ONLINE GROCERY SHOPPING APPLICATION (OGSA)

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ONLINE GROCERY SHOPPING APPLICATION (OGSA)

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Thesis submitted in fulfillment of the requirements

for the award of the degree of

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ABSTRAK

Projek ini adalah aplikasi beli-belah runcit mudah alih berasaskan web dan mudah alih untuk AKPS Cash & Carry. Matlamat projek ini adalah untuk menyampaikan aplikasi runcit dalam talian yang membolehkan para pelanggan membeli barangan runcit dalam talian yang mudah, cepat dan kos efektif melalui telefon pintar atau komputer riba mereka. Pada masa ini, pekerja Cash and Carry AKPS menghadapi masalah dalam mengendalikan lebih banyak pelanggan pada masa yang sama dan pemilik AKPS Cash & Carry juga ingin menaik taraf teknik perniagaan semasa yang merupakan sistem jualan manual. Sehingga, untuk AKPS Cash & Carry untuk memperluaskan perniagaan kedai dan membawa jualan runcit ke dalam talian. Dengan membuat sistem jualan secara dalam talian, pelanggan boleh melawat laman web AKPS Cash & Carry pada bila-bila masa tidak kira pada waktu siang atau malam. Membeli-belah dalam talian biasanya tersedia 24 jam sehari dan ramai pelanggan mempunyai akses internet di tempat kerja dan di rumah. Jadi, sangat mudah bagi mereka yang membeli barang runcit dari rumah dalam talian. Selain itu, aplikasi ini membolehkan pelanggan membuat pembayaran pembelian melalui pembayaran dalam talian melalui PayPal mengunakan internet. Di samping itu, aplikasi ini membolehkan pekerja mengurus produk dan menjana laporan berkaitan perniagaan AKPS Cash & Carry dan membantu untuk menjejaki maklumat jualan. Aplikasi ini dibangunkan menggunakan metodologi yang spesifik iaitu Waterfall kerana cara ini dapat direka bentuk untuk menyediakan pembangunan yang lebih cepat dan hasil yang berkualiti tinggi. Sebagai kesimpulan, membeli-belah dalam talian adalah salah satu aspek terbesar dalam internet hari ini. Dengan memilih untuk berbelanja pelanggan dalam talian akan dapat memperoleh banyak manfaat untuk pelanggan, ia membantu pelanggan untuk menjimat masa mereka, wang dan barangan mereka di kedai dalam talian adalah sangat pelbagai dan sangat mudah untuk semua orang.

ABSTRACT

This project is a web based and mobile friendly online grocery shopping application for AKPS Cash & Carry. The aim of this project is to deliver an online grocery application which is allow the customers to buy the groceries online which is simple, fast and cost effective via their smartphones or laptops. Currently, AKPS Cash and Carry staffs find difficulties in handling more customer at a time and the AKPS Cash & Carry owner also want to upgrade the current business technique which is manual sales system. So that, for AKPS Cash & Carry to expand the business of the shop and bring the grocery sales to be online. By making the sales system online, customers can visit AKPS Cash & Carry websites at any time of day or night. Online Shopping are usually available 24 hours a day and many customers have internet access both at work and at home. So, it is very convenient for them to purchase households online. Moreover, this application allows the customers to make their purchase payment through online payment through PayPal payment gateway over the internet. Besides that, this application allows the staffs to manage the products and to generate business related reports of the AKPS Cash & Carry and it helps to keep track the sales information's. This application is develop using Waterfall methodology as it is designed to provide faster development and high-quality results. In conclusion, online shopping is one of the greatest aspects of the internet today. By choosing to shop online customer will be able to get many benefits for customers, it helps customer to save their time, their money and goods in online shop are so variety and its very convenient for people.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Online Grocery Shopping Application (OGSA) will be developed for AKPS Cash & Carry Sdn.Bhd. where the purpose of this application is to manage all the information of the online grocery shopping. Online Grocery Shopping allow the customer to purchase products through internet by browsing the websites domain name. The AKPS Cash & Carry sells grocery items that we use in our daily life and also Indian devotional items. This shop is the center point of four residential area, Taman Indah Jaya, Taman Tun Sambathan, Taman Wawasan and Kampung Bukit Palong. About 500 household residents buy their daily grocery needs from this shop. As such, from the online grocery application development it is expected to make the daily tasks easier and convenient for the staffs in the shop and also the customers.

Currently AKPS Cash & Carry maintaining manual system to manage all the data of their sales. Manual system has lacking and problem such as loss data, misplaced and more else. In this technologized world nowadays, it is no more possible to maintain manual systems in organizations. Moreover, AKPS Cash & Carry shop must use Online Grocery Shopping Application for quick access of data and to provide efficient service for the customers.

The Online shopping application will be very useful for the customers nowadays since people are becoming very busy taking care of their life chores. The customers are able to purchase groceries right on time without having the difficulties to travel to the shop.

The customers just need few minutes to get their list done online. The customers do not need to worry of being cheated as online shopping applications are already a rising aspect for our citizens to buy things in a very easy and reliable way. The application is secured enough to conduct a safe transaction as well for the customers. Apart from that, the purchased items will be delivered in a very appropriate time consumption.

As a conclusion, the purposed system will be a good opportunity for the customers to purchase the grocery items easily. It also will be very convenient for the customers to purchase grocery items from anywhere and anytime. By using this application, the customers can save their shopping time and there are no needs to strain themselves to go cash & carry daily to make purchases. This system will also be more useful to the staff when the manual product maintaining system be computerized which will consume less time for the shop owner to update the purchasing details of the products. It will be efficient and reliable enough for both customers and seller to purchase and save data respectively.

1.2 Problem Statements

Time consuming is a major issue for customers with the current sales system in AKPS Cash & Carry. Long queue in cashier counter make the billing process slow and the attention towards customers lacks. It is also a time constraint for the customers who are in a rush to get their groceries done.

Another issue is, when customers depending on their own schedule, the business hours of AKPS Cash & Carry might be inconvenient for the customers to buy the grocery items. Basically, AKPS Cash & Carry shop open late morning and close before most of the customers return back to home from work.

Lack of staffs in the AKPS Cash & Carry also being a concern which causes them to entertain their customers less. It takes time for the employees to help each customer to find their groceries if they are in need.

1.3 Objectives

The aim of this project is to develop Online Grocery Shopping Application (OGSA) and to support this Online Grocery Shopping the following objectives are as below:

I. to propose and design a web based online shopping application system;
II. to implement online grocery shopping using Java programming language;
III. to evaluate the functions of Online Grocery Shopping Application system;

1.4 Scope

The project scope is to develop an Online Grocery Shopping Application (OGSA). The online grocery shopping application created for AKPS Cash & Carry to make grocery purchase online through internet via smartphones or computers. This OGSA system mainly developed for residents nearby the AKPS Cash & Carry shop. Most focused function of this system is to allow customer to add selected product to their shopping cart and do checkout safely from the system. Another scope of this system is, the OGSA system must a user-friendly system and easy to access the system for customers, admin and staffs.

1.5 Thesis Organization

There are five chapter will include in this thesis.

Chapter 1 is about discussing on the introduction for the project. In this chapter, it will contain short information of the system, problem statement, objective and scope of the project.

Chapter 2 is about discussing on the related work such as flow of current system in the AKPS Cash & Carry, research on proposed system, features comparison of three existing system and modules in the proposed system.

Chapter 3 will be discussing on methodology used in the proposed system. This chapter consist of the used methodology, software requirement, Gantt chart, testing plan.

Chapter 4 will discuss about system implementation, testing and result of the discussion in the project. This chapter contains the interfaces, result and the process flow of the project that have been done.

Chapter 5 is about conclusion. On this chapter there will be an overview of the project development process and discuss on research constraint and future suggestion work that can be done in further research.

1.6 Conclusion

This chapter has discussed about the introduction of the project, problem statements and objectives of the project which will be the main aim to develop this system, scope of the project that who can use my project and thesis organization of the project for overview of all the chapter. The next chapter is going to be discussed about the literature reviews.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

AKPS Cash & Carry is a mini market which sales the groceries and Indian devotional items. This AKPS Cash & Carry located at Taman Indah Jaya, 71010 Port Dickson, Negeri Sembilan, Malaysia. It is located at the center point of four residential area Taman Indah Jaya, Taman Tun Sambathan, Taman Wawasan and Kampung Bukit Palong. The owner of the company is Mr Ponnusamy Chettiyar. Currently, there are three staffs working there. The business hours on weekdays of the AKPS Cash & Carry is 10.00am until 09.30pm and for the weekend the business hours are 12.30pm until 09.30pm.

AKPS Cash & Carry is a busy mini market because that is the nearest mini market for the people from the specified residential area. These peoples are the main customers for the AKPS Cash and Carry. The current process of product purchasing is, the customer will find the grocery item they need by themselves or with the help of staff. After that, the customers have to stand in queue to pay for the goods at the payment counter. Sometimes the queue will be longer than expected and caused uncontrollable situation.

AKPS Cash & Carry using manual system for the product sales receipt record, supplier's record and also the Inventories record. The staffs will record the details in separate long log books. Every time when the supplier supply products to the AKPS Cash & Carry, the staffs have to take record of how much products has been supplied and how much old stock has return back. The staffs also need to print out two receipt one for the supplier and another one is for

AKPS Cash & Carry records. So that, it is difficult for the staff to handle if they had a situation to handle both supplier and customers at the same time.

2.2 Online Grocery Shopping Application

Online grocery shopping application is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser. These days everybody has installed grocery apps on their device. It is because grocery shopping and delivery has driven a huge people to do shopping online. Current generation peoples are very busy with their works and online grocery shopping would be convenient for them to get the groceries by using just an app instead of going out to the shops and stores, the customers can contact the shop through online. Customer have to see what they want to buy, even if they can't handle it, so the viewscreen of the computer or smartphone shows the goods available. Customer then instruct the computer to order the goods that they want and have them delivered to their house.

2.3 Review of Existing Applications

Review of existing applications is a study and analysis of some existing systems that are similar with the proposed application. The findings of the features, methods and processes used to carry out in this section review.

2.3.1 Tesco Groceries Application

Tesco was founded in 1919 by Jack Cohen as a group of market stalls.The Tesco name first appeared in 1924, after Cohen purchased a shipment of tea from T. E. Stockwell and combined those initials with the first two letters of his surname, and the first Tesco shop opened in 1931 in Burnt Oak, Barnet. His business expanded rapidly, and by 2019 he had over 6569 Tesco shops across few countries (*Cohen, Sir John Edward [Jack] [formerly Jacob Edward Kohen] (1898–1979), grocer and creator of Tesco stores*, 2004). Tesco Stores Sdn. Bhd owns and operates hypermarkets in Malaysia. It offers recent produce, groceries, home items, apparel, and its own food and non-food products. The corporate additionally offers its products through internet.

The users can choose product they want on a website and then can order through online. Tesco groceries application makes shopping easier and more convenient. Users able to search and shop from Tesco's full range of products and have their shopping items will be delivered to their doorstep based on selected time by the user. The users also can update their order after they have checked out to add those last-minute essentials.

The users can earn Tesco Club card points also through this online purchase. This application will be easy to use, search and browsing fucntions. Users able to check out the Tesco promotions while them browsing the products. Regular users of this application can shop quickly by make purchase from "Your Favourite" where users add their most buying items. The users allowed to make payment either pay at door or online transaction. Most importantly, the users able to reject the items before receiving. Figure 2.1 shows Tesco's mainpage.

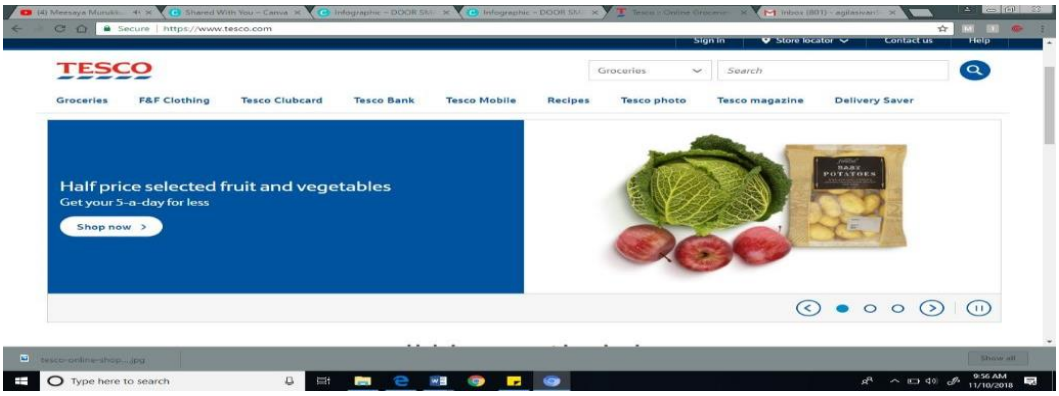

Figure 2.1: Tesco Online Grocery Application

2.3.2 Happy Fresh Application

HappyFresh on of the leading grocery delivery service that allows you to make purchase online from your favorite supermarkets and specialty shops via smartphones, as well as the web store. HappyFresh's name is well known among online shopping needs customers. The online startup provider of online shopping needs is the first to enable customers to shop for a wide range of daily necessities from supermarkets through mobile apps and websites to be delivered in no more than 1 hour.

HappyFresh was established in October 2014. Headquartered in Jakarta, HappyFresh has also been operating in Malaysia and Thailand.(“HappyFresh | Crunchbase,” n.d.) This startup was founded by seven people who have background in technology and business from various companies. Among others from Black- stone, Goldman Sachs, the Boston Consulting Group, J.P. Morgan, and Lazada Group. One of its founders is Dawn Adhitya Budiprasetyo, who became Co-Founder and Chief Technology Officer of HappyFresh.

Main online customers of HappyFresh are mostly from areas in the Klang Valley. The customer able to choose the delivery slots within the hour or any one hour time slots between 10am-10pm. Moreover, In HappyFresh application also has specific features such as the application can trace the delivery place of the user. Besides that, when the grocery item is out of stock, the shopper provides options to replace the item. In addition, this application allow user to use cash vouchers to make the payment of purchased groceries by entering the voucher code. Happy fresh application also has credit card promotions and users can buy the card. Figure 2.2 shows HappyFresh Application’s mainpage.

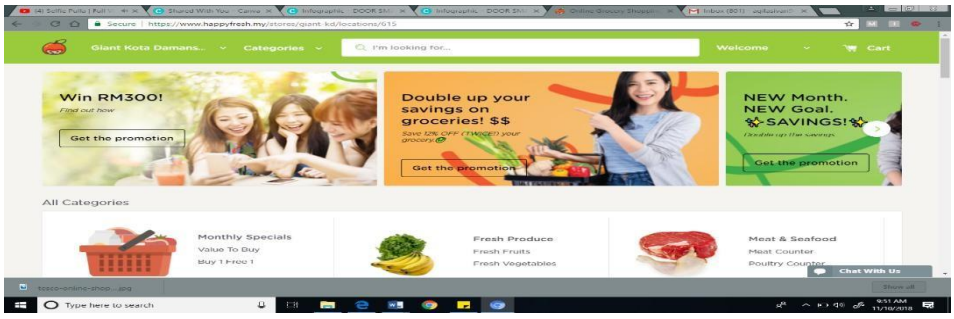

Figure 2.2 HappyFresh Application

2.3.3 Red Tick Application

RedTick is an online grocery shopping company founded in 2010 that features an appealing layout that's not only easy on the eyes however makes shopping much more accessible. This is due to the convenient tabs that shoppers can click into to immediately realize the product they were looking for.

In this application, conveniently classified for an easier shopping experience. Promotions and seasonal foods are highlighted on the front page. Customers will be able to also find baby things and stationery at RedTick online grocery application. RedTick has branch in Puchong and Putrajaya. This application delivers to home shoppers in Kuala Lumpur, Petaling Jaya, Ampang, Puchong, Kinrara, Subang, USJ, Seri Kembangan, Serdang, Putrajaya and Cyberjaya.For same day delivery, customer will have to submit their orders before 4pm. There are 5 delivery slots, from 9am to 6pm daily. Check if the house is within the delivery coverage area here.

RedTick application allows the user to add the grocery item that they frequently purchase in favorite list. From the only purchased also the user can earn membership card points. Moreover, users can zoom in the item that they select and able to know the ingredients of the item while they browsing groceries. This application accepts the payment via credit card, PayPal account or cash on delivery. Figure 2.3 shows RedTick Application's mainpage.

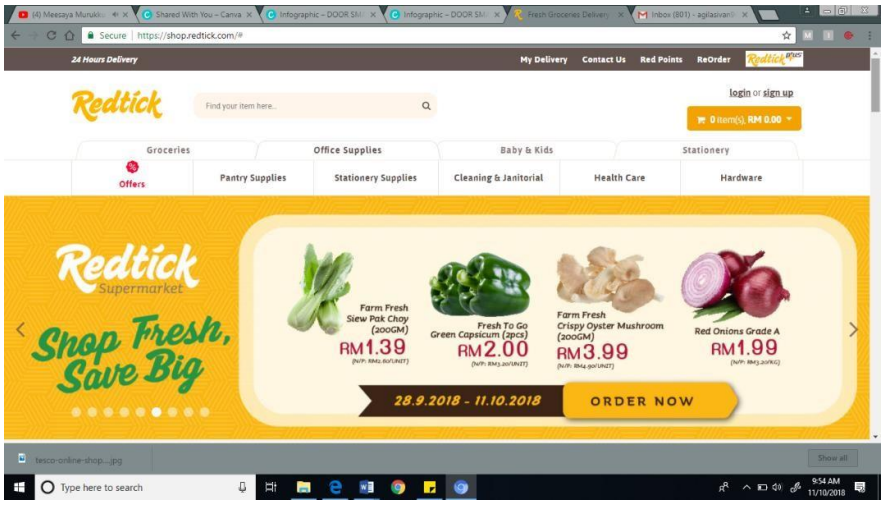

Figure 2.3 RedTick Application

2.4 Comparison of Three Existing Application

The comparisons between three existing application which are Tesco Groceries Application, HappyFresh Application, and RedTick Application are shown as below. Table 2.1 shows the comparison of three existing applications. Based on the reviewed of three existing application above which is Tesco Groceries Application, HappyFresh Application, RedTick Application, it could be seen that each of the application has its own, special unique features, strength of the application and weakness in the application.

Table 2.1 System Comparison of existing application

System Comparison	**Tesco online Groceries**	**HappyFresh**	**RedTick**
Login	/	/	/
Web Based	/	/	/
User Profile	/	-	-
Search Item	/	/	/
Add item to chart	/	/	/
Categorization of products	/	-	/
Online Payment	/	/	/

2.5 Conclusion

Based on the three application systems, which are Tesco Online Groceries, HappyFresh, and RedTick, seems that each of the application has its own advantages and disadvantages. There are also some similarities between the three specified applications above there.

Sample of existing system have generated ideas of design and functions which will be implemented on the proposed system. Moreover, the three-existing application is used by city live residents. But OGSA, specifically developed for AKPS Cash & Carry customers whom live in rural area residents.

The next chapter is about documenting the designs of application and also the use of the specified software and hardware within the information gained from this Chapter 2.

CHAPTER 3

METHODOLOGY

3.1 Introduction

Chapter three explain about the software development methodologies to ensure that the software can be developed within budget and time constraint. There are several methodologies which are used by the professional software system development companies these days. There are certain advantages and drawbacks associated with each of them. The basic purpose of these methodologies is to provide smooth software system development according to the project requirements.

Software system development methodology is a framework that is used to structure, plan, and control the method of developing an information system.(CMS, 2005) this type of development methodologies is only concerned with the software system development method, so it does not involve any technical aspect of, however concern with proper designing for the software system development.

3.2 Waterfall System Development Life Cycle

Software Development Life Cycle consists of a detailed plan describing the way to develop, maintain, replace and change or improve specific software system. The life cycle defines a methodology for rising the standard of software system and overall development process. The methodology chosen for this project is waterfall model. Waterfall methodology is a non-iterative linear approach for developing software system. In this model, the whole development process is split into different phases and every phase is completed separately in a sequential manner. ("SDLC Waterfall Model," n.d.) Thus, one phase can move to another phase only if the previous phase is completed.

Waterfall model is easy for implementations and helps to find the errors earlier. So that, it is easy to understand and easy to use for stakeholders. Moreover, the documentation is produced at every stage of a waterfall model which allow the stakeholder to understand what has been done. There has testing at every stage of waterfall model ("Waterfall Project Management Methodology · Blog · ActiveCollab," n.d.). Waterfall model also has some drawbacks such as, it is only suitable for the small size projects and if the requirements may change the waterfall model may not work. In waterfall model, it is hard to adjust scope during the life cycle and it might highly risk the project. Figure 3.1 shows waterfall model of System Development Life Cycle.

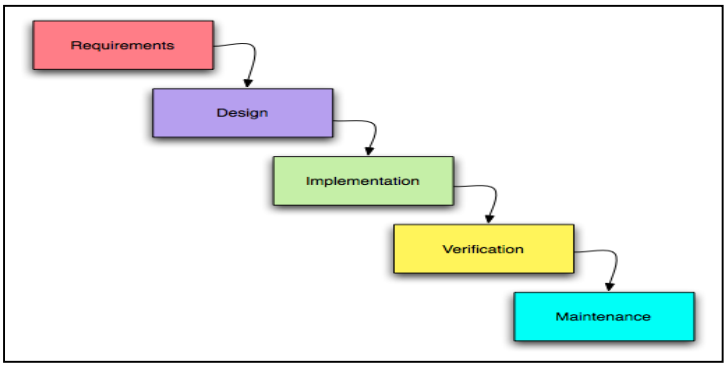

Figure 3.1 Waterfall model of System Development Life Cycle

3.2.1 Requirements Phase

The first phase of methodology in the falls model is that the necessity. Throughout this phase, all possible requirements of the OGSA that has been developed are captured during this phase and documented in a requirement specification document. The expectations, goals and defined of the system are analyses throughout this phase by sketch the Context Diagram, Use Case Diagram, Work Breakdown Structure Diagram (WBS), Software Requirement Specification (SRS) document. OGSA system has been developed to overcome the inconvenience of existing traditional shopping. The development which have to be performe in the OGSA application are the user can view and purchase grocery products online, additionally other user can update the product details and description in the list, and the direction of the online grocery store are determined.

3.2.2 Design Phase

The second phase is that the design phase after identifying the goals of the project. Specifies the systematic method of learning objectives. At this phase, prototype for OGSA system has created to view the specified user requirements. And also sketch Software Design Description (SDD) document as a guidance to design the application. Model-View-Controller (MVC) architecture pattern also designed for this application to implement the system code according to the MVC pattern.

3.2.3 Implementation Phase

The third phase is implementation wherever the system has been developed according to the user requirements and specifications. In this phase, implement the source code to develop OGSA system according to the design phase guidance's. The code has implemented in NetBeans 8.2 with Java programming language and HTML code for interfaces. XAMPP servers' phpMyAdmin database has been used to create Database Table of OGSA system. Moreover, Glass Fish localhost server has used to deploy the System in browser.

3.2.4 Testing Phase

The fourth phase is testing. In this phase, have to verify that the system is meeting the user expectations. In this phase, Unit test has performed to every single interface page of OGSA, Integration Test also has performed to the integration of one interface to another and finally, system and user acceptance test (UAT) test has conducted to test the user satisfaction.

3.2.5 Maintenance Phase

The fifth phase is maintenance phase, in this phase, the system maintaining activities will applied for the system. However, for the OGSA system, this phase did not apply because currently has no maintenance plans for this proposed system.

3.3 Work Breakdown Structure

A work-breakdown structure in project management and systems engineering, is a deliverable oriented breakdown of a project into smaller components. A work breakdown structure is a key project deliverable that organizes the project work into manageable sections. Figure shows 3.2 Work Breakdown Structure for Online Grocery Shopping Application.

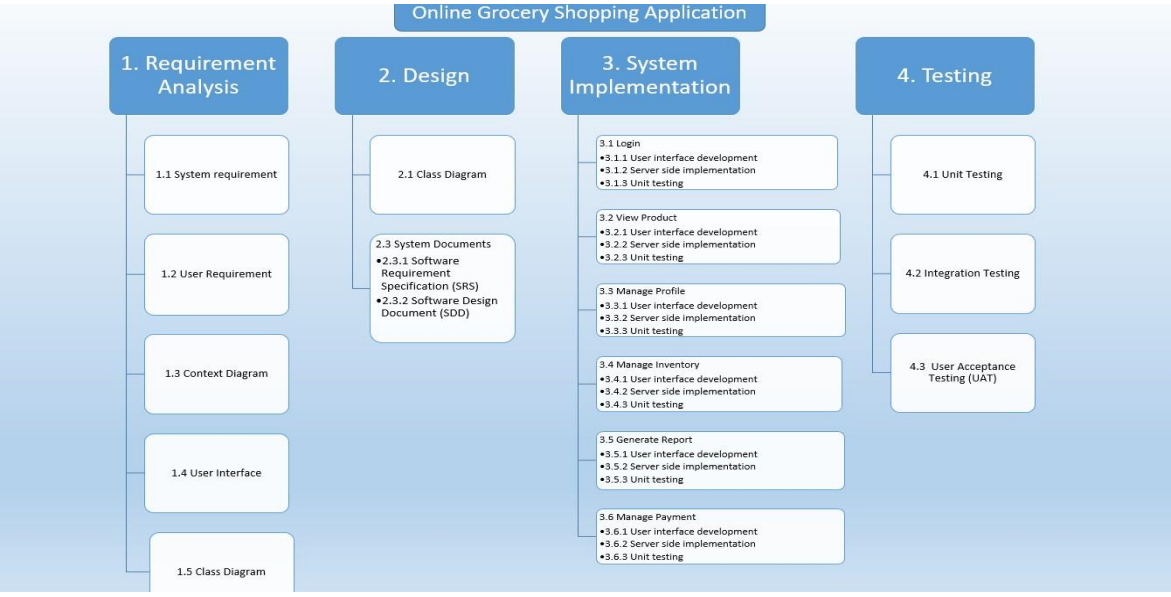

Figure 3.2 Work Breakdown Structure for Online Grocery Shopping Application

3.4 Context Diagram

Context diagram is a diagram that defines the limits between the system, or a part of a system, and its environment, showing the entities that interacts between users that is Customer, staff and payment gateway. Figure 3.3 shows the context diagram of OGSA.

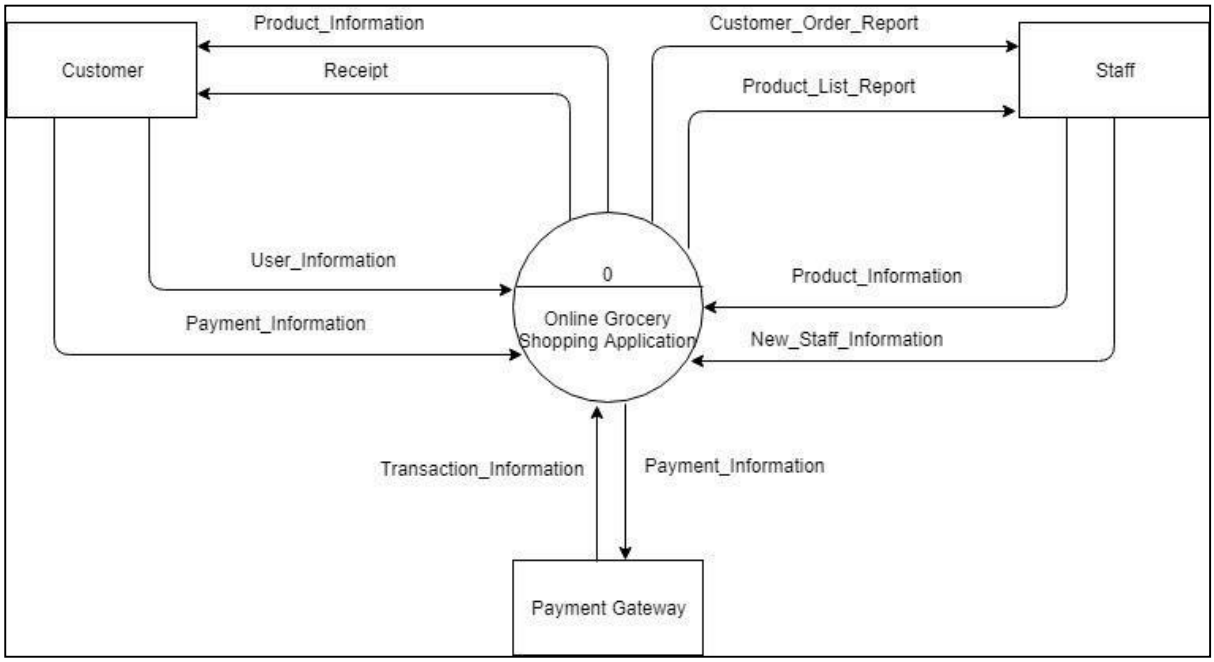

Figure 3.3 Context Diagram for Online Grocery Shopping Application

The context diagram shows that, the customer can key in their user information and payment information to this system. They also can purchase products from this. Customers can view the product information and delivery status and get the payment receipt online from the payment gateway. The admin also interacts with the system by add, edit and remove the product information in the system. Admin can generate the Customer order report and Product list report from the system. The payment gateway gets customer information from the system and send transaction information to the system.

3.5 Use Case Diagram

Use case diagram will indicate all the activities of the application. A graphical diagram of the intercommunications and the distinction between users and the application represented in the use case diagram as shown in the Figure 3.4

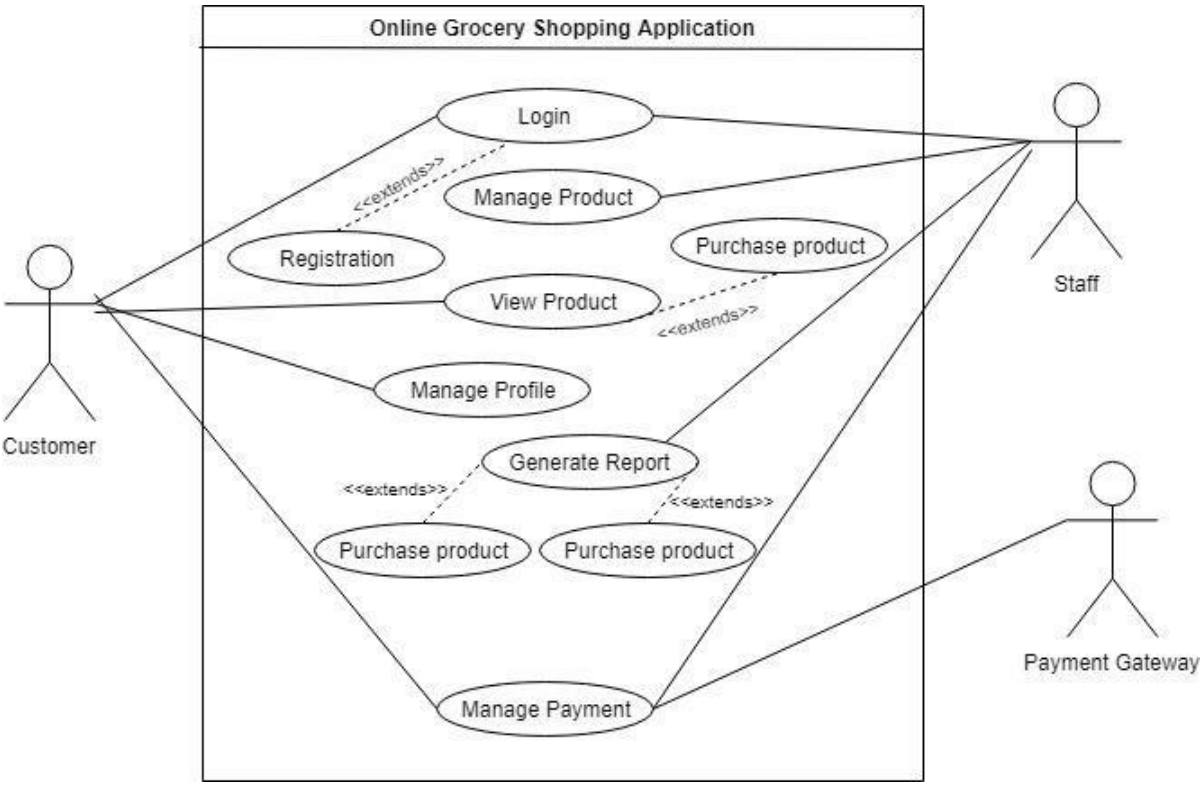

Figure 3.4 Use Case Diagram for Online Grocery Shopping Application

Based on the Figure 3.4, these applications have two main users which is the customers and the owner of the AKPS cash & carry. Both of the users must login the application to have an access and each of customers has their own profile and they allowed to update their profile. Customers can view the product then can add the product to the cart and can make payment for the selected products through online banking. Other than, the admin of the AKPS cash & carry can manage the product by adding, editing and removing the product information. The admin also can generate the Customer order report and Product list report in the application. Another user of the application is Payment Gateway. Payment gateway connect the customers to the selected bank's online transaction page.

3.6 Entity Relationship Diagram

Entity Relationship Diagram is logical database architecture diagram which is used to represent the relationship of database tables. Figure 3.5 shows Entity Relationship Diagram for Online Grocery Shopping Application.

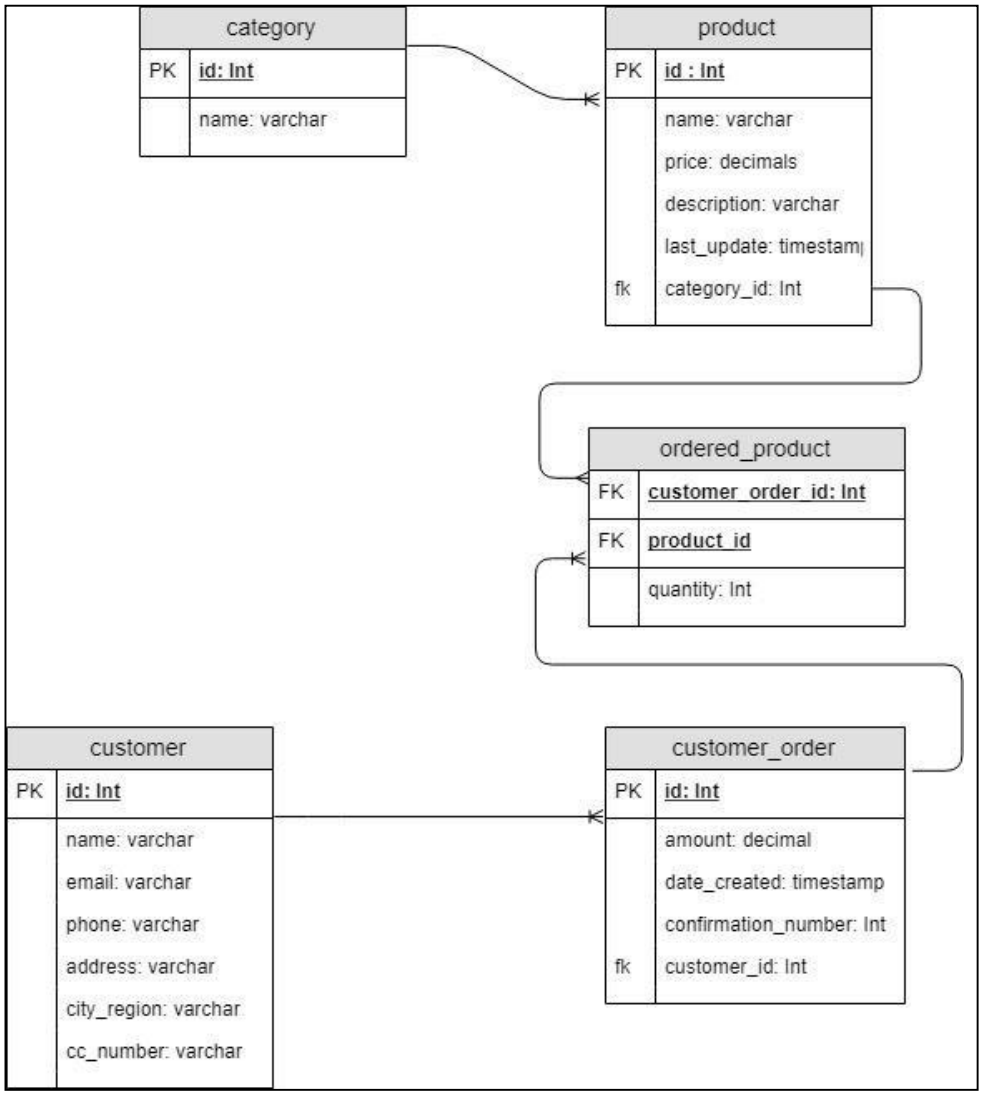

Figure 3.5 Entity Relationship Diagram for Online Grocery Shopping Application

Based on the Figure 3.5, these applications have six database tables in the Online Grocery Shopping Application.

3.7 Class Diagram

In software engineering, a class diagram in the Unified Modelling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations, and the relationships among objects. Figure 3.6 shows Class Diagram for Online Grocery Shopping Application

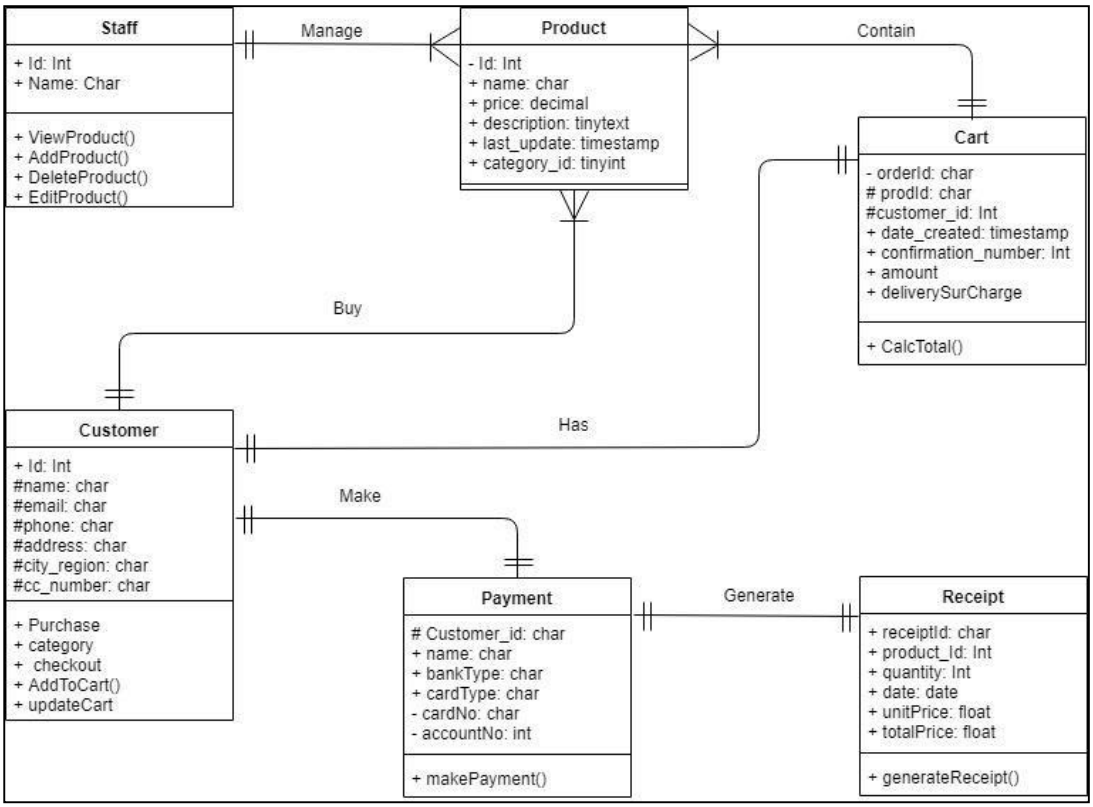

Figure 3.6 Class Diagram for Online Grocery Shopping Application

Based on the Figure 3.6, these applications have six classes in the Online Grocery Shopping Application. The classes are customer, staff, product, cart, payment and receipt.

3.7 Requirement of Hardware and Software

Table 3.1 and Table 3.2 respectively show the hardware and software that will be used to document of this project.

Table 3.1 Hardware Item

Hardware	Specification	Purpose
Laptop	Windows 10 ,Intel(R) inside™, RAM 4.00 GB, 64-Bit Operating System	Use for development and documentation.
Smartphone	Android/ IOS	Use for open the system via mobile seems this application is mobile friendly.
Printer	Canon PIXMA E410 series	To print the document.

Table 3.2 Software Item

Software	**Specification**	**Purpose**
Windows 10	64 – Bit Operating System	To make all the application developments
Microsoft Office Word	Version 2013	To create and edit the documents
Power Point 2013	Version 2016	To create interface design
NetBeans IDE	8.2	To build the application system
Draw IO	Online trial	To draw UML diagrams
PhpMyAdmin	Administration tool for MySQL and MariaDB	To create java database tables for database access.
Microsoft Excel	Version 2013	To create the Gantt chart

3.8 Gantt Chart

The milestone of the Gantt chart shown in Table 3.6 show the task name, duration time of progress report project for Online Grocery Shopping Application. The following table from the start process until the end of the process however still ongoing is shown.

Task Name	Duration	Start	Finish
Planning and Analysis	**91**		
Collect all the details about the system	6	07/9/2018	12/9/2018
Collect the current issues to related my project	6	07/9/2018	12/9/2018
Start to do Chapter 1	14	13/9/2018	26/9/2018
Start to do Chapter 2	7	04/10/2018	10/10/2018
Reviewing the existing system	3	06/10/2018	08/10/2018
Submission Chapter 1 and 2	1	12/10/2018	12/10/2018
Start to do Chapter 3	22	18/10/2018	08/11/2019
Choose suitable Methodology	1	19/10/2018	19/10/2018
Use case diagram, context diagram, DFD	2	26/10/2018	27/10/2018
Hardware and Software requirement	2	03/11/2018	04/11/2018
Submission Chapter 3	1	16/11/2018	16/11/2018
Correction of chapter 1,2,3	3	19/11/2018	21/11/2018
Start to do SRS document	4	22/11/2018	25/11/2018
Start to do SDD document	5	26/11/2018	29/11/2018
Submission SRS and SDD	1	30/11/2018	30/11/2018
Correction of SRS and SDD	3	01/12/2018	03/12/2018
Submission final report	1	04/12/2018	04/12/2018
Submission Turnitin report and Logbook	1	04/12/2018	04/12/2018
Submission Presentation Approval Formal	1	04/12/2018	04/12/2018
Preparation for Presentation	6	06/12/2018	11/12/2018
Presentation	1	12/12/2018	12/12/2018
Design	**14**		
Design the mobile app	7	07/1/2019	13/1/2019
Design the system	7	14/1/2019	20/1/2019
Implementation	**51**		
Software Installation	1	25/1/2019	25/1/2019
Software and Database Implementation	50	07/1/2019	24/2/2019
Testing	**10**		
Unit testing and integration testing	10	01/4/2019	10/4/2019

Table 3.3 Milestone of the project development

3.9 Conclusion

In chapter 3 has discussed about the methodology that we used to overcome this project, the methodology that I choose for my project is Waterfall methodology. We also had discussed each phase of the waterfall model. Next, we had designed the context diagram and use case diagram of the project. This diagram will show how the process are work in step by step. Moreover, in this chapter has discussed the hardware and software that we used to complete this report.

CHAPTER 4

IMPLEMENTATION, TESTING AND RESULT DISCUSSION

4.1 Introduction

This chapter is to discuss about the implementation and testing that conducted on Online Grocery Shopping Application (OGSA) and about the testing results. The purpose of testing is to ensure that the OGSA system functions appropriately and also to make sure the functionality of the system align with the proposed objective of the system.

4.2 Implementation Phase

Implementation phase is the phase where the physical project development is executed. In these phase, NetBeans IDE 8.2 and XAMPP localhost server has been used for the development of Online Grocery Shopping Application

4.2.1 Netbeans IDE 8.2

Netbeans IDE 8.2 is a software developing tools which also used to develop OGSAs. Java programming language used to code the whole Online Grocery Shopping Application system through Netbeans IDE 8.2 based on the specified mod- ule in the thesis. Figure 4.1 shows the NetBeans IDE 8.2.

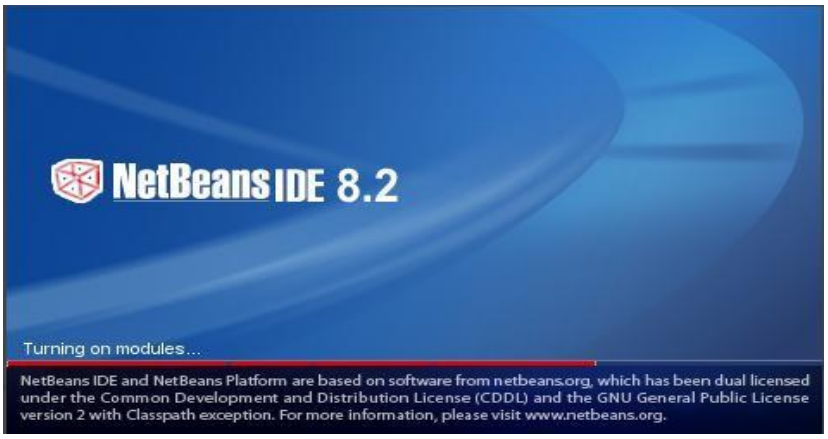

Figure 4.1: NetBeans IDE 8.2

4.2.2 XAMPP localhost server

XAMPP is a free and open-source cross-platform internet server resolution stack package developed by Apache Friends, consisting in the main of the Apache communications protocol Server, MariaDB info, and interpreters for scripts written within the PHP and Perl programming languages. For Online Grocery Shopping Application (OGSA), XAMPP control panel used to create database and table on phpMyAdmin Page. Figure 4.2 shows all the tables under “psm” database.

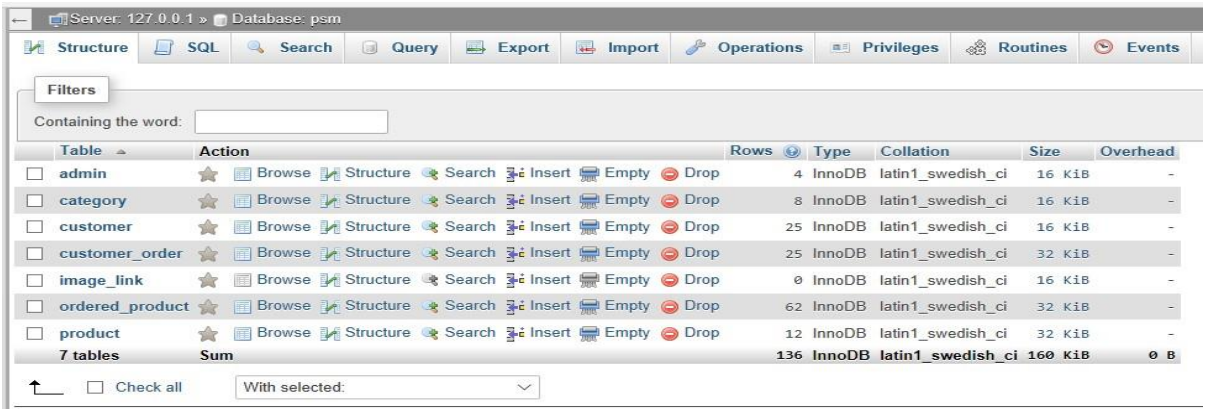

Figure 4.2: XAMPP Database tables

4.2.3 Glass Fish Server and PhpMyAdmin Database Integration

Glass Fish is an Application Server which can also be used as a Web Server which can handle HTTP requests and also can manage Java EE applications. OGSA system deployed on web browser due to Glass Fish server integration. The data of OGSA system would be saved in the database tables of XAMPP database because of the integration of NetBeans with XAMPP MySQL server. Figure 4.3 shows the integration of Glass Fish server and PhpMyAdmin Database.

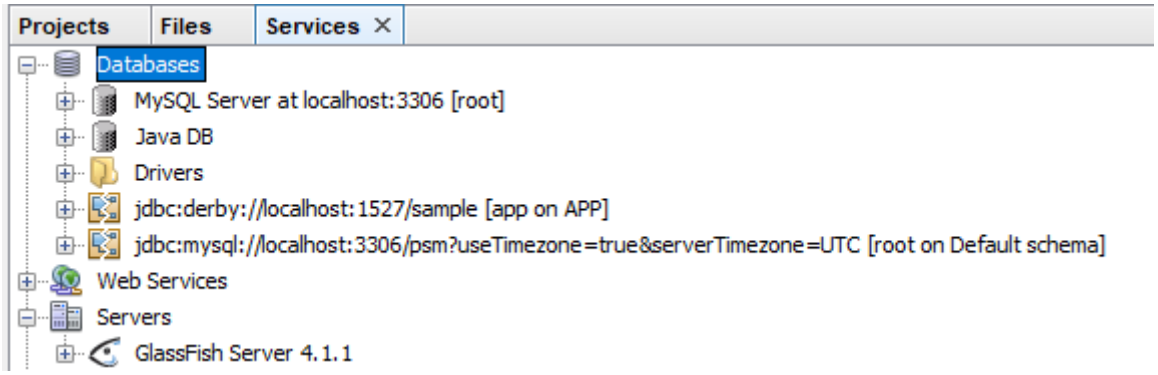

Figure 4.3: Integration of Glass Fish and PhpMyAdmin

4.2.4 Model View Controller (MVC) Architecture

Model View Controller (MVC) architecture pattern applied while developing the OGSA system. The Model View Controller (MVC) is an architectural pattern that separates an application into three main logical components: the model, the view, and the controller. Each of these components are built to handle specific development aspects of an application. Figure 4.3 shows the Model View Controller patterns for Online Grocery Shopping Application.

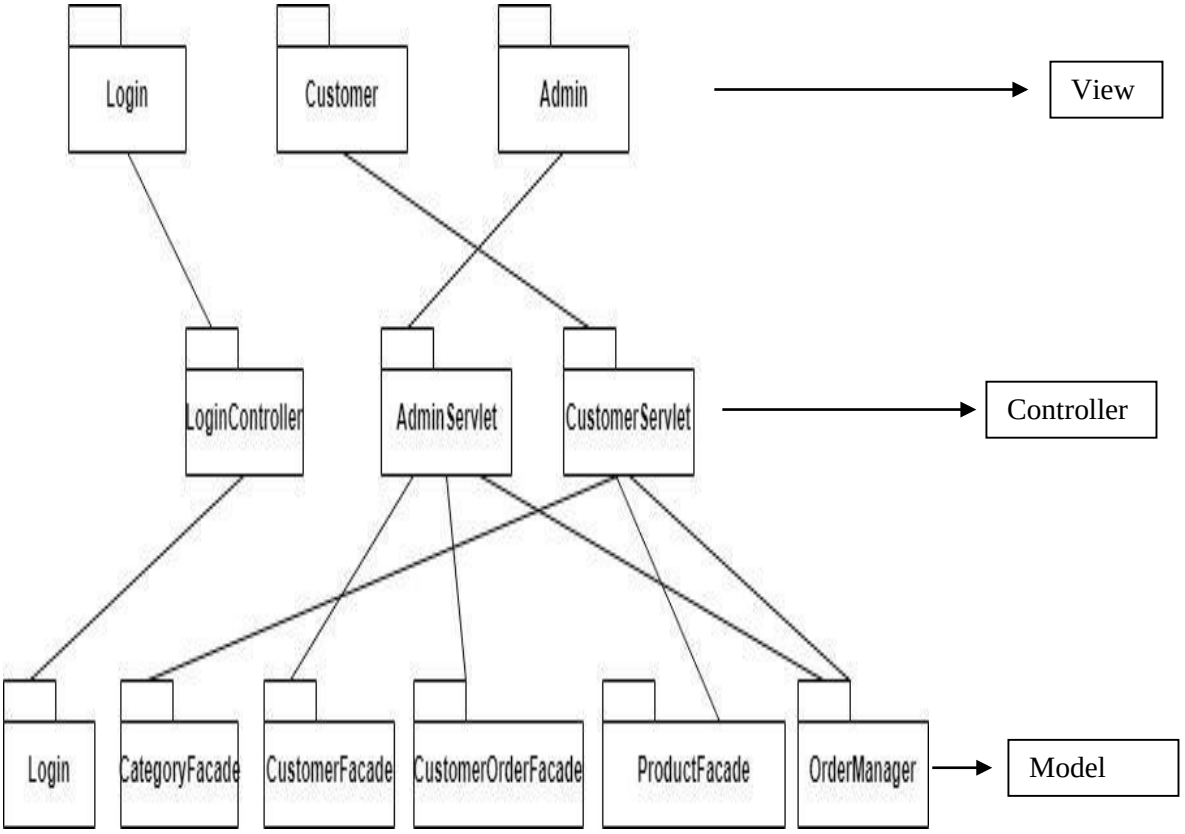

Figure 4.4: Model View Controller patterns for OGSA

Online Grocery Shopping Application developed based on the Model View Controller architecture pattern. The View packages consist the interface pages of OGSA system and the Model packages maintain the data of OGSA system from the database. At last, the controller packages have a collection of models and methods for viewing and editing the models.

4.2.5 Coding Phase

Java, JavaScript and Html language used to develop all the modules of the Online Grocery Shopping Application (OGSA) system. The interface page of every module created in JSP page using HTML code and the validations of page has created with using JavaScript. The Servlet pages of OGSA created using Java Programming language which codes the page functions of every JSP pages. To deploy these OGSA application, GlassFish server has been used. When run the application in Netbeans IDE 8.2, its send request to GlassFish server to deploy the "index.jsp" which is the primary page of the OGSA system on browser. Figure 4.4 shows the context path to deploy the OGSA system.

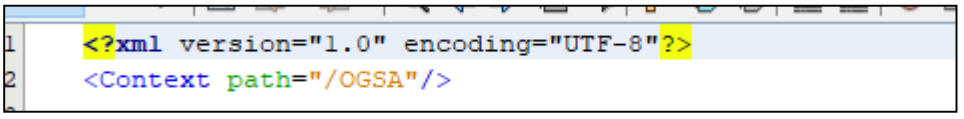

Figure 4.5: Context Path

4.2.5.1 Add to cart Implementation

In Online Grocery Shopping Application (OGSA), AddToCard method used to add the Selected Category name and Products Image, Name, Description, Price by clicking on "**add to cart**" button. Once clicked the **AddToCart method** will add the product into the cart. Figure 4.6 shows the code of "category.jsp" which is the page used to display the product details according to the category page. Figure 4.7 shows the addToCart method java code in Category.jsp.

```
<div id="categoryRightColumn">

    <p id="categoryTitle">${selectedCategory.name}</p>

    <table id="productTable">

        <c:forEach var="product" items="${categoryProducts}" varStatus="iter">

            <tr class="${((iter.index % 2) == 0) ? 'lightBlue' : 'white'}">
                <td>
                    <img src="${initParam.productImagePath}${product.name}.jpg"
                         alt="${product.name}">
                </td>

                <td>
                    ${product.name}
                    <br>
                    <span class="smallText">${product.description}</span>
                </td>

                <td>&#82;&#77; ${product.price}</td>

                <td>
                    <form action="addToCart" method="post">
                        <input type="hidden"
                               name="productId"
                               value="${product.id}">
                        <input type="submit"
                               name="submit"
                               value="add to cart">
                    </form>
```

Figure 4.6: Category.jsp

```
protected void doPost(HttpServletRequest request, HttpServletResponse response
        throws ServletException, IOException {

    request.setCharacterEncoding("UTF-8");  // ensures that user input is inte
                                            // 8-bit Unicode (e.g., for Czech

    String userPath = request.getServletPath();
    HttpSession session = request.getSession();
    ShoppingCart cart = (ShoppingCart) session.getAttribute("cart");
    Validator validator = new Validator();

    // if addToCart action is called
    if (userPath.equals("/addToCart")) {

        // if user is adding item to cart for first time
        // create cart object and attach it to user session
        if (cart == null) {

            cart = new ShoppingCart();
            session.setAttribute("cart", cart);
        }

        // get user input from request
        String productId = request.getParameter("productId");

        if (!productId.isEmpty()) {

            Product product = productFacade.find(Integer.parseInt(productId));
            cart.addItem(product);
        }
```

Figure 4.7: Category Method Code

4.3 Testing Phase

Testing is a process which used to evaluate the functionality of a system and also to test whether the developed system has met all the specified requirements or not. The purpose of testing is to produce a fine quality online shopping system for the customers. The Online Grocery Shopping Application (OGSA) has met all the user requirements and the system will be tested by the customer to verify whether the applied features meet the requirement or not.

4.3.1 Unit Testing

Unit testing is performed to test every single units or components of Online Grocery Shopping Application (OGSA) to determine whether each one is fully functional. Table 4.1 shows the sample of Unit Testing Test Cases of module 1 Login.

Event	**Expected Result**	**Actual Result**	**Pass/Fail**
Navigate to "http://localhost:8080/OGSA/index.html"	Site should open	The site has opened.	Pass
User enter username and password	Credentials can be entered	User can enter their username and password.	Pass
Click Login	User is logged in	User can logged into the system.	Pass

Table 4.1: Unit Testing Test Cases

4.3.2 Integration Testing

Integration testing is performed to combine all of the units among a program and test them as a group. This testing level is intended to find interface defects between the modules. Table 4.2 shows the sample of Integration Testing Test Cases of module 3 Manage Purchase.

Event	Expected Result	Actual Result	Pass/Fail
PhpMyAdmin Database to OGSA	OGSA must receive and display product data from PhpMyAdmin database on Category page.	OGSA system can get the product data from	Pass
OGSA to PhpMyAdmin Database	PhpMyAdmin Database can receive customer details from Checkout page.	The database can get the customer details from OGSA system.	Pass
Category to View Cart	Customer must view the purchase cart with all the selected product once click on “view cart” from category page.	Customer can view the purchase cart with all the selected product once click on “view cart” from category page.	Pass

Table 4.2: Integration Testing Test Cases

4.3.3 System Testing

System testing performed to test the whole complete OGSA system integration. The purpose of this test is to evaluate the OGSA system's compliance with the specified requirements. Table 4.3 shows the sample of System Testing Test Cases.

Event	**Expected Result**	**Actual Result**	**Pass/Fail**
Customer can purchase Groceries	Customer select category, add product to the cart and must able checkout successfully.	Customer select category, add product to the cart and can checkout successfully.	Pass
Admin can manage product	Admin able to add, delete and update product details.	Admin can to add, delete and update product details.	Pass
OGSA can generate report	Admin able to view customer list and customer order list.	Admin can to view customer list and customer order list.	Pass

Table 4.3: System Testing Test Cases

4.3.4 Acceptance Testing

Acceptance testing (or User Acceptance Testing), is conducted to determine whether the system is ready for release.

The detail of User Acceptance Testing (UAT) can refer Appendix B.

4.4 Result and Discussion

In this phase, discuss about the executed testing result of each modules of Online Grocery Shopping Application (OGSA). OGSA system work well as planned. OGSA able to access two type of different user enter into the application. Customer able to select category, add item into the cart, and able to checkout successfully. More than, OGSA allow the customer to update product details, add admin side user to OGSA and also can view customer list and customer order list.

4.5 User Manual

User manual is a guidance with technical communication document intended to provide information and assist the user about how to use the particular system.

The detail of User Manual can refer Appendix C.

4.6 System Testing Approval

2.0 SYSTEM TESTING APPROVAL

	Name	Date
Verified by: ..... Developer	Agila Sivan	20 April 2019
Approved by: ..... Client	Ponnusamy Chelliyar	20 April 2019

4.7 Conclusion

As a conclusion of chapter 4, these chapter discuss about the implementation, testing, Result and discussion. In the implementation phase of OGSA describe about development environment, the programming languages that used to develop these systems and also about the system functionalities. For the testing phase, the test cases and the result of test cases are provided and from the testing, can retrieve a result pertaining the usage of the system.

CHAPTER 5

CONCLUSION

5.1 Introduction

This chapter will conclude the overall of Online Grocery Shopping Application (OGSA). The scope of the project and objective has recognized to implement the OGSA in order to provide a better solution for the problems. The application of research constraints and future work of OGSA also discussed in this chapter.

The Online Grocery Shopping Application has fulfilled this project objective which is to propose and design a web-based application system of online grocery shopping for AKPS Cash & Carry, to implement online grocery shopping using java programming and to evaluate the functions of online grocery shopping Application System.

5.2 Research constraints

The constraints throughout the implementation of OGSA as follows:

I) Time constraints

The development by applying Waterfall model consume a lot of time because, in waterfall model, once moved from one developing phase to another phase, cannot go back to the prior phase. So that, before move to next step the must ensure all the requirement and functionalities must be correctly implemented which caused time constraint. There was also time constraint during deploying the system on web browser.

II) Limitation

During development of Online Grocery Shopping Application has faced some limitation such as insufficient resources for development reference and the glassfish server stop functioning sometimes, so it should be restarting often.

5.3 Future work

Online Grocery Shopping Application needs more function and improvement to make it more effective and interactive for online sales purchase. There are several enhancements that can be made for OGSA.

I) Developing the application with more attractive interfaces and add more features as “My Favorite” which can contain the customers favorite items only and also as “Discount item” page which contains all the discount items only.

II) Upgrading the application that to calculate certain features automatically such as calculate real time quantity of products which can decrease the quantity of products in database according to customer purchase and automatically shows the item unavailable when the products quantity equal to zero.

III) Work more on online payment gateway and make the online transaction successful from OGSA system.

5.4 Conclusion

ONLINE GROCERY SHOPPING APPLICATION was designed for enhancing online shopping management between admin and customers. For this project, the application is developed for easy online purchase purpose which is focus on customer and admin of AKPS Cash & Carry Sdn.Bhd. Although there is some limitation to the system, all three objectives that were stated in Chapter 1 have been achieved. Future work also has been discussed to improve the system.

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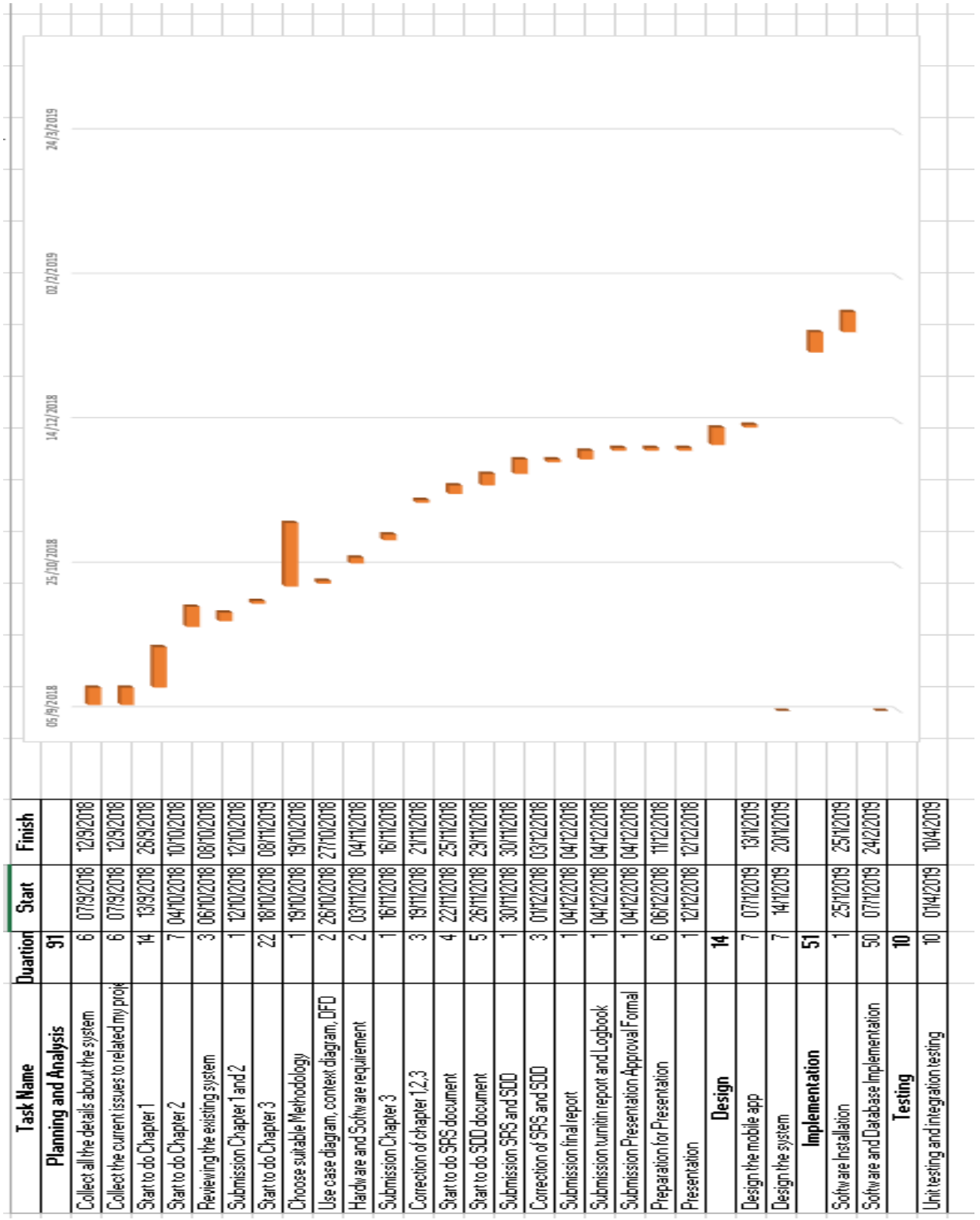
APPENDIX A

Gantt chart



Task Name	Duartion	Start	Finish
Planning and Analysis	**91**		
Collect all the details about the system	6	07/9/2018	12/9/2018
Collect the current issues to related my proje	6	07/9/2018	12/9/2018
Start to do Chapter 1	14	13/9/2018	26/9/2018
Start to do Chapter 2	7	04/10/2018	10/10/2018
Reviewing the existing system	3	06/10/2018	08/10/2018
Submission Chapter 1 and 2	1	12/10/2018	12/10/2018
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Choose suitable Methodology	1	19/10/2018	19/10/2018
Use case diagram, context diagram, DFD	2	26/10/2018	27/10/2018
Hardware and Software requirement	2	03/11/2018	04/11/2018
Submission Chapter 3	1	16/11/2018	16/11/2018
Correction of chapter 1,2,3	3	19/11/2018	21/11/2018
Start to do SRS document	4	22/11/2018	25/11/2018
Start to do SDD document	5	26/11/2018	29/11/2018
Submission SRS and SDD	1	30/11/2018	30/11/2018
Correction of SRS and SDD	3	01/12/2018	03/12/2018
Submission final report	1	04/12/2018	04/12/2018
Submission turnitin report and Logbook	1	04/12/2018	04/12/2018
Submission Presentation Approval Formal	1	04/12/2018	04/12/2018
Preparation for Presentation	6	06/12/2018	11/12/2018
Presentation	1	12/12/2018	12/12/2018
Design	**14**		
Design the mobile app	7	07/1/2019	13/1/2019
Design the system	7	14/1/2019	20/1/2019
Implementation	**51**		
Software Installation	1	25/1/2019	25/1/2019
Software and Database Implementation	50	07/1/2019	24/2/2019
Testing	**10**		
Unit testing and integration testing	10	01/4/2019	10/4/2019

Appendix B
(User Acceptance Testing)

User Acceptance Test (UAT)

LIST OF CONTENT

NO	TITLE	PAGE
1.0	**TESTING REPORT**	
1.1	Testing for customer flow	46
1.2	Testing for admin flow	49
2.0	**SYSTEM TESTING APPROVAL**	

LIST OF TABLES

NO	TITLE	PAGE
1	User acceptance test for student	46
2	User acceptance test for admin	49

1.0 TESTING REPORT

The purpose of this section is to shows the User Acceptance Testing (UAT) process for the system.

1.1 Testing for customer flow

Table 1: User acceptance test for customer.

Event	Test Case	Test Data	Expected Result	Actual Result	Pass/ Fail
Customer registration	Check the functionality of "Sign Up" button.	"Sign Up" button	Customer are able to register into the system.	Customer can to register into the system.	pass
Login with wrong username and password	Check the functionality of "Sign In" button.	insert incorrect username and password	Customer cannot login into the home page.	Customer cannot login into the home page.	pass
Login with correct username and password	Check the functionality of "Sign In" button.	insert correct username and password	Customer can login into the home page.	Customer can login into the home page.	pass

View Categories on homepage	Check the functionality of getting specific categories from database.	Get data from database.	Customer able to see list of categories.	Customer can to see list of categories.	pass
Select a Category	Check the functionality of category buttons.	Get data from database.	Customer able to view the items under the selected category.	Customer can view the items under the selected category.	pass
Add Item page	Check the functionality of "Add" button.	Add item information to the cart.	Customer able to add item into the cart.	Customer can add item into the cart.	pass
View cart	Check the functionality of "cart" icon button.	Get the added item list.	Customer able to view all the items in the cart.	Customer can to view all the items in the cart.	pass
Update Cart Page	Check the functionality of "update" button.	Update item quantity.	Customer able to change the quantity of the item in the cart.	Customer can change the quantity of the item in the cart.	pass
View purchase amount	Check the functionality of "purchase amount" accuracy.	Add items to the cart to view the purchase amount	Customer able to view the correct purchase amount.	Customer can view the correct purchase amount.	pass

Checkout on View Cart page	Check the functionality of "checkout" button.	View checkout page.	Customer able to see "checkout" page.	Customer can see "checkout" page.	pass
View Total Amount on checkout page	Check the functionality of "Total amount" accuracy.	view correct total amount with delivery charge.	Customer able to view the correct total amount.	Customer can view the correct total amount.	pass
Submit Customer credentials	Check the functionality of "Submit" button to submit customer credentials.	Insert customer information into database	Customer payment information should be successfully inserted	Customer payment information successfully inserted	pass

1.2 Testing for admin flow

Table 2: User acceptance test for admin.

Event	Test Case	Test Data	Expected Result	Actual Result	Pass/ Fail
Login with wrong username and password	Check the functionality of "Sign In" button.	insert wrong username and password	Admin cannot login into the home page.	Admin cannot login into the home page.	pass
Login with correct username and password	Check the functionality of "Sign In" button.	insert correct username and password	Admin able can login into the home page.	Admin can login into the home page.	pass
View All the Customers Details	Check the functionality of "View all Customers" button	Get all Customer data.	Admin able to see all the customers.	Admin can see all the customers.	pass
View specific customer details by clicking on customer name	Check the functionality of viewing specific customer details from customers list.	Get specific customer data.	Admin able to view specific customer data.	Admin can view specific customer data.	pass

View All the Order list	Check the functionality of "View all Orders" button	Get all order data.	Admin able to see all the orders detail.	Admin can see all the orders detail.	pass
View specific order summary from the Order list	Check the functionality of viewing specific order summary from orders list.	Get specific order data.	Admin able to view specific order data.	Admin can view specific order data.	pass
View the order summary from specific customer details	Check the functionality of "View order summary" button from specific customer details page.	Get specific customer's order summary	Admin able to view specific customer's order summary by clicking "view order summary"	Admin can to view specific customer's order summary by clicking "view order summary"	pass
View the customer details from specific order summary	Check the functionality of "View Customer" button from specific order summary page	Get customer details from the specific order summary	Admin able to view specific order summary's customer details by clicking "view customer"	Admin can view specific order summary's customer details by clicking "view customer"	pass
View all the products details	Check the functionality of "View All Products"	Get all the products details from database.	Admin able to view all product details.	Admin can view all product details.	pass

Update the products details	Check the functionality of "Update" button in the list of products.	Modify the products details in database.	Admin able to update product details.	Admin can update product details.	pass
Add new products into the system	Check the functionality of "Add Product" button.	Add new product detail into database	Admin able to add new product into system.	Admin can add new product into system.	pass
Add new staff into the system	Check the functionality of "Add User" button.	Add new user detail into database	Admin able to add staff into system.	Admin can add new staff into system.	pass
Delete the staff login credentials details	Check the functionality of "Delete" button in the list of staffs.	Delete the staff details from database.	Admin able to delete staff login credentials from system.	Admin can delete staff login credentials from system.	pass

Appendix C
(User Manual)

User Manual

1.0 GENERAL INFORMATION

1.1 System Overview

The system is about providing online grocery sales to the customers. Online Grocery Shopping Application has two main users, they are customer and admin. To use this application, customer and admin must login into the system to verify the user. The customers in this system can purchase grocery items by selecting the category of the item, add the item to the cart and make payment through online. Moreover, customer have their own user profile and they able to make changes in their profile. Admin also can add, delete and update the categories and products into the system. The admin also can add or remove staffs to the system. Admin also can view and able to print the monthly purchase report.

2.0 SYSTEM SUMMARY

2.1 User Access Level

This system allows 2 users to use this system.

i. Customer

Customer must login the system by using their username and password to have an access to the system. In this system customers can view product, select product, add product to the cart, make payment via PayPal payment gateway and update profile.

ii. Admin

To access the system admin required to login into the system by using username and password. This system allow admin to add, update and delete product and allow to add staff to have an access to the system.

3.0 GETTING STARTED

3.1 Main Page

Main page is the first page customer will see once the open the Online Grocery Shopping Application in their website. This page contains two main function buttons which is “SIGN UP” for new user to register and “SIGN IN” for registered user to login. Figure 4.8 shows the Main page of OGSA.

Figure 4.8: Main page of OGSA

3.2 Login

First, the customer has to login into the application to make online purchase. Once open the appli- cation in the web browser, it will displaymain page with “SIGN IN” and “SIGN UP” button. The customer who already have an account can directly click on “SIGN IN” button and login using their valid username and password. Figure 4.9 shows the Login page of OGSA.

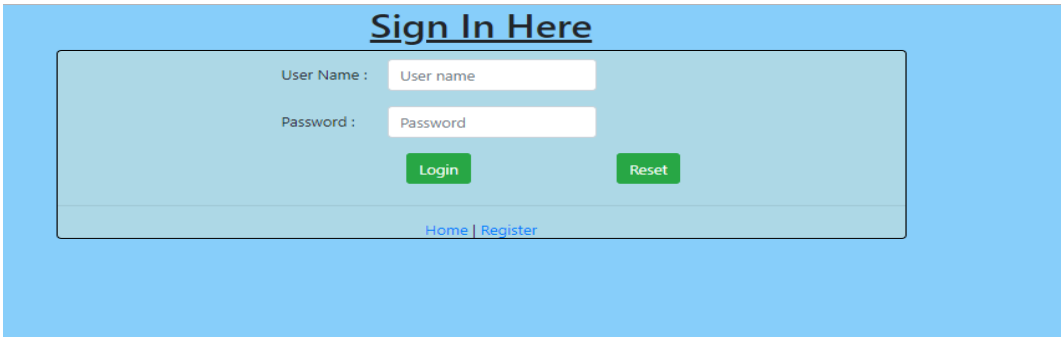

Figure 4.9: Login of OGSA

3.3 Register

Users who are have not register to the application, can register themselves by clicking on "SIGN UP" button in the main page. Once they click "SIGN UP" button, a form will appear and to register the user must fill in the form and click on "Register" button. Figure 4.10 shows the Register page of OGSA.

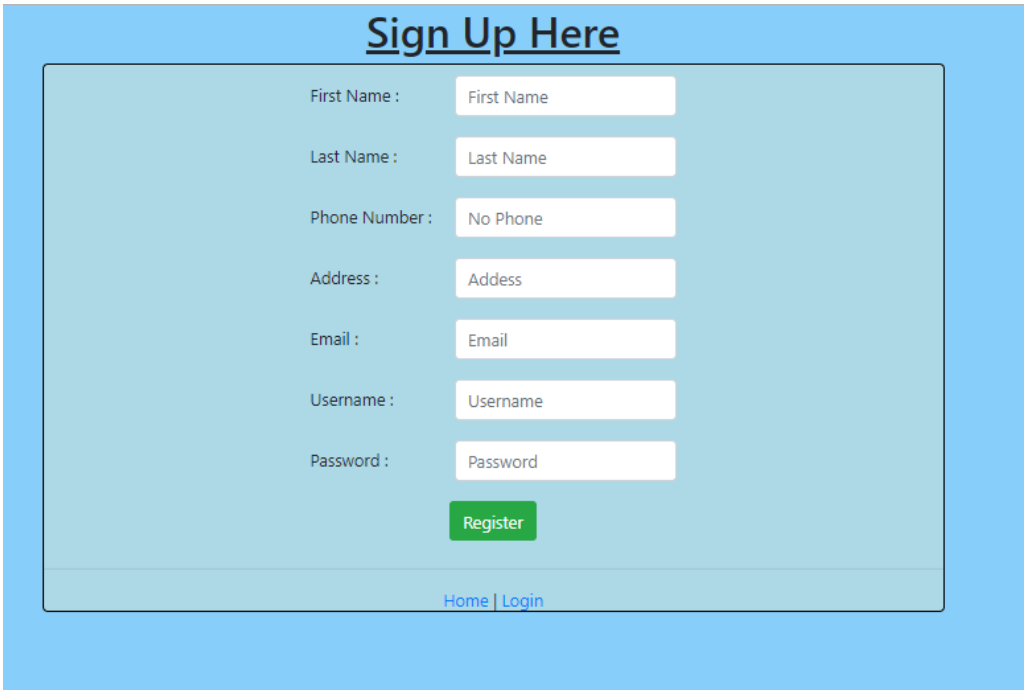

Figure 4.10: Register of OGSA

3.4 Home page

After the Customer login into the system, the homepage will be prompt. Customer can see all the categories of offering products. Customer have to click on the specific category to see the products under the category. Figure 4.11 shows the Home page of OGSA.

Figure 4.11: Homepage of OGSA

3.5 Category Page

Once customer clicked on category button, they able to see all the products in Category.jsp. From this page customer can add the selected item to the cart by click on “add to cart” button. After add items customer can view the cart by clicking on “view cart” button on top of the page and if customer wish to directly checkout, they can click on “proceed to checkout” button. Figure 4.12 shows the Category of OGSA.

Figure 4.12: Category page of OGSA

3.6 View Cart Page

This is the cart page of Online Grocery Shopping Application. After customer clicked “view cart” the cart will be display and this allow customer to clear the cart by clicking on “clear cart” button, allow the customer to go back to the category shopping page by clicking on “continue shopping” where they can add items again and to checkout, customer have to click on “proceed to checkout” button. Moreover, to add or less the quantity of product, customer have to change the number of quantities in the cart and click update. Figure 4.13 shows the View Cart page of OGSA.

Figure 4.13: View Cart page of OGSA

3.7 Checkout Page

The checkout page can view by the customer once they click “proceed to checkout” button from Category.jsp and Cart.jsp. In this page, the total price with the delivery surcharge will be display. And customer have to enter their credentials to do checkout. Figure 4.14 shows the Checkout page of OGSA.

Figure 4.14: Checkout page of OGSA

3.8 Purchase Confirmation Page

Purchase page will display after customer done checkout. In this the order confirmation number will generated for the customer to avoid wrong delivery. The order summary and delivery address also will be display for customer view. Figure 4.15 shows the Purchase Confirmation page of OGSA.

Figure 4.15: Confirmation page of OGSA

Admin Interfaces

4.1 Admin Home Page

This is the homepage for the admin. Once admin login the system with correct username and password, the system will display Admin console page. In this homepage have six menu buttons which is “View All Customers”, “View All Orders”, “View All Products”, “Add New Product”, “View Users” and also “Add New User” to perform admin activities. This page also has “logout” button for customers to get logged out from the system. Figure 4.16 shows the Admin Home page of OGSA

Figure 4.16: Home page of OGSA admin

4.2 View all customer

Once admin clicks on “View all Customers” button, list of customers will be display for admin. To know more detail about a specific customer, Admin have to click on the customer’s name. Figure 4.17 shows the View all customers page of OGSA.

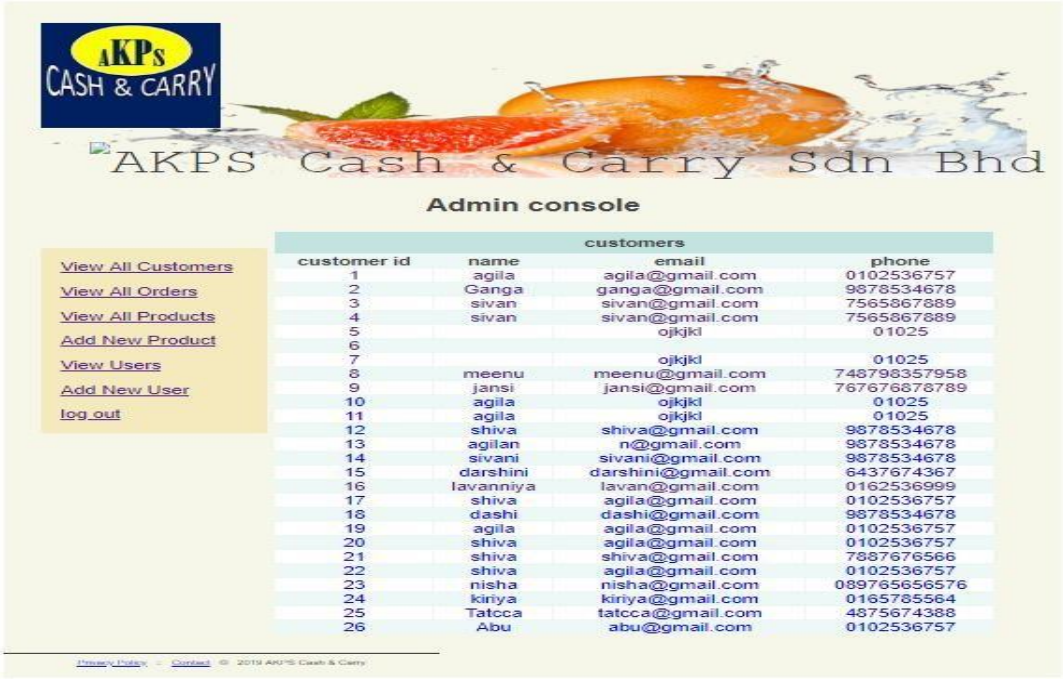

Figure 4.17: View all customers page of OGSA

4.3 View customer list

The customer details will be displaying once the admin clicks on the customer's name. Moreover, Admin also can view the specific customer's order summary from the same page by clicking on "view order summary" button below the page. Figure 4.18 shows View specific customer detail page of OGSA.

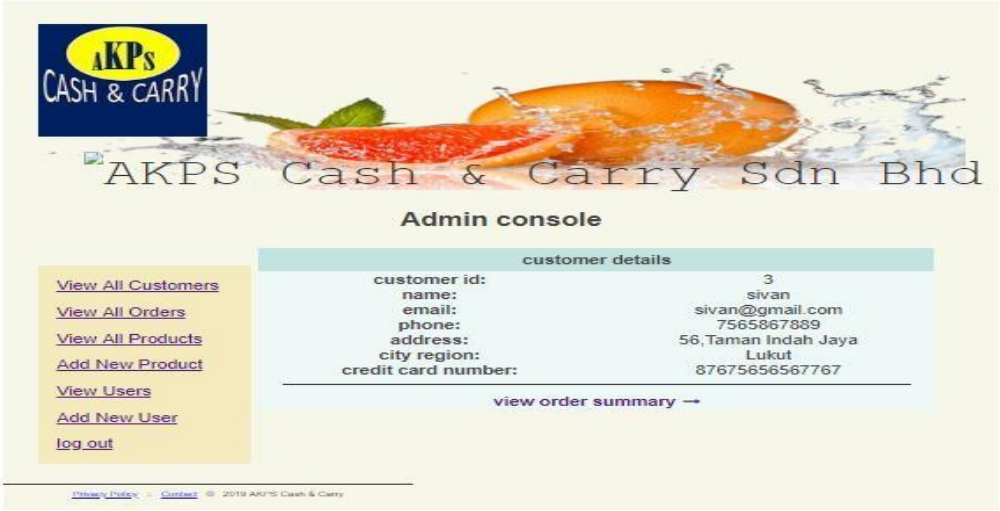

Figure 4.18: View specific customer detail page of OGSA

4.4 View all Orders

Once admin clicks on “View all Orders” button, list of orders will be display for admin. To view the order’s product list, Admin have to click on the order’s confirmation number. Figure 4.19 shows View all orders page of OGSA.

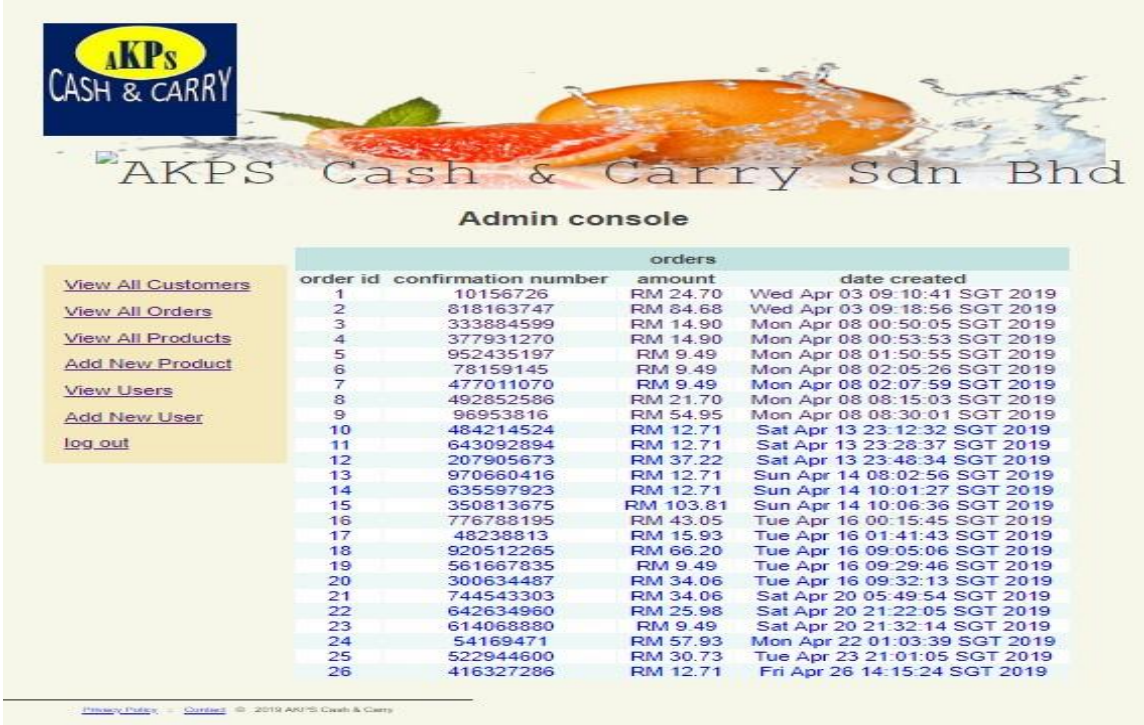

Figure 4.19: View all orders page of OGSA

4.5 view order list

The order details will be displaying once the admin clicks on the order's confirmation number. Moreover, Admin also can view the specific customer's details from the same page by clicking on "view customer details" button below the page. Figure 4.20 shows View specific order summary page of OGSA.

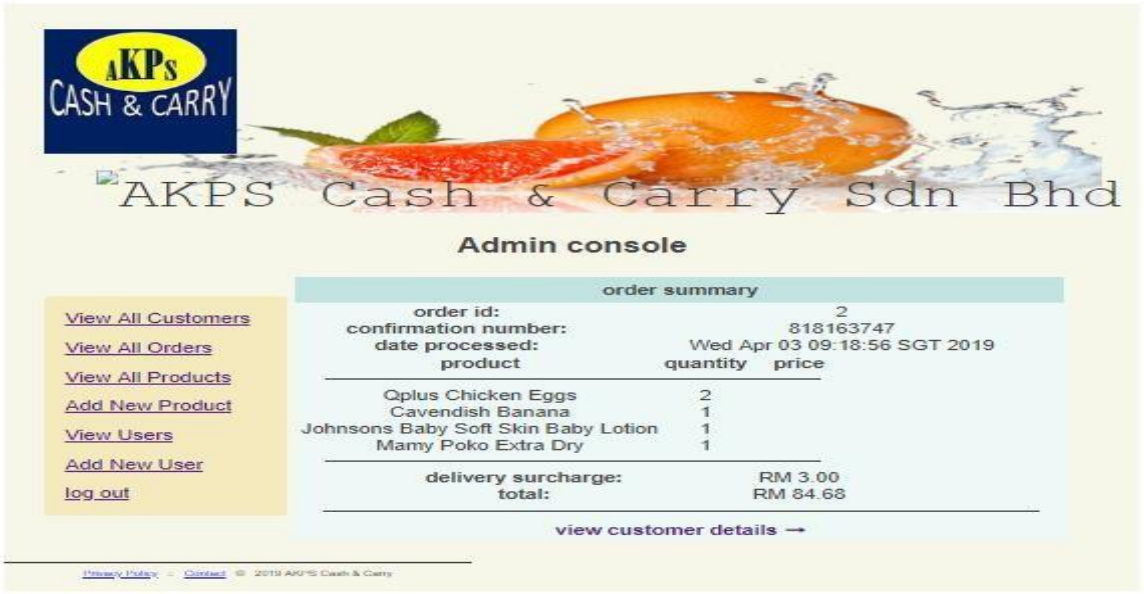

Figure 4.20: View specific order summary page of OGSA

4.6 view all products

Admin can click on ‘View all Products” button to view all the products details. In the product list, has also provide an “Update” button for each product to allow admin to update the product details. Figure 4.21 shows View all product page of OGSA.

.

Figure 4.21: View all product page of OGSA

4.7 Update products

Once customer clicks on “Update” button in the View Products page, the Update Product page will be displayed for the admin to modify the details of the specific product. And admin must click on submit button to save all the modified products information. Figure 4.22 shows Update product page of OGSA

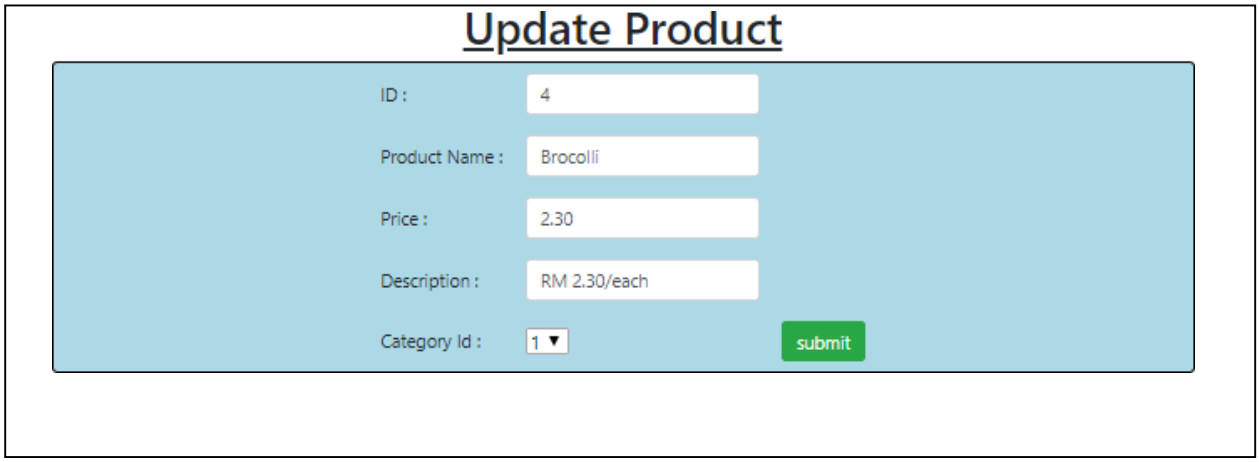

Figure 4.22: Update product page of OGSA

4.8 Add new product

The Add Product page will be display once admin clicks on “Add Product” button in the Admin Homepage. In this page, Admin can add new product information to the OGSA system. Figure 4.23 shows Add new product page of OGSA

Figure 4.23: Add new product page of OGSA

4.9 Add new user

The Add new user page will be display once admin clicks on “Add New User” button in the Admin Homepage. In this page, Admin can add new user information to the OGSA system. Figure 4.24 shows Add new user page of OGSA

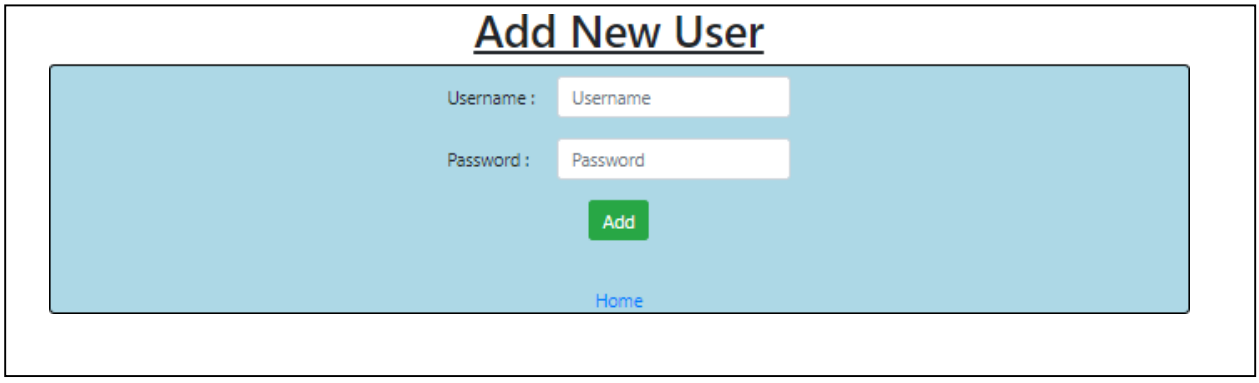

Figure 4.24: Add new staff page of OGSA

4.10 view users

Admin can click on ‘View Users” button to view all the staff’s details. In the staff list, has also provide an “Delete” button for each staff to allow admin to delete the staff details permanently from OGSA system. Figure 4.25 shows View staff list page of OGSA.

Figure 4.25: View staff list page of OGSA

Appendix D

Software Requirement Specification

(SRS)

Appendix E

Software Design Description

(SDD)

2018

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

Online Grocery Shopping Applicati

AGILA A/P SIVAN

[AKPS CASH & CARRY]

Bachelor of Computer Science (Software Engineering)

DOCUMENT APPROVAL

	Name	Date
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Approved by: _____ Client	Mr Ponnusamy Chettiyar	

Software : Adobe Reader XI,Microsoft Word,Microsoft Point,IMB RSA,Google Drive.

Archiving Place : Google Drive

Copies Available : 2 Hard copies

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1. INTRODUCTION

1.1 PURPOSE

The purpose of this document is to provide a detail description of requirement for Online Grocery Shopping Application (OGSA). This document presents an overview of the system in three sections, which are Introduction, Product Descriptions and Specific Requirements. These three sections explain the system in aspects of its functions, interfaces, constraints and requirement of the system and the acronyms and abbreviation. This document is prepared for the customer and developer as their reference.

1.2 SYSTEM IDENTIFICATION

System Title: Online Grocery Shopping Application

System Abbreviation: OGSA

System ID: OGSA-V01-2018

Requirement ID: OGSA_UC_01

1.3 SYSTEM OVERVIEW

Online Grocery Shopping Application (OGSA) is a web based application system and this system is mobile friendly. OGSA allows different users to manage their grocery purchases through online. The purpose of OGSA is to help user to make their grocery purchasing easy and more advanced. Targeted users for this system are staff of the AKPS Cash & Carry and AKPS Cash & Carry's Customer. The staff and customers need to log in to the system to manage the online shopping.

Through this system, customers allowed to choose the groceries and add the selected items to the purchase cart. Customer also allowed selecting the delivery slot. The application can calculate the total amount of payment once customer check out. The customer can make their payment through the online banking before the delivery made.

1.4 REFERENCES

1. Souag, R. Mazo, C. Salinesi, and I. Comyn-Wattiau, “Using the AMAN-DA method to generate security requirements: a case study in the maritime domain,” 2017.

2. Samad Paydar, Mohsen Kahani, A semi-automated approach to adapt activity diagrams for new use cases, Information and Software Technology, Volume 57, January 2015, Pages 543-570,ISSN0950-5849,Retrieved from http://www.sciencedirect.com/science/article/pii/S0950584914001463

1.5 DOCUMENT OVERVIEW

This Software Requirement Specification document has 4 different chapters which is Introduction, Product Descriptions, Specific Requirements and Acronyms and Abbreviation.

The purpose of this document is to document the entire requirements that has been gathered for the Online Grocery Shopping Application. In the Introduction, the system identification of this system has been stated. Besides that, system overview also has been added to represent the details of the system flow. Then, some references that have been used throughout the process has been record accordingly.

In Product Description, product perspective that has been display in the context diagram is explain with details. Then, system interface has explained on actor and description that involve in the system. The system constraints also have been stated to alert the user about the weakness of the system. Assumptions and dependencies are stated to make sure that when the system breakdown, it easier to search for solutions.

In Specific Requirement, it will give accurate and understandable way to explore the system. The client can alert about the software product features, user interface requirement and the requirement traceability.

In Acronyms and Abbreviation, this will be helpful to the client and user to memorize the product and easy to pronounce for marketing purpose.

2. PRODUCT DESCRIPTION

2.1 Product Perspective

A system context diagram in engineering is a diagram that defines the boundary between the system, or part of a system, and its environment, showing the entities that interact with it.

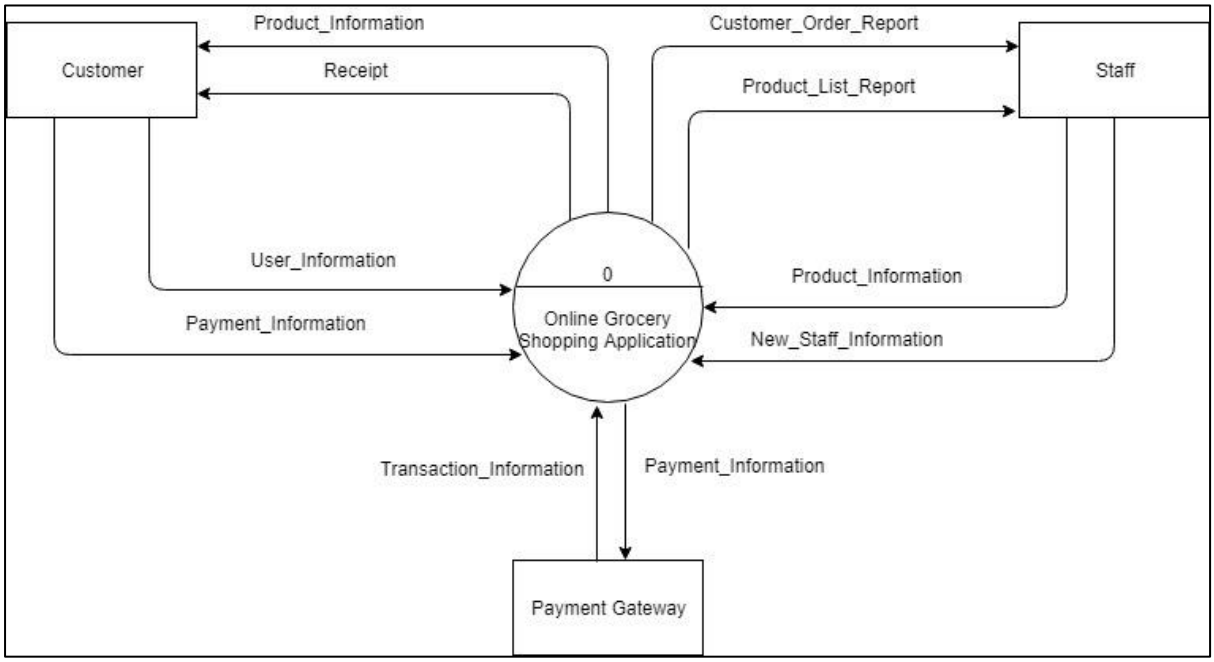


Figure 2.1 Context Diagram for Online Grocery Shopping Application

1. Product_Information := {product name + product image + category + product price + product description }

2. User_Information := {name + email address + address + contact numbers + username + password }

3. Payment_Information := { payment gateway username + payment gateway password + credit card number}

4. Transaction_Information := {details of the customers' payment transaction}

2.2 System Interfaces

The interface is the intermediary between the system and user in order for staff and customer to gather information and do some managing. The interface is used to allow communication between each requirement. All user is requested to have a web browser in order to access this system and it also support mobile web based. In Online Grocery Shopping Application, the first page of the system is the main page. The main page Online Grocery Shopping Application has a few features. Once the customers register to the system, the customers can Log in and can view all the information about the products.

FIGURE 2.2 Main page of Online Grocery Shopping Application

2.3 Product Functions

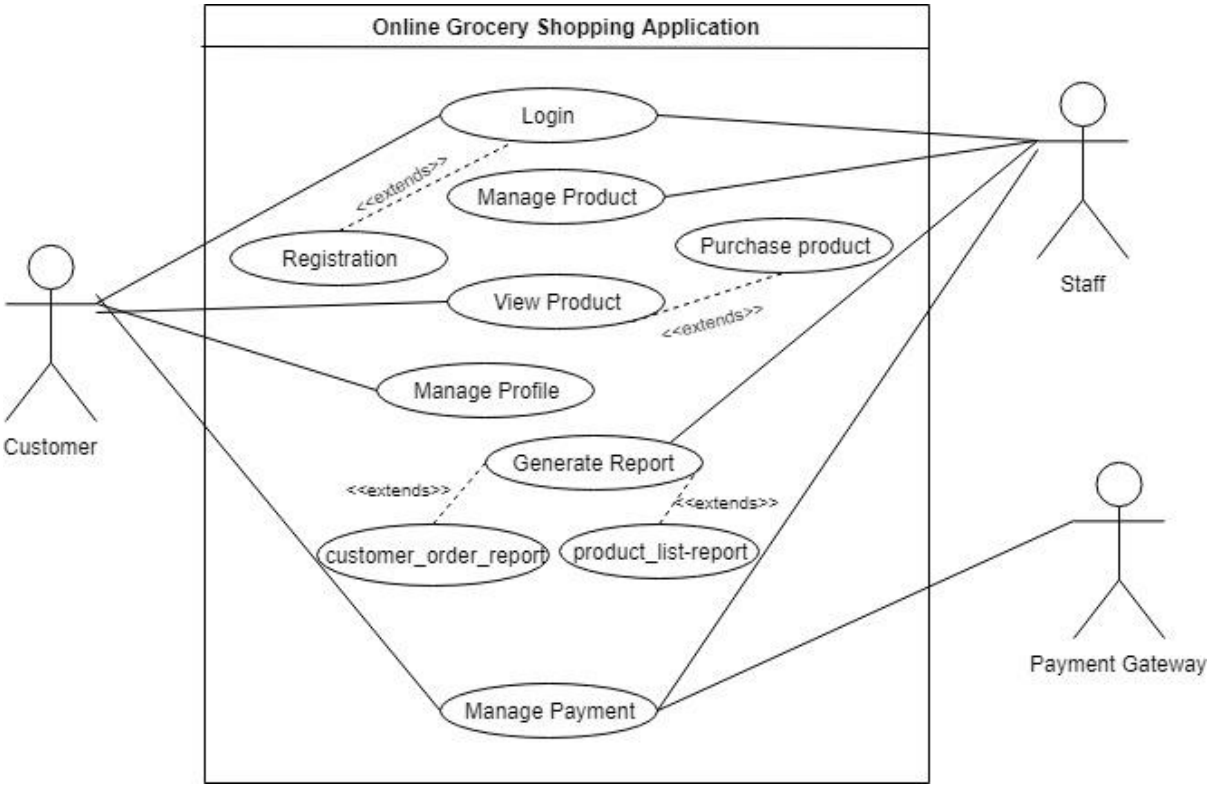


FIGURE 2.3 Use case diagram for Online Grocery Shopping Application

The following details about use case:

1. Login
   This use case is allowed customer to login into the application by enter their username and password to view products make purchases. Only registered customer can login to this application and the unregistered people can register to access this application.

2. View Product
   This use case is allowed the customer to browse the product and allow the customer to add the product into purchase cart.

3. Manage Profile
   This use case is allowed customer and staff to update the credentials on their profile.

4. Manage Product
   This use case is allowed staff to manage their sales product.

5. Generate Report
   This use case is allowed staff to generate the customer order report and also the product list report.

6. Manage Payment
   This use case is allowed customer to make payment through online system. Customer are provided with a payment gateway link to make payment.This use case relates to payment getaway because this system is use online banking for payment.

2.4 User Characteristics

The Online Grocery Shopping Application has two main users, which are Customer and Staff. Each user has their own unique characteristics requirement for the system usability. Below is categorization of each user:

Table 2.4: User Characteristics

User	Education Level	Background Experience	Technical Expertise
Customer	Able to read and understand English language.	Used to surf Internet using browser. Know how to use smartphone.	Not Required
Staff	Able to read and understand English language.	Used to surf Internet using browser. Know how to use smartphone	Not Required

2.5 Constraints

i. The GUI is only in English.

ii. Login username and password is used for the identification of user.

iii. Only four admin user allowed to this system.

iv. Only registered customers and admin will be authorized to use this system.

2.6 Assumptions and Dependencies

i. Safety and Security

Antivirus is to be updated frequently to prevent any attack of virus that would affect system performance.

There should be more backup server, system and data to reduce hardware and system failure reduction.

Password is used for users to protect the privacy and security of system work.

Customers must have valid online banking account and enough balance to do payment.

ii. Environment

The operating system of the PC running the system can be any operating system such Windows, Mac OS, Linux and others OS can be run on another environment. This system also can be viewed in mobile browser.

iii. Connection

About the product is that it will always be used with the internet. Without internet, the users will never be able to access the application server.

3. SPECIFIC REQUIREMENTS

3.1 Software Product Features

3.1.1 Login

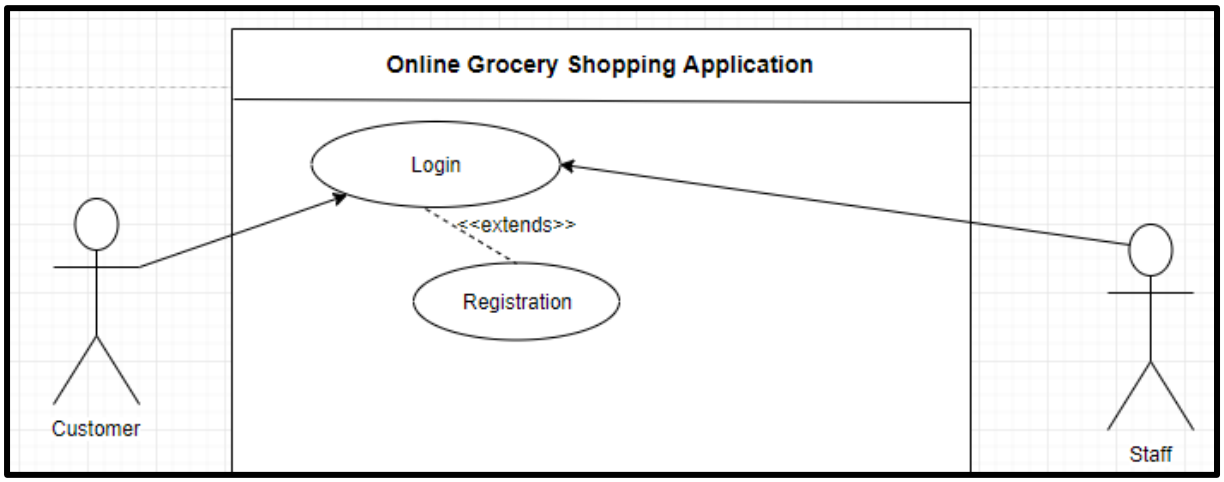


Figure 3.1 Login - Diagram

Login

Table 3.1 Login

Use Case ID	UC01 : Login
Brief Description	This use case describes how a user login to the Online Grocery Shopping Application
Actor	Customer
Pre-Conditions	1. The user has registered into the application. 2. Customer access to OGSA using the web browser.
Basic Flow	1. The use case starts when the application displays login page. [A1 – Registration] 2. Customer enters registered username and password. 3. Customer click “login” button. [A2 – Cancel the login] [E1- Invalid Username and Password] 4. The system display the main page.

	5. End use case.
Alternative Flow	A1. Registration 1. Click the register button. 2. System will display page of register form 3. User fill the form. 4. Click button register. [A3- Cancel the registration] [E2-Incomplete form] 5. System display confirmation Pop up message. 6. Customer click confirm. 7. Continue step 1 in basic flow. 8. End use case. A2. Cancel the login 1. Click Home button. 2. System will display Homepage page. 3. End use case. A3. Cancel the registration 1. Click Home button. 2. System will display homepage. 3. Continue step 4 in basic flow.
Exception Flow	E1. Invalid username or password. 1. The application displays an error message "Invalid username or password". 2. System display homepage. 3. End E2: Incomplete form. 1. System will display error message "Incomplete credentials ".

	2. Customer click “Ok” 3. End
Post-Conditions	Customer logged into the system and the main page is displayed to the customer.
Rules	R1. Password rules 1. Password should be at least 6 characters. 2. Password should be combination of upper and lower case. 3. Password should consist numeric or special character.
Constraints	Only one account for one customer.
Activity Diagram	Refer Appendix **A-1 : Sequence Diagram for Login**

3.1.2 View Product

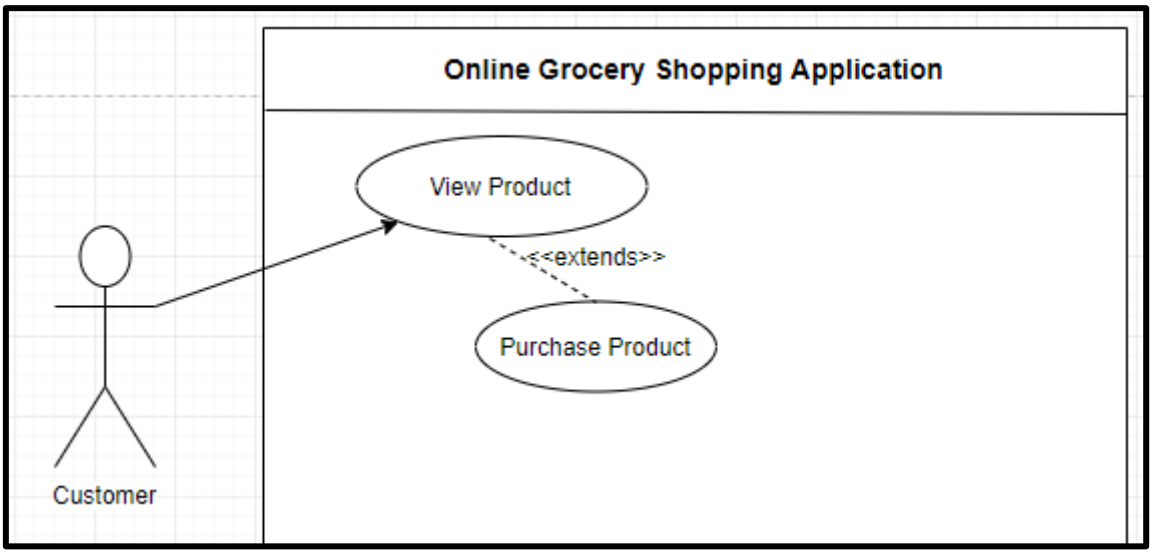


Figure 3.2 View Product -Diagram

View Product

Table 3.2 View product

Use Case ID	UC02: View Product
Brief Description	This use case describes how a user view the grocery shop item in the Online Grocery Shopping Application through the browser.
Actor	Customer
Pre-Conditions	The customer logged in to the application.
Basic Flow	1. The use case starts when the system displays the grocery item in categories. [A1: Display item in categories] 2. Add selected item to the cart. 3. Customer click on "view cart" button to view the cart. 4. Customer click checkout button and enter customer. 5. End use case.
Alternative Flow	A1: Display item in categories 1. Customer click "Categories" button. 2. System display the item category list. [E1- Item not available]

	3. Customer click the list to view the items. 4. System display the selected category items. 5. Continue step 3 in basic flow.
Exception Flow	E1: Items are not available. 1. System will display error message “Not Available”. 2. Customer click “Ok” 3. End
Post-Conditions	Customer can view the items.
Rules	None
Constraints	None
Activity Diagram	Refer Appendix **A-2: Sequence Diagram for View Product**

3.1.3 Manage Profile

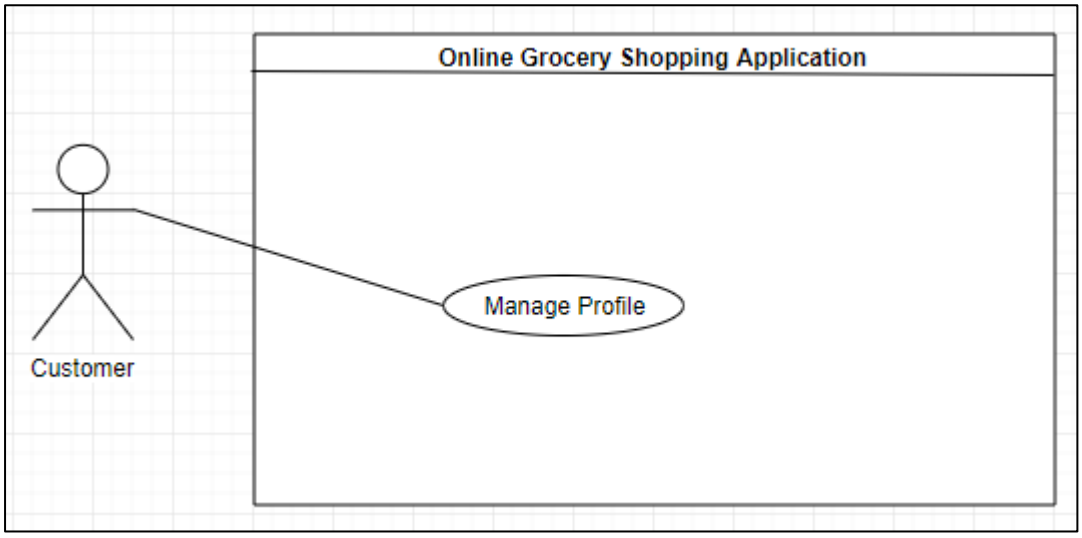


Figure 3.3 Manage Profile-Diagram

Manage profile

Table 3.3 Manage Profile

Use Case ID	UC03: Manage Profile
Brief Description	This use case describes how a user edit their profile in the Online Grocery Shopping Application through the browser.
Actor	Customer
Pre-Conditions	The user logged in to the application and already has a profile in the Online Grocery Shopping Application through the browser.
Basic Flow	1. The use case starts when customer selects “My Profile” to edit their profile. 2. The system displays the users profile and allow the users to update it. 3. The user updates their profile and click “save” button.

	4. System validates information entered by the users. [E1- Invalid Information] 5. System request customer to confirm the given information's. 6. The user confirms that the information's.[A1- Change Information] 7. System updates the user's profile. 8. End use case.
Alternative Flow	A1: Change Information 1. Customer entered incorrect information. 2. Continue step 2 in the basic flow.
Exception Flow	E1: Invalid information 1. The system indicates the fields that were entered incorrectly. 2. Continue step 2 in the basic flow.
Post-Conditions	User profile successfully updated.
Rules	Fill up all the required information in the profile
Constraints	One has only one user profile.
Activity Diagram	Refer Appendix A-3: Sequence Diagram for Manage Profile

3.1.4 Manage Product

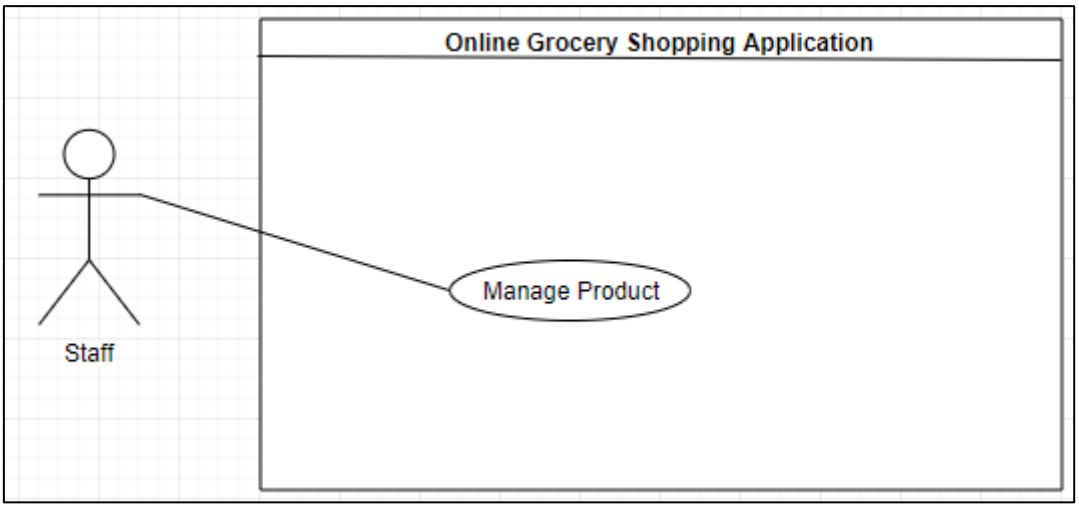


Figure 3.4 Manage Product-Diagram

Manage Product

Table 3.4 Manage Product

Use Case ID	UC04: Manage Product
Brief Description	This use case describes how admin add and remove inventory and update the quantity of products in the Online Grocery Shopping Application through the browser.
Actor	Staff
Pre-Conditions	The user is logged into the system. System displays Main page.
Basic Flow	1. The use case starts when system display admin console. 2. System display "Add Product" button and "Update Item" button. 3. Staff select [A1 -"Add Item"] button and [A2-"Update Item"] button. 4. System commit the data to database. 5. End use case.
Alternative Flow	A1: Add Item 1. System display product category list.

	2. Staff select the product category. 3. System display add Item form. 4. Staff fill the add product form with the product details and click “save” button. 5. Continue step 4 in the basic flow. A3: Update Item 1. System display product category list. 2. Staff select the product category. 3. System display the product list. 4. Staff select the product. 5. System display product update form. 6. Staff update the quantity of the product and click “save” button. 7. Continue step 4 in the basic flow.
Exception Flow	None
Post-Conditions	The product information has been updated.
Rules	Admin and Staff only can perform manage inventory function.
Constraints	Product should be add or update according to the category.
Activity Diagram	Refer Appendix A-4: Sequence Diagram for Manage Inventory

3.1.5 Generate Report

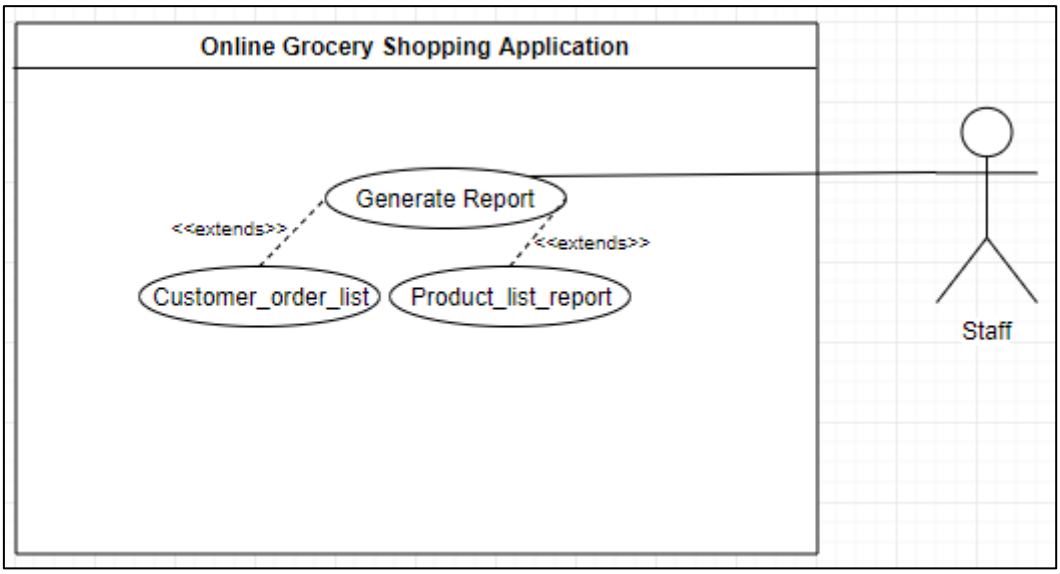


Figure 3.5 Generate Report-Diagram

Generate Report

Table 3.5 Generate Report

Use Case ID	UC05: Generate Report
Brief Description	This use case describes how admin generate monthly sales report and inventory stock report in the Grocery Shopping Management Application through the browser.
Actor	Staff
Pre-Conditions	Staff logged into the system. System display the main page.
Basic Flow	1. The use case starts when system display admin console. 2. System display “Customer order Report” button and “Product list report” button. 3. Staff select [A1-“ Customer order Report”] button or [A2-“ Product list report”] button.[E1- Failed to generate report] 4. System generate and display the report.

	5. Staff can view the report and print by clicking on the "Print" button. [E2- Printer Error] 6. End use case.
Alternative Flow	A1: Customer Order report 1. System display the customer's order report with: - Date - Customer Name - Customer Email Address - Customer Phone Number - Confirmation Number - Total Amount 2. Continue step 4 in the basic flow. A2: Product List Report 1. System display the inventory stock report with: - Product category - Product name - Product description - Product Price 2. Continue step 4 in the basic flow.
Exception Flow	E1: Failed to generate report 1. The system failed to generate report due to network failure. 2. Display error message "Couldn't generate the report". 3. End. E2: Printer Error 1. The system cannot print the report due to improper connection of the printer. 2. Display error message "Couldn't print the report".

	3. End.
Post-Conditions	The report successfully can print and stored in database.
Rules	1. Only staff can generate the report. 2. Response time to view the contents of the report should be fast.
Constraints	None
Activity Diagram	Refer Appendix A-2 :Sequence Diagram

3.1.6 Manage Payment

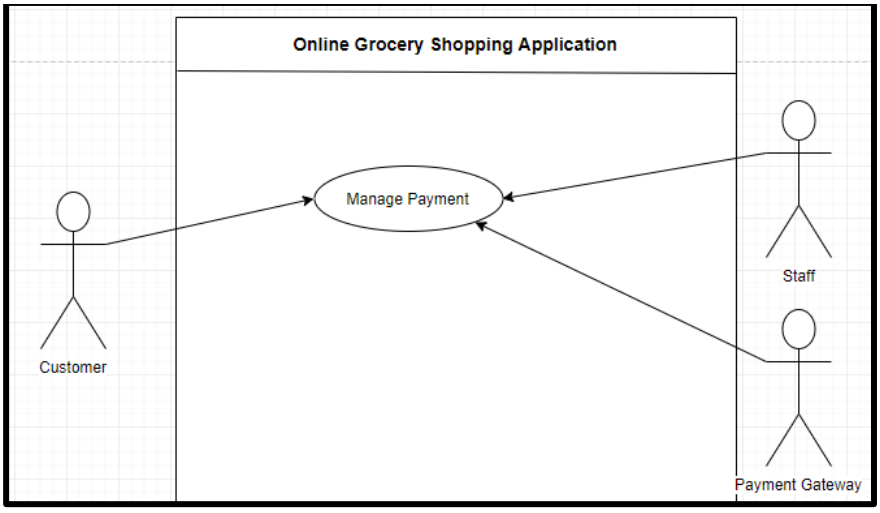


Figure 3.6 Manage Payment-Diagram

Manage Payment

Table 3.6 Manage Payment

Use Case ID	UC06: Manage Payment
Brief Description	This use case describes how a user make purchase in the Online Grocery Shopping Application through the browser.
Actor	Customer, Staff and Payment Gateway
Pre-Conditions	Customer has PayPal account. Customer has enough balance in their account.
Basic Flow	1. The use case starts when customer click “Checkout”. 2. System display the selected items with total amount. 4. Customer clicks on “PayPal Checkout” button. [A1- Cancel Payment] 5. System displays the payment page. 6. Customer select online banking method for payment. [A3- Debit or Credit Card]

	7. Customer clicks on “Submit” button. 8.System displays ‘Confirm the payment information again to the Customer. 9. Customer click on “Confirm”. [A4: Cancel the confirmation] 10. System send the information to the payment gateway. 11. Payment gateway connect to the selected bank. 12. Payment gateway open the main interface of the selected bank. 13. Payment gateway return the payment status. 14. Payment gateway disconnect the connection of the bank interface. 15. System get the payment status. 16. System sends the payment status email to the customer. 17. End use case.
Alternative Flow	A1: Cancel Payment 1. Customer click “Buy items” 2. The system display all items with total amount and request to confirm the purchase. 3. Customer click “cancel” button to cancel the purchase. 4. System display main page. 5. End use case. A2: Select Debit or Credit card payment method. 1. Customer select payment through Debit/Credit card 2. System displays payment form.

	3. Payment gateway forwards the transaction information to the card agency. 4. Card agency then forwards the request to the issuing bank. 5. The transaction status information forwarded by the payment gateway to the system. 6. Continue step 14 in the basic flow. A3: Cancel the confirmation 1.System display confirmation alert message. 2. Customer click “cancel”. 3. System display main page. 4. End use case.
Exception Flow	None
Post-Conditions	Customer pays the total amount to the admin through online transaction.
Rules	1. Online banking activated.
Constraints	Payment timeout if failed to verify in 15 seconds
Activity Diagram	Refer Appendix A-2 :Sequence Diagram

4.0 REQUIREMENT TRACEABILITY

Table 4.1: Requirement Traceability for Login

Requirement ID	Requirement details	Requirement sources
OGSA_UC_01	Student able to login the system after registration.	Online Grocery Shopping Application

Table 4.2: Requirement Traceability for View Product

Requirement ID	Requirement details	Requirement Source
OGSA_UC_02	Customer able to view and add product into the shopping cart.	Stakeholders Online Grocery Shopping Application

Table 4.3: Requirement Traceability for Manage Profile

Requirement ID	Requirement details	Requirement sources
OGSA_UC_03	Customers and staffs able edit their own profile with personal credentials.	Stakeholders Online Grocery Shopping Application

Table 4.4: Requirement Traceability for Manage Inventory

Requirement ID	Requirement details	Requirement sources
OGSA_UC_04	Staff need to update the availability of inventory and can add or the products.	Stakeholders Online Grocery Shopping Application

Table 4.5: Requirement Traceability for Generate Report

Requirement ID	Requirement details	Requirement sources
OGSA_UC_05	Staff can generate monthly sales report and inventory stock report.	Stakeholders Online Grocery Shopping Application

Table 4.6: Requirement Traceability for Manage Payment

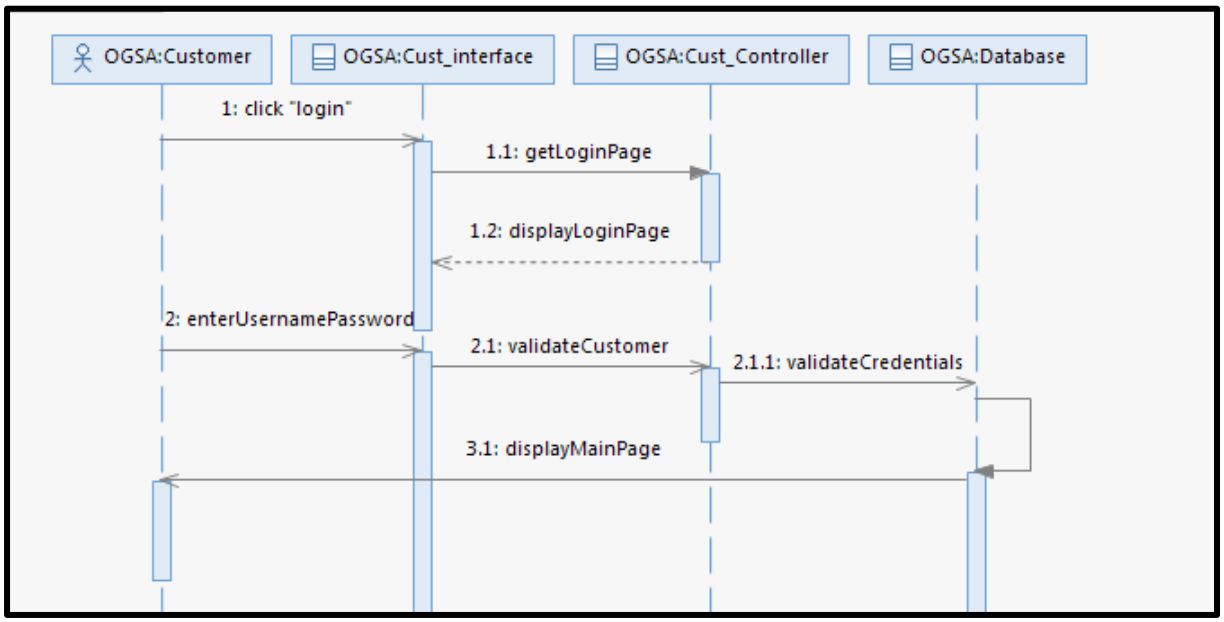
Requirement ID	Requirement details	Requirement sources
OGSA_UC_06	Customer need to do the payment transaction over the internet.	Stakeholders Online Grocery Shopping Application Payment Gateway

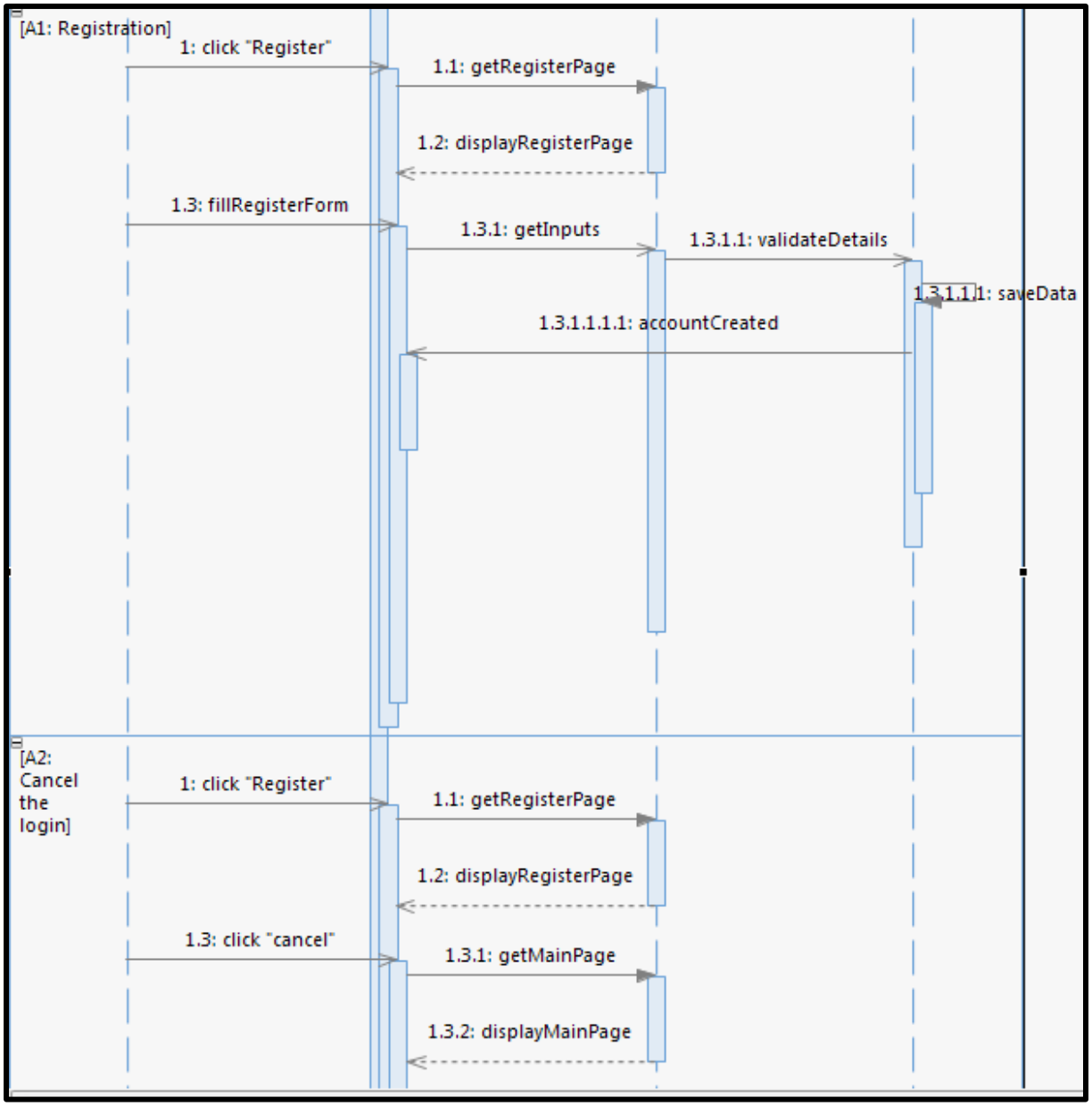
APPENDIX A

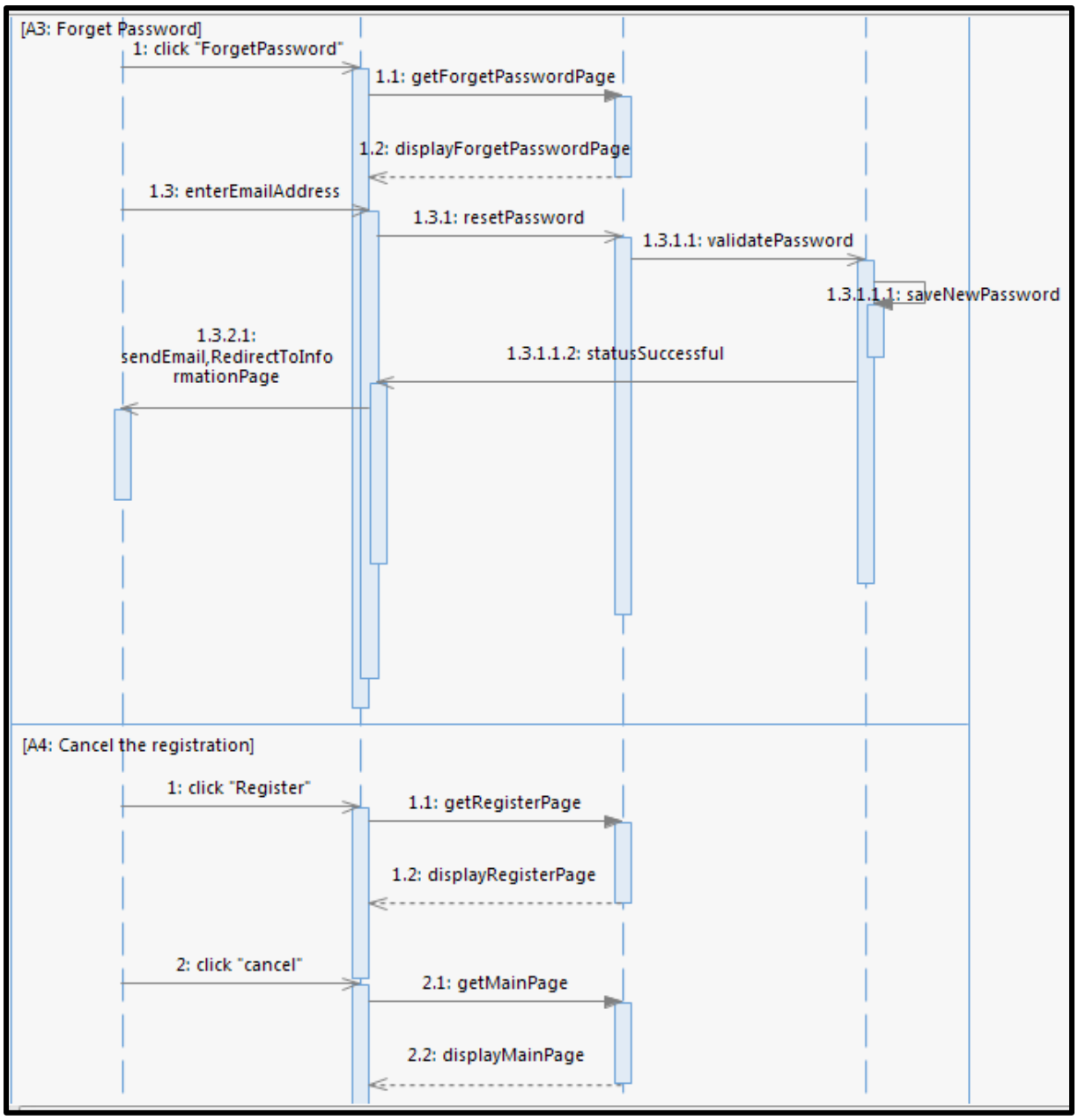
Sequence Diagram

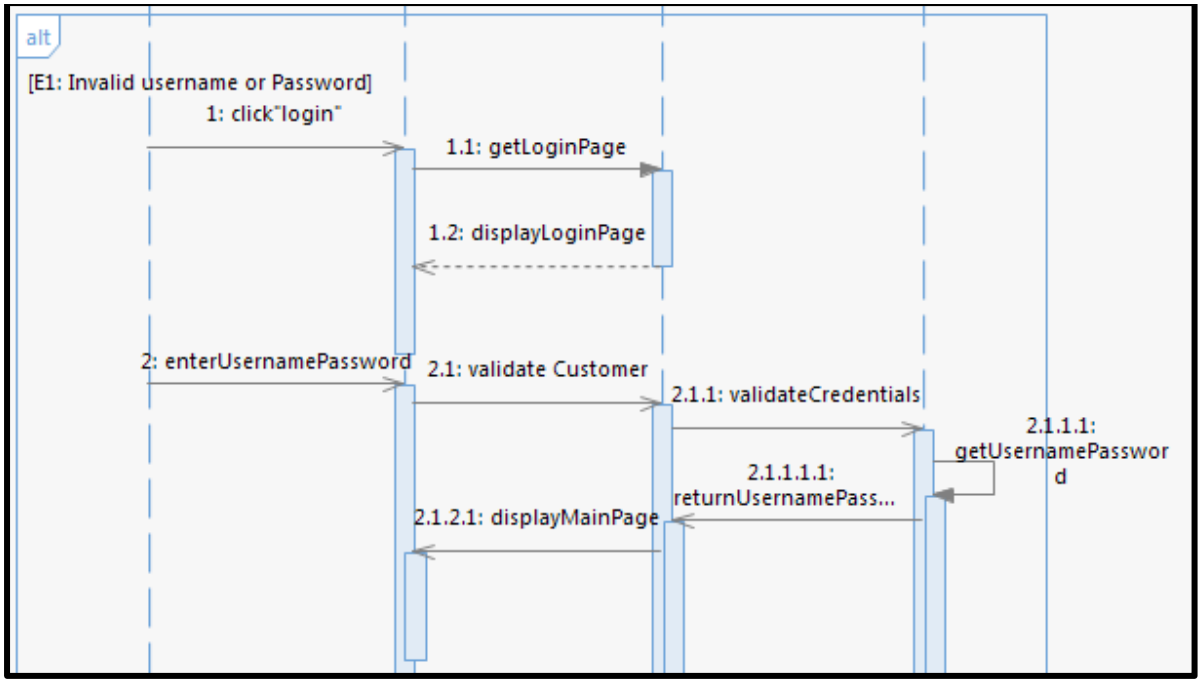
Refer Use Case ID: UC01: Login

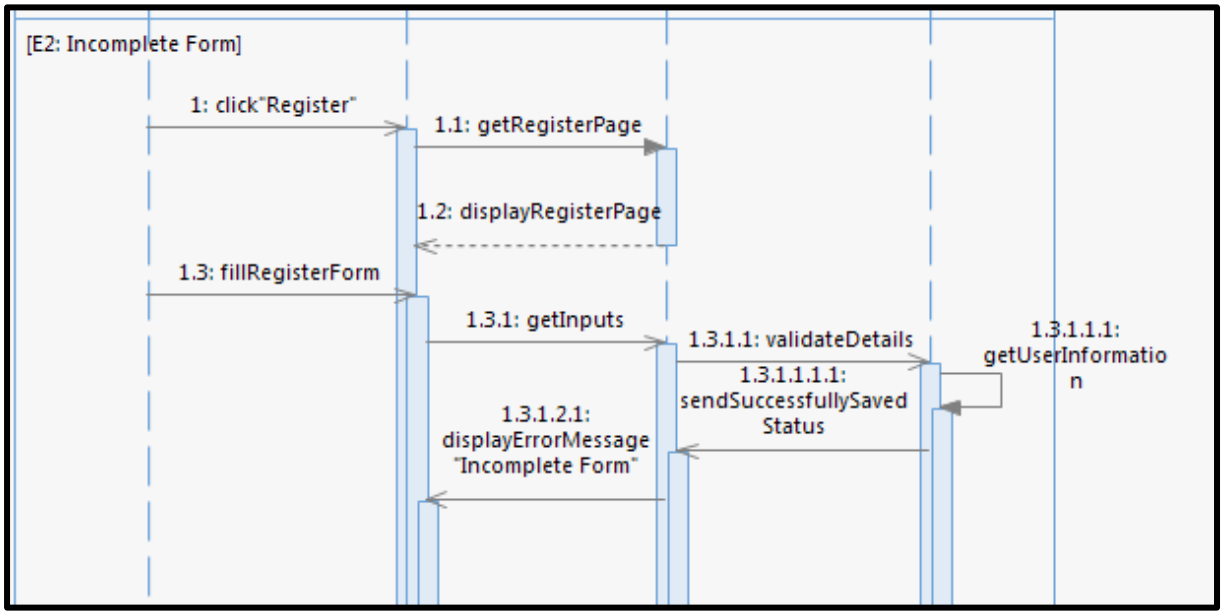
A-1: Sequence Diagram for Login




[A1: Registration]
1: click "Register"
1.1: getRegisterPage
1.2: displayRegisterPage
1.3: fillRegisterForm
1.3.1: getInputs
1.3.1.1: validateDetails
1.3.1.1.1: saveData
1.3.1.1.1.1: accountCreated
[A2: Cancel the login]
1: click "Register"
1.1: getRegisterPage
1.2: displayRegisterPage
1.3: click "cancel"
1.3.1: getMainPage
1.3.2: displayMainPage

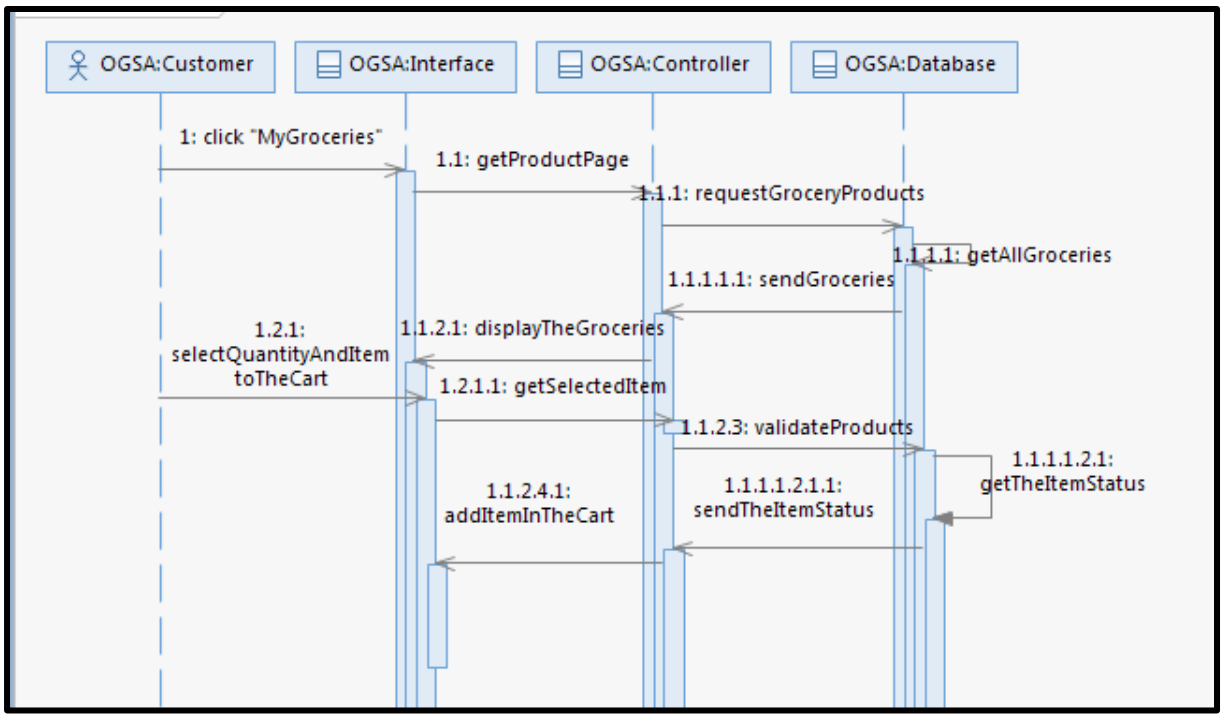

[A3: Forget Password]
1: click "ForgetPassword"
1.1: getForgetPasswordPage
1.2: displayForgetPasswordPage
1.3: enterEmailAddress
1.3.1: resetPassword
1.3.1.1: validatePassword
1.3.1.1.1: saveNewPassword
1.3.1.1.2: statusSuccessful
1.3.2.1: sendEmail,RedirectToInformationPage
[A4: Cancel the registration]
1: click "Register"
1.1: getRegisterPage
1.2: displayRegisterPage
2: click "cancel"
2.1: getMainPage
2.2: displayMainPage

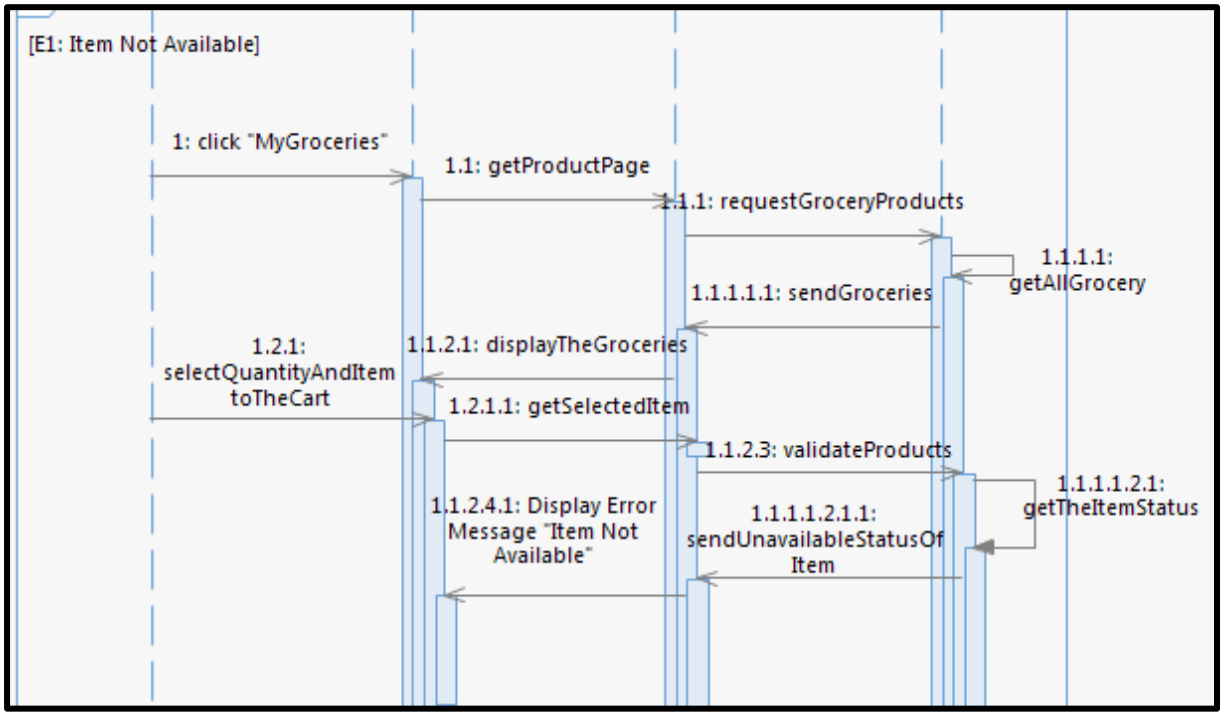

alt
[E1: Invalid username or Password]
1: click"login"
1.1: getLoginPage
1.2: displayLoginPage
2: enterUsernamePassword
2.1: validate Customer
2.1.1: validateCredentials
2.1.1.1: getUsernamePasswor d
2.1.1.1.1: returnUsernamePass...
2.1.2.1: displayMainPage


[E2: Incomplete Form]
1: click"Register"
1.1: getRegisterPage
1.2: displayRegisterPage
1.3: fillRegisterForm
1.3.1: getInputs
1.3.1.1: validateDetails
1.3.1.1.1: getUserInformatio n
1.3.1.1.1.1: sendSuccessfullySaved Status
1.3.1.2.1: displayErrorMessage "Incomplete Form"

Refer Use Case ID: UC02: View Product

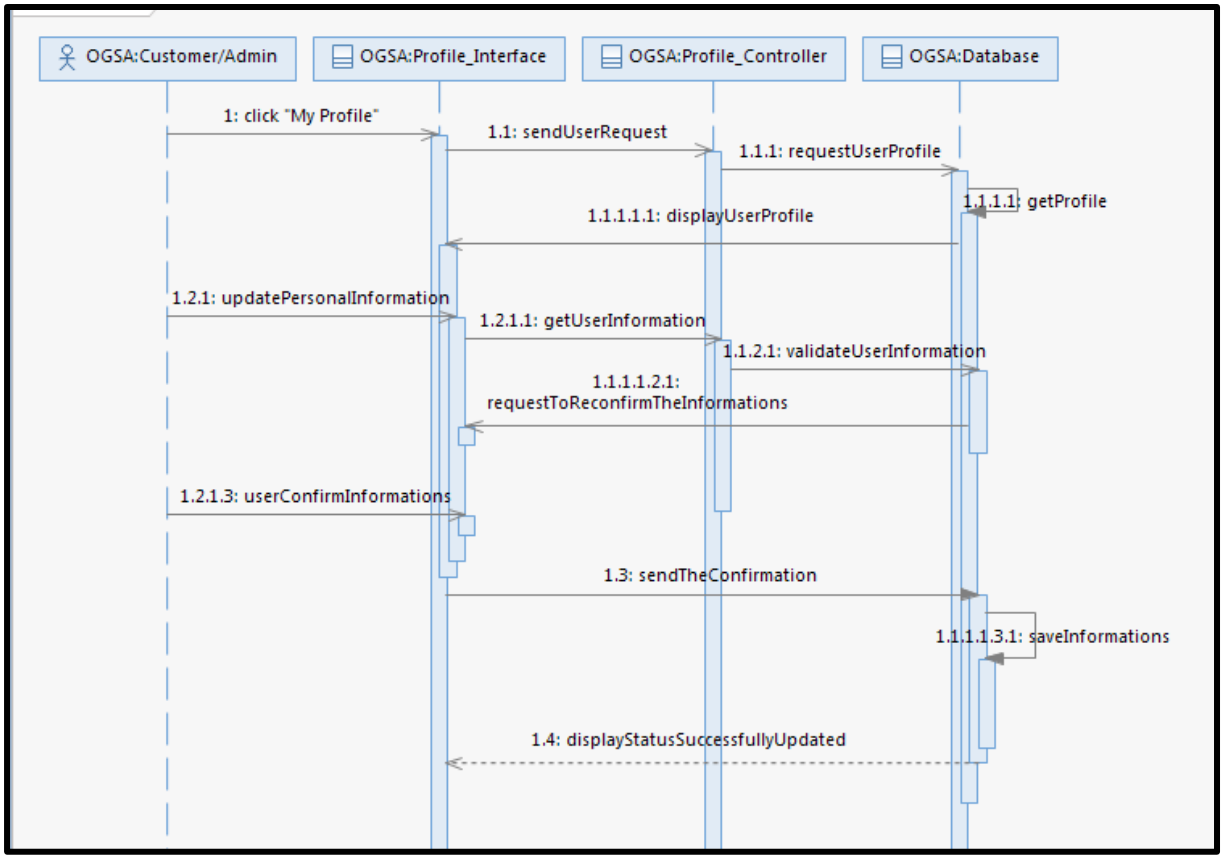
A-2: Sequence Diagram for View Product

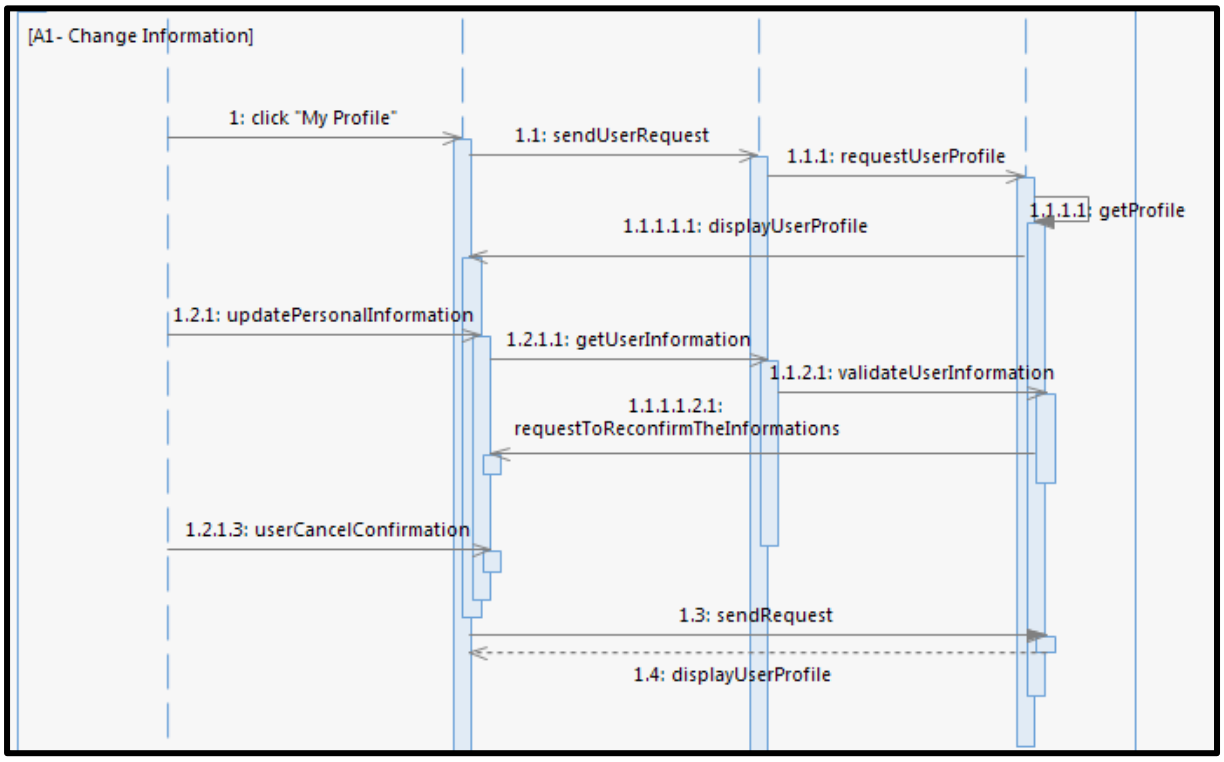


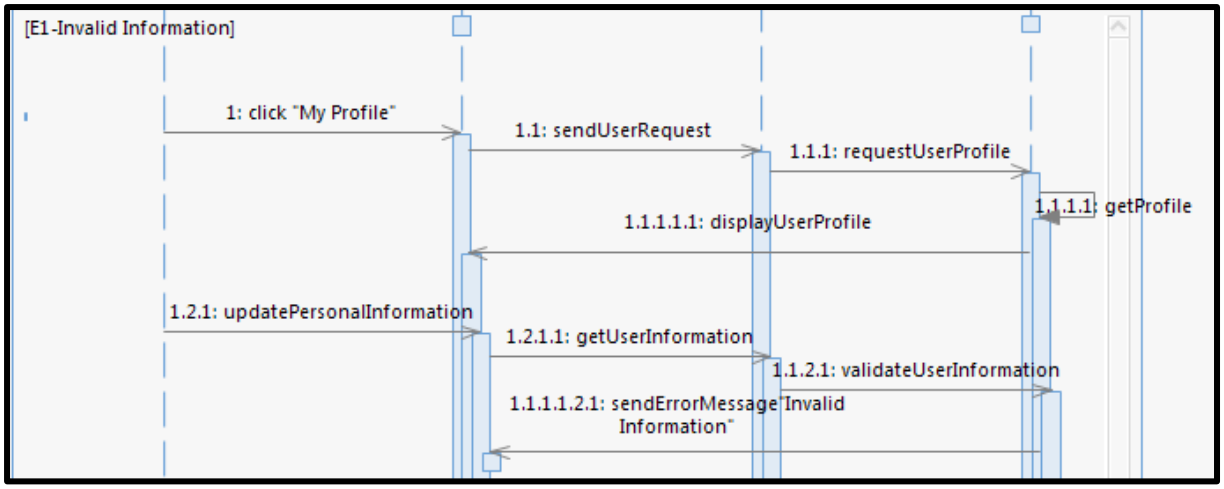


Refer Use Case ID: UC03: Manage Profile

A-3: Sequence Diagram for Manage Profile

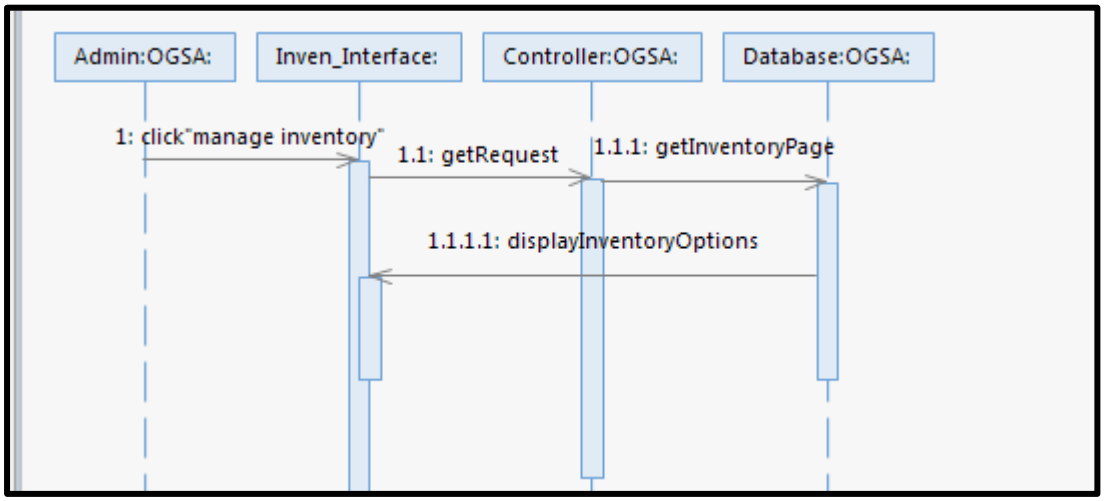


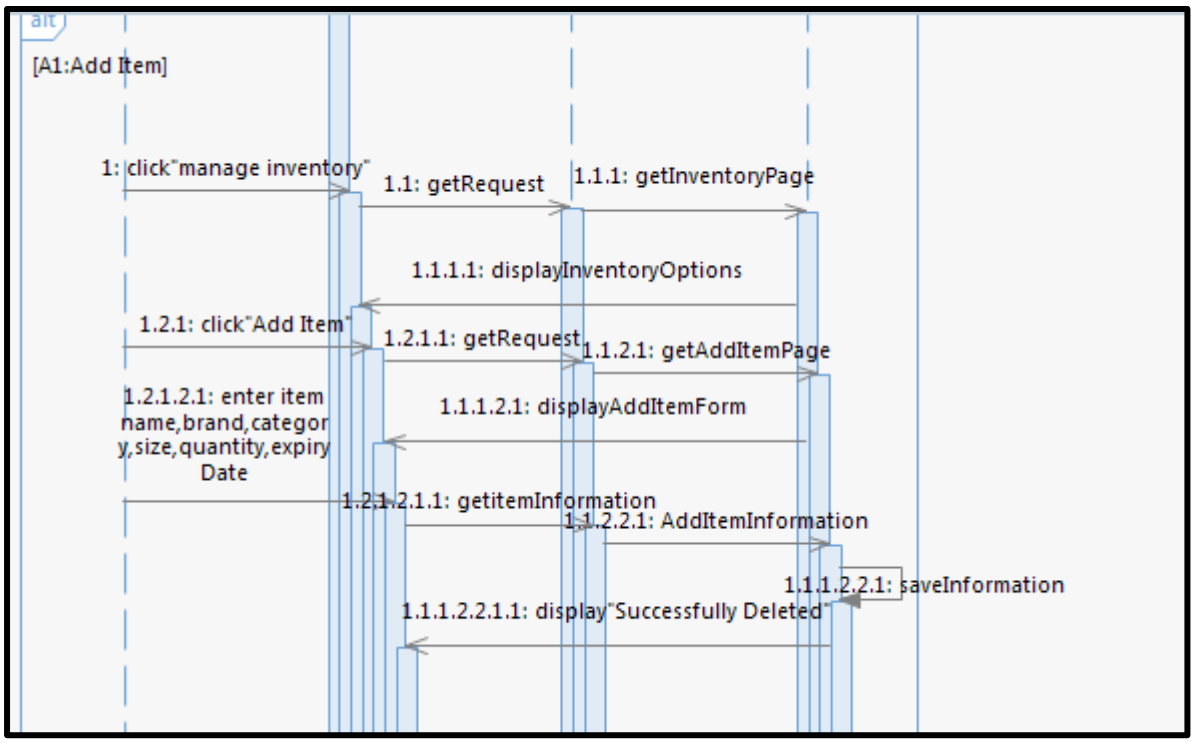


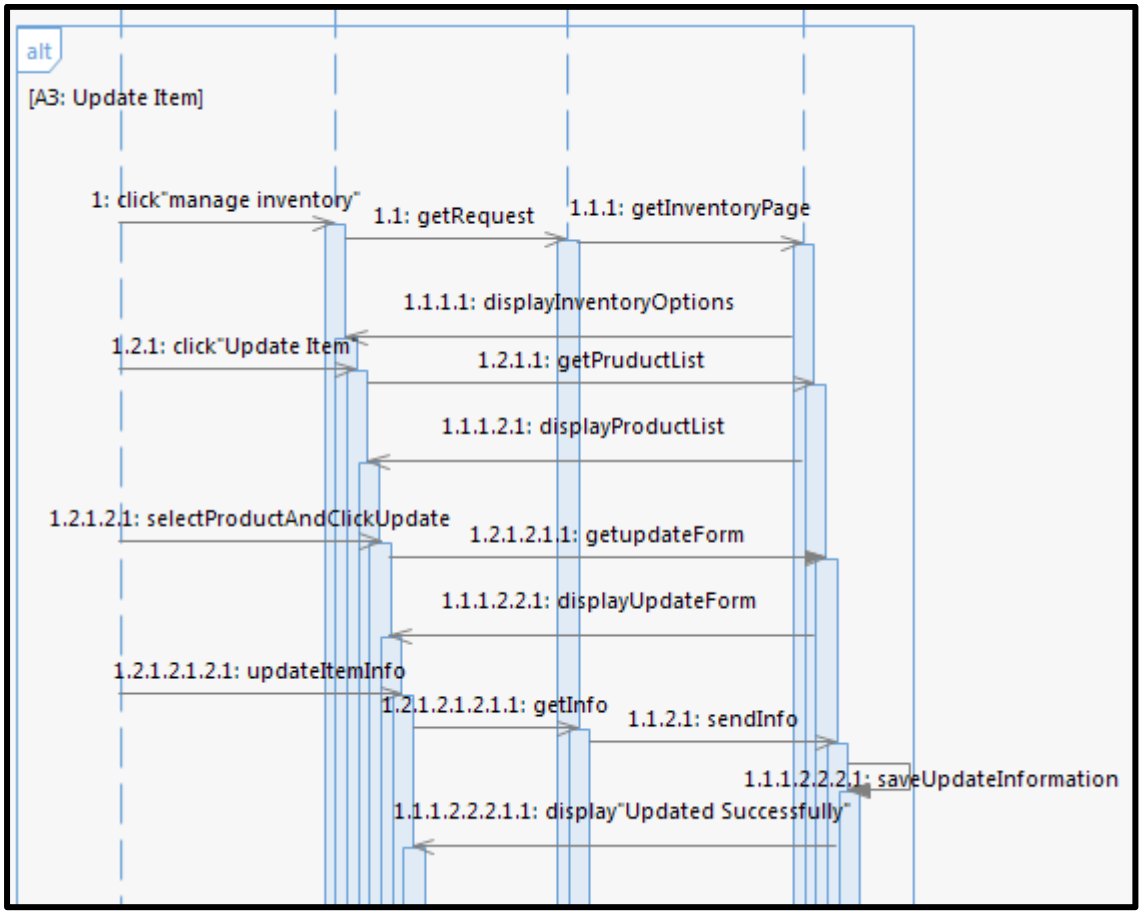

[E1-Invalid Information]
1: click "My Profile"
1.1: sendUserRequest
1.1.1: requestUserProfile
1.1.1.1: getProfile
1.1.1.1.1: displayUserProfile
1.2.1: updatePersonalInformation
1.2.1.1: getUserInformation
1.1.2.1: validateUserInformation
1.1.1.1.2.1: sendErrorMessage"Invalid Information"

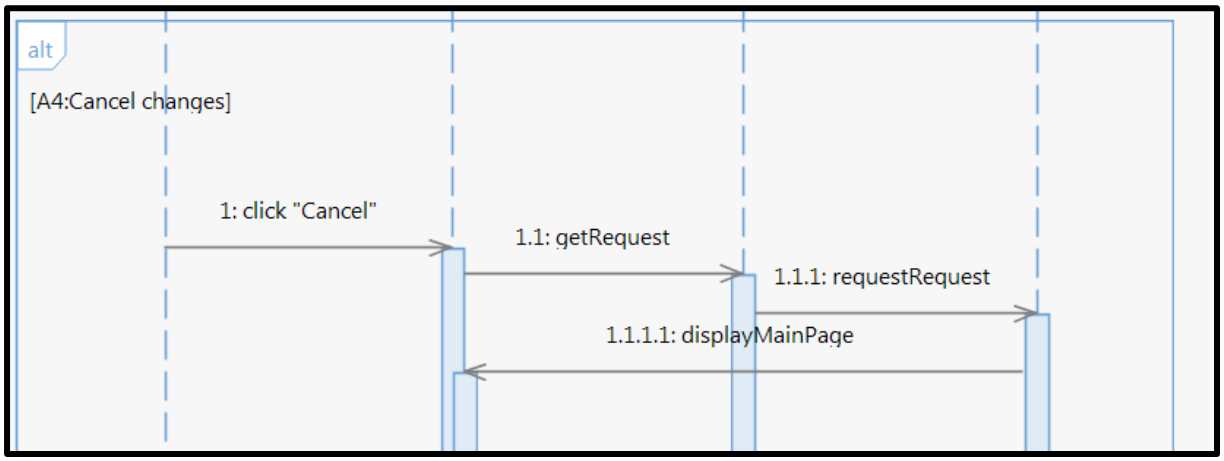
Refer Use Case ID: UC04: Manage Product

A-4: Sequence Diagram for Manage Product



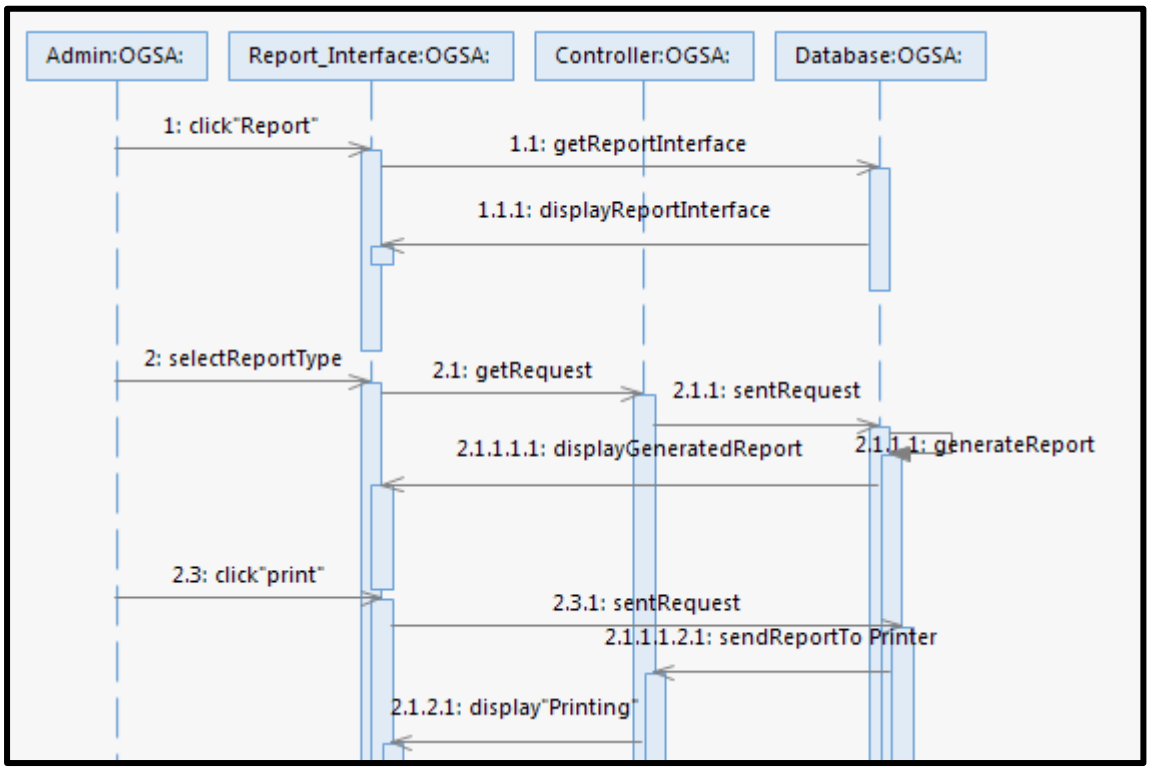


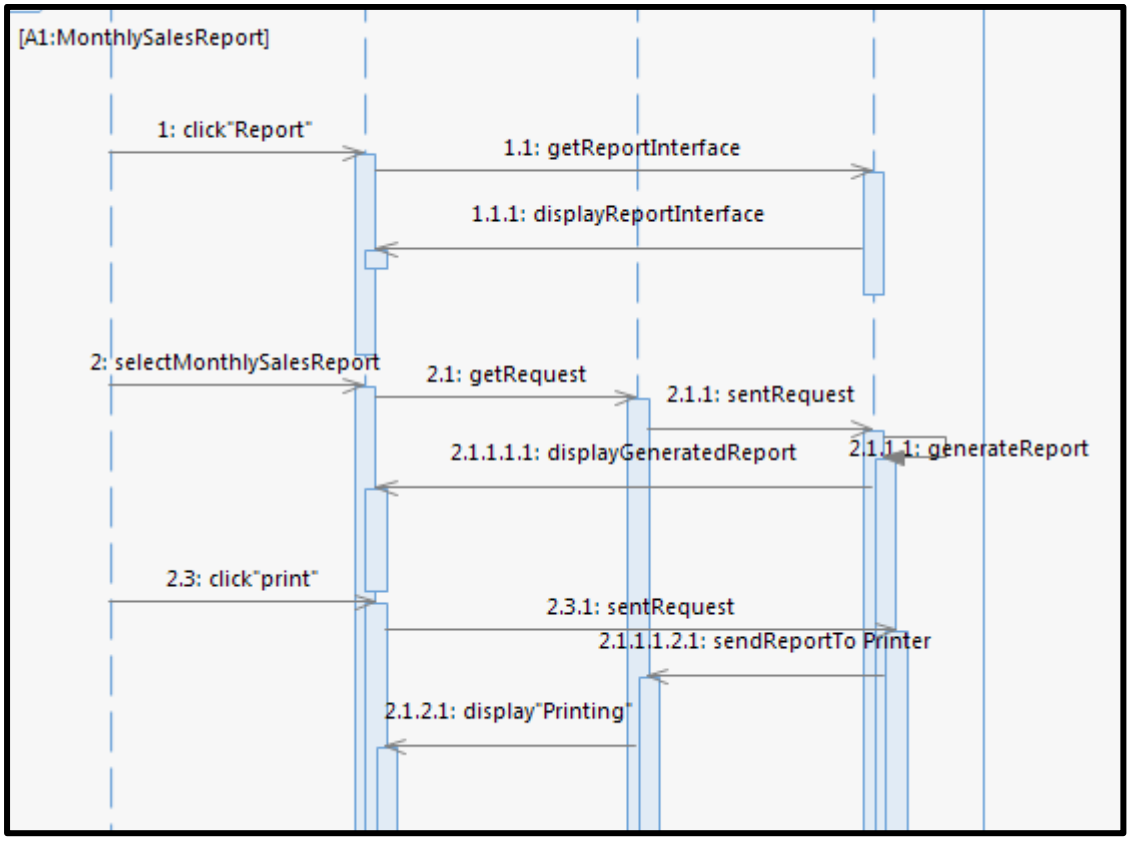

alt
[A3: Update Item]
1: click"manage inventory"
1.1: getRequest
1.1.1: getInventoryPage
1.1.1.1: displayInventoryOptions
1.2.1: click"Update Item
1.2.1.1: getPruductList
1.1.1.2.1: displayProductList
1.2.1.2.1: selectProductAndClickUpdate
1.2.1.2.1.1: getupdateForm
1.1.1.2.2.1: displayUpdateForm
1.2.1.2.1.2.1: updateItemInfo
1.2.1.2.1.2.1.1: getInfo
1.1.2.1: sendInfo
1.1.1.2.2.2.1: saveUpdateInformation
1.1.1.2.2.2.1.1: display"Updated Successfully"

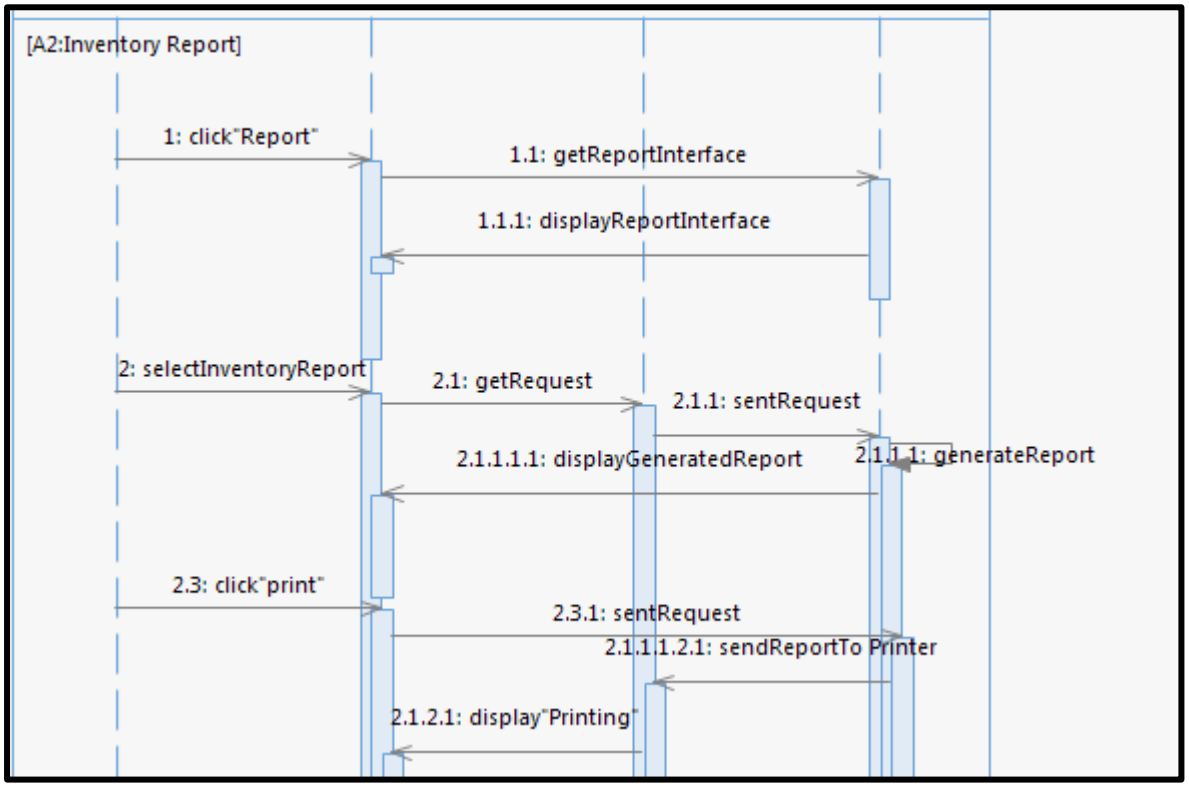

alt
[A4:Cancel changes]
1: click "Cancel"
1.1: getRequest
1.1.1: requestRequest
1.1.1.1: displayMainPage

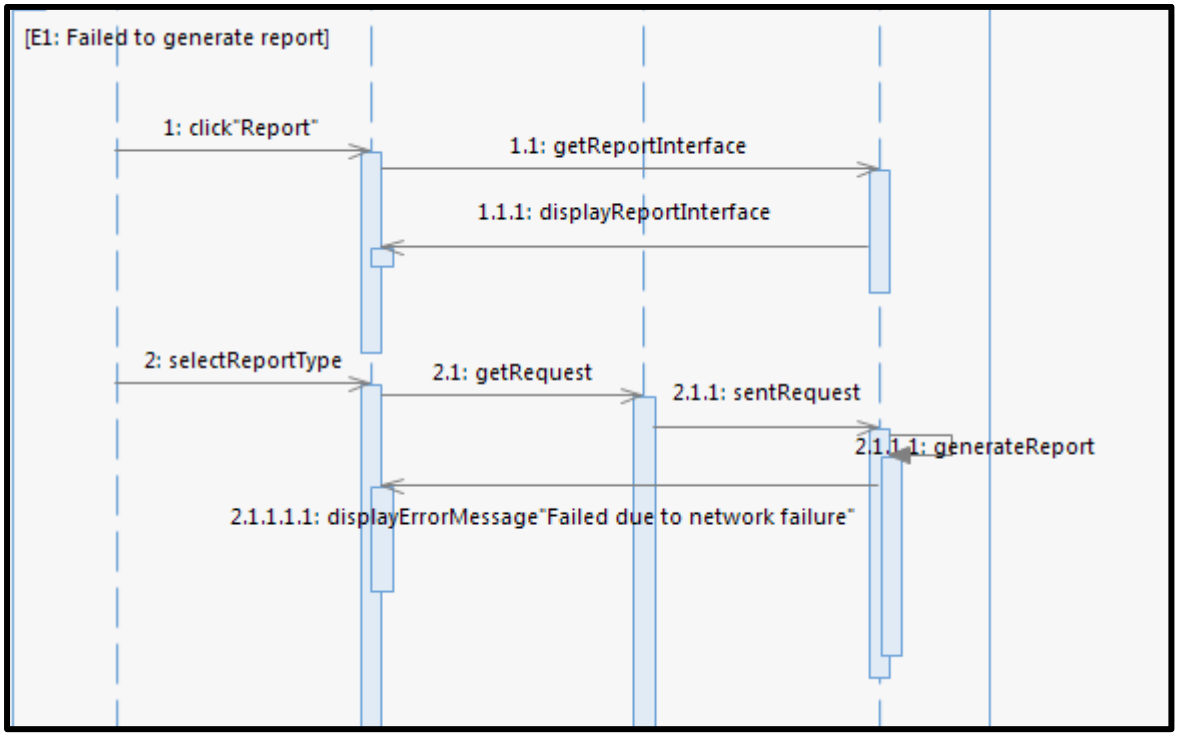
Refer Use Case ID: UC05: Generate Report

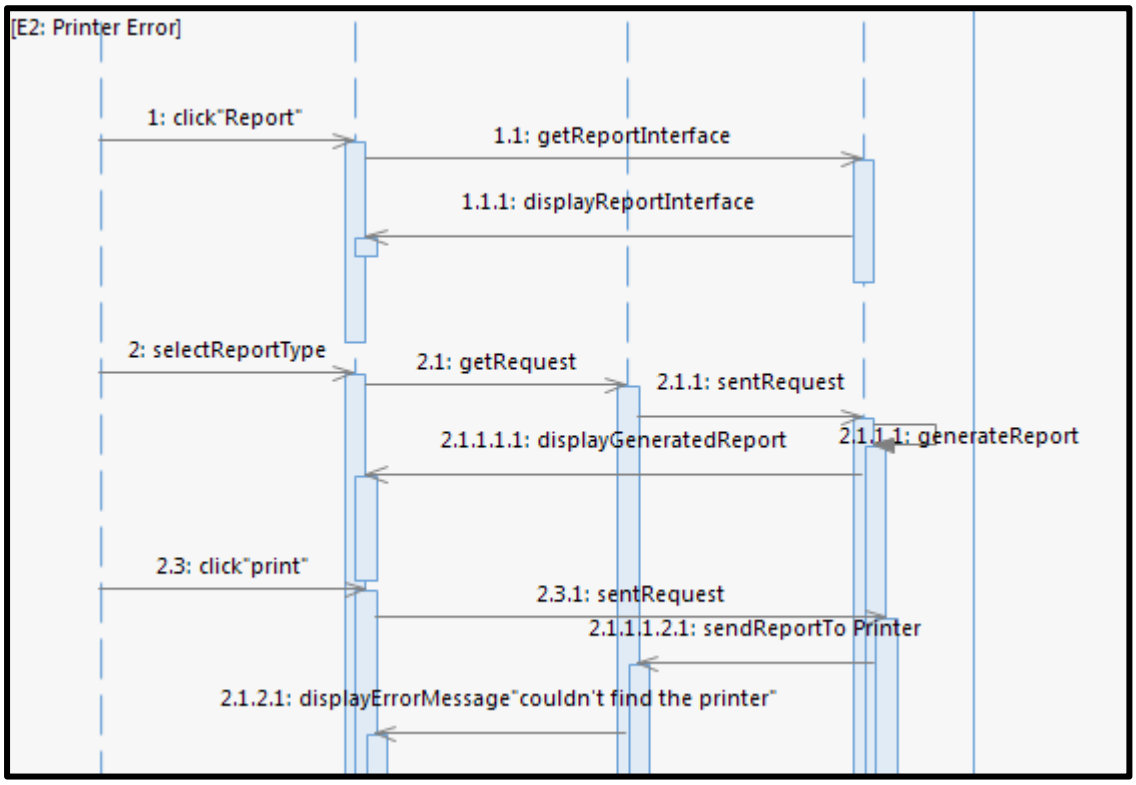
A-5: Sequence Diagram for Generate Report




[A1:MonthlySalesReport]
1: click"Report"
1.1: getReportInterface
1.1.1: displayReportInterface
2: selectMonthlySalesReport
2.1: getRequest
2.1.1: sentRequest
2.1.1.1.1: displayGeneratedReport
2.1.1.1: generateReport
2.3: click"print"
2.3.1: sentRequest
2.1.1.1.2.1: sendReportTo Printer
2.1.2.1: display"Printing"

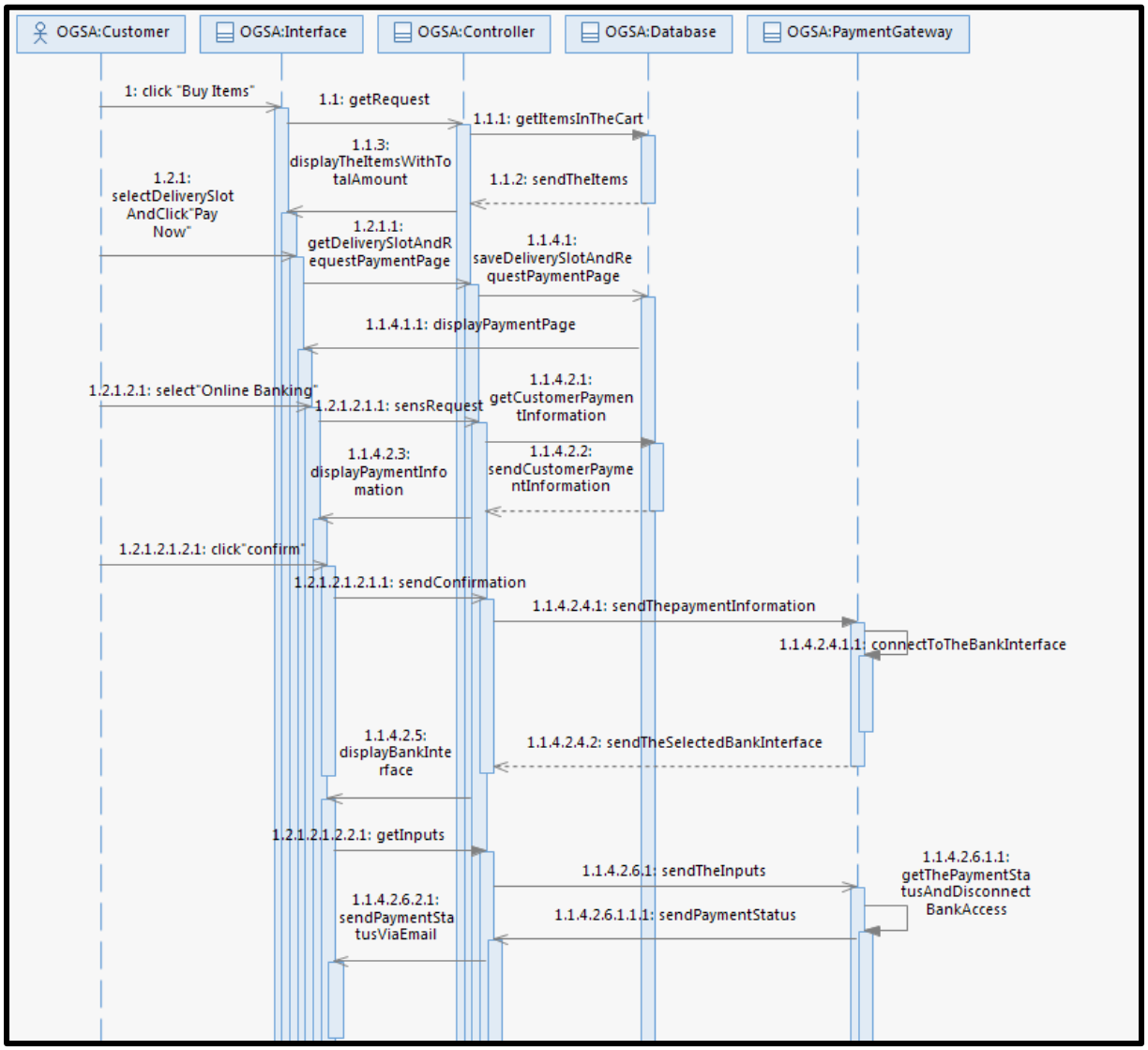

[A2:Inventory Report]
1: click"Report"
1.1: getReportInterface
1.1.1: displayReportInterface
2: selectInventoryReport
2.1: getRequest
2.1.1: sentRequest
2.1.1.1.1: displayGeneratedReport
2.1.1.1: generateReport
2.3: click"print"
2.3.1: sentRequest
2.1.1.1.2.1: sendReportTo Printer
2.1.2.1: display"Printing"

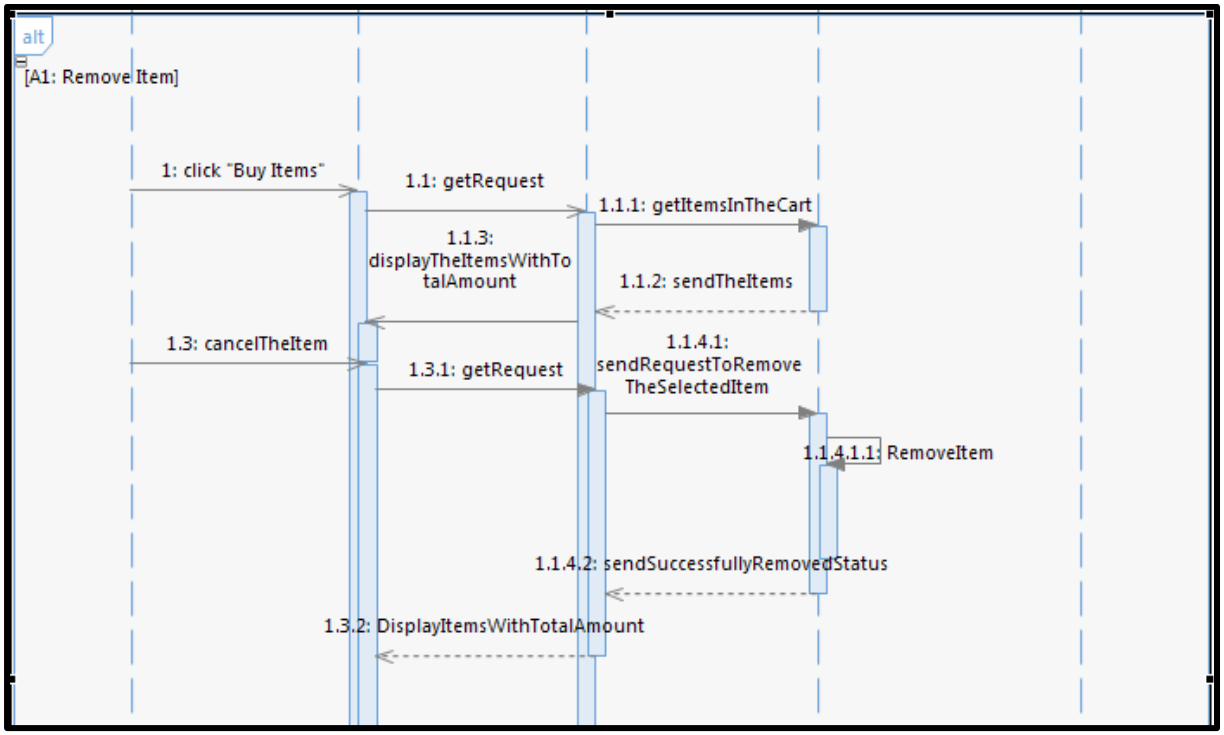

[E1: Failed to generate report]
1: click"Report"
1.1: getReportInterface
1.1.1: displayReportInterface
2: selectReportType
2.1: getRequest
2.1.1: sentRequest
2.1.1.1: generateReport
2.1.1.1.1: displayErrorMessage"Failed due to network failure"

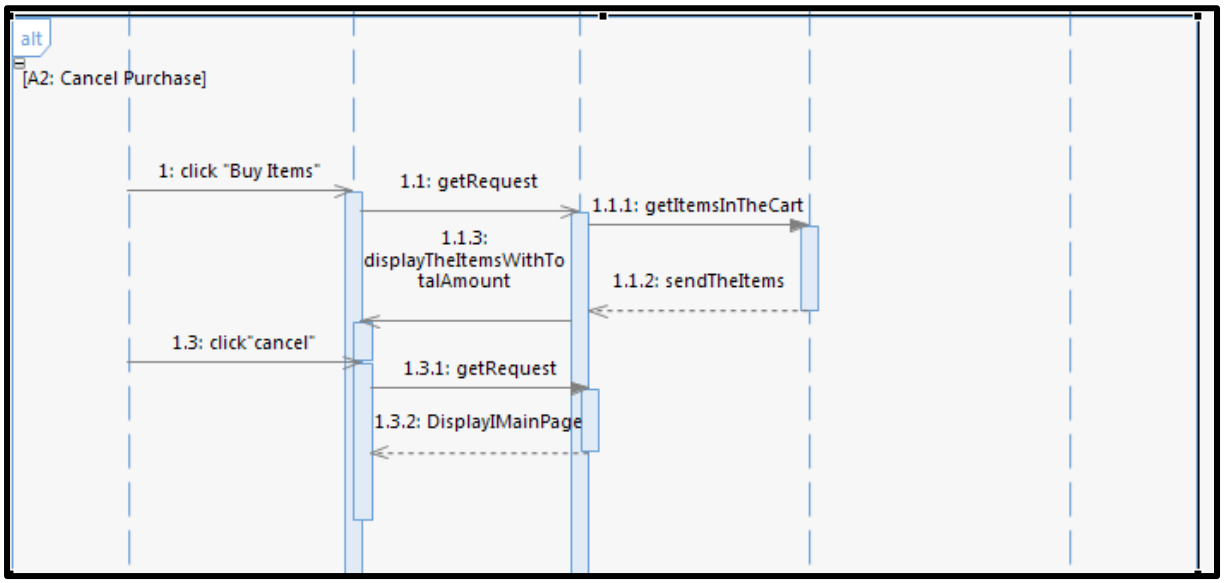

[E2: Printer Error]
1: click"Report"
1.1: getReportInterface
1.1.1: displayReportInterface
2: selectReportType
2.1: getRequest
2.1.1: sentRequest
2.1.1.1.1: displayGeneratedReport
2.1.1.1: generateReport
2.3: click"print"
2.3.1: sentRequest
2.1.1.1.2.1: sendReportTo Printer
2.1.2.1: displayErrorMessage"couldn't find the printer"

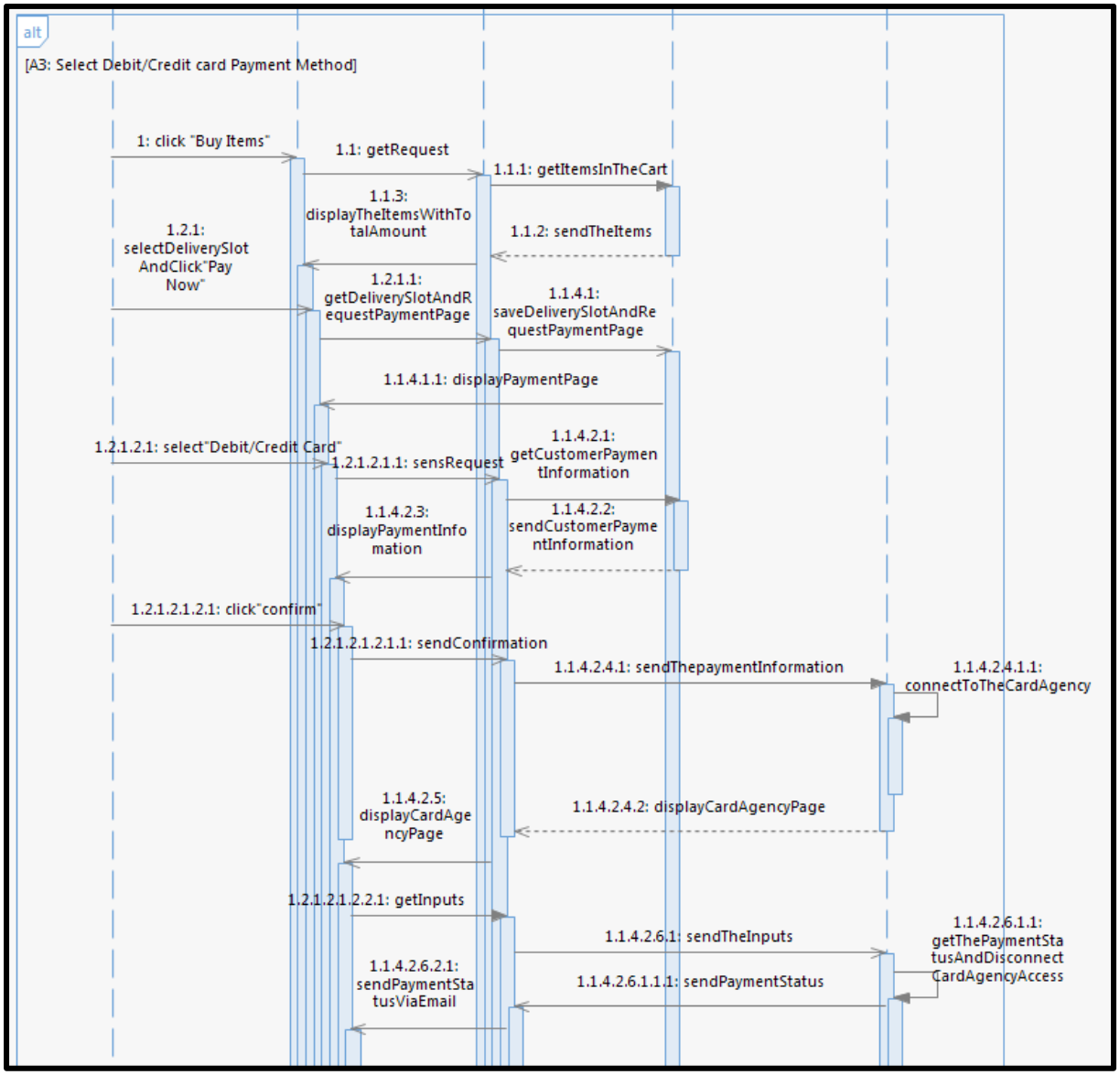
Refer Use Case ID: UC06: Manage Payment

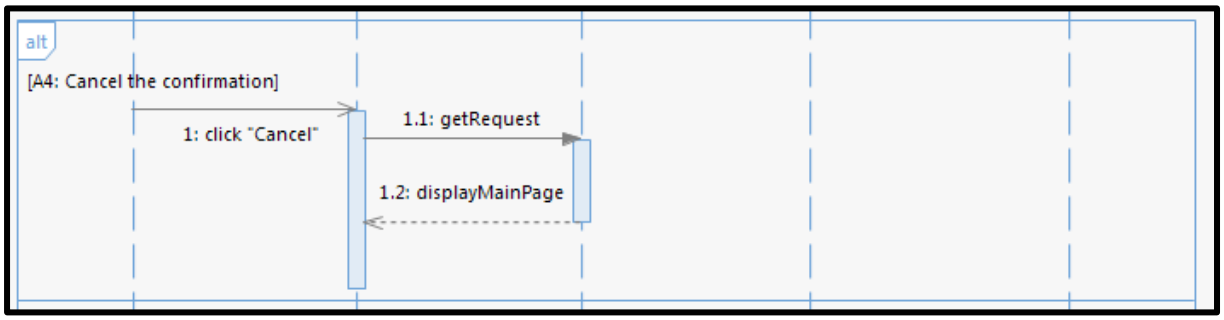
A-6: Sequence Diagram for Manage Payment




alt
[A1: Remove Item]
1: click "Buy Items"
1.1: getRequest
1.1.1: getItemsInTheCart
1.1.3: displayTheItemsWithTotalAmount
1.1.2: sendTheItems
1.3: cancelTheItem
1.3.1: getRequest
1.1.4.1: sendRequestToRemoveTheSelectedItem
1.1.4.1.1: RemoveItem
1.1.4.2: sendSuccessfullyRemovedStatus
1.3.2: DisplayItemsWithTotalAmount


alt
[A2: Cancel Purchase]
1: click "Buy Items"
1.1: getRequest
1.1.1: getItemsInTheCart
1.1.3: displayTheItemsWithTotalAmount
1.1.2: sendTheItems
1.3: click"cancel"
1.3.1: getRequest
1.3.2: DisplayIMainPage


alt
[A3: Select Debit/Credit card Payment Method]
1: click "Buy Items"
1.1: getRequest
1.1.1: getItemsInTheCart
1.1.3: displayTheItemsWithTotalAmount
1.1.2: sendTheItems
1.2.1: selectDeliverySlot AndClick"Pay Now"
1.2.1.1: getDeliverySlotAndRequestPaymentPage
1.1.4.1: saveDeliverySlotAndRequestPaymentPage
1.1.4.1.1: displayPaymentPage
1.2.1.2.1: select"Debit/Credit Card"
1.2.1.2.1.1: sensRequest
1.1.4.2.1: getCustomerPaymentInformation
1.1.4.2.3: displayPaymentInformation
1.1.4.2.2: sendCustomerPaymentInformation
1.2.1.2.1.2.1: click"confirm"
1.2.1.2.1.2.1.1: sendConfirmation
1.1.4.2.4.1: sendThepaymentInformation
1.1.4.2.4.1.1: connectToTheCardAgency
1.1.4.2.5: displayCardAgencyPage
1.1.4.2.4.2: displayCardAgencyPage
1.2.1.2.1.2.2.1: getInputs
1.1.4.2.6.1: sendTheInputs
1.1.4.2.6.1.1: getThePaymentStatusAndDisconnectCardAgencyAccess
1.1.4.2.6.2.1: sendPaymentStatusViaEmail
1.1.4.2.6.1.1.1: sendPaymentStatus


alt
[A4: Cancel the confirmation]
1: click "Cancel"
1.1: getRequest
1.2: displayMainPage

Online Grocery Shopping Application

Faculty of Computer Systems & Software Engineering

Software Design Document (SDD)

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4.0 SYSTEM DESIGN APPROVAL

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Figure 3.3 Customer Package

Figure 3.4 Payment Package

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1.0 DATA DICTIONARY

1.1.1 New users (Registration)

Table 1.1 User Data Dictionary

Field Name	Description	Data Type	Constraint
id	User unique id	int	Primary key
First Name	First Name of User	varchar	
Last Name	Last Name of User	varchar	
Phone Number	User contact number	varchar	
Username	Username for user login	varchar	
Password	Password for user login	varchar	
Address	User Home address	varchar	
Email	User email address	varchar	

1.1.2 Admin

Table 1.2 Admin Data Dictionary

Field Name	Description	Data Type	Constraint
Id	Admin unique id	int	Primary key
Username	Username of admin	varchar	
Password	Password of admin	varchar	

1.1.3 Category

Table 1.3 Category Data Dictionary

Field Name	Description	Data Type	Constraint
Id	Category ID	varchar	Primary Key
Name	Category Name	varchar	

1.1.4 Product

Table 1.4 Product Data Dictionary

Field Name	Description	Data Type	Constraint
Id	Product ID	int	Primary Key
Name	Product name	varchar	Foreign Key
Price	Price of per product	decimal	
Description	Description of product	varchar	
Last_update	Updated date of product	timestamp	
Category_Id	Category Id of product	int	Foreign Key

1.1.5 Customer order

Table 1.5 Purchase Data Dictionary

Field Name	Description	Data Type	Constraint
Id	Customer order ID	int	Primary Key
Amount	Total Price of customer order	decimal	
Date_created	Date of customer order	timestamp	
Confirmation_number	Customer order confirmation number	int	
Customer_id	Customer ID	int	Foreign Key

1.1.6 Ordered product

Table 1.6 Payment Data Dictionary

Field Name	Description	Data Type	Constraint
Customer_orderId	Customer ID	int	Foreign Key
Product Id	Product ID	int	Foreign Key
quantity	Product quantity	smallint	

1.1.7 Customer

Table 1.7 Customer Data Dictionary

Field Name	Description	Data Type	Constraint
Id	Customer ID	int	Primary Key
Name	Customer Name	varchar	
Email	Customer Email Address	varchar	
Phone	Customer Phone number	varchar	
Address	Home Address	varchar	
City_region	City region	varchar	
CC_Number	Credit Card Number	varchar	

2.0 PRELIMARY DESIGN

2.1 System Architecture

A system architecture or systems design is that the abstract model that defines the structure, behavior, and better more views of a system. An architecture description is a formal description and illustration of a system, organized during a way that supports reasoning about the structures and behaviors of the system**.** In here it identifies the internal organizational structure of the Online Grocery Shopping Application. The relationship among system subsystem will be described

2.1.1 Static Organization

Figure 2.1 shows the static organization for Online Grocery Shopping Application. It consist of:

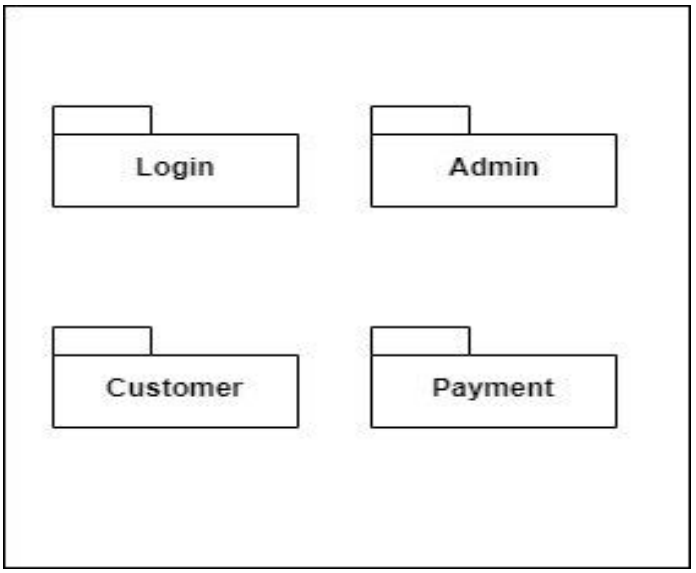

Figure 2.1 Static Organization of Online Grocery Shopping Application (OGSA)

This section describe the detail for each subsystem package.

1. Login

This package is responsible to control and displays user register and login related information. This package consist of the following classes or unit:

a) Login_View class

b) Login_Controller class

c) Login_Model class

2. Admin

This package is responsible to control and display admin activity related information. This package consist of the following classes or unit:

a) Admin_View class

b) Admin_Controller class

c) Admin_Model class

3. Customer

This package is responsible to control and display customer activity related information. This package consist of the following classes or unit:

a) Customer_View class

b) Customer_Controller class

c) Customer_Model class

4. Payment

This package is responsible to control and display Payment related information. This package consist of the following classes or unit:

a) Payment_View class

b) Payment_Controller class

c) Payment_Model clas

2.2 Dynamic Organization

Figure 2.2 shows components and their relationship between each other in the system.

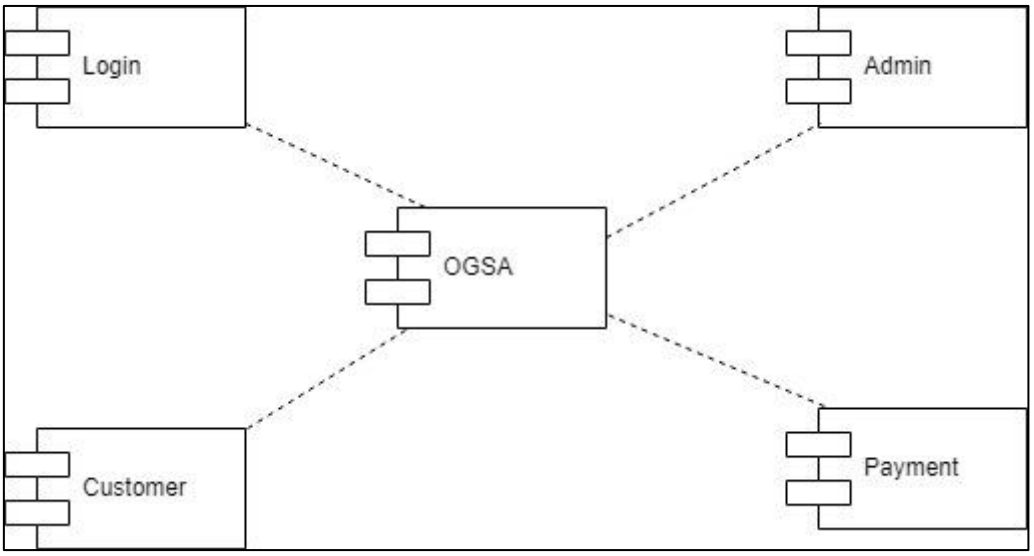

Figure 2.2 Component Diagram of Online Grocery Shopping Application

3.0 DETAILED DESIGN

This section divided into the following paragraphs and subparagraphs to describe the detailed design.

3.1 Login

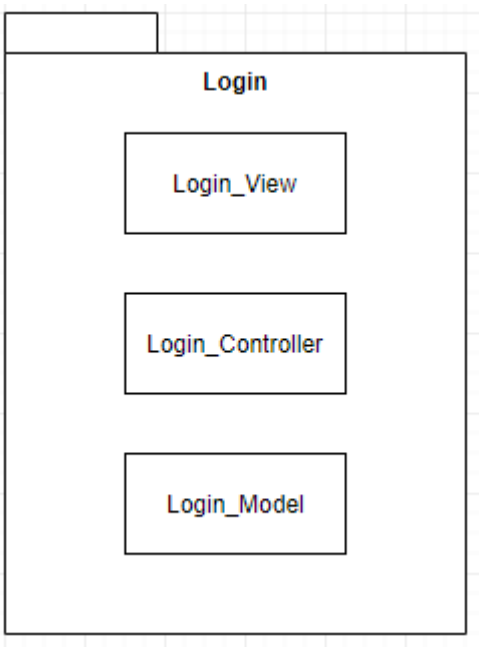

Figure 3.1 Login Package

3.1.1 LoginView.class

Class Type	: View Class	
Responsibility	: This class responsible to display Users login information	
Attributes	: id (users)(Customer)(Admin)	:int
Method	: public class login()	:To enter user credentials

3.1.2 Login_Controller.class

Class Type	: Controller Class	
Responsibility	: This class responsible to control login information	
Attributes	: Id(User)	:int
	: First Name	:varchar
	: Last Name	:varchar
	: Email	:varchar
	: Username	:varchar
	: Password	:varchar
	: Address	:varchar
	: Phone Number	:int
	: Id (Admin)	:int
	: Username (Admin)	:varchar
	: Password (Admin)	:varchars
Method	: private void userRegister()	: To register customer.
	: private void updateprofile()	: To update customer information
	: private void userLogin()	: For customer login

3.1.3 Login_Model.class

Class Type	: Entity Class	
Responsibility	: This class responsible on student database related activity.	
Attributes	: Id(User)	:int
	: Id(Admin)	:int
Method	:public User()	:To get admin and users model

3.2 Customer

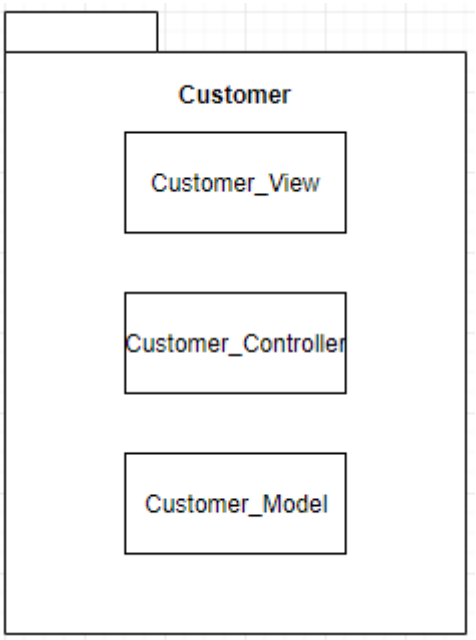

Figure 3.2 Customer Package

3.2.1 Customer_View.class

Class Type	: View Class	
Responsibility	: This class responsible to display Customer purchase information	
Attributes	: Id (Product) : Id (Category)	: int : int
Method	: public class category ()	: To view items in category

3.2.2 Customer_Controller.class

Class Type	: Controller Class	
Responsibility	: This class responsible to control product information according to customer purchase.	
Attributes	: Id(product)	:int
	: Name	:varchar
	: Price	:decimal
	: Description	:varchar
	: Last_Update	:timestamp
	: Category_Id	:int
	: Customer_Id	:int
	: Customer_order_id	:int
Method	: private void category()	: To display item according to the category.
	: private void viewCart()	: allow customer to view the cart.
	: private void addToCart()	: allow customer to add item into the cart
	: private void checkout()	: allow customer to checkout by entering the customer credentials.
	: private void confirmation()	: generate order confirmation code for customer and display order summary to customer.

3.2.3 Customer_Model.class

Class Type	: Entity Class	
Responsibility	: This class responsible on customer purchase database related activity.	
Attributes	: id (product)	:int
	: customer_order_Id	:int
Method	: public product ()	: To get product and customer order model
	: public customer order()	

3.3 Admin

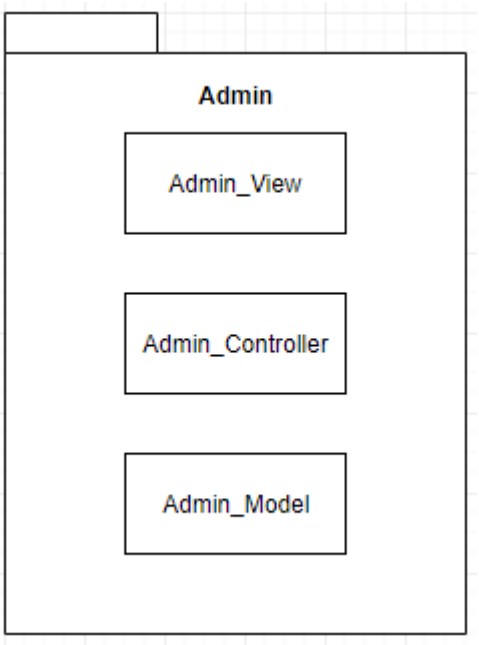

Figure 3.3 Admin Package

3.3.1 Admin_View.class

Class Type	: View Class	
Responsibility	: This class responsible to display product, admin and customer order information	
Attributes	: Id (product)	:int
	: customer_order_Id	:int
	: Id (Admin)	: int
	: Ordered_product_Id	: int
Method	: public class ViewAllCustomerList()	: To view all customer information
	: public class ViewAllCustomerOrders()	: To view all order list
	: public class ViewProduct()	: To view all the products information
	: public class ViewUser()	:To view the admin users.

3.3.2 Admin_Controller.class

Class Type	: Controller Class	
Responsibility	: This class responsible to control product and user information	
Attributes	: Id(Admin)	:int
	: Id(Product)	:int
Method	: private void addNewProduct()	: To add new item.
	: private void updateItem()	: To update item information.
	: private void removeUser()	: To remove user from the system
	: private void addNewUser()	: To add new user.

3.3.3 Admin_Model.class

Class Type	: Entity Class	
Responsibility	: This class responsible on complaint database related activity.	
Attributes	: Id(Admin)	:int
	: Id(Product)	:int
	: Customer_order_Id	:int
	:Ordered_product_Id	:int
Method	: public order ()	: To get customer order and ordered product model
Method	: public product ()	: To get product model
Method	: public user ()	: To get admin model

3.4 Payment

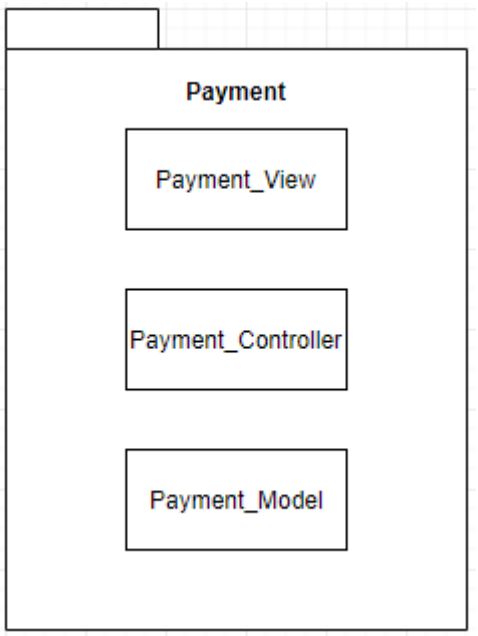

Figure 3.4 Payment Package

3.4.1 Payment_View.class

Class Type	: View Class	
Responsibility	: This class responsible to display payment information	
Attributes	:	
Method	: View_payment	: To view payment amount.

3.4.2 Payment_Controller.class

Class Type	: Controller Class	
Responsibility	: This class responsible to control payment information	
Attributes	Customer_Id	: int
	Id(Product)	: varchar
	totalPrice	: decimal
Method	: pay_onlineBanking()	: To pay through online banking.
	: pay_Debit/Credit card()	: To pay through debit/credit card.
	: payment_calculation()	: To calculate totalAmount

3.4.3 Payment_Model.class

Class Type	: Entity Class	
Responsibility	: To view the payment transaction	
Attributes	: This class responsible on payment information related activity.	
Method	: public Payment()	: To get payment model

4.0 SYSTEM DESIGN APPROVAL

	Name	Date
Verified by: _____ AGILA A/P SIVAN		
Approved by: _____ MR PONNUSAMY CHETTIYAR		