
Admin	Store admin information
Check_In_Request	Store the information of a restaurant check in request
Session	Store a dine in session of the user in a restaurant. This class also refer the other class
	include the cart and bill class.
Cart	Store the session cart information and its cart item.
Cart_Item	Store the food added to the cart
Bill	Store the bill information of the user
Bill_Item	Store the food ordered and included in payment
Waiter_Call	Store the information of user waiter call
Reset_Password_Request	Store the the information of password reset request
Menu	Store the menu item and menu information of a restaurant
Menu_Item	Store the details of the food which can be view by customer and add to cart as a cart
	item
Feedback	Store the feedback of a session added by a customer
Sale_Report	Store the information of the sale report
Consumption	Store the information of the consumption
History_Visit	Store the information of the history visit

4.2 Data Dictionary

4.2.1 Admin

Attribute	Description	Data type
Admin_Email	Email of the admin account	String
Admin_Password	Password of the account	String
Admin_Name	Name of the admin	String
Admin_Number	Phone number of the admin	String

4.2.2 Bill

Attribute	Description	Data type
Bill_ID	Bill identification number	String
Bill_Item	Bill item of the bill	Bill_Item
Bill_Status	Bill status which is 'Unsolve',	String
	'Pending' or 'Solved'.	
Bill_Amount	The total price of the bill item of the	String
	bill	
Bill_Session_ID	The session id of the session the bill	String
	belong to	

4.2.3 Bill_Item

Attribute	Description	Data type
Bill_Item_ID	Bill item identification number	String
Bill_ID	Bill identification number that this bill belong to	String
Bill_Item_Name	Bill item name which is same with menu item name	String
Bill_Item_Price	Bill item price which is same with menu item price	double
Bill_Item_Quantity	Bill item quantity	int
Bill_Item_Status	Bill item status	String

4.2.4 Cart

Attribute	Description	Data type
Cart_ID	Cart identification number	String
Cart_Items	Cart item that cart contain	Cart_Item
Cart_Session_ID	Cart's session id	String

4.2.5 Cart_Item

Attribute	Description	Data type
Cart_Item_Id	Cart item identification number	String
Cart_Item_Quantity	Cart item quantity	int

Cart_Item_Unit_Price	Cart item single unit price	double
Cart_Item_Name	Cart item name	String
Cart_ID	Cart Item cart id	String
Cart_Item_Menu_ID	Cart item menu id	String
Cart_Item_Status	Cart item status	String

4.2.6 Check_In_Request

Attribute	Description	Data type
User_Email	The user email who send this request	String
Restaurant_ID	The restaurant identification which	String
	this request send to	
Date_Time	The Date and time that the request is	DateTime
	send	
Status	The status of the check in request	Boolean
	which is 'Approved' for true or	
	'Rejected' for false	

4.2.7 Consumption

Attribute	Description	Data type
Restaurant	The restaurant of the	Restaurant
	consumption made	
Session	The session of the	Session
	consumption made	
Bill	The bill of the consumption	Bill
	session	

4.2.8 Dine_In_Session

Attribute	Description	Data type
session_user_email	The user email of this session	String
session_restaurant_id	The restaurant id that this session belong to	String
session_id	Session identification number	String

session_status	The session status which is 'Active' and 'Inactive'	String
	/ tolive and mactive	
session_cart_id	The cart id of this session	String
session_bill_id	The bill id of this session	String
session_start_time	The time that the session open	DateTime
session_end_time	The time that the session close	DateTime

4.2.9 Feedback

Attribute	Description	Data type
Feedback_ID	Feedback identification number	String
Feedback_Session_ID	Session ID that this feedback	String
	belong to	
Feedback_Content	The content of the feedback from	String
	user	
Feedback_Reply	The reply of the feedback from	String
	restaurant	

4.2.10 History_Visit

Attribute	Description	Data type
Restaurant	The restaurant object of the	Restaurant
	visit	
Session	The session object of the	Session
	visit	
Bill	The bill object of the	Bill
	consumption session	

4.2.11 Menu

Attribute	Description	Data type
Menu_ID	Menu identification number	String
Menu_Restaurant_ID	Restaurant ID that this menu	String
	belong to	
Menu_Items	The menu item of this menu	Menu_Item[]

Menu_Description The menu description	String
---------------------------------------	--------

4.2.12 Menu_Item

Attribute	Description	Data type
Menu_Item_ID	Menu item identification number	String
Menu_Item_Name	Menu item name	String
Menu_Item_Description	Menu item description	String
Menu_Item_Price	The unit price of the menu item	double
Menu_Item_Picture	The image of the menu item	Image
	which will be displayed to user	
Menu_Item_Allergy	The allergy may cause by this	String
	menu item	
Menu_Item_Picture	The picture of the menu item in	Image
	binary format	
Menu_ID	Menu ID that this menu item	String
	belong to	

4.2.13 Notification

Attribute	Description	Data type
Notification_ID	The notification identification	String
	number	
Notification_Type	The notification type the	String
	notification	
Notification_Status	The status of the notification	String
Notification_Content	The content of the notification	String
Notification_Session_ID	The session that the notification	String
	belongs to	
Notification_Date_Time	The date time when the	String
	notification created	

4.2.14 Reset_Password_Request

Attribute Description Data type

Reset_Password_ID	The reset password	String
	request identification	
	number	
Reset_Password_User_Email	The user email of the user	String
	who request reset	
	password	
Reset_Password_Random_Code	The random generated 6	String
	digit code	
Reset_Password_Expired_Date	The expired date of the	String
	random code	

4.2.15 Restaurant

Attribute	Description	Data type
Restaurant_ID	Restaurant identification	String
	number	
Restaurant_Location	Restaurant location	String
Restaurant_Email	The email of the restaurant	String
	account	
Restaurant_Name	The name of the restaurant	String
Restaurant_Operation_Hours	The operation hour of the	String[]
	restaurant	

4.2.16 Sale_Report

Attribute	Description	Data type
Item	The sale's item name	String
Quantity	The quantity of the item sold	String
Sales	The total amount of the item	String
	sold	

4.2.17 User

Attribute	Description	Data type
User_Age	The age of the user	int

User_Profile_Image	The profile picture of the user	Image
User_Allergy	The allergy the user suffer from	String
User_Name	The name of the user	String
User_Email	The email of the user account	String
User_Phone_Number	The user phone number	String
User_Active_Session	The status of current user which	String
	is 'Active' if in an active session	
	and 'Inactive' if in not in an active	
	session	

4.2.18 Waiter_Call

Attribute	Description	Data type
Waiter_Call_ID	The waiter call identification	String
	number	
Waiter_Call_Status	The status of the waiter call	String
Waiter_Call_Session_ID	The session id which this	String
	waiter call belong to	
Waiter_Call_CreatedAt	The time that waiter call is	String
	created	
Waiter_Call_Content	The message of this waiter call	String
	from user to restaurant	
Waiter_Call_Restaurant_ID	The restaurant id of the waiter	String
	call	
Waiter_Call_User_Email	The user email of the user who	String
	create the waiter call	

5. User Interface Design

5.1 Overview of User Interface

Figure 5.1 below shows the restaurant main screen. This interface contains a navigation bar which allows the user to access the other service at any window of the system. The 'Session' in navigation bar shows the details of the current active session in the system, which allows the restaurant to perform use case Manage Check Out and Manage Order. 'Notification' allows the restaurant to view the notification such as new check in request, new waiter call or need feedback reply. 'Check In' is where the restaurant performs use case Manage Check In to approve or reject the check in request from customer. 'Call List' is where the restaurant executes use case View Waiter Call List to view the waiter call from the customer in active session. 'Feedback' allows the restaurant to view and reply feedback from customer and 'Report' bring the restaurant to a window which use case Generate Report can be performed. Last but not least, 'Menu' brings the restaurant to manage the menu of the restaurant and 'Setting' brings the restaurant to edit their restaurant information.

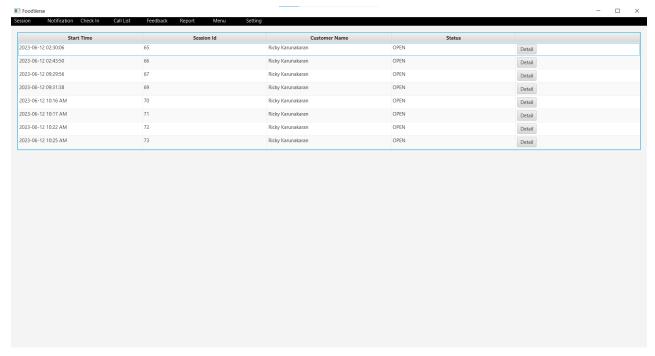


Figure 5.1: Restaurant Main Screen

Figure 5.2 below shows the main screen of the user or customer. The interface contains a bottom navigation bar with three action available. 'Home' brings the user to the home page,

'Check In' will bring the user to a window which Check In use case is performed. 'Profile' will bring the user to the window which use case Edit Account Information can performed.

FoodVerse

Having active session with restaurant: Restaurant Beta Click the button below to view your session

YOUR SESSION



Figure 5.2: User Main Screen

5.2 Screen Images

5.2.1 User: Restaurant Page After Check In

Figure 5.4 below show the restaurant page after the user check in to the restaurant and it is approved.

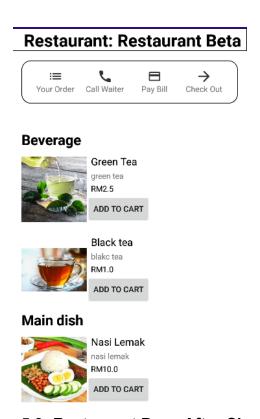
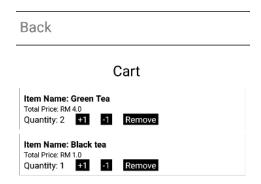


Figure 5.3: Restaurant Page After Check In

5.2.2 User: Cart of a session

Figure 5.5 show the cart interface of a session. It display the cart item that user has added.



SUBMIT CART

Figure 5.4: Cart of a session

5.2.3 User: Bill of a session

Figure 5.6 below shows the bill of a session. It display the bill item which is the cart item submitted.



Figure 5.5: Bill of a session

5.2.4 User: Adding item to cart

Figure 5.7 below showing the interface when adding a menu item to a cart.

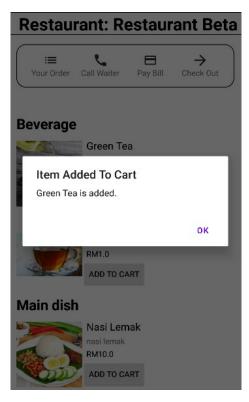


Figure 5.6: Adding item to cart

5.2.5 User: View Visited Restaurant

Figure 5.8 below shows the history visit of the user. The data is obtain from the session that are closed.

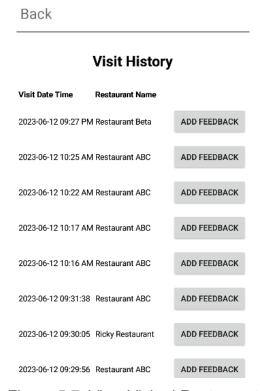


Figure 5.7: View Visited Restaurant

5.2.6 Restaurant: Check In

Figure 5.9 below shows the check in interface with check in request.

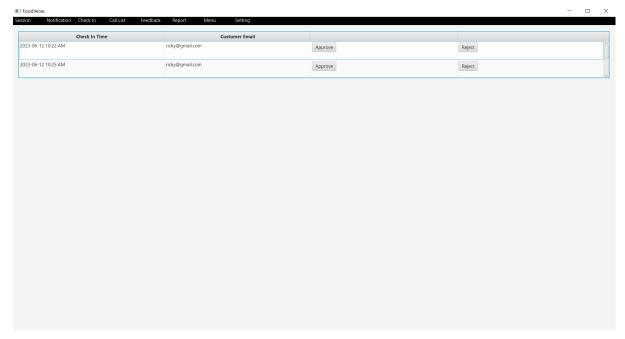


Figure 5.8: Check In Interface

5.2.7 Restaurant: Session

Figure 5.10 below shows the session interface. It display the current active session of the restaurant

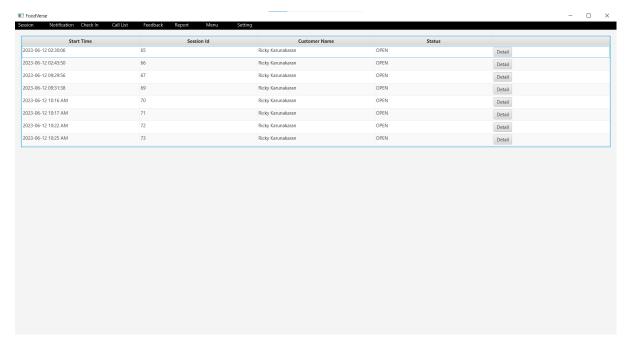


Figure 5.9: Session

5.2.8 Restaurant: Session Detail

Figure 5.11 below shows the session detail of a session. It contains the bill item of the session and also the user name of the session.

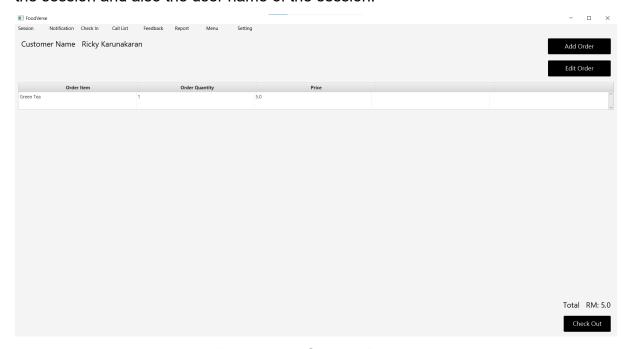


Figure 5.10: Session Details

5.2.9 Restaurant: Menu

Figure 5.12 below shows the menu interface. It display the menu created by the restaurant.

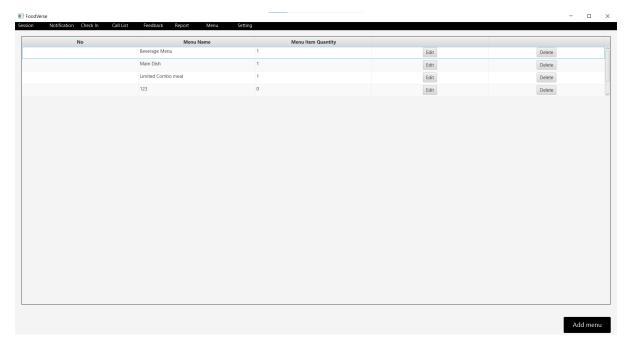


Figure 5.11: Menu

5.2.10 Restaurant: Menu Item

Figure 5.13 below show the menu item interface. It display the menu item added to a menu.

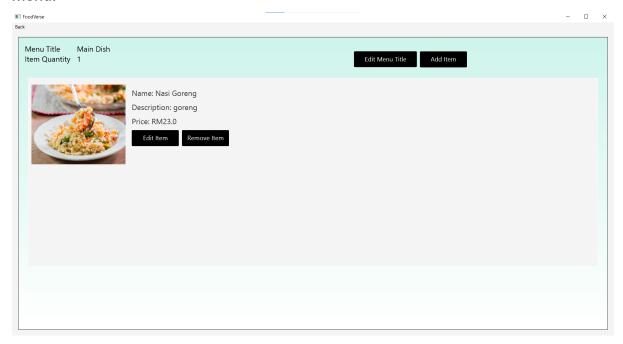


Figure 5.12: Menu Item

5.2.11 Restaurant: Waiter Call List

Figure 5.14 below shows the waiter call list interface. It display the waiter call made by the user to the restaurant in a session

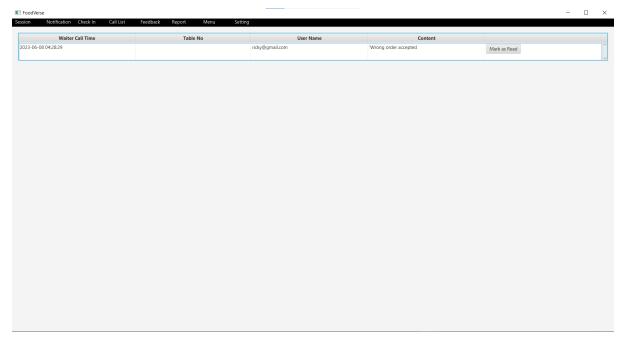


Figure 5.13: Waiter Call List

5.2.12 Restaurant: Feedback

Figure 5.16 below shows the feedback of the user made on a session in a restaurant.

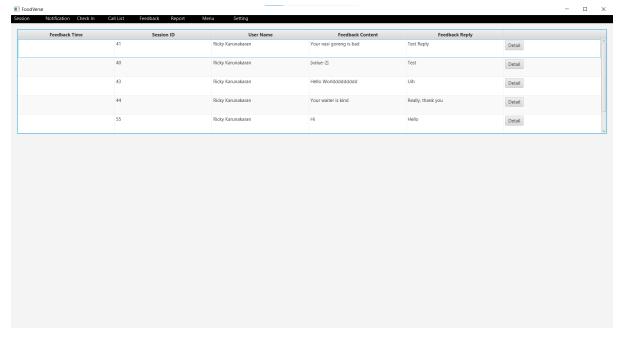


Figure 5.14: Feedback

5.2.13 Admin: Create Admin Account

Figure 5.17 shows the create admin account interface. It requires the admin to enter information required to create an account.

Create Admin Account	Create Admin Account		
Restaurant	account including vie	Creating an account with full access right on restaurant account including view restaurant account details and delete restaurant account.	
	Email:		
	Password:		
	Name:		
	Contact Number:		
	_		
		Create	

Figure 5.15: Create Admin Account

5.2.14 Admin: Manage Restaurant Account

Figure 5.8 shows the interface of manage restaurant account from admin view. Admin can view the details of the restaurant and also delete the restaurant account.

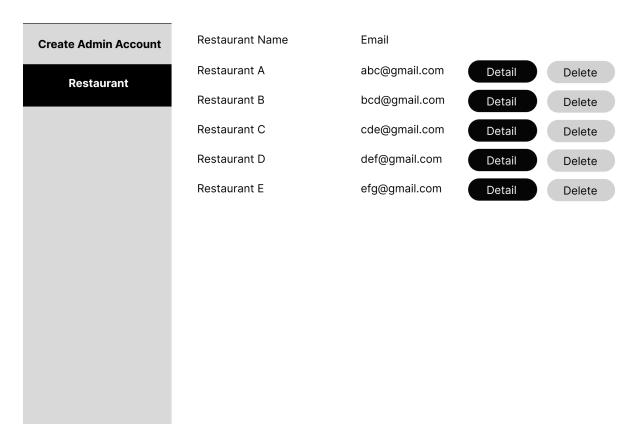


Figure 5.16: Manage Restaurant Account

5.2.15 Requirements Matrix

	P001	P002	P003	P004
UC001	Х			
UC002	Х			
UC003	Х			
UC004	X			
UC005		X		
UC006		X		
UC007		X		
UC008		X		
UC009		X		
UC010			X	
UC011			X	
UC012			X	
UC013			X	
UC014			X	
UC015			X	
UC016			X	
UC017			X	
UC018				X
UC019				X
UC020				X
UC021				Х
UC022				Х
UC023				Х
UC024	Х			
UC025	X			