SOFTWARE REQUIREMENT ENGINEERING

TRIMESTER 2 2019/20

TT02

PROJECT PART 2

SYSTEM REQUIREMENT SPECIFICATION (SyRS)

DIGITAL GROCERY SHARING SOLUTION

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System Requirements Specifications

Pop Groceries System

Version: 1.0

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Version History

Document Version	Date of Release	Section	Amendments
1.0	30/01/2020	Whole document	Original Document

Table of Contents

1.0 Introduction

1.1 System Scope

The scope of the Pop Groceries system:
1. Browsing and purchasing groceries in the Pop Groceries Mobile App software application.
2. Notification of purchased items to the respective warehouse(s).
3. Delivery of the groceries to the respective Pop-Fridges.
4. Notifications to the users of the arrival of the groceries to the Pop-Fridges.
4. Check-ups of the pre-delivery and post-delivery processes.
5. Check-ups of the Pop-Fridges.

1.2 System Overview

1.2.1 System Context

The major elements in the Pop Groceries system are the users, the Pop Groceries Mobile App, the Pop Groceries Warehouse and its staff, the delivery man, and the Pop-Fridge.

The flow of the system is as follows:

1. The users shall open the Pop Groceries Mobile App and choose the delivery location, which is the closest Pop-Fridge to them. They then can browse through the app for groceries and add them to the cart. Finally, they can check-out the cart to purchase the groceries and choose the time for delivery (according to the scheduled delivery time).

2. The Pop Groceries Warehouse staff shall be notified of the orders that have been made by the users. The staff shall use the Pop Groceries Staff App to do the checklist of items and prepare the groceries by transferring the groceries from the storage to the respective boxes.

3. The delivery man shall go through the checklist in the Pop Groceries Staff App to make sure that all the groceries are present before the delivery. Then the delivery man shall deliver the groceries to the respective Pop-Fridges. After transferring the item into the Pop-Fridges, the delivery man needs to do another checklist to make sure that all the groceries have been delivered correctly.

4. The delivery man is also tasked to do weekly inspection of the Pop-Fridges by completing the checklist of inspection tasks that is provided in the Pop Groceries Staff App.

5. The users shall be notified of the delivery and they shall get the respective Pop-Fridge number and the codes to access the respective Pop-Fridge.

1.3 Definitions

Pop Groceries - the name of the whole system including the mobile app for users and staff, the delivery process, the warehouse, and the Pop-Fridge.

Pop-Fridge - a fridge that has many boxes of fridges that is used to store the groceries that has been delivered for the users. It has a terminal that users can use to enter the given fridge number and codes to get their groceries.

Pop Groceries Mobile App - the application that users can download on their mobile phones and use to register, browse the groceries, and purchase the groceries.

Pop Groceries Staff App - the applications for the staff of Pop Groceries system.

Pop Groceries Warehouse - the warehouse where all the groceries are being stored and managed for delivery.

User - anyone who uses the Pop Groceries Mobile App to browse or purchase groceries.

Delivery man - the staff that is responsible to deliver the groceries from the Pop Groceries Warehouse to the Pop-Fridges.

Staff - the staff of the Pop Groceries system that are responsible for managing the groceries in the warehouse.

2.0 References

The document that has been prepared is in accordance to the following documents:

    i.   ISO/IEC/IEEE 29148:2011(E), *Systems and software engineering - Life cycle processes - Requirements engineering*.

3.0 System requirements

3.1 Functional Requirements

The following is an overview of the use case in the system:
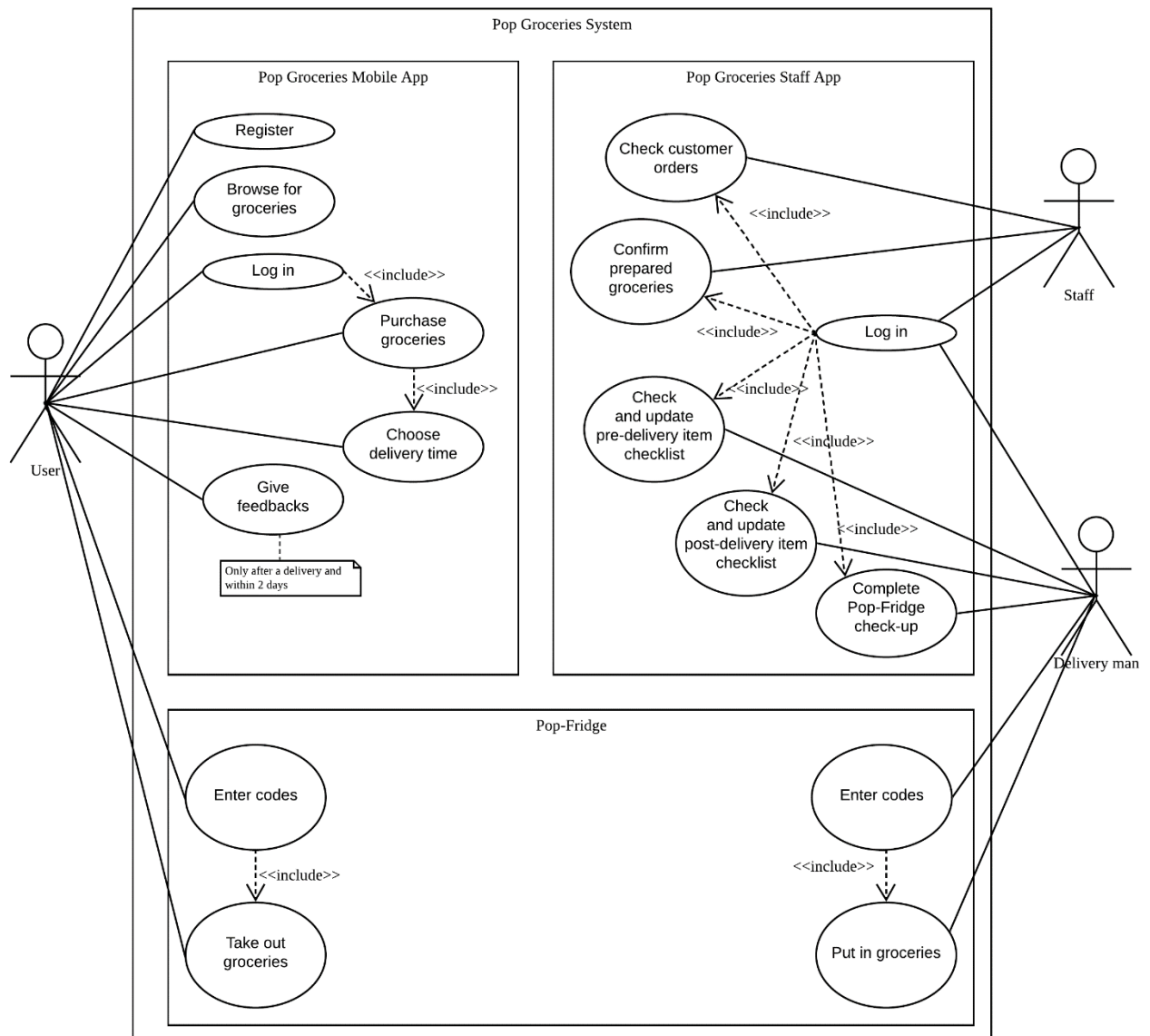
Figure 1.0 Pop Groceries System Overall Use Case

The following are the functional requirements of the system categorized by the specific use cases:

3.1.1 F001 Registration

Following is the functional requirement for Registration:

Requirement ID	REQ_F00101	Version	1.0
Description	User should be allowed by the system to choose register on the main page of the mobile app		
Author	Hizri Hatta		

3.1.2 F002 Groceries Browsing

Following is the functional requirement for Groceries Browsing:

Requirement ID	REQ_F00201	Version	1.0
Description	User should be allowed by the system, (registered or not), to browse the groceries item in the mobile app		
Author	Hizri Hatta		

3.1.3 F003 Log In (User)

Following is the functional requirement for Log In (User):

Requirement ID	REQ_F00301	Version	1.0
Description	User should be allowed by the system to log in into the mobile app		
Author	Hizri Hatta		

3.1.4 F004 Purchase Groceries

Following is the functional requirement for Purchase Groceries:

Requirement ID	REQ_F00401	Version	1.0
Description	Logged in user should be allowed by the system to make a purchase		
Author	Hizri Hatta		

3.1.5 F005 Choose Delivery Time

Following is the functional requirement for Choose Delivery Time:

Requirement ID	REQ_F00501	Version	1.0
Description	User that is making a purchase should be allowed by the system to choose a delivery time		
Author	Hizri Hatta		

3.1.6 F006 Give Feedback

Following is the functional requirement for Give Feedback:

Requirement ID	REQ_F00601	Version	1.0
Description	User that has their groceries delivered should be allowed by the system to give a feedback		
Author	Hizri Hatta		

3.1.7 F007 Take Out Groceries

Following are the functional requirements for Take Out Groceries:

Requirement ID	REQ_F00701	Version	1.0
Description	User should be allowed by the system to enter codes into the Pop-Fridge terminal		
Author	Hizri Hatta		

Requirement ID	REQ_F00702	Version	1.0
Description	User that entered the correct codes should be allowed by the system to open the respective Pop-Fridge and take out the groceries		
Author	Hizri Hatta		

3.1.8 F008 Log In (Staff / Delivery Man)

Following is the functional requirement for Log In (Staff):

Requirement ID	REQ_F00801	Version	1.0
Description	Staff / Delivery man should be allowed by the system to log in into the Staff App		
Author	Hizri Hatta		

3.1.9 F009 Check Customer Orders

Following is the functional requirement for Check Customer Orders:

Requirement ID	REQ_F00901	Version	1.0
Description	Logged in staff / delivery man should be allowed by the system to check customer orders		
Author	Hizri Hatta		

3.1.10 F010 Confirm Prepared Groceries

Following is the functional requirement for Confirm Prepared Groceries:

Requirement ID	REQ_F01001	Version	1.0
Description	Logged in staff should be allowed by the system to confirm prepared groceries		
Author	Hizri Hatta		

3.1.11 F011 Check and Update Pre-Delivery Item Checklist

Following is the functional requirement for check and update pre-delivery item checklist:

Requirement ID	REQ_F01101	Version	1.0
Description	Logged in delivery man should be allowed by the system to check and update pre-delivery item checklist		
Author	Hizri Hatta		

3.1.12 F012 Check and Update Post-Delivery Item Checklist

Following is the functional requirement for check and update post-delivery item checklist:

Requirement ID	REQ_F01201	Version	1.0
Description	Logged in delivery man should be allowed by the system to check and update post-delivery item checklist		
Author	Hizri Hatta		

3.1.13 F013 Complete Pop-Fridge Check-up

Following is the functional requirement for check and update pre-delivery item checklist:

Requirement ID	REQ_F01301	Version	1.0
Description	Logged in delivery man should be allowed by the system to complete pop-fridge check-up		
Author	Hizri Hatta		

3.1.14 F014 Put in Groceries

Following is the functional requirement for check and update pre-delivery item checklist:

Requirement ID	REQ_F01401	Version	1.0
Description	Delivery man should be allowed by the system to enter codes into the terminal of the Pop-Fridge		
Author	Hizri Hatta		

Requirement ID	REQ_F01402	Version	1.0
Description	Delivery man that has entered correct codes should be allowed by the system to open the respective Pop-Fridge and put in the groceries		
Author	Hizri Hatta		

3.2 System Modes and States

3.2.1 Pop Groceries Mobile App Modes and States

The following are the modes and states for the Pop Groceries Mobile App:

Mode	State	Description	Flow
	Main menu	Main menu of the app which shows the option of register, log in, search, and it shows groceries that are on sale and popular	Out: Choose register (CR) Log in (LI) Search menu (SM) Select item (SI) In: From Begin Register complete (RC) Log in complete (LIC) Payment confirmed (PC) Main menu (MM)
Registration & Login	Registration	Shows the registration form for new user	Register complete (RC)
	Logging in user	User enters their username and password to log in into the system	Log in complete (LIC)
Search	Search menu	Showing options for item filters and searching strings of item	Out: Enter search (ES) In: Search menu (SM)
	Searching item	System searching for item in the database	Found (F) Null (N)
	Showing searched item	Show page of found item(s)	Select item (SI) Search menu (SM)
	No item found	Show no item found	Main menu (MM)
Purchase	Show chosen item	System display chosen item details	Add item (AI)
	Adding item into shopping cart	Adding item into shopping cart	Checking out (CO)
	Checkout	Calculate items for payment	Confirm (C)
	Choose delivery destination	User choose delivery destination based on the closest Pop-Fridge to them	Confirm (C)
	Payment	User enter payment details and the system process it	Out: Payment confirmed (PC) Cycle: Payment error (PE)

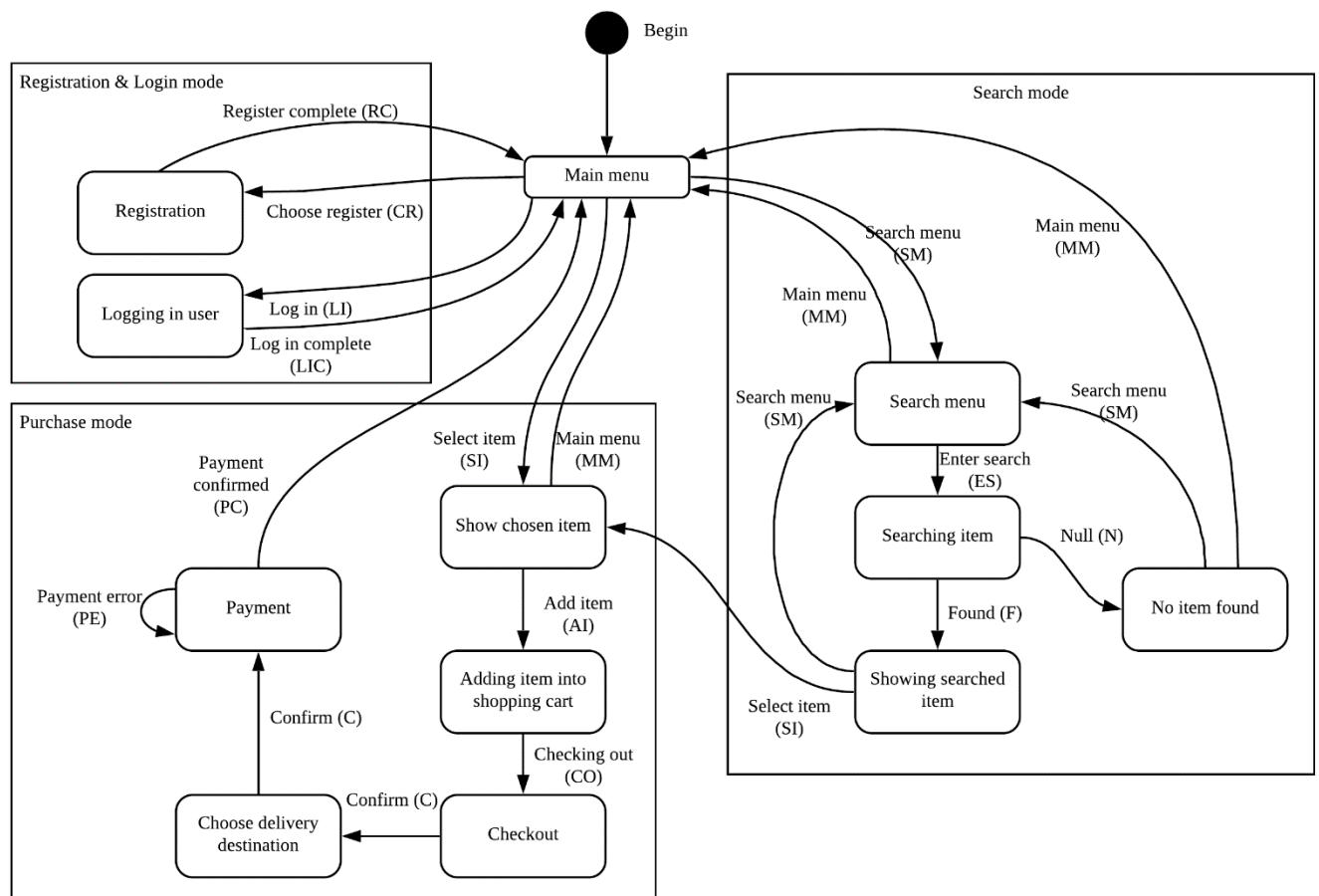Shown below is the state diagram for Pop Groceries Mobile App.

Figure 2.0 State Diagram of Pop Groceries Mobile App

3.2.2 Pop Groceries Staff App Modes and States

The following are the modes and states for the Pop Groceries Staff App:

Mode	State	Description	Flow
	Log in page	Displaying the log in page	Out: Delivery man log-in (DML) Warehouse staff log-in (WSL) In: Log out (LO)
Delivery man	Delivery man main menu	Showing the main menu	Out: Pre-delivery checklist chosen (PDCC) In: Complete (C)
	Pre-delivery checklist	Showing the items for delivery before delivery	Post-delivery checklist chosen (PDCC)
	Post-delivery checklist	Showing the items that is to be delivered	Complete (C)
	Pop-Fridge check-up list	Showing the check-up list for Pop-Fridge inspection	Complete (C)
Warehouse staff	Warehouse staff main menu	Showing the main menu	Customer order chosen (COC)
	Customer order	Displaying the customer orders	Prepared groceries checklist chosen (PGCC)
	Prepared groceries checklist	Displaying the prepared groceries checklist	Complete (C)

Shown below is the state diagram for Pop Groceries Staff App.
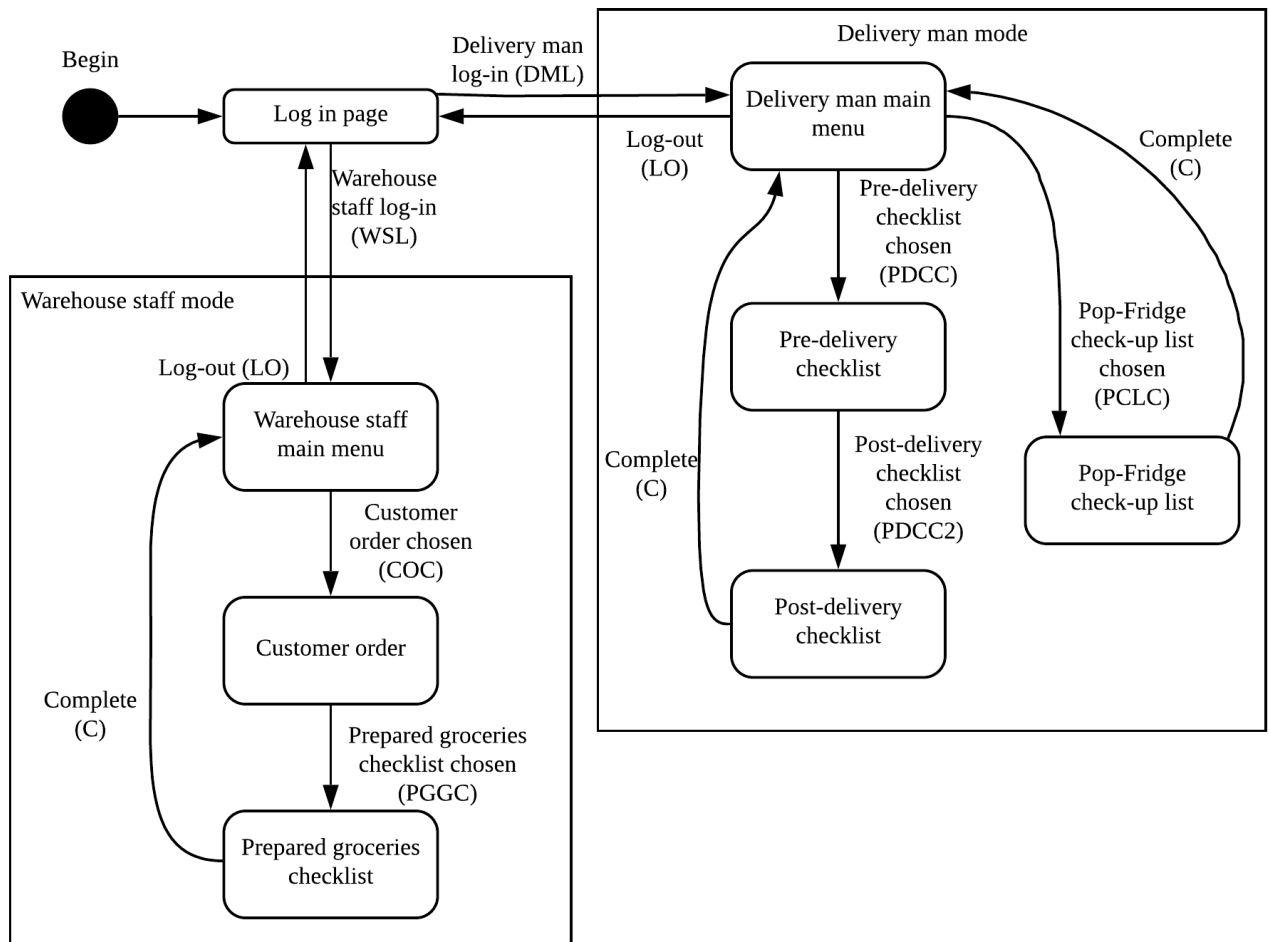

Figure 3.0 State Diagram of Pop Groceries Staff App

3.3 Logical Database Requirements
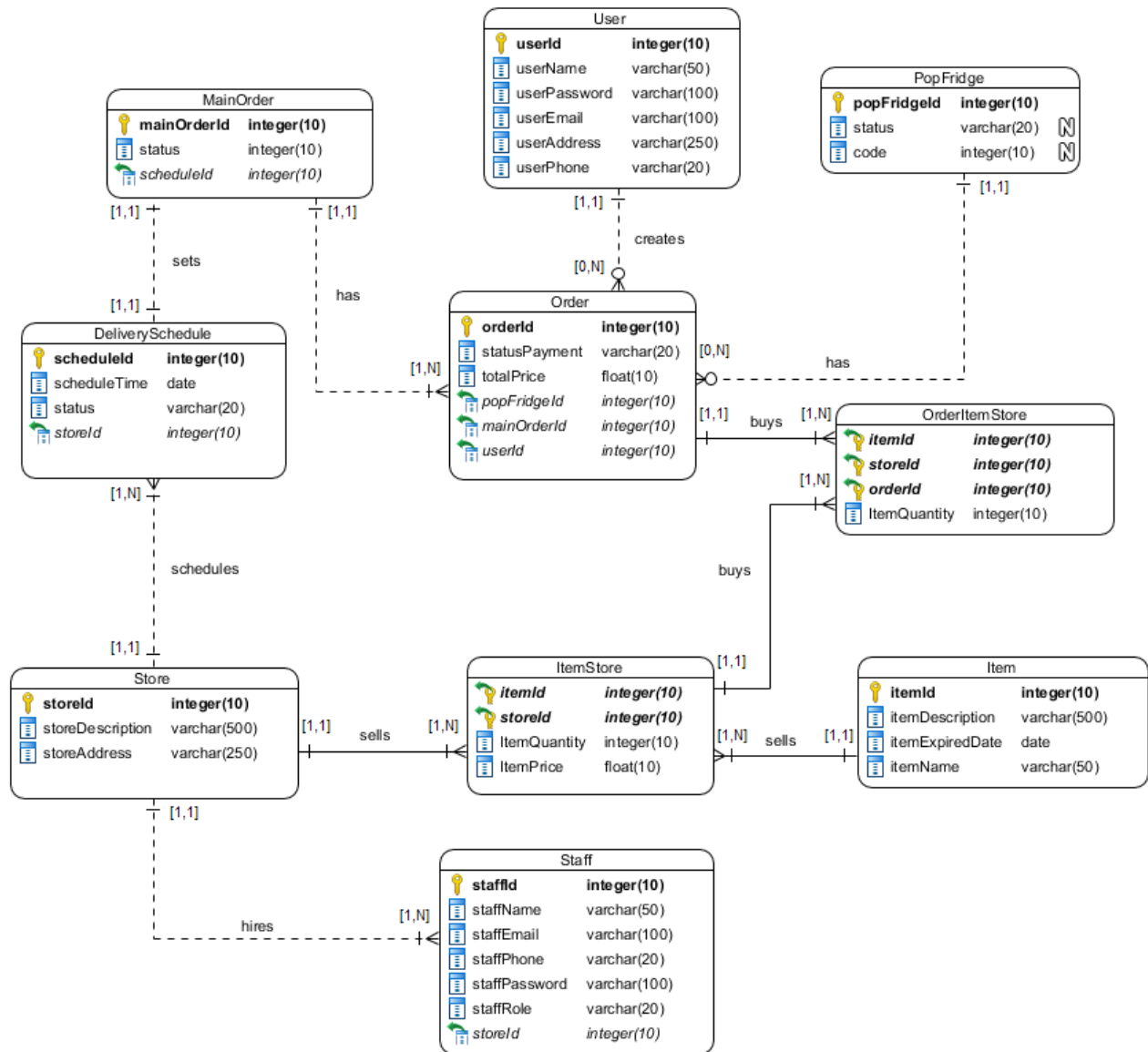
3.3.1 Entity Relationship Diagram

Figure 4.0 Entity Relationship diagram for pop fridge system

Icon Reference:

🔑	Primary Key	🔑	Foreign Key
📋	Normal Attribute	🔑	Primary Key, Foreign Key

- Based on Figure 4.0, the user able to keep their data on the system. The user may create an order to buy items from the system. If the user does create an order, the system will check if there any other users already created the main order. If not, the system will create a new main order. This is because of the system allow user from the same location to share the order but make payment separately.
- The first user who initiate the system to create the MainOrder entity can pick a delivery schedule. The relationship of the MainOrder and DeliverySchedule is one to one.
- The Item entity has a composite bridge to the Store entity which created ItemStore entity. This means an item type can be sold by many stores and a store can sells many item types. The order also has a composite bridge to the ItemStore entity which means the order can buy many Items and an Item can be bought by many orders.
- The Store entity can have many staffs. Staff entity keeps all the staff information including their role which is deliverer staff or warehouse staff. The store also can schedule one to more delivery schedule.
- Once the payment is completed by all users and the status of the MainOrder entity is 'PAID', the system will automatically notify the warehouse about the order. Once the order is ready to be delivered, the system assign the order to the pop fridge which has the status of 'UNUSED'.

3.3.2 Data Dictionary

3.3.2.1 Entity: User

Attributes	Data Type	Length	Description	Remarks
userId	Integer	10	User id which is unique id to identify a user (System generated)	PK
userName	Varchar	50	Name of the user	
userPassword	Varchar	100	Password of the user	
userAddress	Varchar	250	Address of the user	
userPhone	Varchar	20	Phone Number of the user	

3.3.2.2 Entity: Order

Attributes	Data Type	Length	Description	Remarks
orderId	Integer	10	Order id which is unique id to identify the order (System generated)	PK
statusPayment	Varchar	20	The status of the payment which can be 'PAID', 'UNPAID', 'CANCEL'	
totalPrice	float	10	The total price that user need to pay (System generated)	
popFridgeId	Integer	10	The pop fridge id once the order is confirmed. (Default null)	FK
mainOrderId	Integer	10	The main order id which this order belongs to.	FK
userId	Integer	10	User Id who is created the order	FK

3.3.2.3 Entity: Main Order

Attributes	Data Type	Length	Description	Remarks
mainOrderId	Integer	10	Main order id which is unique id to identify the main order (System generated)	PK
status	Varchar	20	The status of the Main Order which can be 'PAID', 'IN-PROGRESS', 'CANCEL','COMPLETED'	
scheduleId	Integer	10	The schedule id which the first user pick	FK

3.3.2.4 Entity: Pop Fridge

Attributes	Data Type	Length	Description	Remarks
popFridgeId	Integer	10	Pop fridge id which is unique id to identify the pop fridge (System generated)	PK
status	Varchar	20	The status of the pop-fridge which can be 'USED', 'UNUSED'	
code	Integer	10	The secret code for the deliverer and user (System generated: always changing when the status change)	

3.3.2.5 Entity: Delivery Schedule

Attributes	Data Type	Length	Description	Remarks
scheduleId	Integer	10	Schedule id which is unique id to identify the schedule (System generated)	PK
scheduleTime	Date		The date and time of the delivery	
status	Varchar	20	The status of the pop-fridge which can be 'TAKEN', 'AVAILABLE','CANCEL'	
storeId	Integer	10	The store id which created the schedule	FK

3.3.2.6 Entity: Store

Attributes	Data Type	Length	Description	Remarks
storeId	Integer	10	Store id which is unique id to identify the store (System generated)	PK
storeDescription	Varchar	500	The description of the store	
storeAddress	Varchar	250	The address of the store location	

3.4 Usability (Quality in Use) Requirements

The following are the usability requirements and objective for the system include satisfaction criteria, efficiency, and measurable effectiveness in specific contexts of use:

3.4.1 U001 Registration

Following is the usability requirement for Registration:

Requirement ID	REQ_U00101	Version	1.0
Description	The user shall only need to go through one page of form to register		
Author	Hizri Hatta		

3.4.2 U002 Log In

Following are the usability requirements for Log In:

Requirement ID	REQ_U00201	Version	1.0
Description	The login process should take less than 2 second with the connection speed of 1Mbps		
Author	Hizri Hatta		

Requirement ID	REQ_U00202	Version	1.0
Description	The login process should take less than 5 second with the connection speed of 500 Kbps		
Author	Hizri Hatta		

3.4.3 U003 Give Feedbacks

Following is the usability requirement for Give Feedbacks:

Requirement ID	REQ_U00301	Version	1.0
Description	The system should prompt user to give feedbacks within 1 hour after a delivery is confirmed		
Author	Hizri Hatta		

3.4.4 U004 Taking Out Groceries

Following are the usability requirements for Taking Out Groceries:

Requirement ID	REQ_U00401	Version	1.0
Description	The system should provide the codes for the Pop-Fridge to the user within 10 minutes after a delivery is confirmed		
Author	Hizri Hatta		

Requirement ID	REQ_U00402	Version	1.0
Description	The system should make less than 0.001% of false negative within 1000 times of code verification process		
Author	Hizri Hatta		

Requirement ID	REQ_U00403	Version	1.0
Description	The system should have customer support for Pop-Fridge code confirmation error available 24/7		
Author	Hizri Hatta		

3.4.5 U005 Check Customer Order

Following is the usability requirement for Check Customer Order:

Requirement ID	REQ_U00501	Version	1.0
Description	The system should update the customer orders within 1 minute of customer order confirmation		
Author	Hizri Hatta		

3.4.6 U006 Check and Update Post-Delivery Item Checklist

Following are the usability requirements for Check and Update Post-Delivery Item Checklist:

Requirement ID	REQ_U00601	Version	1.0
Description	The system should update the delivery status within 30 seconds with the connection speed of 1Mbps		
Author	Hizri Hatta		

Requirement ID	REQ_U00602	Version	1.0
Description	The system should update the delivery status within 2 minutes with the connection speed of 500 Kbps		
Author	Hizri Hatta		

4.0 Design Constraints

4.1 The delivery schedule

The system only offers the delivery once a week. This is because of the main system's concept that was introduced is to share the grocery between users from the same residential area to get cheaper prices. This allow the system to collect and accumulate all the orders from the same residential area and calculate the discounted price of the items.

The scheduled can only be picked by the first user who is initiated the order for the week.

4.2 The order limitation

The system only allows the first 20 users that created the orders currently. This is because the pop-fridge available for a residential area is only 20 units.

The order will be sent directly to the pop fridge once it is ready to be delivered and the user will get the notification.