UNIVERSITI TEKNIKAL MALAYSIA MELAKA
FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

W O R K S H O P   1   R E P O R T

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TABLE OF CONTENTS

PAGE

CHAPTER 1: INTRODUCTION

1.1 Introduction

e-Cafeteria: Food Ordering and Food Budgeting Application is a system that can improve on the current system of UTeM's cafeteria. The current system uses a traditional method of food ordering that is hard to maintain. Vendor take order from customer directly and sometime may make mistake in the orders. This is also proving to be difficult for vendor to estimate the amount of food needed to be prepared daily since they have no easy access to such statistic. Therefore, this system would allow for vendor to track and manage customer order efficiently. Furthermore, this system also generate report and ranking for vendor to be able to accurately estimate how much food should they prepare and adjust their sale strategy. On the other hand, this system also allows for customers to plan their daily food spending budget. The system track and record the customer's daily spending to show customer their spending and help them keep track of it. All the information will be stored in database for easier reference.

1.2 Background

UTeM is a local university located in Durian Tunggal, Alor Gajah, Melaka, Malaysia. It consists of two campuses namely campus Induk which represents the main campus and campus Technology. Both campus have their own respective cafeteria that provides daily meals of students, lecturer and staff in UTeM. These cafés offer both buffet style catering as well as menu for them to choose. The cafeteria in UTeM do not consists of any electronic system to manage orders. Currently, vendors only write down the orders in handwriting or remember the orders in mind. Therefore, orders are forgotten and customer do not get their food. Besides, they do not have a fixed price due to the lack of a proper system. e-Cafeteria system is designed to solve these problem as well as make it easier for both customer and vendor. Customers can use the system to order, pay and plan budget. On the other hand, vendors can use this system to check order, check payment and generate sales report daily.

1.3 Problem Statement

- ➢ The cafeteria in UTeM do not consists of any electronic system to manage order
- ➢ The food is not enough to supply for everyone during rush hour
- ➢ The order in café is not being organized
- ➢ The cafeteria do not provide the service of delivery

1.4 Objectives

- ➢ To develop and design a cafeteria management system
- ➢ To generate budget for customers and sales report for vendors
- ➢ To make cafeteria more accessible to individuals in UTeM

1.5 Scope

1.5.1 Module Developed:

a. Login
- ➢ Admin, vendors and customers can login the system by entering correct user ID and password

b. Register
- ➢ New user can register by filling in username, password and all personal information, user identity number is the most important to check the user is exist or not

c. Select/Add/Update/Delete
- ➢ Admin, vendors and customers can select, add, update and delete data in this system

d. Calculate
- ➢ The system will calculate total amount of daily profit and remaining budget based on the budget planning of customer

1.5.2 Target User:

a. Admin
   - ➢ Manage own account
   - ➢ Manage user account
   - ➢ Manage budget type
   - ➢ Manage meal type
   - ➢ Manage menu

b. Vendors
   - ➢ Manage own account
   - ➢ Manage menu
   - ➢ Manage order
   - ➢ Generate report

c. Customers
   - ➢ Manage own account
   - ➢ View menu and make order
   - ➢ Make payment
   - ➢ View order status
   - ➢ Plan budget

CHAPTER 2: ANALYSIS OF PROBLEM

2.1 Problem Description

Nowadays, the electronic system is more easy to store the data and future references. However, in UTeM's cafeteria, it does not consist of any electronic system to manage order. Vendors only write down the order using handwriting or remember it in mind. Sometimes, it would cause the orders to be lost and customer do not get their food. Due to lack of an electronic system, it caused the food do not have a fixed price. For example, the fried rice with a chicken drumstick on Monday is RM6.00 whereas it is RM7.50 for the next day. As a result, customers cannot estimate their monthly budget for food. Furthermore, vendors also have a hard time to do accounts for their daily profits due to the unfixed price.

Next, the food is not enough to supply for everyone during rush hour. It is due to the vendors cannot determine the needs of students, lecturers and staff. The food that prepared only can provided for first come first serve. For example, sometimes, the students who have class until 1 p.m., then the food is not enough for them. However, sometimes, the food would be prepared more but the most student may not have class on that day. Therefore, vendors faced the problem of food wastage. As a result, vendors cannot determine the amount that they need to prepare every day.

Furthermore, the order in cafeteria are not being organized. Therefore, customer often have their order taken by mistake and end up having to wait for very long before they can eat. This results in long waiting time and some customer are unwilling to wait for so long. Furthermore, due to having to order at the counter, customer who are busy and unable to visit the café are unable to have food from the cafeteria. This is due to the lack of a delivery service and the café is losing out on a lot of business opportunity.

2.2 Problem Decomposition

Problem	Solution
The cafeteria in UTeM do not consists of any electronic system to manage order	For customers, use e-Cafeteria system to make order. For vendors, use e-Cafeteria system to provide the order to customers.
The food is not enough to supply for everyone during rush hour	For customers, use e-Cafeteria system to make a pre-order. For vendors, use e-Cafeteria system to ensure the quantity that left. Therefore, they can decide whether need to add on or not.
The order in café is not being organized and customer may mistook other order for their own.	Use e-Cafeteria system to ensure that the order belongs to whom, therefore customers do not worry the order is taken by others and vendors also do not worry that the order is false.
The cafeteria does not provide the service of delivery	e-Cafeteria system have the pre-order and delivery service to allow customers to make order anywhere and anytime.

Figure 2.2.1 Problem Decomposition

The problem decomposition table above shows the problem currently faced by the current state of the café and the corresponding solution for it.

2.3 Structure Chart
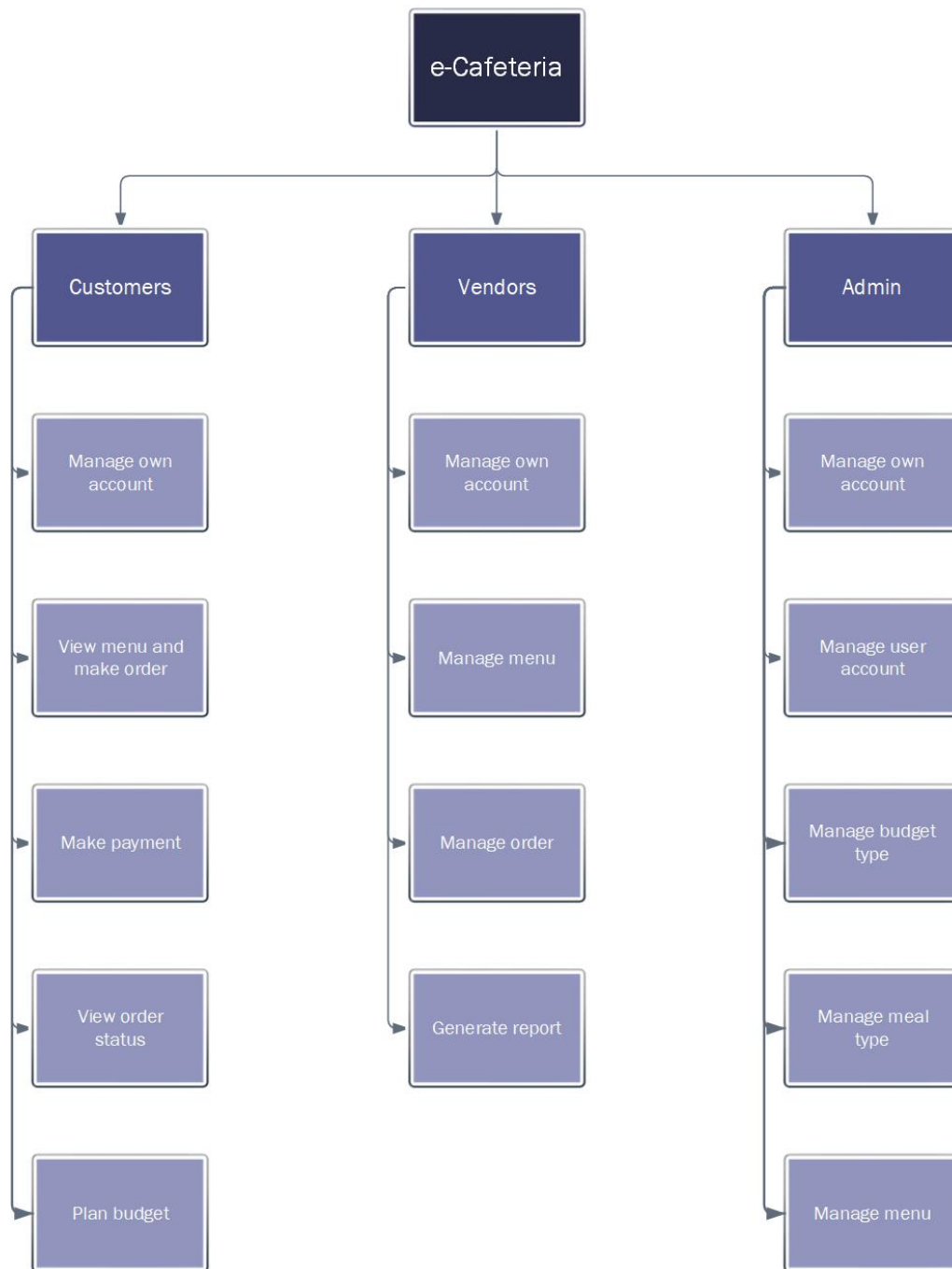
Figure 2.3.1 Structure Chart

The structure chart above show the modules under the category of customer, vendor, and admin.

CHAPTER 3: DESIGN

3.1 Overall Flowchart
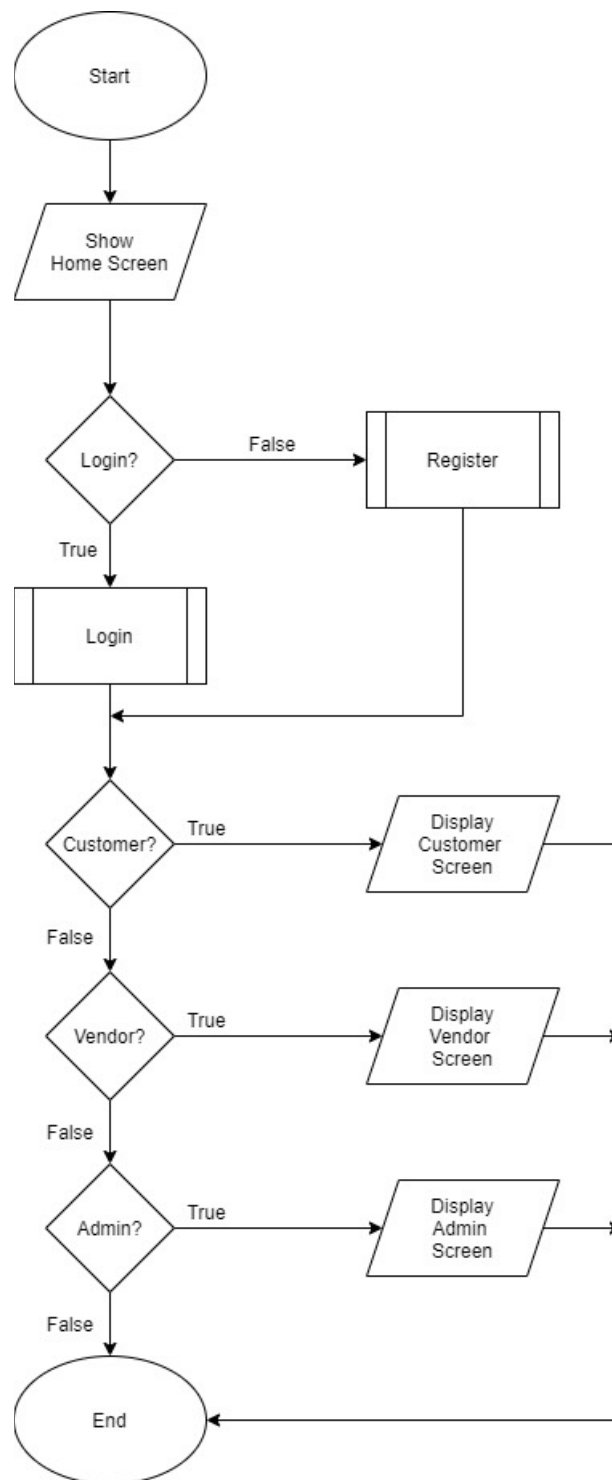
Figure 3.1.1 Main Module
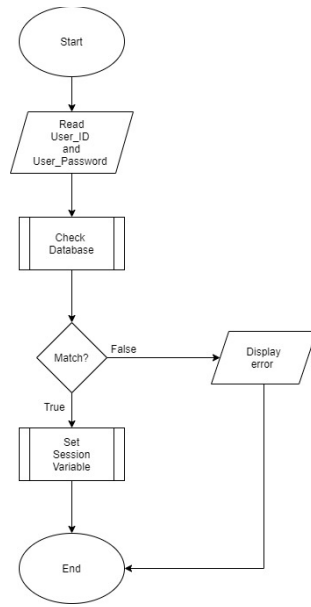
Figure 3.1.2 Login Module
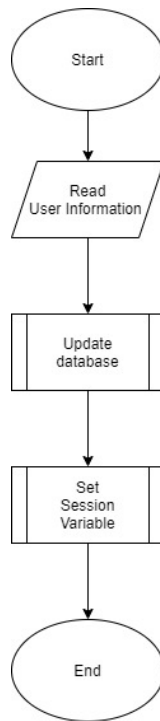
Figure 3.1.3 Register Module

3.2 Customer Flowchart
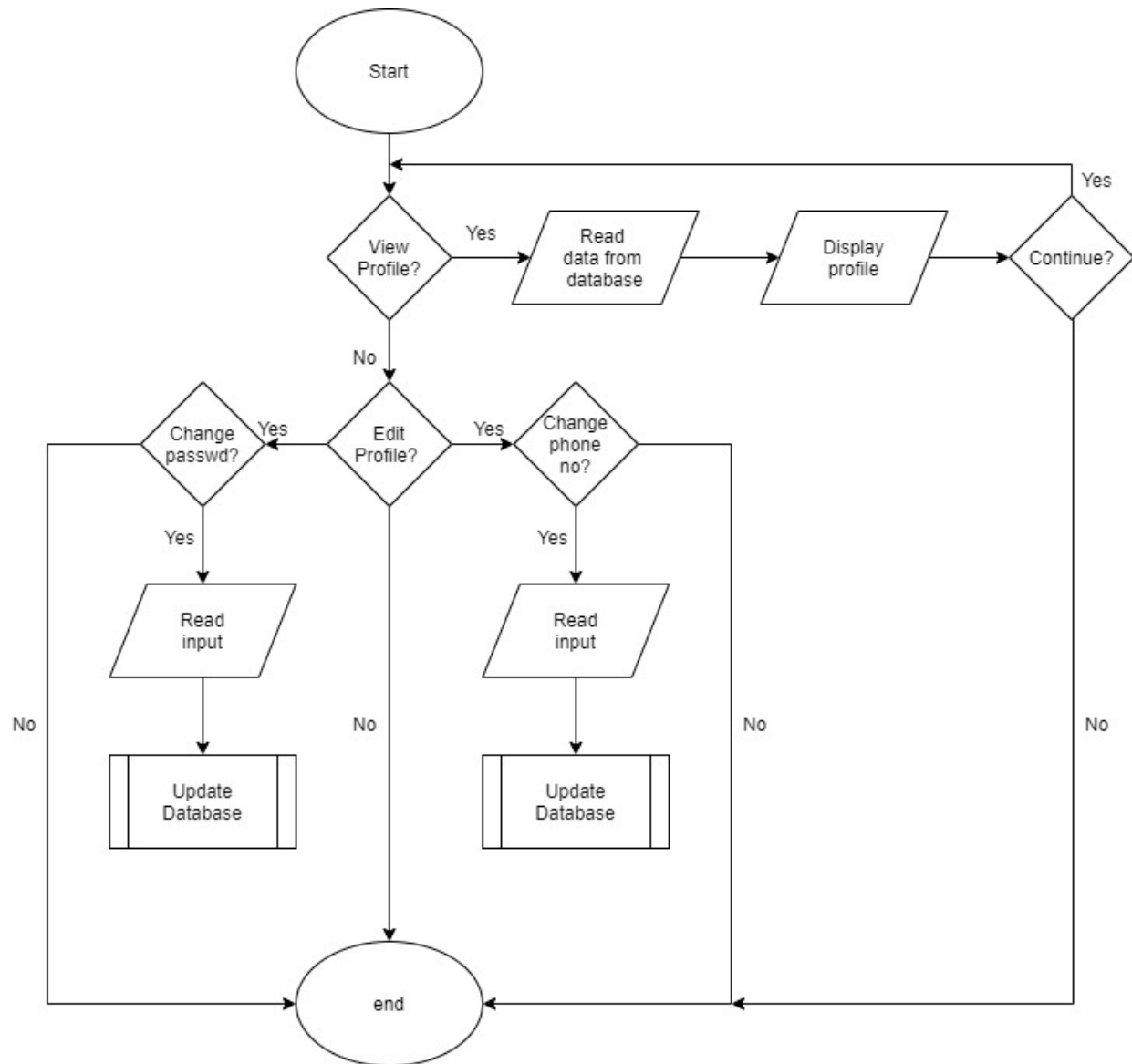
Figure 3.2.1 Manage Own Profile Module
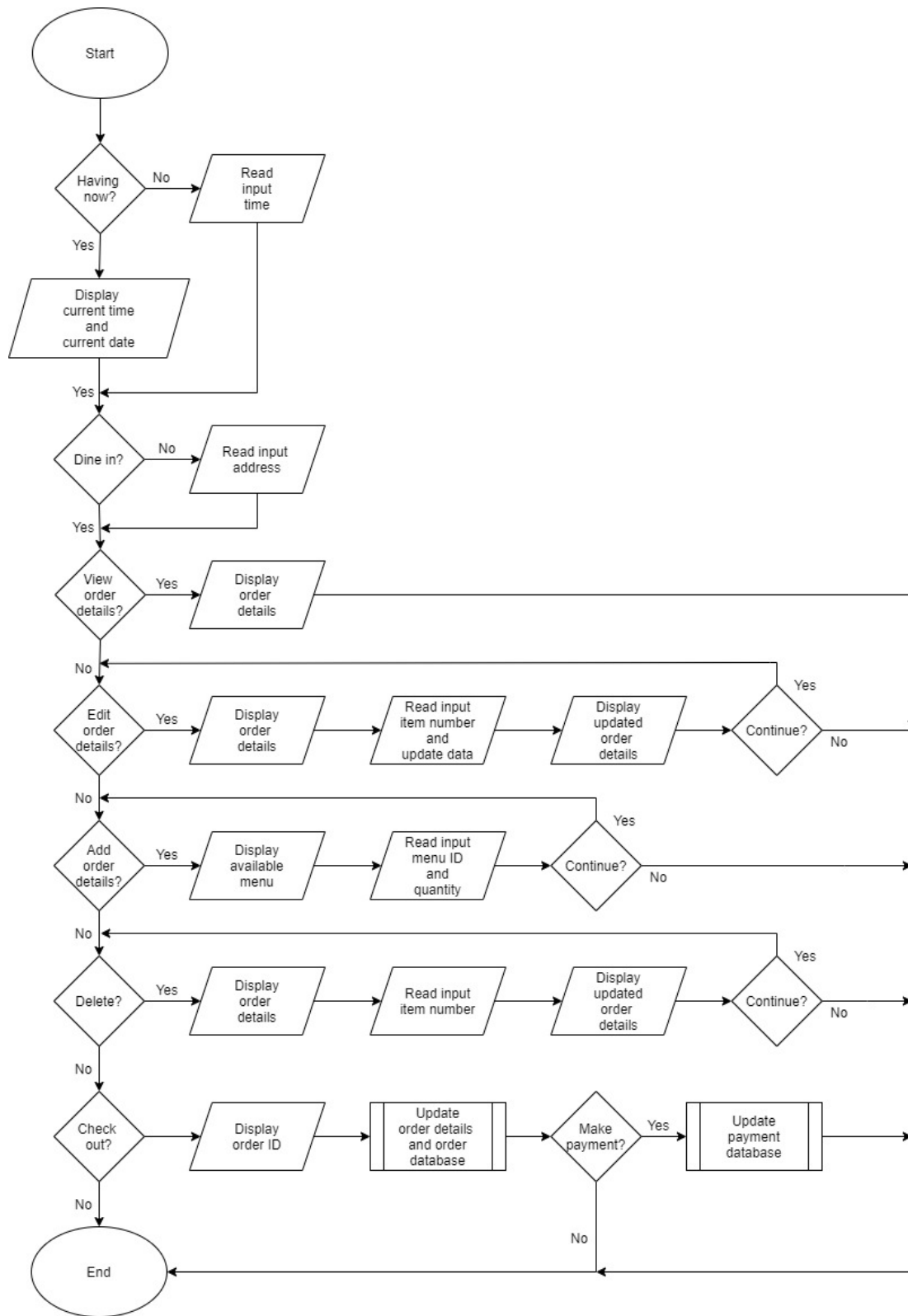
Figure 3.2.2 View Menu, Make Order and Payment Module
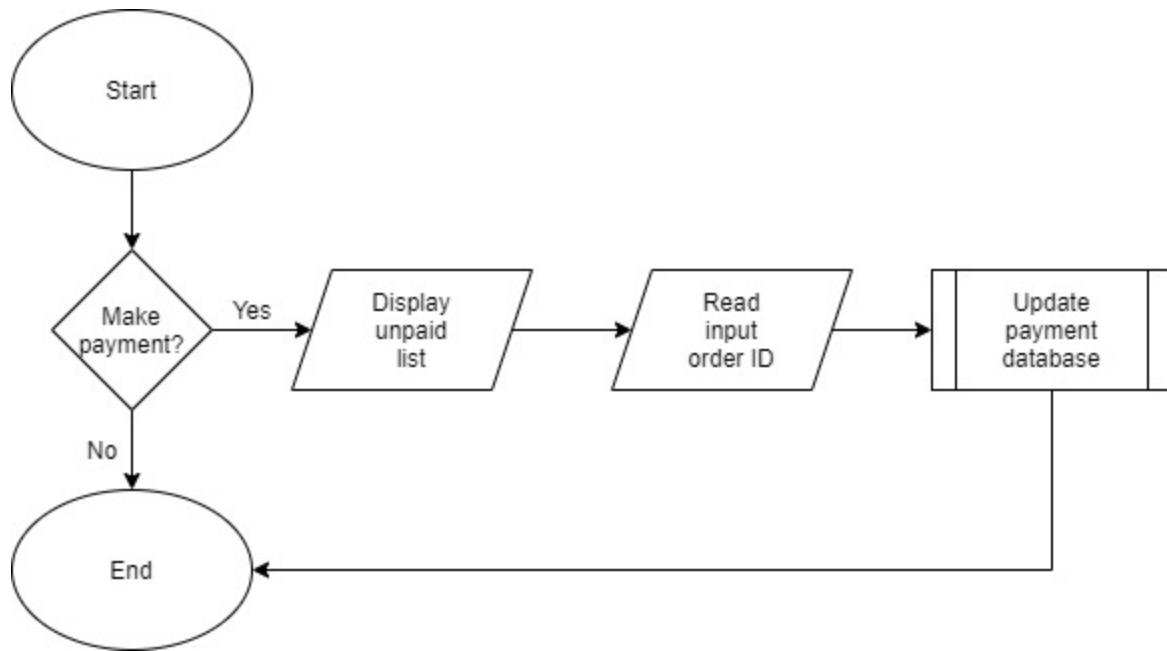
Figure 3.2.3 Make Payment Module
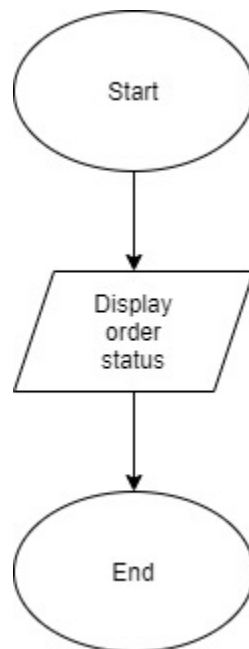
Figure 3.2.4 View Order Status Module
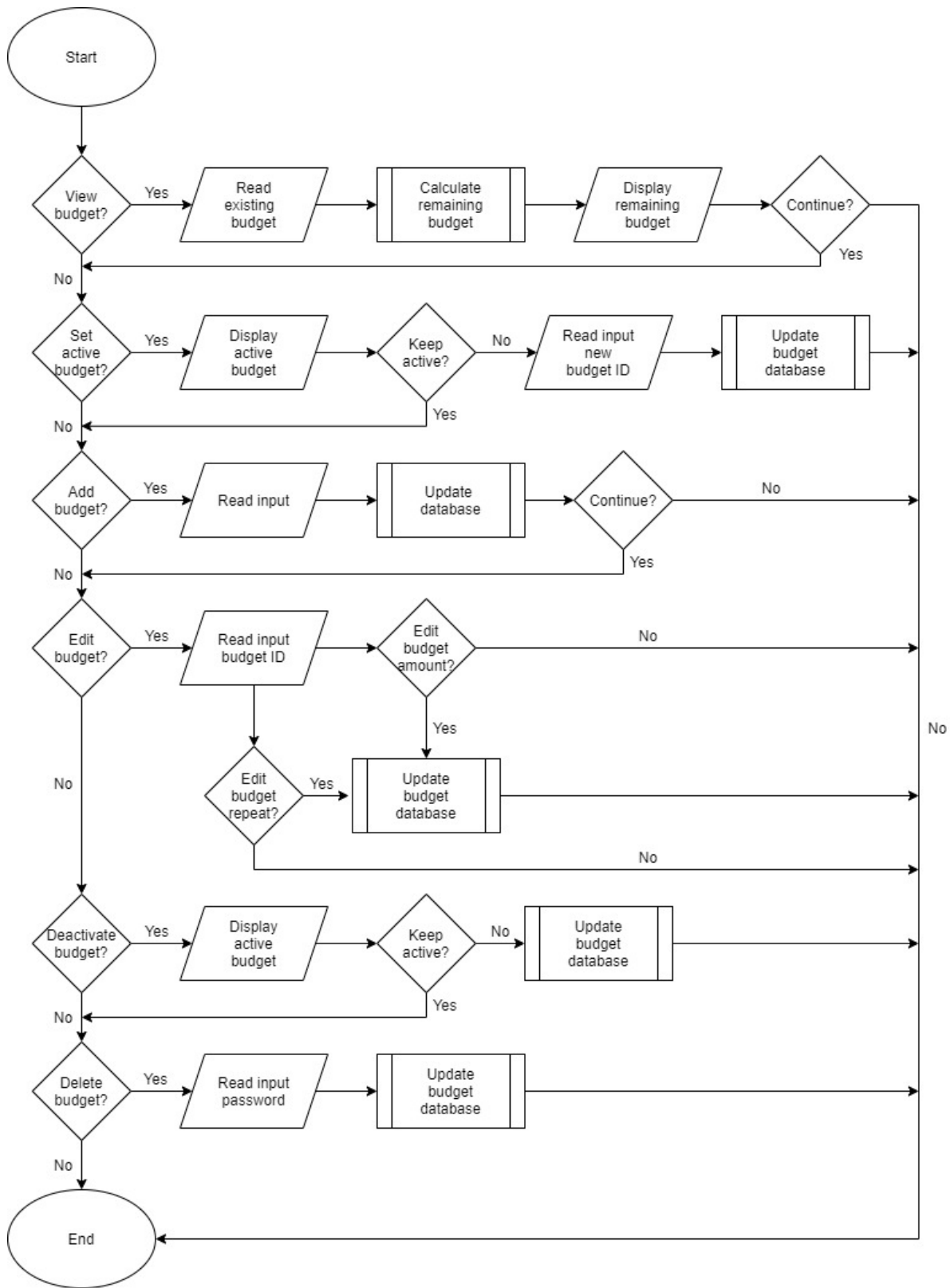
Figure 3.2.5 Plan Budget Module

3.3 Vendor Flowchart
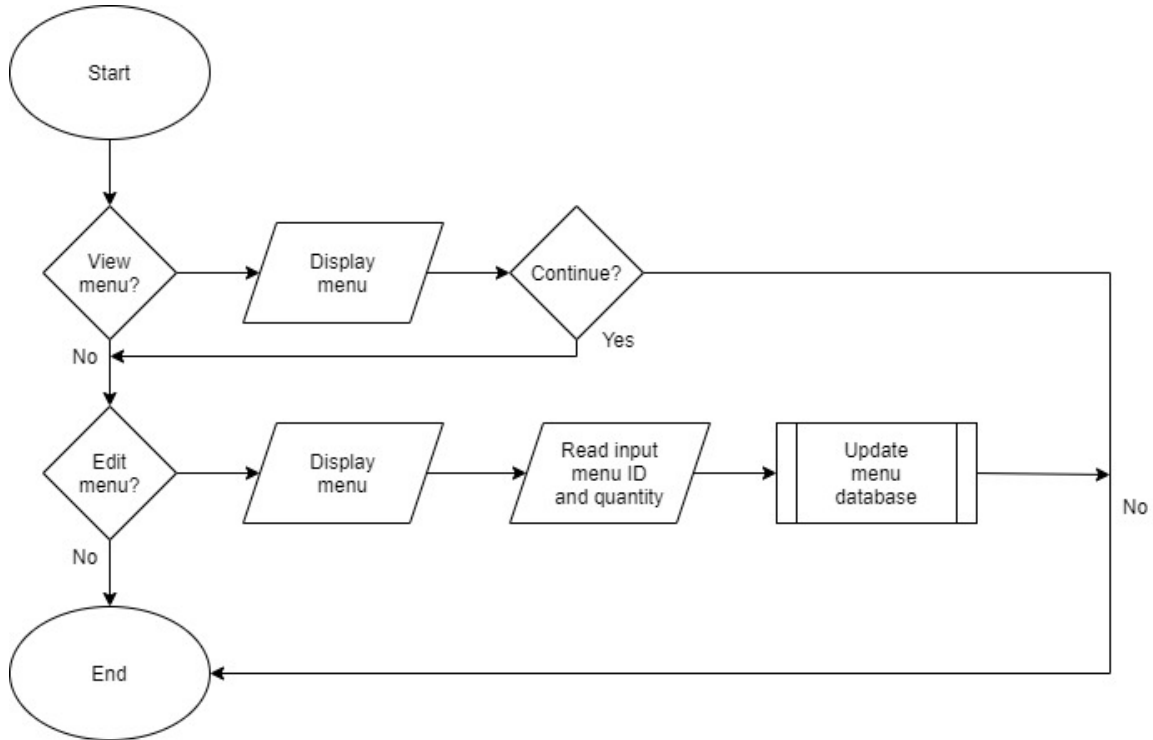
Figure 3.3.2 Manage Menu Module
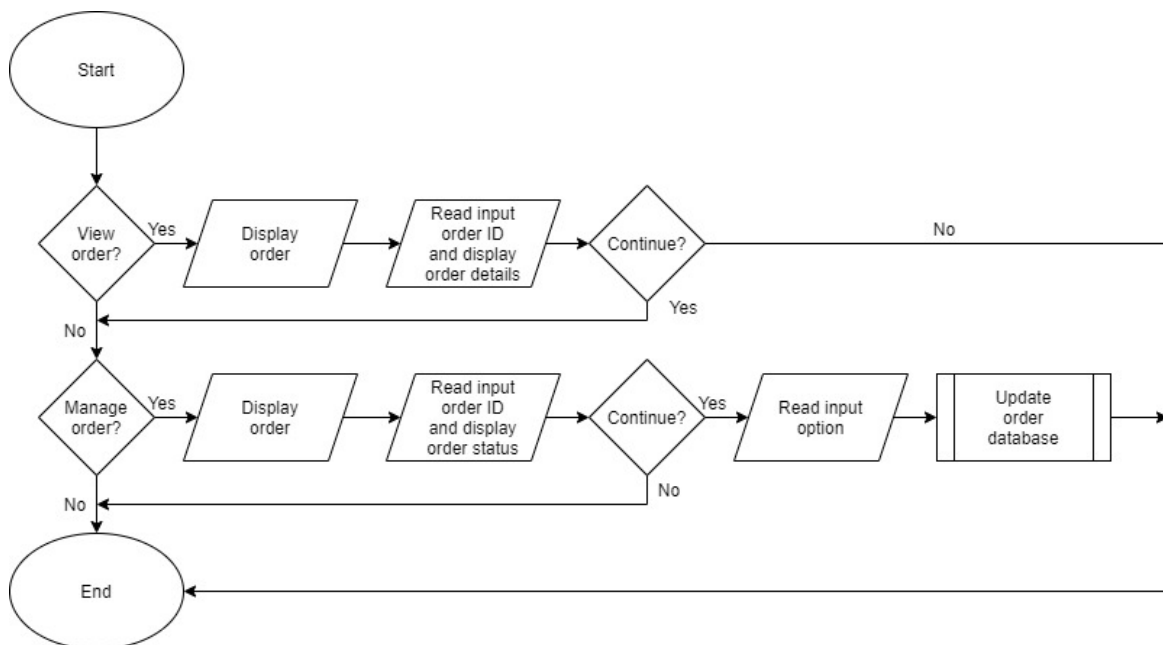
Figure 3.3.3 Manage Order Module

13
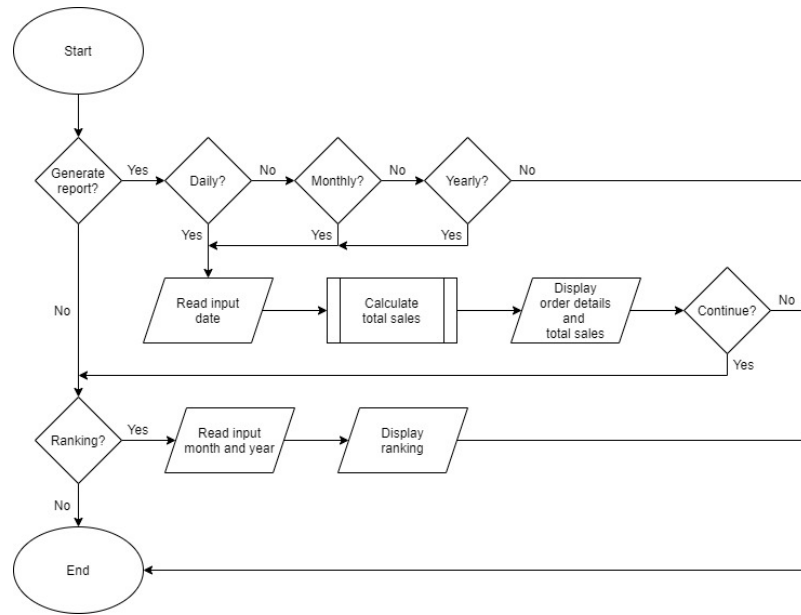
Figure 3.3.4 Generate Report Module

3.4 Admin Flowchart
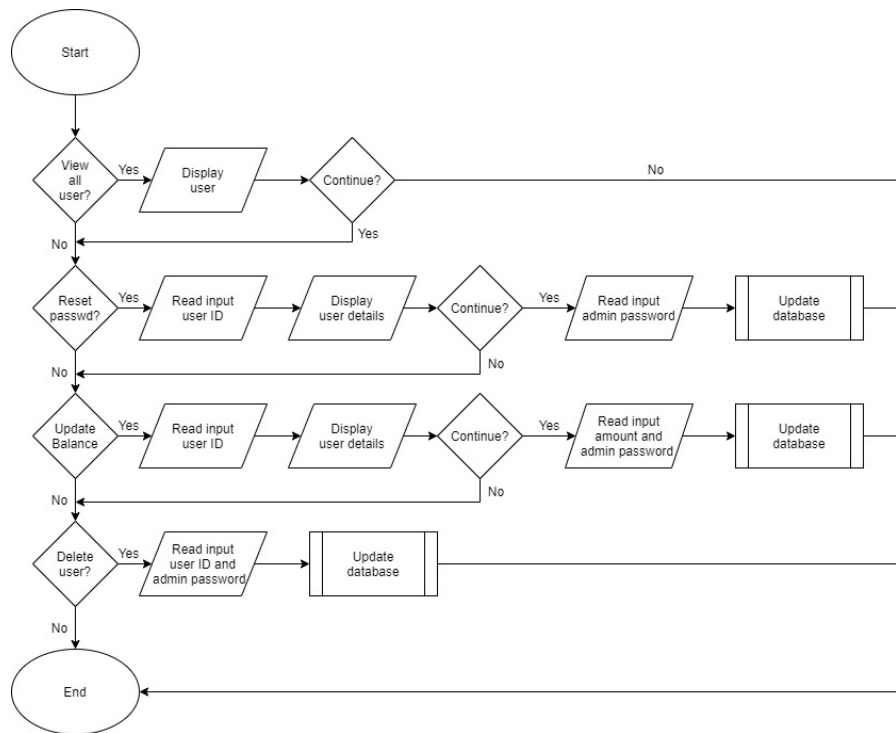
Figure 3.4.2 Manage User Module
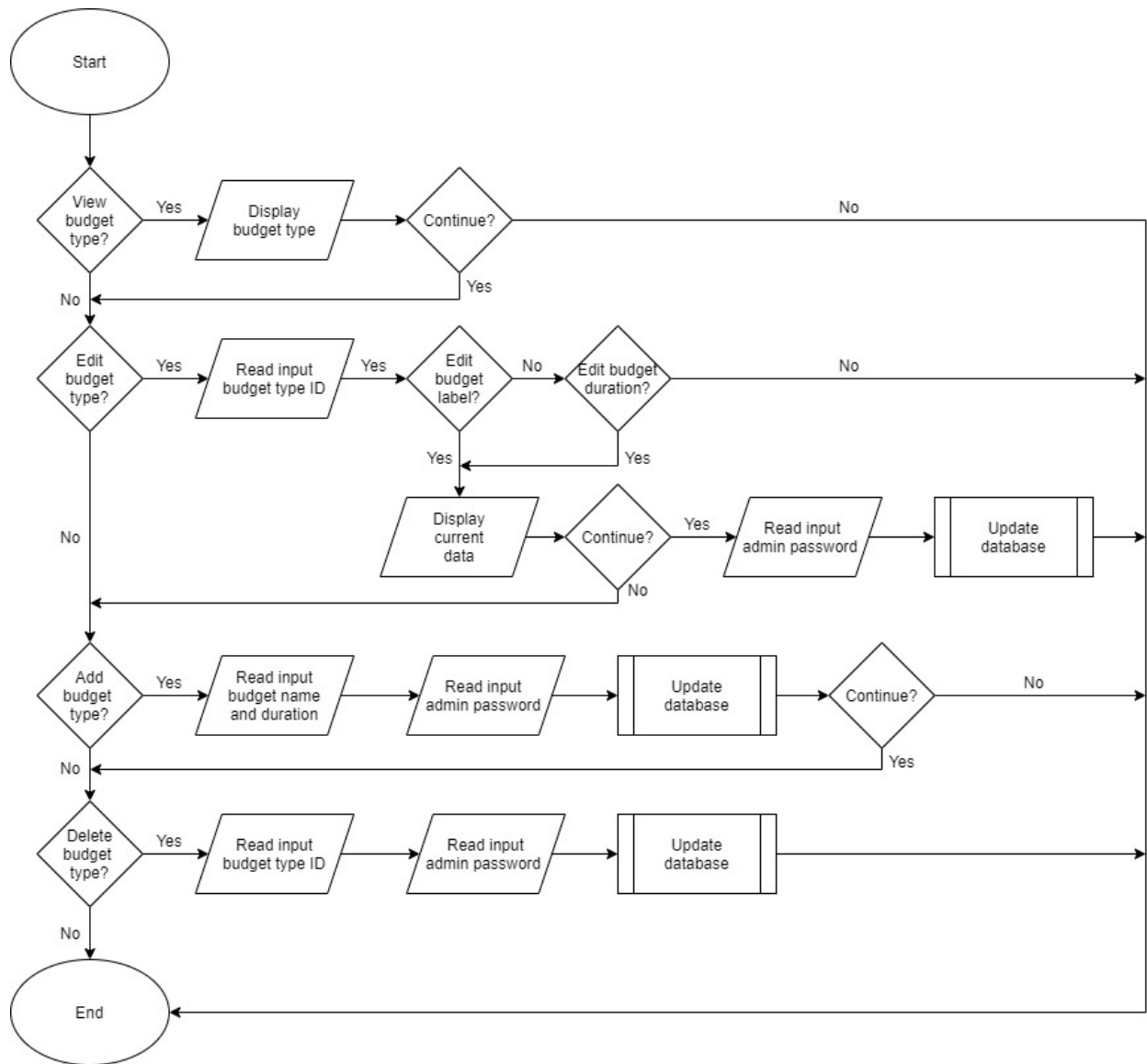
Figure 3.4.3 Manage Budget Type Module
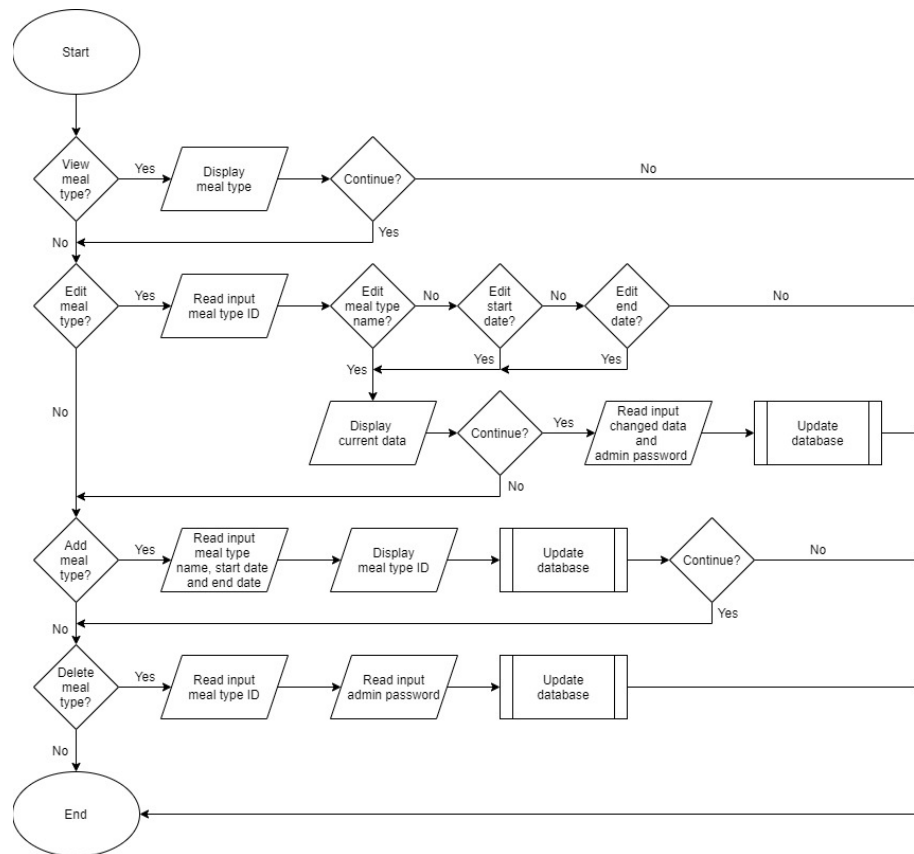
Figure 3.4.4 Manage Meal Type Module
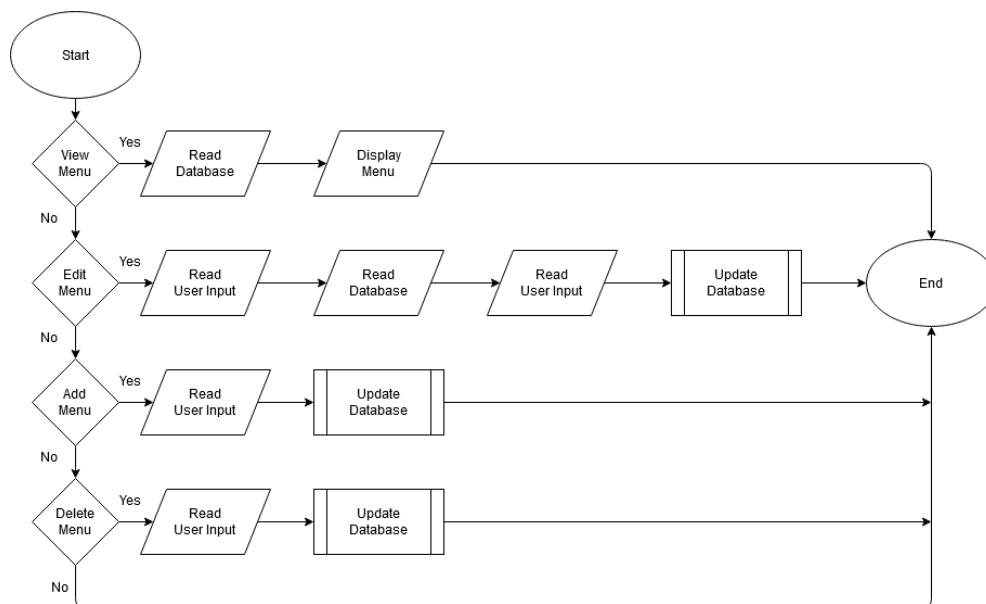
Figure 3.4.5 Manage Menu Module

16

3.5 Entity Relationship Diagram
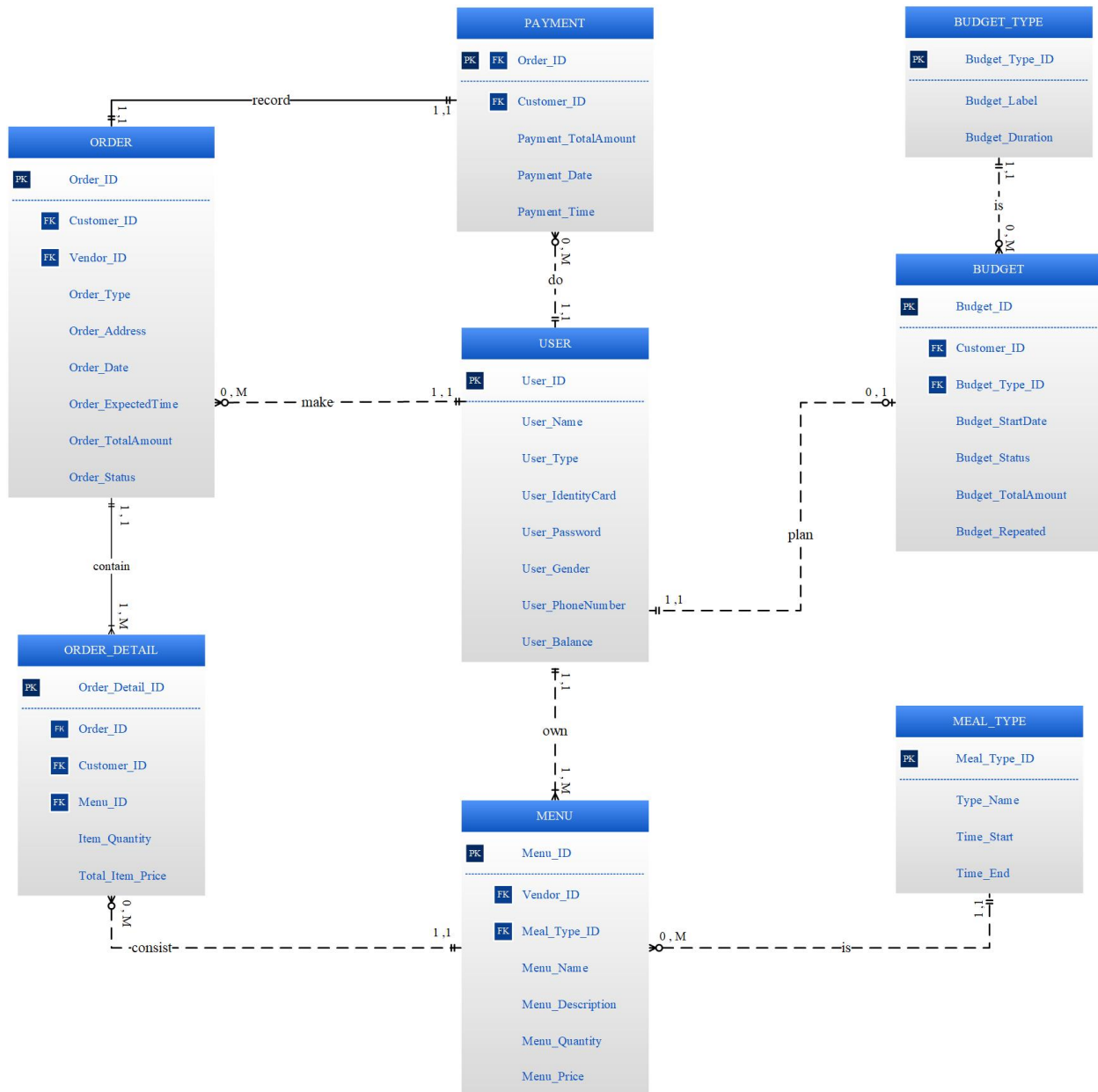
Figure 3.5.1 Entity Relationship Diagram (ERD)

The Entity Relationship Diagram (ERD) above show the relationship of the tables in the database. There is a total of 8 tables and the relationship and multiplicity is labeled as shown in the diagram above.

3.6 Data Dictionary

3.6.1 User Table

	Data Dictionary							
	e-Cafeteria: Food Ordering and Food Budgeting Application							
USER								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
User_ID	Customers, Vendors and Admin's identification number	Integer(5)	1	Yes		Yes	PK	
User_Name	Full name of each user	Varchar2(30)		Yes				
User_Type	Type of each user	Varchar2(10)	Customer / Vendor / Admin	Yes				
User_IdentityCard	Number of Identity Card (IC) of each user	Varchar2(15)	980317-02-4156	Yes		Yes		
User_Password	Password for their account	Varchar2(10)	abc123	Yes				
User_Gender	Gender of each user	Char(1)	L / P	Yes				
User_PhoneNumber	Handphone number that can contact	Varchar2(12)	014-9236578	Yes				
User_Balance	Balance in the account (in RM)	Double		Yes				

3.6.2 Meal Type

	Data Dictionary							
	e-Cafeteria: Food Ordering and Food Budgeting Application							
MEAL_TYPE								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Meal_Type_ID	Meal Type's identification number	Varchar(10)	T001	Yes		Yes	PK	
Type_Name	Meal Type's name	Varchar(10)	Breakfast / Lunch /Dinner	Yes				
Time_Start	Time to start the meal type	Time		Yes				
Time_End	Time to end the meal type	Time		Yes				

3.6.3 Menu

|	Data Dictionary							
	e-Cafeteria: Food Ordering and Food Budgeting Application							
MENU								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Menu_ID	Menu identification number	Varchar2(10)	M001	Yes		Yes	PK	
Vendor_ID	Vendors' identification number	Integer(5)	2	Yes			FK	USER
Meal_Type_ID	Meal Type's identification number	Varchar2(10)	T001	Yes			FK	MEAL_TYPE
Menu_Name	Product name	Varchar2(50)		Yes				
Menu_Description	Description of the product	Varchar2(100)		Yes				
Menu_Quantity	Quantity of the product	Integer(3)		Yes				
Menu_Price	Price of the product (in RM)	Double		Yes				

3.6.4 Order Details

	Data Dictionary							
	e-Cafeteria: Food Ordering and Food Budgeting Application							
ORDER_DETAIL								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Order_Detail_ID	Order detail's identification number	Varchar2(10)	K001	Yes		Yes	PK	
Order_ID	Order's identification number	Varchar2(10)	D001	Yes			FK	ORDER
Customer_ID	Customers' identification number	Integer(5)	1	Yes			FK	USER
Menu_ID	Menu identification number	Varchar2(10)	M001	Yes			FK	MENU
Item_Quantity	Quantity of each item	Integer(3)		Yes				
Total_Item_Price	Total amount for each item (in RM)	Double		Yes				

3.6.5 Order

	Data Dictionary							
	e-Cafeteria: Food Ordering and Food Budgeting Application							
ORDER								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Order_ID	Order's identification number	Varchar2(10)	D001	Yes		Yes	PK	
Customer_ID	Customers' identification number	Integer(5)	1	Yes			FK	USER
Vendor_ID	Vendors' identification number	Integer(5)	2	Yes			FK	USER
Order_Type	Dine in or delivery	Varchar2(10)		Yes				
Order_Address	Place that deliver	Varchar2(50)		Yes	Café (Dine In)			
Order_Date	Date of make order	Date		Yes				
Order_ExpectedTime	Time to receive order	Time		Yes				
Order_TotalAmount	Amount of order (in RM)	Double		Yes				
Order_Status	Status of order	Varchar(20)		Yes				

3.6.6 Payment

Data Dictionary								
e-Cafeteria: Food Ordering and Food Budgeting Application								
PAYMENT								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Order_ID	Order's identification number	Varchar2(10)	D001	Yes		Yes	PK,FK	ORDER
Customer_ID	Customers' identification number	Integer(5)	1	Yes			FK	USER
Payment_TotalAmount	Total amount paid (in RM)	Double		Yes				
Payment_Date	Date of payment	Date		Yes				
Payment_Time	Time of payment	Time		Yes				

3.6.7 Budget Type

Data Dictionary								
e-Cafeteria: Food Ordering and Food Budgeting Application								
BUDGET_TYPE								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Budget_Type_ID	Budget Type's identification number	Varchar2(10)	B001	Yes		Yes	PK	
Budget_Label	Name of the budget type	Char(10)	Daily / Weekly / Monthly	Yes				
Budget_Duration	Duration where it is available	Integer(5)		Yes				

3.6.8 Budget

Data Dictionary								
e-Cafeteria: Food Ordering and Food Budgeting Application								
BUDGET								
Attribute Name	Contents	Data Type And Size	Format	Requirement?	Default Value	Unique?	PK or FK	FK Reference Table
Budget_ID	Budget identification number	Varchar2(10)	G001	Yes		Yes	PK	
Customer_ID	Customers' identification number	Integer(5)	1	Yes			FK	USER
Budget_Type_ID	Budget Type's identification number	Varchar2(10)	B001	Yes			FK	BUDGET_TYPE
Budget_StartDate	Date start to plan budget	Date		No				
Budget_Status	Status of budget	Varchar(10)		Yes	OFF			
Budget_TotalAmount	Amount of budget (in RM)	Double		Yes				
Budget_Repeated	Will the budget repeat	Char(1)	Y / N	Yes				

3.7 Screen Design
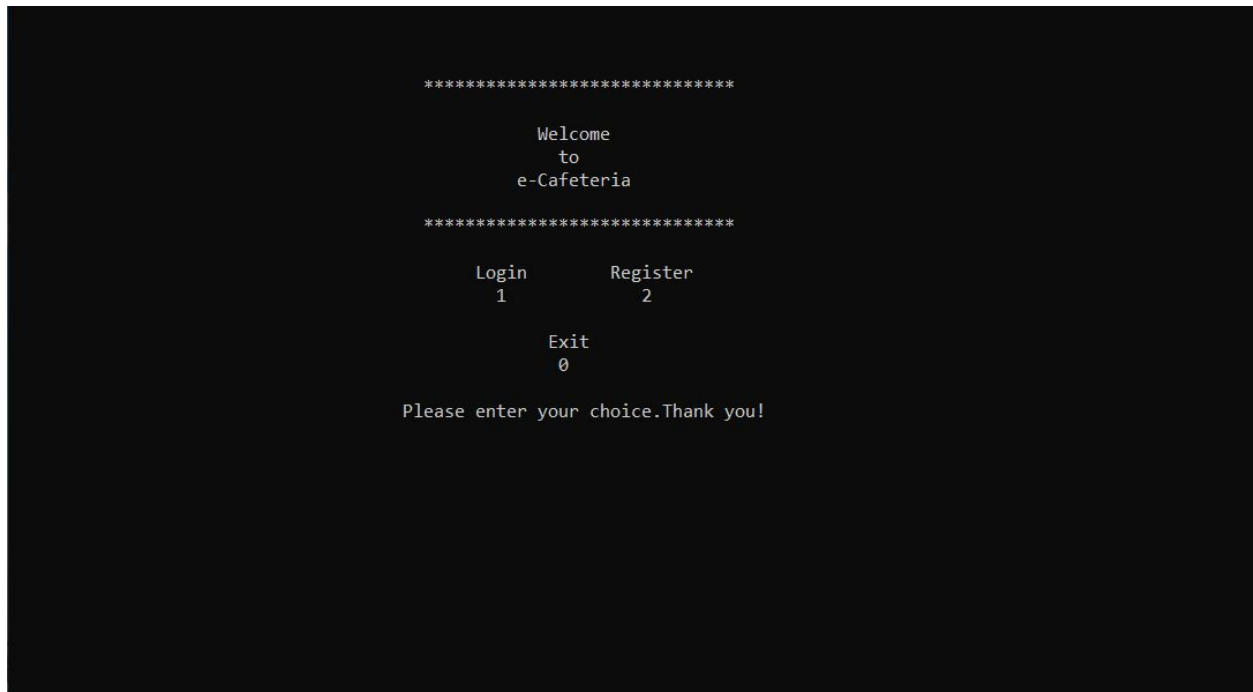
Figure 3.7.1 Main Screen

19

```
Please insert your name
Ahmad Haris Bin Abdul Rizal

1. Customer
2. Vendor
Please enter your type
*Note: Please enter 1 if you are customer or 2 if you are vendor.
2

Please insert your Identity Card Number (IC)
Note: XXXXXX-XX-XXXX
791231-05-1127

Please enter your User_Password
Note: It must be alphabet and digit.
haris79

Please enter your gender
Note: Please enter L/l for Male or P/p for female
L

Please insert your phone number
Note: XXX-XXXXXXXX
013-2116678

Your User ID is: 8
Press any key to continue . . .
```
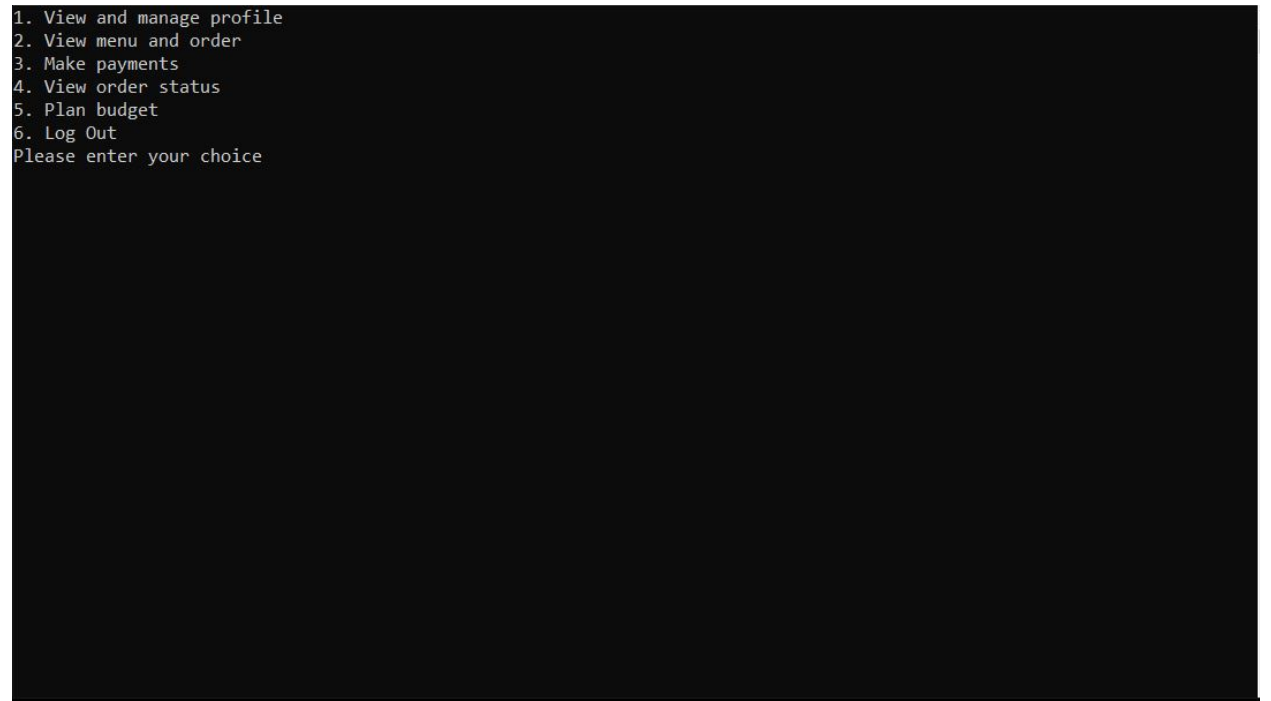
Figure 3.7.2 Register Screen

```
Please insert your User_ID
1

Please enter your User_Password
yes999
```

Figure 3.7.3 Login Screen

```
1. View and manage profile
2. View menu and order
3. Make payments
4. View order status
5. Plan budget
6. Log Out
Please enter your choice
```

Figure 3.7.4 Customer Screen

```
1. View and manage profile
2. View and manage menu
3. View and manage order
4. View and manage report
5. Log Out
Please enter your choice
```

Figure 3.7.5 Vendor Screen

```
1. View and manage own profile
2. View and manage user
3. View and manage budget type
4. View and manage meal type
5. View and manage menu
6. Log out
Please enter your choice
```

Figure 3.7.6 Admin Screen

```
1. View profile
2. Edit profile
3. Go back
Please enter your choice
```

Figure 3.7.7 View and Manage Profile Screen

```
| M009 | 3  | T004 | Chicken Carbonara Spaghetti | carbonara spaghetti and grilled chicken chop | 1 | 5.00 |
-----------------------------------------------------------------------------------------------------------------
| M010 | 5  | T004 | Lamb Soup with Fried Rice   | lamb soup and fried rice                     | 1 | 3.50 |
-----------------------------------------------------------------------------------------------------------------
| M011 | 9  | T004 | Gong Bao Chicken with Rice  | Gong Bao chicken, rice and fried egg         | 1 | 4.50 |
-----------------------------------------------------------------------------------------------------------------
| M012 | 10 | T004 | Tomyam Seafood Maggie Soup  | seafood, chicken, vegetable and maggie tomyam| 1 | 4.00 |
-----------------------------------------------------------------------------------------------------------------
| M013 | 3  | T006 | Lemon Tea (Hot)             | hot tea with lemon                           | 1 | 1.50 |
-----------------------------------------------------------------------------------------------------------------
| M014 | 5  | T006 | Lemon Tea (Cold)            | tea with lemon and ice                       | 1 | 2.00 |
-----------------------------------------------------------------------------------------------------------------
| M015 | 5  | T006 | Tea Tarik (Hot)             | hot milk tea                                 | 1 | 1.00 |
-----------------------------------------------------------------------------------------------------------------
| M016 | 5  | T006 | Tea Tarik (Cold)            | milk tea with ice                            | 1 | 1.50 |
-----------------------------------------------------------------------------------------------------------------
| M017 | 10 | T006 | Sirap Bandung (Cold)        | rose syrup, milk and ice                     | 1 | 2.50 |
-----------------------------------------------------------------------------------------------------------------
| M018 | 9  | T006 | Herbal Tea (Hot)            | tea with grass jelly                         | 1 | 1.20 |
-----------------------------------------------------------------------------------------------------------------

Please insert your menu ID that you want to eat
Note: MXXX (e.g: M001)
M012

Please enter the quantity to order
1

Do you want to continue order ? (Y/N)
```

Figure 3.7.8 View Menu and Order Screen

```
-----------------------------------------------------------------------------------------------------------------
| D002 | 4  | 5  | Booking | Lekir Satria L4-B8-A | 2021-01-14 | 08:00:00 | 1.00 | Processing |
-----------------------------------------------------------------------------------------------------------------
| D003 | 4  | 10 | Booking | Lekir Satria L4-B8-A | 2021-01-14 | 08:00:00 | 1.50 | Processing |
-----------------------------------------------------------------------------------------------------------------
Please enter the order ID that you want to pay
Note: DXXX (e.g: D001)
D002

Payment for order ID D002 is successful
Press any key to continue . . .
```

Figure 3.7.9 Make Payment Screen

```
---------------------------------------------------------------------------------------------------
| D002 | 4  | 5  | Booking   | Lekir Satria L4-B8-A    | 2021-01-14 | 08:00:00 | 1.00 | Processing |
---------------------------------------------------------------------------------------------------
| D003 | 4  | 10 | Booking   | Lekir Satria L4-B8-A    | 2021-01-14 | 08:00:00 | 1.50 | Processing |
---------------------------------------------------------------------------------------------------

Press any key to continue . . .
```

Figure 3.7.10 View Order Status Screen

```
1. View active budget
2. Set active budget
3. Add new budget
4. Edit budget
5. Deactivate budget
6. Delete budget
7. Go back
Please enter your choice
```

Figure 3.7.11 Plan Budget Screen

24

```
1. View menu
2. Manage menu
3. Go back
Please enter your choice
```

Figure 3.7.12 View and Manage Menu Screen (Vendor)


```
1. View order
2. Manage order
3. Go back
Please enter your choice
```

Figure 3.7.13 View and Manage Order Screen

```
1. Generate report
2. Ranking
3. Go back
Please enter your choice
```

Figure 3.7.14 View and Manage Report Screen

```
1. View all user
2. Reset password
3. Update balance
4. Delete user
5. Go back
Please enter your choice
```

Figure 3.7.15 View and Manage User Screen

```
1. View budget type
2. Edit budget type
3. Add budget type
4. Delete budget type
5. Go back
Please enter your choice
```

Figure 3.7.16 View and Manage Budget Type Screen

```
1. View meal type
2. Edit meal type
3. Add meal type
4. Delete meal type
5. Go back
Please enter your choice
```

Figure 3.7.17 View and Manage Meal Type Screen

```
1. View menu
2. Edit menu
3. Add menu
4. Delete menu
5. Go back
Please enter your choice
```

Figure 3.7.18 View and Manage Menu Screen (Admin)

CHAPTER 4: IMPLEMENTATION

Module	Function	File	Function
Login	Authenticate user	Login.h	login(Session& currentSession)
Register	Add user	Register.h	registerUser()
Profile Management	Manage profile	Profile.h	profile(Session currentSession)
	View profile		viewProfile(Session currentSession)
	Edit profile		editProfile(Session currentSession)
	Edit password		changePassword(Session currentSession)
	Edit phone number		changePhoneNumber(Session currentSession)
User Management	Manage user	UserManagement.h	userManagement(Session currentSession)
	View user		viewAllUser(Session currentSession)
	Reset user password		resetUserPassword(Session currentSession)
	Update user balance		updateBalance(Session currentSession)
	Delete user		deleteUser(Session currentSession)
	Generate password		generateRandomPassword()
Budget Type Management	Manage budget type	BudgetTypeManagement.h	budgetTypeManagement(Session currentSession)
	View budget type		viewBudgetType(Session currentSession)
	Edit budget type		editBudgetType(Session currentSession)
	Add budget type		addBudgetType(Session currentSession)
	Delete budget type		deleteBudgetType(Session currentSession)
	Edit budget label		editBudgetLabel(Session currentSession, BudgetTypeList tempBudgetTypeList)
	Edit budget duration		editBudgetDuration(Session currentSession, BudgetTypeList tempBudgetTypeList)
Meal Type Management	Manage meal type	MealTypeManagement.h	mealTypeManagement(Session currentSession)
	View meal type		viewMealType(Session currentSession)
	Edit meal type		editMealTypeMenu(Session currentSession)
	Add meal type		addMealType(Session currentSession)
	Delete meal type		deleteMealType(Session currentSession)
	Edit type name		editTypeName(Session currentSession, MealTypeList tempMealTypeList)
	Edit time start		editTimeStart(Session currentSession, MealTypeList tempMealTypeList)
	Edit time end		editTimeEnd(Session currentSession, MealTypeList tempMealTypeList)
Menu Management	Manage menu	MenuManagement.h	menuManagement(Session currentSession)
	View menu		viewMenu(Session currentSession)
	Edit menu		editMenu(Session currentSession)
	Add menu		addMenu(Session currentSession)
	Delete menu		deleteMenu(Session currentSession)
	Edit meal type for menu		editMealType(Session currentSession, MenuList menu)
	Edit menu name		editMenuName(Session currentSession, MenuList menu)
	Edit menu description		editMenuDescription(Session currentSession, MenuList menu)
	Edit menu price		editMenuPrice(Session currentSession, MenuList menu)
Customer Order Management	Manage order for customer	CustomerOrderManagement.h	customerOrderManagement(Session currentSession)
	Display menu		displayMenuCustomer(Session currentSession, string time)
	Make order		customerOrder(Session currentSession, string time)
	Check out		checkOut(Session currentSession, MyList<OrderDetailList>& orderDetails, OrderList templateOrder)
	Make payment		payment(Session currentSession, double totalAmount)
	Delete order details		deleteOrderDetails(Session currentSession, MyList<OrderDetailList>& orderDetails)
	Arrange order details		arrangeOrderDetail(MyList<OrderDetailList>& orderDetails)
	Edit order details		editOrderDetail(MyList<OrderDetailList>& orderDetails)
	Edit item in list		editItemInList(MyList<OrderDetailList>& orderDetails, int index, int quantity)
Complete Payment	Make payment	CompletePayment.h	completePayment(Session currentSession)
Order Status	View order status	ViewOrderStatus.h	viewOrderStatus(Session currentSession)
Budget	Manage budget	BudgetManagement.h	budgetManagement(Session currentSession)
	Add budget		addNewBudget(Session currentSession)
	View budget type		viewBudgetTypeChoices(Session currentSession)
	View active budget		viewActiveBudget(Session currentSession)
	Set active budget		setActiveBudget(Session currentSession)
	Deactivate budget		deactivateBudget(Session currentSession)
	View all budget		viewAllBudget(Session currentSession)
	Delete budget		deleteBudget(Session currentSession)
	Edit budget		editBudget(Session currentSession)
	Edit budget total amount		editBudgetTotalAmount(Session currentSession, BudgetList budget)
	Edit budget repeat		editBudgetRepeat(Session currentSession, BudgetList budget)
Vendor Menu Management	Manage menu for vendor	VendorMenuManagement.h	vendorMenuManagement(Session currentSession)
	View menu for vendor		viewVendorMenu(Session currentSession)
	Manage menu quantity		vendorManageMenu(Session currentSession)
Vendor Order Management	Manage order	VendorOrderManagement.h	vendorOrderManagement(Session currentSession)
	View order		viewVendorOrder(Session currentSession)
	Manage order		vendorManageOrder(Session currentSession)
Vendor Report Management	Manage report	VendorReportManagement.h	vendorReportManagement(Session currentSession)
	Generate report		generateReport(Session currentSession)
	Ranking		ranking(Session currentSession)

Figure 4.1 Module Representation

CHAPTER 5: CONCLUSION

In conclusion, I have developed the e-cafeteria system. The system is able to help user organize their budget and generate sales report for vendor. This allow for better budget planning and better preparation for daily food preparation. By generating report of daily sales and generating ranking, vendor can better plan their food stock for the next day. By having food preparation, there will be enough to supply everyone even during rush hour. Furthermore, the cafeteria is able to provide delivery service now with the system. This allows for individuals to easily access the cafeteria no matter where they are which will increase the profit of the cafeteria as well.

5.1 Limitation

1. The system uses only manual payment and cannot use online transaction.
2. The system cannot alert the user whether or not the order is completed
3. The system is hard to navigate as it lacks UI elements.

5.2 Future Improvements

Some possible future improvement for the system would be:

1. Integrate cashless payment method to allow for easier balance management
2. Integrate notification system to notify user of completed order.
3. Implement graphical user interface to better guide user through the system.