

### **SUPERVISOR'S DECLARATION**

“I hereby declare that I have read this thesis and in my opinion this thesis is sufficient in terms of scope and quality for the award of the degree of Bachelor of Computer Sciences (Software Engineering)”

Signature :

Name of Supervisor : NG CHOON CHING

Date : 30 MAY 2012

## **STUDENT'S DECLARATION**

I declare that this thesis entitled “Online Product Selection System of REH Trading” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

Signature :

Name : ANG TZY GUAN

Date : 30 MAY 2012

## DEDICATION

*Special dedication to my beloved family,  
my lecturer, my fellow friends,  
and all faculty members.*

*For all your support and believe in me.*

## **ACKNOWLEDGEMENT**

I am grateful and would like to express my sincere gratitude to my supervisor Ng Choon Ching for his great ideas and invaluable guidance in making this project possible. He also gives me continuous encouragement and constant support while doing the project. I appreciate his hard work to guide me from the first day I approach to him to have him as my supervisor to these concluding moments. I am truly grateful for his progressive vision about my training in writing good documentation and he often impressed me with creative idea in designing the system flow. I often make mistakes but he is able to tolerate with me and lead me back to the correct way.

My sincere thanks go to the lecturers of my faculty who helped me directly or indirectly to complete this project. I also would like to express a very special thanks to the evaluators of my project for their suggestions and opinions. I also sincerely thank to all my friends in the university who helped me in many ways and their excellent co-operation, inspiration and supports.

I acknowledge my sincere indebtedness and gratitude to my parents for their love, dream and sacrifice throughout my life. I cannot find the appropriate words that could properly describe my appreciation for their devotion, support and faith in my ability to attain my goals and studies. They consistently encouraged me to carry on my studies and make achievements in life.

## **ABSTRACT**

Online Product Selection System of REH Trading (OPSS) is a web-based system that helps REH Trading to manage their business online and allow customer to make order and view support. The existing system of the company does not optimize the usage of internet services. The system just provides simple company profile, product view and contact of the company. There is no guide service for customer to choose the right product. Therefore, this system is developed to manage the company business and provide product selection service by using rule-based forward chaining. There are two targeted users in this system, which are the admin staff and the customers of REH Trading. The modules of the system are login and registration, view product, view support, make appointment and order, manage order and profile, search product and approve order and appointment. Rapid Application Development (RAD) model is used to develop this project. There are four phases which are requirements planning, user design, construction and cutover. The testing results shown that the proposed system gives user flexibility to choose the product smartly.

## ABSTRAK

System pemilihan produk REH Trading adalah sistem web yang membantu REH Trading untuk menguruskan perniagaan mereka secara online, dan membenarkan pelanggan untuk membuat pesanan atas talian dan dapatkan sokongan. System yang sedia ada tidak mengoptimalkan penggunaan perkhidmatan internet. System tersebut hanya menyediakan profil syarikat, produk yang dijual dan cara hubungi syarikat. Tiada perkhidmatan untuk pelanggan untuk memilih produk yang betul. Oleh itu, system ini dibangunkan untuk membantu menguruskan perniagaan syarikat REH Trading dan menyediakan perkhidmatan pemilihan produk dengan menggunakan peraturan berasaskan rangkaian ke hadapan. Terdapat dua pengguna dalam system ini, iaitu kakitangan admin dan pelanggan REH Trading. System ini terdiri daripada sepuluh modul : pendaftaran, masuk, melihat dan mengedit profil, melihat produk and memesan produk, membuat temujanji untuk memasang produk, perkhidmatan pemilihan produk, pencarian produk, menguruskan pengguna, menguruskan product, menguruskan sokongan. *Rapid Application Development (RAD)* telah digunakan dalam projek ini. Terdapat empat tahap iaitu perancangan keperluan, rancangan pengguna, pembinaan dan pengubahsuaian.. Ujian yang telah dijalankan menunjukkan bahawa sistem ini berjaya mencapai matlamat dan objektif projek ini.

## TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
	<b>SUPERVISOR’S DECLARATION</b>	<b>i</b>
	<b>STUDENT’S DECLARATION</b>	<b>ii</b>
	<b>DEDICATION</b>	<b>iii</b>
	<b>ACKNOWLEDGEMENT</b>	<b>iv</b>
	<b>ABSTRACT</b>	<b>v</b>
	<b>TABLE OF CONTENTS</b>	<b>vii</b>
	<b>LIST OF TABLES</b>	<b>xi</b>
	<b>LIST OF FIGURES</b>	<b>xii</b>
	<b>LIST OF APPENDICS</b>	<b>xiv</b>
	<b>LIST OF ABBREVIATIONS</b>	<b>xv</b>
<b>1</b>	<b>INTRODUCTION</b>	
	1.1 Background	1
	1.2 Problem Statements	2
	1.3 Objectives	3
	1.4 Scopes	3
	1.5 Thesis Organization	4
<b>2</b>	<b>LITERATURE REVIEW</b>	
	2.1 Survey on the Existing System of REH Trading	6
	2.2 Existing System Review	7
	2.2.1 Online Restaurant Menu Ordering System (MEROSYS)	7

2.2.2	Dell System	9
2.2.3	Domino's Pizza Online Order System	13
2.2.4	Comparison of Systems that similar with Order and Support system	15
2.3	Development Tools	16
2.3.1	Programming Language	16
2.3.1.1	Active Server Pages.Net (ASP.NET)	16
2.3.1.2	Hypertext Preprocessor (PHP)	17
2.3.1.3	Java Server Pages (JSP)	17
2.3.1.4	Comparison of Advantages and Disadvantages of Programming Language	18
2.3.2	Integrated Development Environment (IDE)	18
2.3.2.1	Microsoft Visual Studio 2010	18
2.3.2.2	Adobe Dreamweaver CS5	19
2.3.2.3	Netbeans IDE 6.9	20
2.3.2.4	Comparison of Advantages and Disadvantages of Integrated Development Environment (IDE)	21
2.3.3	Database	22
2.3.3.1	MySQL	22
2.3.3.2	Microsoft SQL Server 2008 R2	22
2.3.3.3	Oracle Database Ili/Ilg	23
2.3.3.4	Comparison of Advantages and Disadvantages of Database	24
2.3.4	Web Server	25
2.3.4.1	Apache HTTP Server	25
2.3.4.2	Internet Information Services (IIS)	25
2.3.4.3	NGINX	26
2.3.4.4	Comparison of Advantages and Disadvantages of Web Server	27



2.4	Methodology	28
2.4.1	Waterfall	28
2.4.2	Rapid Application Development (RAD)	30
2.4.3	Iterative & Incremental Development	32
2.5	Technique	34
2.5.1	Fuzzy Logic	34
2.5.2	Rule-Based	35
2.5.3	Artificial Neural Network	35
<b>3</b>	<b>METHODOLOGY</b>	
3.1	Rapid Application Development	38
3.2	Implementation of Rapid Application Development in Online Product Selection System	39
3.2.1	Requirement Planning Phase	39
3.2.2	User Design Phase	40
3.2.3	Construction Phase	43
3.2.4	Cutover Phase	43
3.3	Artificial Intelligence	43
3.3.1	Rule Based Expert System	44
3.3.2	Structure of a Rule-Based Expert System	45
3.3.3	Forward Chaining inference techniques	46
3.3.4	Example of Rule-Based Forward Chaining	46
3.3.5	Justification of Selected Technique	48
3.4	Software and Hardware Tools	48
3.4.1	Hardware	48
3.4.2	Software	49
<b>4</b>	<b>IMPLEMENTATION</b>	
4.1	Database Implementation	51
4.1.1	Database Server Connection	52
4.2	System Interface and Implementation	53
4.2.1	Main Page	53

4.2.2	Login and Registration Module	54
4.2.3	View and Edit Profile Module	55
4.2.4	View Product and Make Order Module	56
4.2.5	Make Appointment Module	58
4.2.6	Product Selection Module	59
4.2.7	Product Search Module	60
4.2.8	Manage User Module	61
4.2.9	Manage Product Module	62
4.2.10	Manage Frequent asked question Module	65

## **5      RESULT AND DISCUSSION**

5.1	Testing	66
5.2	Analysis of Result	66
5.3	System Constraint	68
5.4	Suggestion and Improvement	69
5.5	Summary	69

## **6      CONCLUSION**

6.1	Introduction	<b>70</b>
6.2	Project Contribution	<b>71</b>
6.3	Future Work	<b>71</b>
6.4	Summary	<b>71</b>

<b>REFERENCES</b>	<b>72</b>
-------------------	-----------

<b>APPENDICES A - C</b>	<b>76-103</b>
-------------------------	---------------

## LIST OF TABLES

TABLE NO.	TITLE	PAGE
2.1	Comparison of Systems with Online Product Selection System of REH Trading	16
2.2	Comparison of Advantages and Disadvantages of Programming Language	19
2.3	Comparison of Advantages and Disadvantages of Integrated Development Environment	22
2.4	Comparison of Advantages and Disadvantages of Database	25
2.5	Comparison of Advantages and Disadvantages of Web Server	38
3.1	Fact Database	49
3.2	New Fact Database	49
3.3	Hardware Specification for Online and Support System	51
3.4	Software Specification for Online and Support System	52

## LIST OF FIGURES

<b>FIGURE NO.</b>	<b>TITLE</b>	<b>PAGE</b>
2.1	MEROSYS – Main page	9
2.2	MROSYS – Customer order page	10
2.3	Dell System – Main page	11
2.4	Dell System – Customer order page	12
2.5	Dell System – Support for home user page	13
2.6	Domino’s Pizza Online Order System – Main page	14
2.7	Domino’s Pizza Online Order System- Order page	15
2.8	Waterfall Model	30
2.9	Rapid Application Development Lifecycle	33
2.10	Iterative Development Models	34
2.11	Multi-valued Logic	35
2.12	Architecture of a typical Artificial Neural Network	37
3.1	Rapid Application Development Lifecycle	40
3.2	Flowchart for Registered User	42
3.3	Flowchart for admin	43
3.4	Flowchart for public user	44
3.5a	Production system and basic structure of a Rule-Based Expert System	47
3.5b	Basic structure of a Rule-Based Expert System	47
4.1	OPSS Database	51
4.2	Database and Server Connection	52

4.3	Connection Details	52
4.4	OPSS Home {Page	53
4.5	Login Interface	54
4.6	Registration Interface	54
4.7	View User Profile	55
4.8	Edit User Profile	55
4.9	User View Product	56
4.10	User Make Order	57
4.11	User Make Appointment	58
4.12	The Product Selection	59
4.13	Result of Product Selection	60
4.14	Result of Product Search	61
4.15	Admin View Customer and Delete Function	61
4.16	Admin View Customer Details	62
4.17	Admin Add Product Interface	63
4.18	Admin Edit Product Interface	64
4.19	Admin Delete Product Interface	64
4.20	FAQ Add and Delete Interface	65
5.1	Customer Product Order	67
5.2	Product Selection	68

**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>TITLE</b>	<b>PAGE</b>
A	User Manual	76
B	Coding	87
C	User Acceptance Testing	98

## LIST OF ABBREVIATIONS

PHP	Hypertext Preprocessor
ASP	Active Server Pages
JSP	Java Server Pages
IDE	Integrated Development Environment
SQL	Standard Query Language
HTTP	Hypertext Markup Language
RAD	Rapid Application Development
IIS	Internet Information Services
RUP	Rational Unified Process

## **CHAPTER 1**

### **INTRODUCTION**

This chapter briefly discuss on the overview of this research. It contains five sections. This first section is background; follow by the problem statement. Next are the objectives where the project's goal is determined. After that are the scopes of the system and lastly is the thesis organization which describes the structure of this thesis.

#### **1.1 Background**

Today's technology is progressing faster than anyone has ever expected and is changing the way we live. Internet technology is one of the influenced technologies these days. It has become so popular in many ways. The use of the internet is becoming so wide that we can do almost everything on the internet. We can download materials, search for information, online shopping and many more. The advantages of internet have attracted most of the business companies to make full use of the internet services. Study has shown that Internet access has socioeconomic benefits and can accelerate economic development (Fosu, 2011). Most of the companies expand their business through the online information system by selling product, publishing advertisement and other services. However, the growth of the online services in our local business companies still needs improvement.

When we talk about order or buy, most of us will feel that it is more suitable if we order or buy something on the spot. This is because we try to understand the use and function of the product before we make the decision to buy or order. During the buying



or ordering process, there is communication and interaction between us as the customer and the sales person. This is to make sure we understand the use of the product and then only make a decision either to buy it or not. So when we converted the process into a service and put it on the internet, it makes it hard to just describe the product in words and sometimes customer does not understand the description. This makes it a great challenge for the local companies to put their sales and services online. REH Trading is one of the local companies facing such problem. Previously customers prefer to order or buy on the spot. However, because of the growth of the internet technology, more and more consumers prefer online shopping. Through online shopping, consumers feel that they not only save their time and cost, at the same time they can get what they want with easy steps.

Therefore, Online Product Selection System of REH Trading is developed to provide online services. The system provides basic information and background of the company. The information provides the location and the company contact of Branches. The system is strictly controlled by the admin. A product selection service has been modeled to customer for guiding customer in choosing the right product. It is necessary because there are no real persons to advice the customers in the Internet (Prasad, 2003).

## **1.2 Problem Statements**

Reh Trading & Technical Support Sdn Bhd is a contractor and supplier of CCTV surveillance System and owned a web system. However, the existing web system is not fully optimized. It just provides simple company profile, product view, job reference and contact of the company. There is no product recommendation for customer. This makes customers don't know which one to buy because there are too many products and with the description, that is not enough to guide the customers to the product they really need. The website is not nicely organized. There is also lack of customer database.

### **1.3 Objectives**

The objectives of this project are:

- i. To design and develop online product selection system of REH Trading.
- ii. To apply rule-based in product selection.

### **1.4 Scopes**

The scopes of this project are:

- i) User
  - a. The system can register the customers in the database and manage by admin.
  - b. The system can provide online product overview that allows customer to order.
  - c. Customers are able to edit and update their profile.
  - d. The system provides support for customers to view critical issues.
  - e. Customer able to use the product selection function to choose the suitable product.
  - f. Customer able to search product by typing product name.
- ii) Admin
  - a. The system provides basic information and the background of the REH Trading Company.
  - b. Current products specification can be updated and new product can be added by admin too.
  - c. Admin can manage the sales by approve or cancel the order.
  - d. Admin can insert new rules for the new product.

- e. Admin can add new issue of support.
- f. Admin can manage the users.

## **1.5 Thesis Organization**

This thesis is divided into 6 chapters. Chapter 1 is introduction, Chapter 2 is literature review, Chapter 3 is methodology, Chapter 4 is implementation, Chapter 5 is results and discussion and Chapter 6 is conclusion.

Chapter 1 is to introduce about the Online Product Selection System of REH Trading. This chapter contains five parts. The first part is the background of the project. Second part is about the problem statements. In problem statement, the problem faced by REH Trading is stated. Third part is about the objectives of the Online Product Selection System. The next part is to discuss on the scope of the system. Lastly is the summary of the each chapter in the thesis.

Chapter 2 is to explain about the review for the Order and Support System for REH Trading Sdn Bhd. This chapter is divided into two sub-reviews that require the students to study to get complete information about the order and support system. The first sub-review requires the student to review and explain about the researches that had been developed by others or/and present computer projects which are related to the current project. The second sub-review is to explain about the technique/ method/ equipment or technology that can be used in constructing the project.

Chapter 3 is to discuss about the approach and framework for the project. In the content, it included the method, technique or approach that will be used and have been used in designing and implementing the Online Product Selection System of REH Trading. This chapter also explains about the justification of method or approach used and both the hardware and software needed for the project.

Chapter 4 is for the documentation of all the process that is involved in the development of the project. This chapter highlights generally about the designed project development and shows the content of the method on how the database and table that had

been designed were included through SQL instruction and the source code for developed the designated user's interfaces.

Chapter 5 is to explain about the results and data analysis that had been acquired. In the explanation, it must include result analysis, project limitation, also suggestion and project enhancement. The result analysis must be explained so that the objective is parallel with the project's problem. The project limitation must be elaborated about development constraints and system constraints of the project. The suggestion and project enhancement part are included in the knowledge discussion or contribution for future improvement on the research.

## **CHAPTER 2**

### **LITERATURE REVIEW**

This chapter will be devoted to a survey on the existing system of REH Trading Sdn Bhd, followed by the systems that similar with Online Product Selection System of REH Trading, development tools and methodology.

#### **2.1 Survey on the Existing System of REH Trading**

REH Trading Sdn Bhd has an existing web system. The company has an online system that only provide company background, contact number, job reference and product information. They do not fully utilize the internet usage that provides extra services for the customers. There is no guide service for customers in choosing the product. This is important because most of the customers do not have the knowledge about surveillance system. As a result, customers may not visit the website again.

The company is using customer detail form to record down the customer information manually and keep then in a file. They do not have a method to organize the customers' data file and this makes it hard to search back for further reference. Sometimes, the customer detail information may lose because of unexpected accident. In order to solve this problem, the company is advised to register all customers in computer and store them safely.

The company has staff responsible for picking up customer's phone call for product inquiry and appointment booking for product installation. The staff record down all the appointment manually on a note. It is a very traditional way to record down appointment and it may cause misunderstanding between the staff and customer because it does not have a proper way of recording down the appointment and sometimes

conversation can brought to conflict. Staff may also misplace the note or the time and date for the appointment crash with other appointment.

The staff or sales manager will deal with the customer face to face when customer visits the company or during appointment. Once again, the order and appointment from the customer will be recorded down manually by the staff. Current existing web systems do not provide a service for customer to guide customer in choosing the product that suits them. This makes customer keep visiting the company at the same time they keep making appointment just to choose the right product. It is time wasting for both the company and customer.

The company has technical support team to do the product installation after customer order the product and also provide technical support if there is a problem that the surveillance system cannot function well. Since the company is just a small company, the numbers of support team is limited. Consequently, the support team is busy at most of the time. Sometimes, the customers keep calling for support although it is just a minor problem that can be fixed with simple steps. The current support system is not good enough to manage the problems.

## **2.2 Existing System Review**


This section is to review the current system and the existing system that similar with Online Product Selection System of REH Trading.

### **2.2.1 Online Restaurant Menu Ordering System (MEROSYS)**

Online Restaurant Menu Ordering System (MEROSYS) is an online food ordering system. The main page is as shown in Figure 2.1. It is designed to seamlessly integrate with existing website without having to replace your existing website. It's a unique Restaurant Menu Software wherein admin can set up an online restaurant menu and make food delivery service faster and easier.

Customer can quickly, effectively and securely order food online, and make reservations for dining directly from restaurant's website. An example of customer order is shown at Figure 2.2. Orders can be sent to an email account or directly viewed over the internet. Payment can be made upon food delivery (as usually done) or in advance.


Online Restaurant Menu Ordering System also helps build valuable customer information database automatically as orders are placed on website (MEROSYS, 2004).



Toll Free: 888-575-0276

Login Contact

[HOME](#)
[ADVANTAGES](#)
[FEATURES](#)
[TOUR](#)
[PRICING & SIGN-UP](#)
[BLOG](#)
[PARTNERS](#)



## MeroSys - The Restaurant Owner's Pride

With our Online Food Ordering System, get copious food orders right in your email-box. Our food ordering software offers so much at so little that you won't stop saying to your customers, "We will get your order soon ma'am!"

Plan Begins at  
**\$99.95/mo.**

[Get Started](#)

### Product & Benefits

MeroSys is a leading online food ordering system, developed to work for restaurants/food chains from all over the world.

### Amazing Services

You could explore our various services geared towards the hospitality ranging from restaurant's custom web design to custom application development.

### Working for You

MeroSys works for you 24x7x365 and provides your customers with anytime/anywhere access to your online food menu.

### Pricing & Signup

MeroSys is competitively priced with packages starting for as low as US\$3.50 (per day) and offers you the ability to set up your online restaurant instantly.

### Increased Revenue

For a small monthly fee, you have a whole new convenient way to accept orders from your customers!

### No Installation - No Hosting

MeroSys is a web based online food ordering service and no on-site installation is necessary! We manage your servers - all you need to do is to sign up! You can be up and running in bare 48 hours!

### Make Your Business Efficient

Taking phone orders takes time! With our online food menu ordering system, you can eliminate the need of many hours on the phone and costly phone lines! Receive your orders securely in real time!

### Broader Customer Reach

Broaden customers' reach with Merosys, the online meal ordering software. You can get orders 24\*7\*365. So now be available to customers even when you rest! You can even book large orders weeks in advance!

### Zero Cost Maintenance


You don't need to worry about costly updates! You are able to control everything about your online ordering system!

### Low Advertising Costs

Provides you another channel for Marketing and Promotion, lowering your advertising costs!

### Merosys Announces Affiliate Membership Plan

**Get in touch** with us for more details.



### Latest News

May 6, 2007  
A breezy departure from the costly and still lacking online food ordering systems, as highly reliable Merosys announces its fresh USD 25/Month plan...  
[read more](#)


### Latest Article

How online Food Ordering system helps you run more efficiently? Your Online Food Ordering System empowers your business with an ace computer technology - the eCommerce!...  
[read more](#)

Home	Pricing & Signup	Articles	Policy
Advantages	Login	Testimonials	Disclaimer
Features	Partner	Links 1 2 3	
Tour	About	Contact	
Buzz	FAQs	Sitemap	

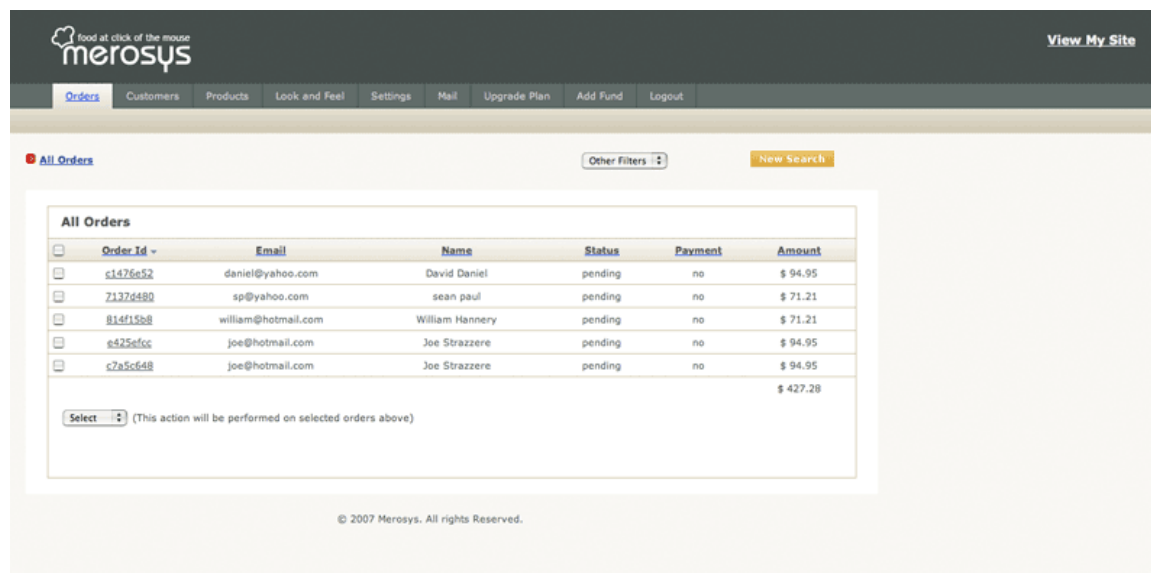
### How to find us

228 Park Ave S # 25950  
New York, NY 10003  
USA  
Toll Free: 888-575-0276

 [RSS Feeds](#)

© 2004-2011 All rights reserved  
Web Promotion & Maintenance by [Kneoteric eSolutions](#).

Figure 2.1 MEROSYS – Main page



food at click of the mouse  
**merosys** [View My Site](#)

[Orders](#) [Customers](#) [Products](#) [Look and Feel](#) [Settings](#) [Mail](#) [Upgrade Plan](#) [Add Fund](#) [Logout](#)

[All Orders](#) [Other Filters](#) [New search](#)

Order Id	Email	Name	Status	Payment	Amount
c1476e52	daniel@yahoo.com	David Daniel	pending	no	\$ 94.95
71379480	sp@yahoo.com	sean paul	pending	no	\$ 71.21
814f15b8	william@hotmail.com	William Hannery	pending	no	\$ 71.21
e425efcc	joe@hotmail.com	Joe Strazzere	pending	no	\$ 94.95
c7a5c648	joe@hotmail.com	Joe Strazzere	pending	no	\$ 94.95
					\$ 427.28

Select (This action will be performed on selected orders above)


© 2007 Merosys. All rights Reserved.

Figure 2.2 MEROSYS – Customer order page

## 2.2.2 Dell System

Dell System is an order and support system that mainly focus on computer and other hardware as well. The main page of Dell System is as shown in Figure 2.3. At the main page, user can browse across the content of the dell system with provided link and menu bar. There is a search tool for public user to search the products based on keywords and E-value code. Figure 2.4 shows the order page of the dell system. User need to register an account to order the product. In order page, user able to continue shopping to add more item or checkout. By clicking checkout meaning user confirm the order and to buy it. Besides, user also able to view order status. Figure 2.5 shows the support for home users. At the support side, user able to download drivers and other system updates, seek for product support including product troubleshooting, view support by topic, warranty information and so on. There is also a Dell forum for product support discussion. The support covers most of the home user's products (Dell, 2011).





The power to do more

[Premier Login](#) | [Support](#)

[For Home](#) | [For Small and Medium Business](#) | [For Public Sector](#) | [For Large Enterprise](#)

[Order Online Safely, Visit Dell Stores & Retailers or Contact Us](#)

## Signature Event


Sometimes spending money can save you money for your small office

Our very best deals!

[Shop Now >](#)




### What's New



- ▶ Limited Units! Inspiron 13z Limited Edition Lotus Pink.
- ▶ Get the enhanced power, sleek design and smart features of the Vostro V131 working for you.
- ▶ Manage PCs anywhere, anytime – Learn more

### Headlines



- ▶ Dell pledges \$10 Million to Education in 2011
- ▶ Dell To Expand Its China Operations
- ▶ Dell Technology Brought to 2 Million Children
- ▶ 2010 Responsibility Report Shows Progress
- ▶ Dell Sheds 18.2 Million Pounds of Packaging

### Dell Deals



- ▶ Get an extra \$88 off when you purchase Vostro 460 desktop. Use Coupon Number "3LQ?F12VDJ0SCX" at the checkout
- ▶ Deals for Home
- ▶ Deals for Small & Medium Business

 Malaysia

#### Shop

- ▶ Home & Home Office
- ▶ Small & Medium Business
- ▶ Large Business
- ▶ Public Sector
- ▶ Partners

#### Participate

- ▶ Join the Discussion
- ▶ Share Your Ideas
- ▶ Read our Blog
- ▶ View Videos

#### Support

- ▶ All Support Options
- ▶ Drivers & Downloads
- ▶ Product Support
- ▶ Order Status

#### Company Information


- ▶ About Dell
- ▶ Corporate Responsibility
- ▶ Careers
- ▶ Investors
- ▶ Newsroom

#### My Account

- ▶ Sign-In / Register
- ▶ Order Status
- ▶ Dell Subscription Center

[Laptops](#) | [Desktops](#) | [Business Laptops](#) | [Business Desktops](#) | [Workstations](#) | [Servers](#) | [Storage](#) | [Monitors](#) | [Printers](#) | [Electronics](#)  
 © 2011 Dell | [About Dell](#) | [Terms of Sale](#) | [Unresolved Issues](#) | [Privacy](#) | [Site Map](#) | [Dell Recycling](#) | [Feedback](#)  
[AT](#) | [AU](#) | [BE](#) | [BR](#) | [CA](#) | [CH](#) | [CL](#) | [CN](#) | [CO](#) | [DE](#) | [DK](#) | [ES](#) | [FR](#) | [HK](#) | [IE](#) | [IN](#) | [IT](#) | [JP](#) | [KR](#) | [ME](#) | [MX](#) | [NL](#) | [NO](#) | [PA](#) | [PR](#) | [RU](#) | [SE](#) | [SG](#) | [UK](#) | [US](#) | [VE](#) | [ALL](#)  
[Large Text](#)

Figure 2.3 Dell System – Main page


[Shop](#)
[Support](#)
[Community](#)

[Best-selling Deals](#)
[Laptops](#)
[Desktops & All-in-Ones](#)
[Mobile Phones & Tablets](#)
[Electronics & Upgrades](#)
[Printers & Ink](#)
[Monitors](#)
[PC Help & Advice](#)
[View All](#)

[PC Setup/Repair](#)
[My Order Status](#)
[Contact Us](#)
[Email Updates](#)
[Feedback](#)


[Sign In](#)
[Cart: \(1 Item\)](#)

[Dell recommends Windows® 7.](#)

## My Cart


Welcome! Registered members sign in now to retrieve an old cart or to save this cart. Not registered? Then select [Create An Account](#) to enjoy membership benefits like Save cart and faster checkout with pre-filled forms.

[Sign In](#)
[Create An Account](#)



[Summary View](#) | [Detail View](#)

[Save Cart for Future Access](#)
[Print Cart](#)
[E-mail Cart](#)
[Continue Shopping](#)
[Checkout](#)

NEW XPS 15		Qty	Unit Price
 <div> <b>XPS 15</b>  XPS L502X Direct Base, Genuine Windows® 7 Home Premium SP1 64bit (English)  <a href="#">Adjust System</a> </div>	<input type="text" value="1"/> <a href="#">Update Total</a>	RM 3,299.00	
<b>Total Price</b>			RM 3,299.00

Coupon Entry

[Sign in to retrieve your coupons](#)
OR
[Apply Coupon](#)

Note: Coupon savings are only applied to items you have added to your cart.

Sub-total

GST- Malaysia(0%)


Total Price



RM 3,299.00

RM 0.00


RM 3,299.00

[Save Cart for Future Access](#)
[Print Cart](#)
[E-mail Cart](#)
[Continue Shopping](#)
[Checkout](#)


[Chat or Call: 1800-88-0301](#)



**SECURE SHOPPING**  


**Popular Accessories**


**24 months McAfee Security Centre**  
Add McAfee SecurityCenter pre-loaded today! Help protect against Viruses, hackers, identity theft, and more from the moment you turn on your PC.


RM 35.00

[Add to Cart](#)


**Microsoft® Office Home and Student**


RM 249.00

[Add to Cart](#)


**Western Digital Elements Desktop 1 TB Hard Drives (Black)**


RM 259.00

[Add to Cart](#)


**Targus Wireless Comfort Laser Mouse**

RM 118.00

[Add to Cart](#)


**Philips Multimedia Speakers 2.0**

RM 59.00

[Add to Cart](#)

Figure 2.4 Dell System – Customer Order page

Malaysia ▼ [Contact Us](#) Sign In Cart

**DELL** [Shop](#) [Support](#) [Community](#)

[Drivers & Downloads](#) [Product Support](#) [Support by Topic](#) [Order Support](#) [Warranty Information](#) [View All](#)

Support Home Page My Account My Order Status Feedback

## Welcome to Home User Support

**Support Options**

[Support Home Page](#)

**Drivers & Downloads**

- Drivers Home
- Drivers Help
- Dell Supported Operating Systems
- Technical Subscriptions
- Monitor Drivers

**Product Support**

- Troubleshooting
- Manuals
- System Configuration
- Parts & Upgrades
- My Products and Services
- Support History & Status
- Dispatch Status
- Express Service Code Converter
- Global Recycling Options

**Support by Topic**

- Hot topics
- Getting Started
- Windows 7
- Windows XP
- Windows Vista
- Networking and Wireless
- Security & Virus
- Alienware
- Support Videos
- Printers Support

**Order Support**

- Order Status
- Delivery
- FAQs
- Missing, Wrong or Damaged
- Returns

**Warranty Information**

- Warranty Status
- Extend & Upgrade Warranty
- Service Contracts
- Retail Registration
- Ownership Transfers


**Premium Services**

- Solution Station

**Contact Us**


- Contact Technical Support
- Contact Order Support
- Contact Dell Sales
- International Support

**Drivers & Downloads**




Find Drivers, BIOS and other system updates [+](#)

**Assisted Search**




Locate solutions to common issues [+](#)

**Windows 7**




Support for your Windows 7 needs [+](#)

**Order Status & Support**





Track your order & get online support [+](#)


### Top Solutions


-  [How To Restore or Reinstall Microsoft® Windows® on a Dell™ Computer](#)
- [Microsoft Windows Locks Up, Hangs Unexpectedly or an Error Occurs](#)
- [Get Answers to Common Questions about Laptop Batteries](#)
- [My Computer does not turn on](#)
- [Understanding and Troubleshooting Your Hard Drive](#)
- [Why Did My Dell System Not Come With Disks?](#)
- [Office 2010 Activation](#)
- [Troubleshoot with Desktop Monitor or Laptop Screen](#)
- [More Top Solutions](#)


### Other Support Tools


 [Windows\(Windows 7, Vista, XP\)](#)


 [Hardware](#)

 [Mobile Devices](#)


 [Network & Wireless](#)

 [Manuals & Documentation](#)

 [Monitors & Display](#)


 [Printers](#)

### Additional Resources


 **Solution Station**

Call: 1-800-88-1304 for our Premium Service phone support.


- Get expert help to speed up your PC, remove viruses, configure wireless networks and more.

 **Parts & Upgrades**


- Find compatible spare parts and upgrades for your Dell system(s) and more.

 **Warranty Information**

- Check warranty status for a single system.
- New!** Access My Products & Services to view all of your support contracts online.

 **Dell Forums**

- Talk with other customers in the Forum

 **Customer Service**

- Get help on order status , invoices, missing / wrong / damaged and more.

Figure 2.5 Dell System – Support for home user page

### 2.2.3 Domino's Pizza Online Order System

Domino's Pizza has an online order system on the internet. Figure 2.6 shows the main page of the Domino's Pizza Online Order System. At the main page, user can see the latest promotion sets, news and others. Figure 2.7 shows the order page of the Domino's Pizza. User must register an account to login to order pizza. At the order page, all sets of meal are displayed for user to choose to order (Domino's Pizza, 2011). To order pizza, user just need to click on the order now icon and then proceed to finish the order.

**GPS TRACKER**

**Domino's Pizza**

GRAND TOTAL **RM9.60**  
CLICK HERE FOR ORDER DETAILS

**CHECK OUT**

HOME MENU PROMOTION CORPORATE STORE LOCATION LOG OUT

1 2 3

## Starter box

**Introducing Domino's Starter Box!**  
**Great for sharing good times!**

Featuring new Roasted Chicken Drummet, new Original Flavor Crazy Chicken Crunchies with Salsa sauce, Crazy Chicken Crunchies Spicy Tonyam with tangy cheese dip and Garlic Cheese Onion Rings.

**AWESOME FOURSOME**

Add-on: **RM34.80**  
Normal price: **RM44.20**

- Roasted Chicken Drummet - 6 pcs (NEW)
- Crazy Chicken Crunchies Original Flavor with salsa sauce (NEW)
- Crazy Chicken Crunchies Spicy Tonyam with tangy cheese dip
- Garlic Cheese Onion Rings

**DYNAMIC DUO**

Add-on: **RM19.80**  
Normal price: **RM25.60**

- Roasted Chicken Drummet - 6 pcs (NEW)
- Crazy Chicken Crunchies Original flavor with salsa sauce (NEW)
- Crazy Chicken Crunchies Original flavor with salsa sauce (NEW)

**It's Our Passion**

**DOMINO'S DEBIT** ONLINE PAYMENT

EASY ONLINE PAYMENT @ YOUR FINGERTIPS

CLICK HERE FOR DETAILS

**Online Offer: 25% OFF**  
a la carte price

\* Valid with minimum regular pizzas purchase  
\*\* Valid for online ordering only

**CRABBY chicken crunchies** Original Flavor

**NOW OPEN DOMINO'S NEW STORE**

**CENTRE POINT, TAIPING**

LOCATION MAP

Lot 51-G, 51-1 & 51-2, Centre Point  
Jalan Istana Larut 34000 Taiping, Perak.

**JOIN OUR TEAM**

CONTACT US | TERMS OF USE | PRIVACY | EDIT PROFILE | HISTORY  
COPYRIGHT 2011 BY DOMINO'S PIZZA MALAYSIA SDN BHD. ALL RIGHTS RESERVED.  
Operation Hours : 10:30am - 11:00pm

**DELIVERY HOTLINE: 1-300-888-333**

Figure 2.6 Domino's Pizza Online Order System – main page

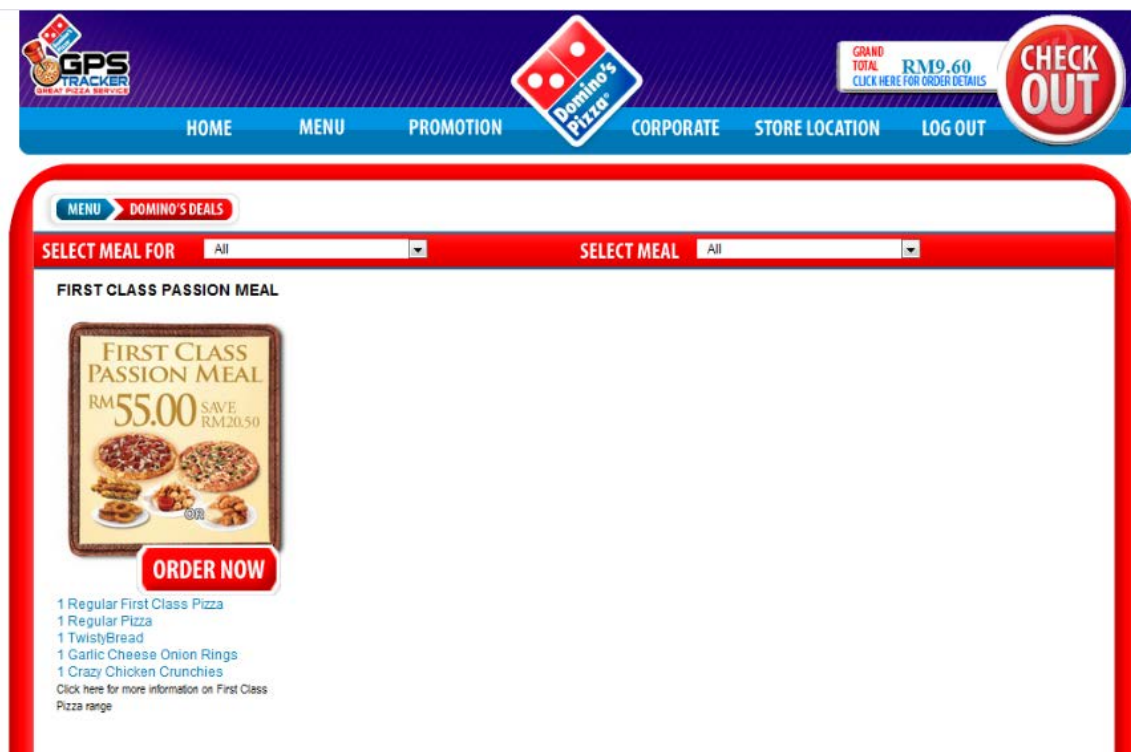


Figure 2.7 Domino's Pizza Online Order System– Order page



#### 2.2.4 Comparison of Comparison of Systems that Similar with Online Product Selection System

The table 2.1 shows the comparison of systems that similar with the Order and Support System. The table compares the entire function variable with the existing system. Most of the systems provide basic information of the company, user need to register and login to make full use of the system function. User also able to view and order product. The system that going to be develop for REH Trading will be more complete with support and also product selection service using rule-based forward chaining.

Table 2.1: Comparison of Systems with Order and Support System for REH Trading

	<b>Online Product Selection System of REH Trading</b>	<b>Online Restaurant Menu Ordering System (MEROSYS)</b>	<b>Dell System</b>	<b>Domino's Pizza Online Order System</b>
<b>Basic Information of the Company</b>	Yes	Yes	Yes	Yes
<b>Login and Register User</b>	Yes	Yes	Yes	Yes
<b>Product Overview</b>	Yes	Yes	Yes	Yes
<b>Product Order</b>	Yes	Yes	Yes	Yes
<b>Support</b>	Yes	No	Yes	No
<b>Product Selection Using Rule-Based</b>	Yes	No	No	No

## **2.3 Development Tools**

The development tools to develop the Online Product Selection System of REH Trading has been identified and choose based on which would be more suitable for the development of the project at the end of the research. Also the programming language, programming tools and database has been studied and summarized into the following sections.

### **2.3.1 Programming Language**

A programming language can be considered as an artificial language used to express computations that can only performed by machine (Wikipedia, 2001a).

#### **2.3.1.1 Active Server Pages.Net (ASP.NET)**

ASP.NET is the successor of ASP and it is not compatible with previous versions of ASP as .NET is a complete rewrite of the software. One of the core features of ASP.NET is the flexibility to choose programming language to develop a system. ASP.NET works with scripted language such as VBScript, Jscript, PerlScript, and Python as well as compiled languages such as VB, C#, C, COBOL, Smalltalk, and Lisp. The new framework uses the common language runtime (CLR) which the language source that you have chosen will be compiled into Microsoft Intermediate Language code, which the CLR then executes.

ASP.NET is complemented by a powerful integrated development environment called Visual Studio which contains a rich toolbox and designer which allows the developer and programmer to easily do editing, drag and drop server controls, and automatic deployment. It speeds up the development process with all the easy and readymade controls which provide flexibility to the programmer and developer (Asp.net, 2003).

### **2.3.1.2 Hypertext Preprocessor (PHP)**

PHP was originally created by Rasmus Lerdorf in 1995 and since then, the language had been widely accepted in web building the development of the language has grown continuously. PHP started as a series of perl scripts for homepages and that is where its original name came from which is "Personal Home Pages". Due to its growth and to be a fully developed and accepted language and with plenty of advantages and flexibility it has been renamed to "Hypertext Preprocessor" (Jonathan Arkell, 2010).

PHP is a scripting language based on the model of pre-processing HTML pages. The PHP pre-processor in the web server will detect any PHP language tag any the PHP engine will execute that particular code. In other words, PHP is mainly focussed on server side scripting. PHP scripts are normally use in these 3 main areas which are server side scripting, command line scripting and writing desktop applications (Php.net, 2001).

### **2.3.1.3 Java Server Pages (JSP)**

Java Server Pages (JSP) is a technology that provides a simplified, fast way to create dynamic web content. JSP technology enables rapid development of web-based applications that are server and platform independent (Oracle, 2010a).

JavaServer Pages technology is an extension of the Java Servlet technology. Servlets are platform-independent, server-side modules that fit seamlessly into a Web server framework and can be used to extend the capabilities of a Web server with minimal overhead, maintenance, and support. JSP technology and servlets provide an attractive alternative to other types of dynamic Web scripting/programming by offering: platform independence; enhanced performance; separation of logic from display; ease of administration; extensibility into the enterprise; and, most importantly the ease of use (Oracle, 2010b).



#### 2.3.1.4 Comparison of Advantages and Disadvantages of Programming Language

The Table 2.2 (Steven, 2010) shows the comparison of advantages and disadvantages of programming language between PHP, ASP.NET and JSP.

Table 2.2: Comparison of Advantages and Disadvantages of Programming Languages

	<b>ASP.NET</b>	<b>PHP</b>	<b>JSP</b>
<b>Code price</b>	Free	Free	Free
<b>Platform price</b>	Not free	Free	Free
<b>Language code style</b>	VB	C	Java
<b>Efficiency</b>	Weak	Strong	Weak
<b>Security</b>	Strong	Strong	Weak
<b>Platform</b>	Microsoft platforms only	Any	Any
<b>Source available</b>	No	Yes	Yes
<b>Object Oriented Programming</b>	Yes	Yes	Yes

#### 2.3.2 Integrated Development Environment (IDE)

An integrated development environment (IDE) also known as integrated design environment or integrated debugging environment is a software application that provides comprehensive facilities to computer programmers for software development (Wikipedia, 2010b).

##### 2.3.2.1 Microsoft Visual Studio 2010

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It can be used to develop console and graphical user interface applications along with Windows Forms applications, web sites, web applications, and web services in both native codes together with managed code for all platforms. It supports various types of

languages such as C/C++, VB.NET, C# and F#. Support for other languages too such as M, Python, Ruby, XML/XSLT, HTML/XHTML, JavaScript, CSS, ASP and ASP.NET (Wikipedia, 2001c).

Visual Studio 2010 is packed with new and enhanced features that simplify the entire development process from design to deployment. Customize your workspace with multiple monitor support. Create rich applications for SharePoint and the Web. Target multiple versions of the .NET Framework with the same tool (Microsoft, 2010).

#### **2.3.2.2 Adobe Dreamweaver CS5**

Adobe Dreamweaver formerly called Macromedia Dreamweaver is a web development application originally created by Macromedia, and is now developed by Adobe Systems, which acquired Macromedia in 2005. It supports various types of languages such as ActionScript, Active Server Pages (ASP), C#, Cascading Style Sheets (CSS), ColdFusion, EDML, Extensible HyperText Markup Language (XHTML), Extensible Markup Language (XML), Extensible Stylesheet Language Transformations (XSLT), HyperText Markup Language (HTML), Java, JavaScript, PHP: Hypertext Preprocessor (PHP), Visual Basic (VB), Visual Basic Script Edition (VBScript) and Wireless Markup Language (WML) (Wikipedia, 2001d).

Adobe Dreamweaver CS5 software empowers designers and developers to build standards-based websites with confidence. Design visually or directly in code, develop pages with content management systems, and accurately test browser compatibility (Adobe, 2010).

### **2.3.2.3 Netbeans IDE 6.9**

The NetBeans IDE is an award-winning integrated development environment available for Windows, Mac, Linux, and Solaris. The NetBeans project consists of an open-source IDE and an application platform that enable developers to rapidly create web, enterprise, desktop, and mobile applications using the Java platform, as well as JavaFX, PHP, JavaScript and Ajax, Ruby and Ruby on Rails, Groovy and Grails, and C/C++.

The NetBeans project is supported by a vibrant developer community and offers extensive documentation and training resources as well as a diverse selection of third-party plugins. NetBeans IDE 6.9 introduces the JavaFX Composer, a visual layout tool for visually building JavaFX GUI applications, similar to the Swing GUI builder for Java SE applications (Netbeans, 2000).

### 2.3.2.4 Comparison of Advantages and Disadvantages of Integrated Development Environment (IDE)

The table below as shown in Table 2.3 (Steven, 2010) consists of comparison of advantages and disadvantages of integrated development environment (IDE) between Adobe Dreamweaver CS5, Microsoft Visual Studio 2010 and Netbeans IDE 6.9.

Table 2.3: Comparison of Advantages and Disadvantages of Integrated Development Environment

	<b>Microsoft Visual Studio 2010</b>	<b>Adobe Dreamweaver CS5</b>	<b>Netbeans IDE 6.9</b>
<b>Software price</b>	Not free	Not free	Free
<b>Memory usage</b>	High	High	Low
<b>OS Compability</b>	Window only	Any	Any
<b>Server and client side scripting</b>	Yes	Yes	Yes
<b>Platform</b>	Microsoft platforms only	Any	Java platforms only
<b>Code coverage</b>	Limited	Large	Limited
<b>GUI</b>	Good	Good	Good
<b>System Requirement</b>	High	High	Low

### **2.3.3 Database**

A database consists of an organized collection of data for one or more uses, typically in digital form (Wikipedia, 2001e).

#### **2.3.3.1 MySQL**

MySQL was originally founded and developed in Sweden by two Swedes and a Finn: David Axmark, Allan Larsson and Michael "Monty" Widenius, who had worked together since the 1980's. MySQL is the world's most popular open source database software because of its consistent fast performance, high reliability and ease of use with over 100 million copies of its software downloaded or distributed throughout its history.

Not only is MySQL the world's most popular open source database, it's also become the database of choice for a new generation of applications built on the LAMP stack (Linux, Apache, MySQL, PHP / Perl / Python.) MySQL runs on more than 20 platforms including Linux, Windows, Mac OS, Solaris, HP-UX, IBM AIX, giving you the kind of flexibility that puts you in control (MySQL.com, 2010).

#### **2.3.3.2 Microsoft SQL Server 2008 R2**

Microsoft SQL Server is a relational model database server produced by Microsoft. Its primary query languages are T-SQL and ANSI SQL. The code base for MS SQL Server originated in Sybase SQL Server, and was Microsoft's entry to the enterprise-level database market, competing against Oracle, IBM, and others.

SQL Server 2008 R2 adds certain features to SQL Server 2008 including a master data management system branded as Master Data Services, a central management of master data entities and hierarchies. Also Multi Server Management, a centralized console to manage multiple SQL Server 2008 instances and services including relational databases, Reporting Services, Analysis Services & Integration Services (Wikipedia, 2001f).

### **2.3.3.3 Oracle Database 11i/11g**

An Oracle database is the key to solving the problems of information management. In general, a server reliably manages a large amount of data in a multiuser environment so that many users can concurrently access the same data. All this is accomplished while delivering high performance. A database server also prevents unauthorized access and provides efficient solutions for failure recovery.

Oracle Database is the first database designed for enterprise grid computing, the most flexible and cost effective way to manage information and applications. Enterprise grid computing creates large pools of industry-standard, modular storage and servers. With this architecture, each new system can be rapidly provisioned from the pool of components. There is no need for peak workloads, because capacity can be easily added or reallocated from the resource pools as needed.

The database has logical structures and physical structures. Because the physical and logical structures are separate, the physical storage of data can be managed without affecting the access to logical storage structures (Oracle, 2010c).

#### 2.3.3.4 Comparison of Advantages and Disadvantages of Database

The table below as shown in Table 2.4 (Steven, 2010) consists of comparison of advantages and disadvantages of database between MySQL, Microsoft SQL Server R2 and Oracle Database 11i/11g.

Table 2.4: Comparison of Advantages and Disadvantages of Database

	<b>MySQL</b>	<b>Microsoft SQL Server R2</b>	<b>Oracle Database 11i/11g</b>
<b>Software price</b>	Free	Not free	Not Free
<b>Simplicity</b>	Yes	Yes	No
<b>Access speed</b>	Fast	Slow	Fast
<b>Server side scripting language</b>	Any	Any	Any
<b>Platform</b>	Any	Microsoft platforms only	Any
<b>Security</b>	Strong	Strong	Strong
<b>GUI</b>	No	No	Yes
<b>Storage</b>	Big	Big	Big

### **2.3.4 Web Server**

A web server is a computer program that delivers content. It can also refer to the computer or virtual machine running the program (Wikipedia, 2001g).

#### **2.3.4.1 Apache HTTP Server**

The Apache HTTP Server Project is an effort to develop and maintain an open-source HTTP server for modern operating systems including UNIX and Windows NT. The goal of this project is to provide a secure, efficient and extensible server that provides HTTP services in sync with the current HTTP standards.

The Apache HTTP Server Project is a collaborative software development effort aimed at creating a robust, commercial-grade, featureful, and freely-available source code implementation of an HTTP (Web) server. The project is jointly managed by a group of volunteers located around the world, using the Internet and the Web to communicate, plan, and develop the server and its related documentation. This project is part of the Apache Software Foundation. In addition, hundreds of users have contributed ideas, code, and documentation to the project. This file is intended to briefly describe the history of the Apache HTTP Server and recognize the many contributors (Apache.org, 1999).

#### **2.3.4.2 Internet Information Services (IIS)**

Internet Information Services (IIS) formerly called Internet Information Server is a web server application and set of feature extension modules created by Microsoft for use with Microsoft Windows. It is the world's second most popular web server in terms of overall websites behind the industry leader Apache HTTP Server. As of March 2010, it served 24.47% of all websites on the Internet according to Netcraft (Wikipedia, 2001h).

Internet Information Services (IIS) for Windows Server is a flexible, secure and easy-to-manage Web server for hosting anything on the Web. From media streaming to



web application hosting, IIS's scalable and open architecture is ready to handle the most demanding tasks (IIS.net, 2010).

#### **2.3.4.3 NGINX**

Nginx is a free, open-source, high-performance HTTP server and reverse proxy, as well as an IMAP/POP3 proxy server. Igor Sysoev started development of Nginx in 2002, with the first public release in 2004. Nginx now hosts nearly 6.55% of all domains worldwide. Nginx is known for its high performance, stability, rich feature set, simple configuration, and low resource consumption.

Nginx is one of a handful of servers written to address the C10K problem. Unlike traditional servers, Nginx doesn't rely on threads to handle requests. Instead it uses a much more scalable event-driven (asynchronous) architecture. This architecture uses small, but more importantly, predictable amounts of memory under load. Even if you don't expect to handle thousands of simultaneous requests, you can still benefit from Nginx's high-performance and small memory footprint. Nginx scales in all directions: from the smallest VPS all the way up to clusters of servers (NGINX.org, 2010).

#### 2.3.4.4 Comparison of Advantages and Disadvantages of Web Server

The table below as shown in Table 2.5 (Steven, 2010) consists of comparison of advantages and disadvantages of web server between Apache HTTP Server, IIS and NGINX.

Table 2.5: Comparison of Advantages and Disadvantages of Web Server

	<b>Apache HTTP Server</b>	<b>IIS</b>	<b>NGINX</b>
<b>Server price</b>	Free	Not free	Free
<b>Platform</b>	Any	Microsoft platforms only	Any
<b>Security</b>	Strong	Strong	Weak
<b>Architecture</b>	Complete	Complete	Complete
<b>Control</b>	Full	Full	Partial
<b>Reliability</b>	Yes	Yes	Yes
<b>Support</b>	Yes	Yes	Yes
<b>Access Authentication</b>	Strong	Strong	Weak

## **2.4 Methodology**

Methodology is an ongoing process where software developers used as guidelines to build system from goal definition to the actual system or final product. It is important to identify and use a suitable methodology that suits the development of the project the developer is doing to ensure every phase and stages are rightly focus and apply to achieve project goals set. Three software methodologies had been identified and considered for the development of Order and Support System for REH Trading:

- i) Waterfall
- ii) Rapid Application Development
- iii) Iterative & Incremental Development

### **2.4.1 Waterfall**

The waterfall model is a first model of the software development process was derived from other engineering process (Royce, 1970). It is a model which was developed for software development that is to create software. It is called as such because the model develops systematically from one phase to other in a downward fashion, like a waterfall.

Waterfall model has been structured on various phases especially to help out the software construction companies to develop an organized system of construction. The project will divide into many stages by following this method. When start with first Phase and according to this model, only can proceed to next phase once the previous one has been completed. This way one moves progressively to the final stage and once that point is reached, then cannot turn back, similar to the water in a waterfall.

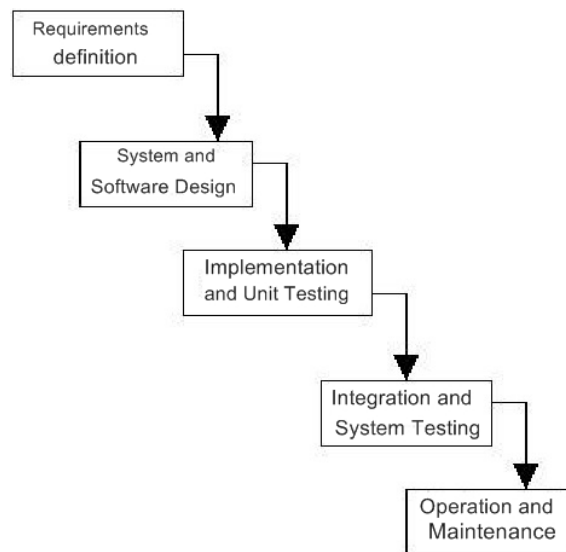


Figure 2.8 Waterfall Model

According to Figure 2.2, waterfall model takes the fundamental process activities of specification, development, validation and evolution and represents them as separate process phase such as (Ain Sommerville, 2001):

i. Requirements Analysis and Definition

The system's services, constraints and goals are established by consultation with system users. They are defined in detail and serve as a system specification.

ii. System and Software Design

The systems design process partitions the requirements to either hardware or software system. It establishes an overall system architecture. Software design involves identifying and describing the fundamental software system abstractions and their relationships.

iii. Implementation and Unit Testing

During this stage, the software design is realised as a set of programs or program units. Unit testing involves verifying that each unit meets its specification.

iv. Integration and System Testing

The individual program units or programs are integrated and tested as a complete system to ensure that the software requirements have been met. After testing, the software system is delivered to the customer.

v. Operation and Maintenance

Normally this is the longest life cycle phase. The system is installed and put into practical use. Maintenance involves correcting errors which were not discovered in earlier stages of the life cycle, improving the implementation of system units and enhancing the system's services as new requirements are discovered.

#### **2.4.2 Rapid Application Development (RAD)**

RAD is a software development process developed initially by James Martin in 1991. The methodology involves iterative development, and the construction of prototypes. Traditionally the rapid application development approach involves compromises in usability, features and execution speed. It is described as a process through which the development cycle of an application is speed up. Therefore, RAD enables quality products to be developed faster, saving valuable resources (Tinnirello, 2000). In other words, the key objectives of RAD are high quality systems, fast development and delivery, and low costs (Beynon-Davies et al, 2002).

RAD aids system developments through the usage of extensive user involvement, Joint Application Design (JAD) sessions, prototyping, integrated Computer Aided Software Engineering (CASE) tools and code generators. Basically, the end users and prototyping are heavily involved in the development from the beginning till the end where the product is completed. End users are generally involved:

- i) In the development process where they participate together in application planning.

- ii) In requirements determination where they aid analyst in system prototyping.
- iii) In design and implementation where they work with developers to validate final elements and attributes of the system's design.

RAD consists of four phases which are (Shelly et.al, 2008):

i) Requirements planning

- All the vital information such as scope, key issues, needs and goals of the project will be identified and finalized. The people involved in the development of the project such as project managers, users, IT staff members will start working on the project upon agreeing the discussed and finalized requirements and after authorization.

ii) User Design

- During the user design phase, users or the targeted audience of the system will interact with the developer in order to build the models and prototype that would represent the finalized product in terms of processes, outputs and inputs. CASE tools will be used in order to translate users' need into working models and this process is ongoing to allow the users to understand and commence any changes if necessary.

iii) Construction

- Users continue to participate in this stage and they can suggest any modifications and improvements that need to be done in the actual screen or reports shown by the developer.

#### iv) Cutover

- This phase is similar to the finals tasks in the SDLC implementation phase which includes data conversion, testing, changeover to new system and user testing. In RAD, all these tasks are compressed which causes the final system to be able to be delivered and place in operation much sooner.

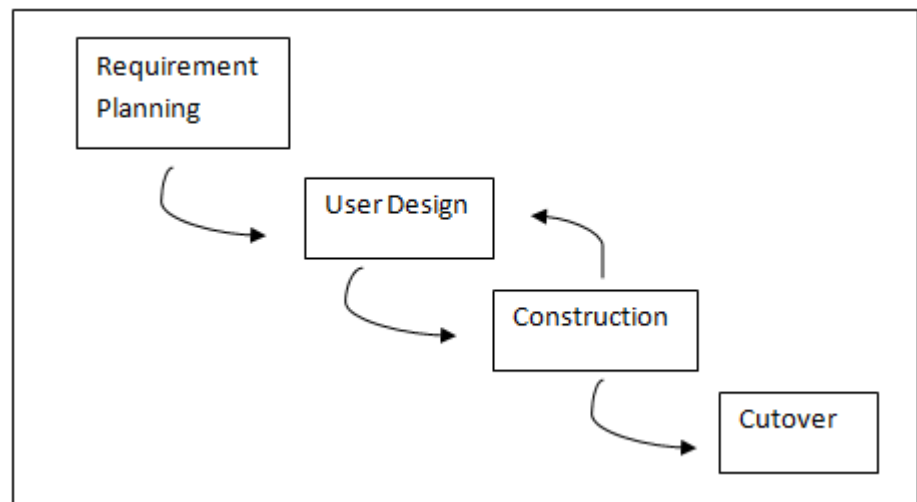


Figure 2.9: Rapid Application Development Lifecycle

### 2.4.3 Iterative & Incremental Development

Iterative and Incremental development is developed in response to the weaknesses of the waterfall model in which at heart of a cyclic software development process. It starts with an initial planning and ends with deployment with the cyclic interactions in between. The incremental approach to development was suggested by Mills (Mills et al, 1980) as a means of reducing rework in the development process and giving customers some opportunities to delay decisions on their detailed requirements until they had some experience with the system.

A basic idea of Iterative & Incremental Development is develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), the purpose of this development is allowing software developers to take advantage of what was learned during development of earlier parts or versions of the system. Learning comes from both the development and use of the system, where possible key steps in the process start with a simple implementation of a subset of the software requirements and iteratively enhance the

evolving versions until the full system is implemented. At each iteration, design modifications are made and new functional capabilities are added.

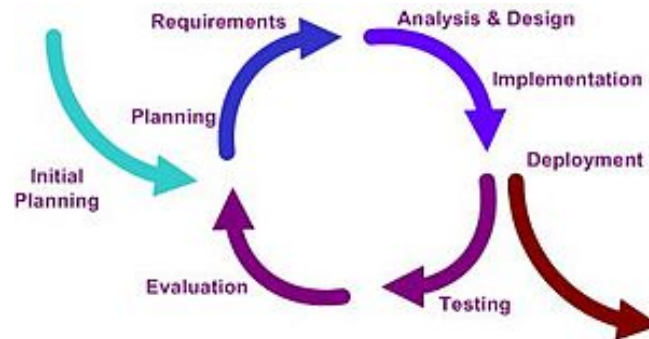


Figure 2.10 Iterative development models

Incremental development process has a number of advantages:

- Customers do not have to wait until the entire system is delivered until they can gain value from it. The first increment satisfies their most critical requirements so the software can be immediately used.
- Customers can use the early increments as a form of prototype and gain experience which informs the requirements for later system increments.
- There is a lower risk of overall project failure. Although problems may be encountered in some increments, it is likely that some will be successfully delivered to the customers.

However, there are some problems with incremental development. Increments should be relatively small (no more than 20,000 lines of code) and each increment should deliver some system functionality. It may therefore be difficult to map the customer's requirements onto increments of the right size.



## 2.5 Technique

The techniques has been analyzed are fuzzy logic, rule-based and neural network.

### 2.5.1 Fuzzy Logic

Fuzzy logic is a precise logic of imprecision and approximate reasoning (Zadeh, 2008). Unlike two-valued Boolean logic, fuzzy logic is multi-valued. It deals with degrees of membership and degrees or truth (Negnevitsky,2005).Fuzzy logic extended the value of true or false,  $\{0, 1\}$ . Instead of black and white, fuzzy logic employs the spectrum of colors, accepting that things that can be partly true and partly false at the same time, Figure 2.11. Fuzzy logic is used to reason about Fuzzy sets. Fuzzy set is contrast with the traditional set theory, the crisp set (Coppin, 2004). Fuzzy logic is based on rules. These rules are expressed in the form of IF-THEN statements. Example, IF  $p$  then  $q$ , where  $p$  and  $q$  are unconditional fuzzy propositions (Ramot et al, 2003). It is different with the classical IF-THEN rule.

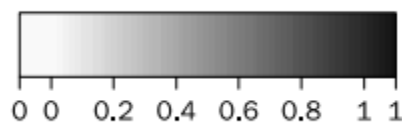


Figure 2.11 Multi-Valued Logic

### 2.5.2 Rule Based System

A rule-based system is a knowledge based where the knowledge base is represented in the form of a set, or sets, of rules (Hopgood, 2001). The rules express what must happen or what does happen when certain conditions are met. Rules are usually expressed in the form of IF...THEN...statements, such as:

IF A THEN B

This can be considered to have a similar logical meaning of the following:

$A \rightarrow B$

A is called the antecedent and B is the consequent in this statement. In expressing rules, the consequent usually takes the form of an action or conclusion. In other words, the purpose of a rule is to tell the system on what to do in certain circumstances, or what conclusion to draw from a set of input about current situation. In general, a rule can have more than one antecedent by AND or by OR and may have more than one consequent (Coppin, 2004).

### 2.5.3 Artificial Neural Network

A neural network can be defined as a model of reasoning based on the human brain (Negnevitsky, 2005). Artificial neural network learns from experience, example and analogy. It improves the performance of an intelligent system over time. Figure 2.9 is the architecture of a typical artificial neural network. The neurons are connected by links, and each link has a numerical weight associated with it. Weights are the basic means of long term memory in Artificial Neural Network. They express the strength, or in other words importance, of each neuron input. A neural network learns through repeated adjustment of these weights.

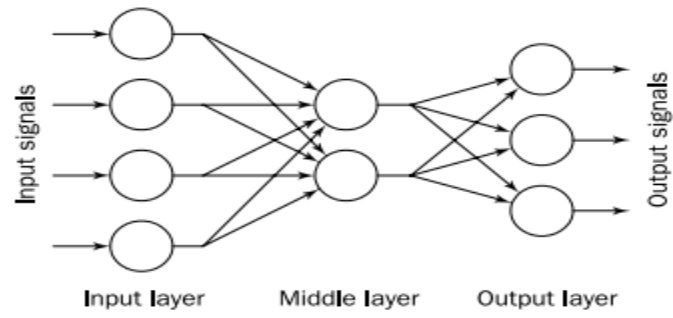


Figure 2.12 Architecture of a typical artificial neural network

## **CHAPTER 3**

### **METHODOLOGY**

In this chapter will discuss about the methodology that will be using in the development of Online Product Selection System of REH Trading. The Rapid Application Development (RAD) method was choosing because RAD has several characteristic that is suitable for the development of Order Online Product Selection System of REH Trading. There are three section consists in this chapter. The first section explains about the introduction of the RAD development method and the reason to choosing the RAD approach. The next section discuss about the implementation of RAD method and also the selected technique in the system. The last section will elaborate the hardware and software that was used in the development of the system.

### **3.1 Rapid Application Development (RAD)**

RAD is a software development process developed initially by James Martin in 1991 (Tinnirello, 2000). The methodology involves iterative development, and the construction of prototypes. Traditionally the rapid application development approach involves compromises in usability, features and execution speed. It is described as a process through which the development cycle of an application is speed up. Therefore, RAD enables quality products to be developed faster, saving valuable resources (Tinnirello, 2000). In other words, the key objectives of RAD are high quality systems, fast development and delivery, and low costs (Beynon-Davies et al, 2002).

RAD aids system developments through the usage of extensive user involvement, Joint Application Design (JAD) sessions, prototyping, integrated Computer Aided Software Engineering (CASE) tools and code generators. Basically, the end users and prototyping are heavily involved in the development from the beginning till the end where the product is completed. End users are generally involved:

- i) In the development process where they participate together in application planning.
- ii) In requirements determination where they aid analyst in system prototyping.
- iii) In design and implementation where they work with developers to validate final elements and attributes of the system's design.

### 3.2 Implementation of Rapid Application Development (RAD) in Online Product Selection System of REH Trading

There have four main life cycle phases in the RAD life cycle as refer to figure 3.1, which is:

- a. Requirement Planning
- b. User Design
- c. Construction
- d. Cutover

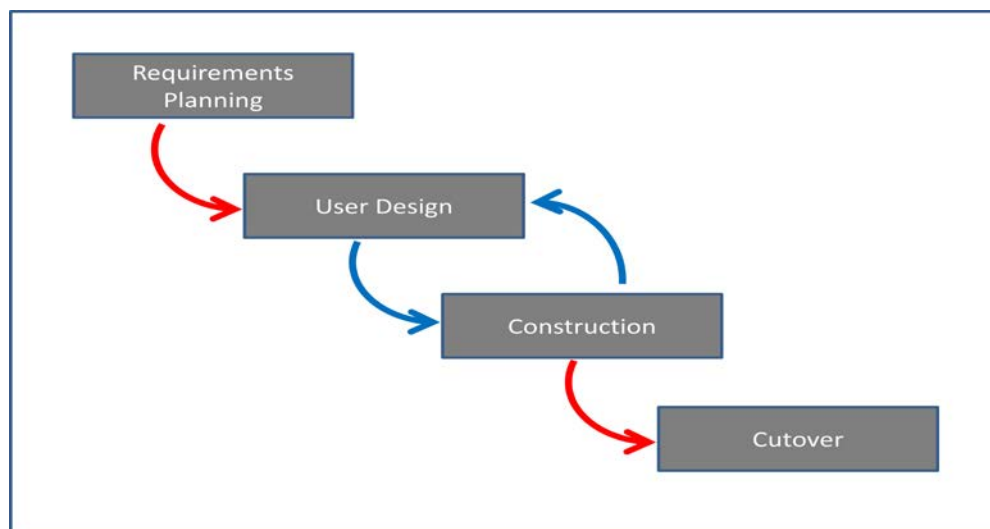


Figure 3.1 Rapid Application Development Lifecycle

#### 3.2.1 Requirement Planning Phase

The requirements planning are the early stages of the system development. After a few times of meeting and discussion with the representative of REH Trading Sdn Bhd, all the important information is discussed and the requirements are noted down. The requirement of Online Product Selection System of REH Trading is finalize.

The Online Product Selection System of REH Trading is listed as below:

- a. The system provides basic information and the background of the REH Trading Company.
- b. The system allow customer to register to the database. The database is managed by the admin.
- c. The system provides online product overview with its specification together with description. Admin able to update and delete product.
- d. The system allow only registered customer to order the product.
- e. There is a product selection guide using rule based for customer to guide customer in choosing the right product.
- f. All customers can search for product instead of looking one by one.
- g. The system enables registered customer to make appointment for product installation or repair.
- h. The system provides support for registered customer to help customer solve the problem they face.

### **3.2.2 User Design Phase**

The user design is the second phase of the project development. The interaction with the users of the system is important to build the models and prototype of the system. Lots of interactions are made with the staff of the company. The user design consist the flow chart of the system.

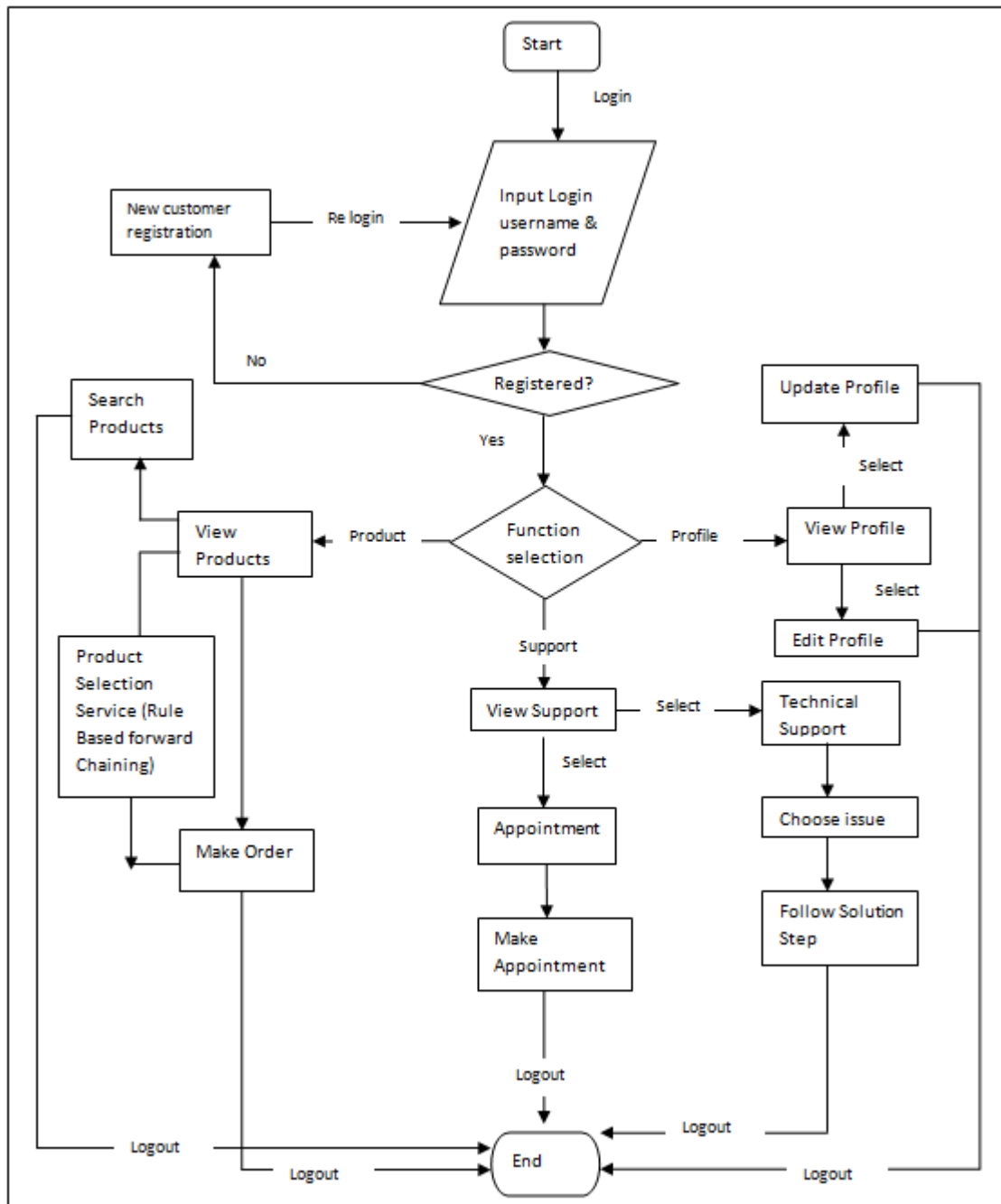


Figure 3.2 Flowchart for Registered User



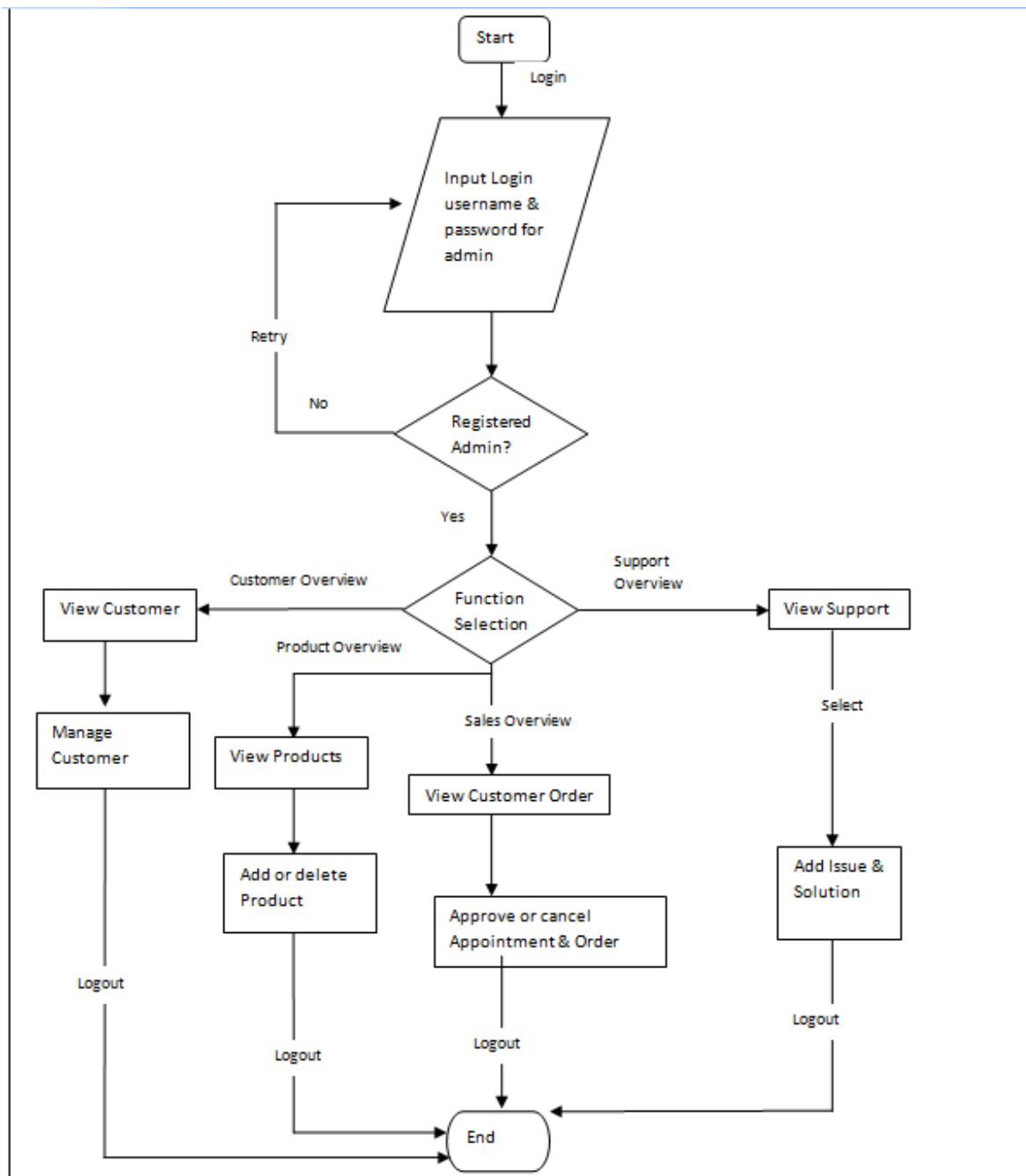


Figure 3.3 Flowchart for admin

### **3.2.3 Construction Phase**

Construction phase is the third phase of the project development. The prototypes are built using the software tools that described earlier. The development of the prototypes is based on the user requirements in the early phase. Users continue to participate in this stage to suggest any possible modifications and improvements that need to be done.

### **3.2.4 Cutover Phase**

Cutover phase is the last phase of the project development. This phase includes data conversion, testing, changeover to new system and user testing. Unit testing, integration testing, and system testing are carried out to test the system. After the unit testing is done, integration testing will be carry on. Integration testing is to test the integration between the modules. At last, system testing is to test the whole system and make sure the system can work perfectly without any errors or bugs. User accpetance testing will also be done. In RAD, all these tasks are compressed which causes the final system to be able to be delivered. Besides that, Users need to be trained to use the system. The system need to be convert and install to the company together with the server system. Lastly, all the necessary documentation for the system will be completed.

## **3.3 Artificial Intelligence**

Artificial Intelligence is a new technological science to research and develop theory, methods, technologies and applications for simulation, extension and expansion of human intelligence (Mei, 2010). It is a branch of computer science. Artificial Intelligence attempts to understand the substance of intelligence and produce a new intelligent machine which could response in a similar way as human intelligence. Artificial Intelligent system has been used to solve some problems in some specific fields (Min,2009). Examples of Artificial Intelligence approach are rule-based, fuzzy logic and neural network.

### 3.3.1 Rule based Expert System

An expert system is a computer system that emulates the ability of a human expert in decision-making (Jackson, 1999). It is designed to be like an expert to solve complex problems. Anyone can be considered as an expert if she or he has deep knowledge in particular domain. For example, expert in electrical machines may have only general knowledge about transformers, while experts in life insurance marketing might have limited understanding of a real estate insurance policy (Negvitsky, 2005). In general, an expert is a skillful person who can do things that other people cannot. The way for the expert to express the knowledge they used to solve particular domain problem is by using rules. Rules is also known as production rule (Hopgood,A.A, 2001). Rules are usually expressed in the form of IF...THEN statements such as :

IF A THEN B

A can be called as antecedent(condition) and B is the consequent(conclusion or action) (Coppin, 2004). A rule can have multiple condition joined by AND(conjunction), OR(disjunction) or combination of both. In general, the antecedent(condition) of a rule contained two parts: an object and its value. There are usually linked by an operator. Example:

IF apple < 3

THEN buy more apple

Similarly, the consequent also combines an object, a value with an operator. Example:

IF price of an apple = 0.8

THEN total price = number of apple \* price of an apple

According to Durkin , rule can represent relations, recommendations, directives, strategies and heuristics.

### 3.3.2 Structure of a Rule-Based Expert System

A production system model is also a rule-based system model is proposed. It is known to be the foundation of the modern rule-based expert system (Newell, 2009). The model is based on the idea that human used to solve problems by applying their knowledge to a given problem presented by problem-specific information.

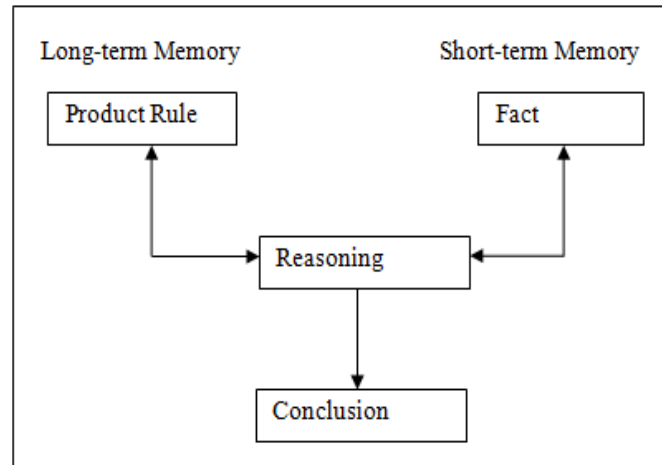


Figure 3.5a Production System Model

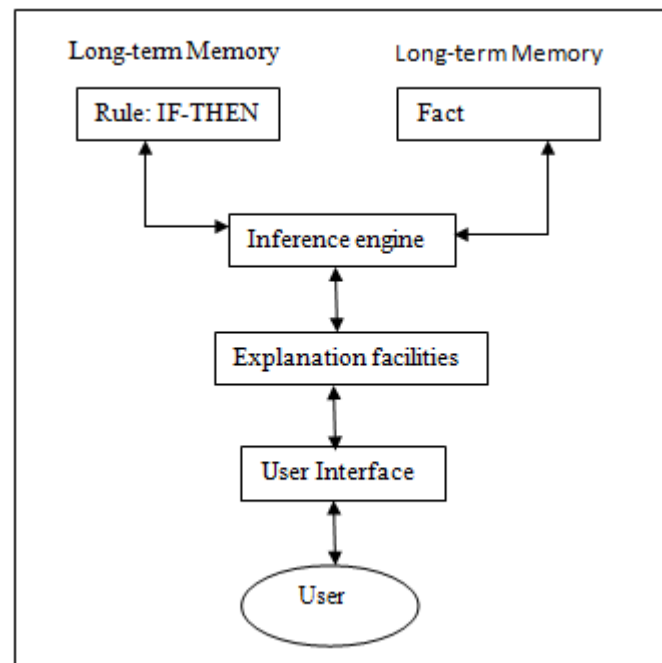


Figure 3.5b Basic Structure of a rule-based expert system

A rule based expert system has five components: the knowledge base, the database, the inference engine, the explanation facilities, and the user interface. The major components that are important are the knowledge base, database and the inference engine. According to (Negnevitsky, 2005), the knowledge based consists of a set of rules useful for problem solving. The database includes a set of facts used to match against the IF parts of rules stored in the knowledge base (Coppin, 2004). The inference engine is part of the system that controls the process of deriving conclusion by using the rules and the facts. The inference engine compares each rules stored in the knowledge based with facts contained in the database. When the antecedent (IF) condition matches a fact, the rule is fired and its action or conclusion (THEN) is executed (Negvitsky, 2005).

### 3.3.3 Forward chaining inference techniques

Forward chaining is the data-driven reasoning (Negvitsky, 2005).. It also can be explained by using deduction to reach a conclusion from a set of antecedents (IF) (Coppin, 2004). It is an inference method where rules are matched against facts to establish new facts and then reaching a conclusion (Jozsef, 2009). This means that the reasoning starts from the known data and proceeds forward with that data. In other words, the system starts from a set of facts, and a set of rules, and tries to find a way of using the rules and facts to deduce a conclusion (Coppin, 2004).

### 3.3.4 Example of Rule Based Forward Chaining

Forward Chaining is known as data-driven reasoning because the reasoning starts from a set of data and ends up at the goal, which is the conclusion. Below is an example of rule based forward chaining. Consider a set of rules to control an elevator in a three story building.

Table 3.1 Fact Database

Fact Database	
Fact 1	First Floor

Fact 2	Button Pressed on Third Floor
Fact 3	Today is Monday

#### Rule 1

If        on first floor  
AND    button is pressed on second floor  
THEN go to second floor

#### Rule 2

IF        on first floor  
AND    button is pressed on third floor  
THEN go to third floor

The system will examine the facts with the rules and fires the rule if the fact is matched with the rule. In this case, the rule 2 is fired. The new fact is added into the fact database.

Table 3.2 New Fact Database

Fact Database	
Fact 1	First Floor
Fact 2	Button Pressed on Third Floor
Fact 3	Today is Monday
Fact 4	Go to third floor

### **3.3.5 Justification of Selected Technique**

The chosen technique to be applied in the part of Online Product Selection System of REH Trading is rule based forward chaining. The rule based forward chaining is selected because forward chaining is good for problems where it is desirable to learn as much as possible from the available problem information. Unlike others artificial intelligent techniques, fuzzy logic extends the possibilities of a decision instead of true or false. Neural network studies from experience then improves the performance of an intelligent system. Both the techniques are more complex than rule-based and it takes time to digest both techniques theory and apply it. In this case for REH Trading Order and Support System, forward chaining is used as the questioning of an expert who has no idea of the customer's need. Then end up approaching the goal, which is the conclusion.

## **3.4 Software and Hardware Tools**

There are several software and hardware that have been used in the development of Order and Support System for REH Trading. Software is the program used to operate computer and other devices while hardware is the physical aspect of the computer.

### **3.4.1 Hardware**

The hardware specification for the system is base on the system requirement of the chosen development tools. Table 3.1 below shows the list of hardware that is used during the development of the system.

Table 3.3 Hardware Specification for Online and Support System

Hardware	Specification	Purpose
Laptop	-Intel(R) Core(TM)2 Duo CPU T6400 @ 2.1GHz  -4 GB DDR2 RAM  -370 GB Hard Disk	To run the operating system for development
Printer	Epson TX100	Print out the documentation
External Hard Disk	Samsung G2 portable 500GB	Backup data
USB Flash Disk	Kingston 4 GB Data Traveler	Transferring data
CD	700 MB 48x	System backup and delivery

### 3.4.2 Software

After doing the research, PHP is chosen as the programming language in developing the system. So the development tools are selected based on the chosen language environment for the development of Online Product Selection System of REH Trading after comparing all the possible tools. Table 3.2 below shows the list of software that is used during the development of the system.



Table 3.4 Software Specification for Online and Support System

<b>Software</b>	<b>Purpose</b>
Adobe Dreamweaver CS5	System interface design and coding implementation
MySQL	Database platform
Apache HTTP Server	Web server platform
Microsoft Office -Microsoft Office Word 2007 - Microsoft Office Power Point 2007 - Microsoft Office Project 2007 - Microsoft Office Visio 2007	Documentation, presentation slide, schedule planning and graphical diagram design
WinRAR 3.80	File compress and decompress
Foxit Reader	Reading pdf files
Mozilla Firefox 7.0	Browse and test system
Window 7 Professional 32bit Operating System	Operating system used in development
Avast! Pro Antivirus 6.0.01289	Protect laptop from virus and spyware

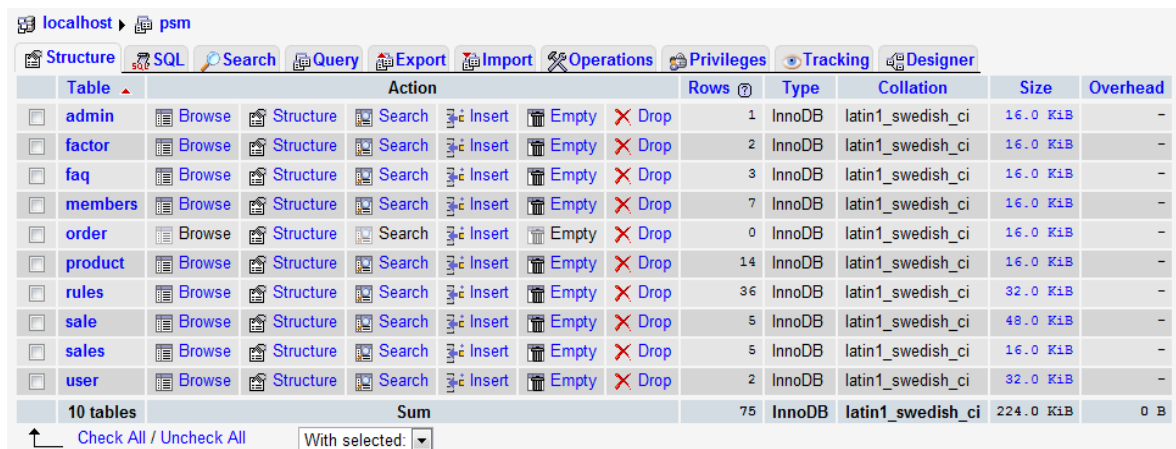
## CHAPTER 4

### IMPLEMENTATION

This chapter devotes the implementation of database, interface and coding into the system.

#### 4.1 Database Implementation

The Online Product Selection System of REH Trading (OPSS) require database to store the data for the company to manage the sales and support. The system is using phpMyadmin as the database management system. It has 9 tables in the database named psm as shown in Figure 4.1.



The screenshot shows the phpMyAdmin interface for a database named 'psm' on 'localhost'. The 'Structure' tab is selected, displaying a list of 10 tables. Each table row includes a checkbox, the table name, and icons for 'Browse', 'Structure', 'Search', 'Insert', 'Empty', and 'Drop'. The bottom of the table list shows a 'Sum' row for all 10 tables.

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> admin		1	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> factor		2	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> faq		3	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> members		7	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> order		0	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> product		14	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> rules		36	InnoDB	latin1_swedish_ci	32.0 KiB	-
<input type="checkbox"/> sale		5	InnoDB	latin1_swedish_ci	48.0 KiB	-
<input type="checkbox"/> sales		5	InnoDB	latin1_swedish_ci	16.0 KiB	-
<input type="checkbox"/> user		2	InnoDB	latin1_swedish_ci	32.0 KiB	-
<b>10 tables</b>	<b>Sum</b>	<b>75</b>	<b>InnoDB</b>	<b>latin1_swedish_ci</b>	<b>224.0 KiB</b>	<b>0 B</b>

Check All / Uncheck All      With selected: ▾

Figure 4.1: OPSS Database

### 4.1.1 Database Server Connection

The OPSS need a server to host and link to the database. OPSS is using Apache Server as local host and using PHP and MySQL code to connect the system with the server and database as shown in Figure 4.2. There is another file named config.php that stores the host, user, password and database in Figure 4.3.

```
require_once('config.php');
//Connect to mysql server
$link = mysql_connect(DB_HOST, DB_USER, DB_PASSWORD);
if(!$link) {
    die('Failed to connect to server: ' . mysql_error());
}
//Select database
$db = mysql_select_db(DB_DATABASE);
if(!$db) {
    die("Unable to select database");
}
```

Figure 4.2: Database and Server Connection

```
<?php
    define('DB_HOST', 'localhost');
    define('DB_USER', 'cb09088');
    define('DB_PASSWORD', '890507');
    define('DB_DATABASE', 'psm');
?>
```

Figure 4.3: Connection Details

## 4.2 System Interface and Implementation

System interface is the important part as it acts as the interaction between user and the system. The OPSS interface is designed using CSS and HTML code while the OPSS module function is using PHP and MySQL codes.

### 4.2.1 Main Page

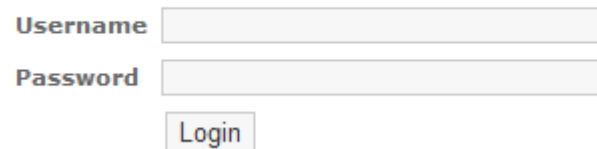
The main page design is framed with logo, header, footer and navigation bar. The design is same for other page as well. The main page has brief introduction on what is this system all about. Every page has the navigation bar to link to home, about us page, product view page, product selection page and more. The main page is shown in Figure 4.4.



Figure 4.4: OPSS Home Page

### 4.2.2 Login and Registration Module

This module provides the capability for customer and admin to login into the system as shown in Figure 4.5.



A login interface form with two input fields and a button. The first field is labeled 'Username' and the second is labeled 'Password'. Below these fields is a button labeled 'Login'.

<b>Username</b>	<input type="text"/>
<b>Password</b>	<input type="password"/>
<input type="button" value="Login"/>	

Figure 4.5: Login Interface

This module also provides the capability to register new customer as shown in Figure 4.6.



A registration interface form with eight input fields and a button. The fields are labeled: 'First Name', 'Last Name', 'Address', 'Email Address', 'Mobile Phone No.', 'Username', 'Password', and 'Confirm Password'. Below these fields is a button labeled 'Register'.

<b>First Name</b>	<input type="text"/>
<b>Last Name</b>	<input type="text"/>
<b>Address</b>	<input type="text"/>
<b>Email Address</b>	<input type="text"/>
<b>Mobile Phone No.</b>	<input type="text"/>
<b>Username</b>	<input type="text"/>
<b>Password</b>	<input type="password"/>
<b>Confirm Password</b>	<input type="password"/>
<input type="button" value="Register"/>	

Figure 4.6: Registration Interface

### 4.2.3 View and Edit Profile Module

This module provides the capability for customer to view and edit profile after login into the system as shown in Figure 4.7 and Figure 4.8.

#### User Profile

Firstname : 2  
Lastname : 123  
Address : 123  
Email : tzyguan@asda.com  
Hp.Number : 123  
[Edit Profile](#)

Figure 4.7: View User Profile

#### User Profile

Firstname :	<input type="text" value="2"/>
Lastname :	<input type="text" value="123"/>
Address :	<input type="text" value="123"/>
Email :	<input type="text" value="tzyguan@asda.com"/>
Hp.Number :	<input type="text" value="123"/>

Figure 4.8: Edit User Profile

#### 4.2.4 View Product and Make Order Module

This module provides the capability for customer to view product as shown in Figure 4.9 and make order in Figure 4.10.



	<p>Product id : IWD001</p> <p>Product Name : REH FALKEN EYE</p> <p>Horizontal Resolution : 420 TV Lines</p> <p>Image Pick-up Device : 1/4" Sharp CCD</p> <p>Minimum Illumination : 0.5 Lux</p> <p>S/N Ratio : &gt;=48dB</p> <p>Infrared (IR): -</p> <p>Lens : 3.6mm</p> <p>Gain Control : Auto</p> <p>Weight : Approx 300g</p> <p>Body : Dust Proof</p> <p><b>Order</b></p>
	<p>Product id : IWD002</p> <p>Product Name : REH COLOUR IR CCTV</p> <p>Horizontal Resolution : 540 TV Lines</p> <p>Image Pick-up Device : 1/3" Sony CCD</p> <p>Minimum Illumination : 0 Lux (7meter IR ON)</p> <p>S/N Ratio : 45dB</p> <p>Infrared (IR): 23 LED's, auto trigger</p> <p>Lens : 3.6mm</p> <p>Gain Control : Auto</p> <p>Weight : Approx 420g</p> <p>Body : Dust Proof</p> <p><b>Order</b></p>

Figure 4.9: User View Product

	
Product id :	IWD001
Product Name :	REH FALKEN EYE
Horizontal Resolution :	420 TV Lines
Image Pick-up Device :	1/4" Sharp CCD
Minimum Illumination :	0.5 Lux
S/N Ratio :	>=48dB
Infrared (IR):	-
Lens :	3.6mm
Gain Control :	Auto
Weight :	Approx 300g
Body :	Dust Proof
<a href="#">Confirm Order</a>	

Figure 4.10: User Make Order




#### 4.2.5 Make Appointment Module

This module provides the capability for customer to make appointment for product installation after order the product. It is as shown in Figure 4.11.

### Appointment

Make appointment for product installation.  
Appointment date is only available on Monday to Saturday.  
Appointment time is only available in 2 sessions.

APPOINTMENT FOR PRODUCT INSTALLATION

Appointment Date : 20 May 2012 

Appointment Time :

Additional Note (if have) :

Next

Back

Figure 4.11: User makes Appointment

#### 4.2.6 Product Selection Module

This module provides the capability to help customer in choosing the products. It is as shown in Figure 4.12 and Figure 4.13.

**Welcome**

1.Which type of cctv system you prefer?  
wired ☐  
Wireless ☒

Suggestions: 2.Do you want it to be remotely?  
☐Yes  
☒No

3.You want it in indoor or outdoor?  
☐Indoor  
☒Outdoor

5.Please choose the infared range?  
☐10m  
☒20m  
☐30m

[OWLS002A](#)  
[OWLS002B](#)  
[OWLS002C](#)  
[OWLS002D](#)

Figure 4.12: The product selection

The Recommended Result for you is :



Product id	IWD001
Product Name	REH FALKEN EYE
Horizontal Resolution	420 TV Lines
Image Pick-up Device	1/4" Sharp CCD
Minimum Illumination	0.5 Lux
S/N Ratio	>=48dB
Infrared (IR)	-
Lens	3.6mm
Gain Control	Auto
Weight	Approx 300g
Boody	Dust Proof

Figure 4.13: The result of product selection

#### 4.2.7 Product Search Module

This module provides the capability for customer to search the product. It is as shown as in Figure 4.14.

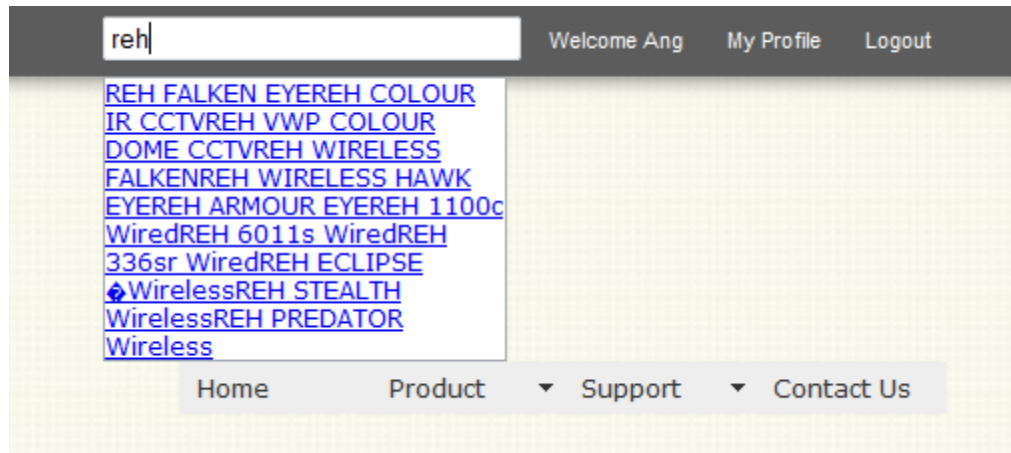


Figure 4.14: The result of product search

#### 4.2.8 Manage User module

This module provides the capability for admin to manage user. Admin is able to view details of user and delete user. It is as shown in Figure 4.15 and Figure 4.16.

### Customer Overview

Customer Name	View Details	Remove
qweqwe	<a href="#">View details</a>	<a href="#">Remove</a>
AngAng	<a href="#">View details</a>	<a href="#">Remove</a>

Figure 4.15: Admin view customer and delete function

## Customer Details

Customer Name :	Ang123
Address :	123
Email :	tzyguan@asda.com
Hp Number :	123

[Back](#)

Figure 4.16 Admin view customer details

### 4.2.9 Manage Product Module

This module provides the capability for admin to manage user. Admin is able to add product, edit and delete product. Adding product is shown in Figure 4.17. Edit product is shown in Figure 4.18. Delete product is shown in Figure 4.19.

Product id:	<input type="text"/>
Product Name:	<input type="text"/>
Horizontal Resolution:	<input type="text"/>
Image pick-up device:	<input type="text"/>
Minimum Illumination:	<input type="text"/>
S/n_Ratio:	<input type="text"/>
Infrared:	<input type="text"/>
Lens:	<input type="text"/>
Gain Control:	<input type="text"/>
Weight:	<input type="text"/>
Body:	<input type="text"/>
Picture:	<input type="text"/> <input type="button" value="Browse_"/>
<input type="button" value="Reset"/>	<input type="button" value="Submit"/>
	<input type="button" value="Back"/>

Figure 4.17: Admin add product interface

Product id:

Product Name:

Horizontal Resolution:

Image pick-up device:

Minimum Illumination:

S/n\_Ratio:

Infrared:

Lens:

Gain Control:

Weight:

Body:

Picture: 

Figure 4.18: Admin edit product interface

## Product Overview

Product ID	Product Name	Edit Product	Remove
IWD001	REH FALKEN EYE	<a href="#">Edit</a>	<a href="#">Remove</a>
IWD002	REH COLOUR IR CCTV	<a href="#">Edit</a>	<a href="#">Remove</a>
IWD003	REH VWP COLOUR DOME CCTV	<a href="#">Edit</a>	<a href="#">Remove</a>

Figure 4.19: Admin delete product interface

#### 4.2.10 Manage Frequent asked question Module

This module provides the capability for admin to manage frequent asked question (FAQ). Admin is able to add new FAQ and delete FAQ. It is shown in Figure 4.20.

##### Frequently Asked Questions

1. how far and coverage of a camera? [Delete](#)  
Depends on lens and requirement of actual size display on screen.
2. Can a lift capable to fix camera, does it clear? [Delete](#)  
Yes. We often install. Depends on life span and brand to lift. Major cause of fixing camera in lift Electromagnetic field.
3. What is the difference between indoor and outdoor camera? [Delete](#)  
Outdoor camera must equip with water proof case (enclosure) to protect weather. Whereas indoor need

##### Add Issue

Topic :

Solution:

Figure 4.20 FAQ Add and delete interface

#### 4.2.11 Summary

Basically this chapter is about the interfaces for the entire module that is involved in the development of the project. This chapter highlights generally about the designed project development and shows the content of the method on how the database and table that had been designed were included through SQL instruction and the source code for developed the designated user's interfaces.



## **CHAPTER 5**

### **RESULTS AND DISCUSSION**

#### **5.1 Testing**

A testing has been done after the construction phase. The purpose of the testing is to check the common problems which are incorrect username or password or invalid input. Black box testing method has been used into this system. The testing completely covers all the function in this system. All the problem occurs have been corrected during the testing process.

#### **5.2 Analysis of Result**

The purpose of this chapter is to identify and discuss the result of the OPSS. Analysis of the result can be done by analyze the objective of the system, development constraint. Purpose of the analysis is to ensure the development of the OPSS has meets user requirement. The developments of OPSS are based on the objectives which have been met in this system.

- I. The objective for developing this system is to develop an online product selection system of REH Trading which can help to manage sales order services and provide support. It was already achieved by developing this system with s order function that allows customer to

make product order. Furthermore, all the records of order from the customers are kept well in database instead of recorded in paper.



Product id :	IWD001
Product Name :	REH FALKEN EYE
Horizontal Resolution :	420 TV Lines
Image Pick-up Device :	1/4" Sharp CCD
Minimum Illumination :	0.5 Lux
S/N Ratio :	>=48dB
Infrared (IR):	-
Lens :	3.6mm
Gain Control :	Auto
Weight :	Approx 300g
Body :	Dust Proof

**Confirm Order**

Figure 5.1: Customer Product order

Figure 5.1 above shows the example of the page which customer can order the product they want.

- II. The second objective has been met by applying the rule-based in product selection.

**Welcome**

1. Which type of CCTV system do you prefer?  
 wired ☐  
 Wireless ☒

Suggestions: 2. Do you want it to be remote?  
☐ Yes  
☒ No

3. You want it indoors or outdoors?  
☐ Indoor  
☒ Outdoor

5. Please choose the infrared range?  
☐ 10m  
☒ 20m  
☐ 30m

[OWLS002A](#)  
[OWLS002B](#)  
[OWLS002C](#)  
[OWLS002D](#)

Figure 5.2: Product Selection

### 5.3 System Constraint

OPSS is a web application to help REH Trading to manage their sales services. The constraint during the development of the OPSS is the time constraint. This is because the time is used to do the course projects, assignments, tests and quizzes as well.

The constraints of OPSS are as follows:

- I. Service will not be available if the server host of the system down
- II. Internet connection is needed to access the system.
- III. Google Chrome and Mozilla Firefox are strongly recommended to use to display the system.

- IV. Admin has only one access account that needs not to register and share by all admin of the company to manage the system.
- V. Customers can only maximum order one product and make one appointment per order until it is approved by the admin then only they can order the second product or making the second appointment.
- VI. No payment or any transaction on the system.
- VII. No email or SMS notification when order is successfully made or being rejected.

#### **5.4 Suggestion and Improvement**

There are some ways to enhance OPSS by implement new features into the system to improve the system. Adding new module is one of the ways to improve the system functionality.

#### **5.5 Summary**

Basically this chapter is about the results and data analysis that had been acquired. In the explanation, it must include result analysis, project limitation, also suggestion and project enhancement. The result analysis must be explained so that the objective is parallel with the project's problem. The project limitation must be development constraints and system constraints of the project. The suggestion and project enhancement part included in the knowledge discussion or contribution for future improvement on the research.

## **CHAPTER 6**

### **CONCLUSION**

This chapter is devoted to conclude and summarize the project overall performance.

#### **6.1 Introduction**

As a conclusion, online product selection system of REH Trading is proposed to develop for management of sales and support. This system is developed to solve the current problem faced by the REH Trading which is using the manual filing system to record the customers, sales, appointment and do not have a proper management system used and lack of proper platform for support and problem solving solution for customers. There are total of two targeted users in this system, which are the admin staff and the customers of REH Trading. This system main functions are login and registration, Product order, make appointment, manage order and profile, forum interaction for the customer side and manage registered customer, manage product and specification, approve order and appointment, forum administration for admin side and. The system is developed by using Rapid Application Development (RAD) model which consists of four phases and that are requirements planning, user design, construction and cutover. The type of testing use to test on the system is user acceptance testing. After successfully developing this system, this

system succeeds to achieve the objectives which are to manage prior sales services and to develop an order and support system.

## **6.2 Project Contribution**

The online product selection system of REH Trading solves the current problem faced by the REH Trading which using the manual filing system to record the customers, sales, appointment and do not have a proper management system used and lack of proper platform for support and problem solving solution for customers.

## **6.3 Future Work**

For future work, the system can add a new module for profile registration for staff to record their details and every staff has a new staff login id into the system. transaction can be made online after approve the draft order of product by the company side. Email notification or SMS notification can be added to the system once the customer's order approved or rejected.

There are some recommendations for industrial companies for them to improve their management on sales and support. They are recommend to fully utilize the usage of internet nowadays as a medium for them do online sales and support. An online system like OPSS is important as a platform for them to manage the sales and support activities. It is recommended for them to computerize all the data in the system for ease to manage. It can save up a lot of unwanted wastes and costs.

## **6.4 Summary**

Overall, the system developed meet all user requirement and have achieved the objectives of this project using several techniques with nine modules which is login and registration, view product and make order module, make appointment module, product selection module, product search module, manage user module, manage product module and manage frequent asked question module.

## REFERENCES

Adobe. 2010. What is Dreamweaver.

<http://www.adobe.com/products/dreamweaver/whatisdreamweaver/> (20 October 2011)

Asp.net. 2003. What is ASP.net (online).

<http://wiki.asp.net/page.aspx/1332/aspnet/> (20th October 2011)

Apache.org. 1999. Apache HTTP Server Project

[http://httpd.apache.org/ABOUT\\_APACHE.html](http://httpd.apache.org/ABOUT_APACHE.html) (20 October 2011)

Beynon-Davies, P. and Holmes, S. 2002. Design breakdowns, scenarios and rapid application development. *Information and Software Technology*. **44**(10): 579-592.

Coppin, B. 2004. *Artificial Intelligence Illuminated*. S. Solomon. UK: Jones and Bartlett Publishers, pp. 505-507.

Dell. 2011. *Main Page*. <http://www.dell.com.my> (22 October 2011)

Domino's Pizza. 2011. *Main Page*. <http://www.dominos.com.my> (22 October 2011)

Fosu, I. 2011. Exploring the potential of wireless technologies to accelerate universal Internet access in Ghana. *Telecommunications Policy*. **35**(2011): 494–504.

Hopgood, A.A. 2001. *Intelligent Systems for Engineers and Scientists*. 2<sup>nd</sup> ed. USA: CRC Press LLC, pp.19-47.

IIS.net. 2010. IIS Overview. <http://www.iis.net/overview> (20 October 2011)

Jackson, P. 1999. *Introduction to expert system*. 3<sup>rd</sup> ed. US: Addison Wesley.

Jonathan Arkell. 2010. PHP language (online).

<http://www.c2.com/cgi-bin/wiki?PhpLanguage> (21 October 2011)

Jozsef, S. 2009. A computational model for inference chains in expert systems.

*Intelligent Engineering Systems, Egyetem.* (16):183-188.

Mei, L. and Cheng, F. 2010. The use of artificial intelligence in the information

retrieval system epoch-making changes in information retrieval system.

MEROSYS. 2004. *Main Page*. <http://www.merosys.com> (22 October 2011)

Microsoft. 2010. Microsoft Visual Studio.

<http://www.microsoft.com/visualstudio/en-us> (20 October 2011)

Mills, H. D. and O'Neill, D. 1980. The management of software engineering.

*IBM Sys.J.* **24**(2): 414-77.

Min, L.Y., Wu, X.B. and Bo, L.P. 2009. Constructing a crisis response system

using artificial intelligent strategy. *Networking and Digital Society, 2009.*

*ICNDS '09. International Conference on, 1*, pp. 129-132.

Negnevitsky, M. 2005. *Artificial Intelligence A Guide to Intelligent System.*

K.Mansfield. 2nd ed. UK: Pearson Education Limited, pp. 89-120.

Netbeans. 2000. NetBeans IDE 6.9.1 Release Information.

<http://netbeans.org/community/releases/69/> (20 October 2011)

Newell, A. and Simon, H.A. 1972. *Human problem solving.*

Prentice Hall: Englewood Cliffs, NJ. Computational.

NGINX.org. 2010. Main. <http://wiki.nginx.org/Main> (20 October 2011)



Oracle. 2010a. JavaServer Pages Technology

<http://www.oracle.com/technetwork/java/javaee/jsp/index.html>

(20 October 2011).

Oracle. 2010b. JavaServer Pages Technology.

<http://java.sun.com/products/jsp/faq.html/> (20th October 2011)

Oracle. 2010c. Oracle Database Architecture.

[http://download.oracle.com/docs/cd/B19306\\_01/server.102](http://download.oracle.com/docs/cd/B19306_01/server.102)

/b14220/intro.htm (20 October 2011)

Php.net. 2001. What is PHP. <http://www.php.net/> (20 October 2011)

Prasad, B. 2003. Intelligent techniques for e-commerce. *Journal of Electronic*

*Commerce Research*. **4**(2): 65-71.

Ramot, D., Friedman, M., Langholz, G. and Kandel, A. 2003. Complex fuzzy

logic. *Fuzzy Systems, IEEE Transactions*. **11**(4) : 450-461.

Royce, W.W. 1970. Managing the development of large software systems:

concept and techniques. Proc. *IEEE WESTCON*, pp. 1-9.

Sommerville, A. 2001. *Ain Sommerville Software Engineering:*

*Software Processes*. 6<sup>th</sup> ed. University of Strathclyde: Addison-Wesley.

Tinnirello, P.C. 2000. *The system development handbook*. 4th edition. U.S: CRC

Press.

Wikipedia. 2001a. Programming language.

[http://en.wikipedia.org/wiki/Programming\\_language](http://en.wikipedia.org/wiki/Programming_language) (21 October 2011)

Wikipedia. 2010b. Integrated Development Environment.

[http://en.wikipedia.org/wiki/Integrated\\_development\\_environment/](http://en.wikipedia.org/wiki/Integrated_development_environment/)

(20 October 2011)

Wikipedia. 2001c. Microsoft Visual Studio.

[http://en.wikipedia.org/wiki/Microsoft\\_Visual\\_Studio/](http://en.wikipedia.org/wiki/Microsoft_Visual_Studio/) (20 October 2011)

Wikipedia. 2001d. Adobe Dreamweaver.

[http://en.wikipedia.org/wiki/Adobe\\_Dreamweaver](http://en.wikipedia.org/wiki/Adobe_Dreamweaver) (20 October 2011)

Wikipedia. 2001e. Database. <http://en.wikipedia.org/wiki/Database> (20 October 2011)

Wikipedia. 2001f. Microsoft SQL server.

[http://en.wikipedia.org/wiki/Microsoft\\_SQL\\_Server](http://en.wikipedia.org/wiki/Microsoft_SQL_Server) (20 October 2011)

Wikipedia. 2001g. Web Server.

[http://en.wikipedia.org/wiki/Web\\_server](http://en.wikipedia.org/wiki/Web_server) (20 October 2011)

Wikipedia. 2001h. Internet Information Services.

[http://en.wikipedia.org/wiki/Internet\\_Information\\_Services](http://en.wikipedia.org/wiki/Internet_Information_Services)

(20 October 2011)

Zadeh, L.A. 2008. Is there a need for fuzzy logic?. *Fuzzy Information Processing*

*Society*, 2008. *NAFIPS 2008. Annual Meeting of the North American*, pp.1-3.

## **APPENDIX A**

### **USER MANUAL**

System Name: Online Product Selection System of REH Trading (OPSS)

Folder to install : i) System ii) Database(psm)

#### Installation

- I. Install XAMPP in your computer
- II. After the installation, click on the XAMPP icon. Make sure that Apache and MYSQL are running before you operate OPSS.
- III. Go to your C Drive. Find XAMPP folder and look for htdoc. Once you found it, paste the OPSS system in the folder and named it as psm. (C:\xampp\htdocs)
- IV. Next, open the browser, either Mozilla or Google Chrome and enter this location : <http://localhost/phpmyadmin/>. Then create a database name psm and import the psm.sql into this database.

Now, type this location on your browser : <http://localhost/psm/> and user and operate the system start from here



Figure 1: Home Page

Figure 1 is the homepage for OPSS. In this page, user can obtain the basic information of REH Trading. There are four options on menu bar which is Home, Product, Support and Contact us.

Menu	Description
Home	Home page of the System, Briefly explain about the services of REH Trading.
Product	Display the product of REH Trading.
Support	Display support provided by REH Trading regarding CCTV product.
Contact Us	List of ways to contact the company.

Admin or user has to enter the valid username and password in order to gain the access to the system. User can register themselves by clicking the *register now* button. Message box will be appeared when user enter invalid username or password or do not fill in the username or password.

**Login Failed!**  
**Please check your username and password**

[Back](#)

Figure 2: Message box for invalid username or password

## Admin

Customer Overview		
Customer Name	View Details	Remove
qweqwe	<a href="#"><u>View details</u></a>	<a href="#"><u>Remove</u></a>
AngAng	<a href="#"><u>View details</u></a>	<a href="#"><u>Remove</u></a>
		<a href="#"><b>Back</b></a>

Figure 3: Admin manage customer of REH Trading

Admin can view user details by clicking the underlined view details under View Details column. Admin can also remove user by click clicking the underlined remove under Remove column.



Sales ID	Product ID	Firstname	Status
51	<a href="#">IWD001</a>	<a href="#">Ang</a>	<a href="#">APPROVE</a>
53	<a href="#">IWD002</a>	<a href="#">Ang</a>	<a href="#">APPROVE</a>
54	<a href="#">IWD004</a>	<a href="#">Ang</a>	<a href="#">APPROVE</a>

Back

Figure 4: Admin manage sales of PCK Engineering

Admin can approve customer's order by clicking the underlined APPROVE to change its status either to APPROVE or CANCEL.



Figure 5: Admin manage product of PCK Engineering

Admin can add new product or manage product here. Click add product to add new product. Click manage product to edit or remove product.

Product id:

Product Name:

Horizontal Resolution:

Image pick-up device:

Minimum Illumination:

S/n\_Ratio:

Infrared:

Lens:

Gain Control:

Weight:

Body:

Picture:

Choose File

No file chosen

Reset

Submit

Back

Figure 6: Admin add product.



Product Overview			
Product ID	Product Name	Edit Product	Remove
IWD001	REH FALKEN EYE	<a href="#">Edit</a>	<a href="#">Remove</a>
IWD002	REH COLOUR IR CCTV	<a href="#">Edit</a>	<a href="#">Remove</a>
IWD003	REH VWP COLOUR DOME CCTV	<a href="#">Edit</a>	<a href="#">Remove</a>
IWD004	12	<a href="#">Edit</a>	<a href="#">Remove</a>
IWLS001	REH WIRELESS FALKEN	<a href="#">Edit</a>	<a href="#">Remove</a>
IWLS002	REH WIRELESS HAWK EYE	<a href="#">Edit</a>	<a href="#">Remove</a>

Figure 7: Admin edit or remove product.

Admin can edit product by clicking the underlined Edit under Edit Product column. Admin can remove product by clicking the underlined Remove under Remove column.

<b>Frequently Asked Questions</b>	
1. how far and coverage of a camera?	<a href="#">Delete</a>
Depends on lens and requirement of actual size display on screen.	
2. Can a lift capable to fix camera, does it clear?	<a href="#">Delete</a>
Yes. We often install. Depends on life span and brand to lift. Major cause of fixing camera in lift Electromagnetic field.	
3. What is the difference between indoor and outdoor camera?	<a href="#">Delete</a>
Outdoor camera must equip with water proof case (enclosure) to protect weather. Whereas indoor need	
4. qwe	<a href="#">Delete</a>
qwe	
<b>Add Issue</b>	
Topic :	<input type="text"/>
Solution:	<input type="text"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>

Figure 8: Admin manage Frequent Asked Questions (FAQ)

Admin can add issue by direct key in the topic and solution and then submit. Admin can delete the FAQ based on topic.

## Customer



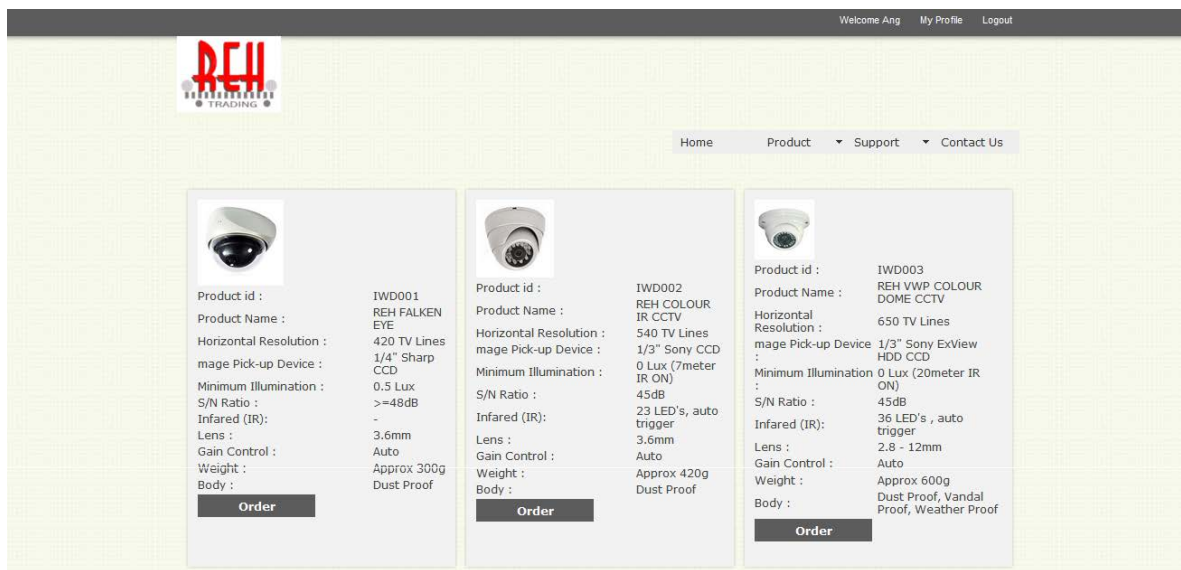
**User Profile**

Firstname : Ang  
 Lastname : 123  
 Address : 123  
 Email : tzyguan@asda.com  
 Hp.Number : 123

[Edit Profile](#)

Figure 9: User profile


Customer can update their profile in this page. Edit profile link enables customer to edit their profile and update the profile.



REH TRADING


Welcome Ang My Profile Logout

Home Product Support Contact Us




Product id : IWD001  
 Product Name : REH FALKEN EYE  
 Horizontal Resolution : 420 TV Lines  
 Image Pick-up Device : 1/4" Sharp CCD  
 Minimum Illumination : 0.5 Lux  
 S/N Ratio : >=48dB  
 Infrared (IR): -  
 Lens : 3.6mm  
 Gain Control : Auto  
 Weight : Approx 300g  
 Body : Dust Proof

[Order](#)



Product id : IWD002  
 Product Name : REH COLOUR IR CCTV  
 Horizontal Resolution : 540 TV Lines  
 Image Pick-up Device : 1/3" Sony CCD  
 Minimum Illumination : 0 Lux (7meter IR ON)  
 S/N Ratio : 45dB  
 Infrared (IR): 23 LED's, auto trigger  
 Lens : 3.6mm  
 Gain Control : Auto  
 Weight : Approx 420g  
 Body : Dust Proof

[Order](#)




Product id : IWD003  
 Product Name : REH VWP COLOUR DOME CCTV  
 Horizontal Resolution : 650 TV Lines  
 Image Pick-up Device : 1/3" Sony ExView  
 Minimum Illumination : 0 Lux (20meter IR ON)  
 S/N Ratio : 45dB  
 Infrared (IR): 36 LED's , auto trigger  
 Lens : 2.8 - 12mm  
 Gain Control : Auto  
 Weight : Approx 600g  
 Body : Dust Proof, Vandal Proof, Weather Proof

[Order](#)

Figure 10: Customer view product

This is the page where customer can view all the products. Each product has an order button. Customer can order the product by just clicking the order button.



Product id :	IWD002
Product Name :	REH COLOUR IR CCTV
Horizontal Resolution :	540 TV Lines
Image Pick-up Device :	1/3" Sony CCD
Minimum Illumination :	0 Lux (7meter IR ON)
S/N Ratio :	45dB
Infrared (IR):	23 LED's, auto trigger
Lens :	3.6mm
Gain Control :	Auto
Weight :	Approx 420g
Body :	Dust Proof

**Confirm Order**

**back**

Figure 11: Customer Order Product

This is the place where customer confirms the order. After confirm the order, customer have to choose the product installation date as shown in Figure 12.


### Appointment

Make appointment for product installation.

Appointment date is only available on Monday to Saturday.

Appointment time is only available in 2 sessions.

**APPOINTMENT FOR PRODUCT INSTALLATION**

Appointment Date : 9 June 2012 

Appointment Time :

Next

Back

Figure 12: Customer makes appointment

### Previous Order

Product id: IWD002 [APPROVE](#)

Product id: IWD004 [APPROVE](#)

Product id: IWD002 [APPROVE](#)

Product id: IWD002 [PENDING](#)

### Your Order

Sales id : 56

Product id : [IWD002](#)

Firstname : Ang

Status : PENDING

Appointment for installation date : 2012-06-11

Make Appointment

Back

Cancel Order

Figure 13: Customer order after make appointment

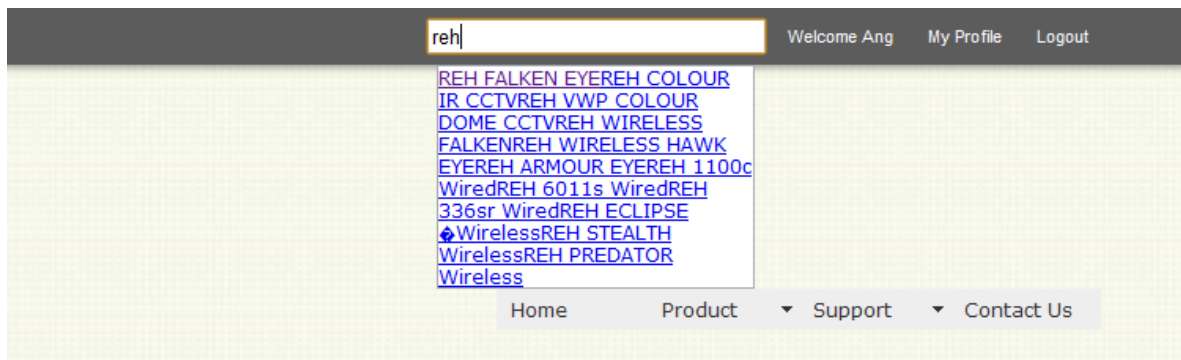


Figure 14: Customer search product

Customer can search product by key in related product name. Then click on the name and the result will show on the other page.

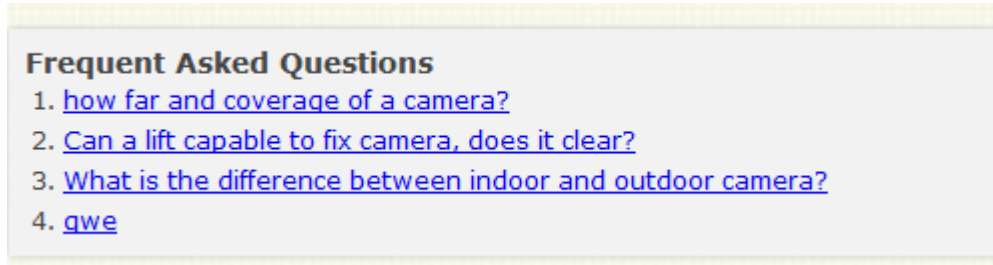


Figure 15: Customer support

Customer can view frequent asked questions and the solution by clicking the link.

## **APPENDIX B**

### **CODING**

```
//Include database connection details
require_once('config.php');

//Connect to mysql server

$link = mysql_connect(DB_HOST, DB_USER, DB_PASSWORD);
if(!$link) {
    die('Failed to connect to server: ' . mysql_error());
}

//Select database
$db = mysql_select_db(DB_DATABASE);
if(!$db) {
    die("Unable to select database");
}
```

Figure 1: Connect to database coding

```

if($username!=" && $password !=") {

    if(mysql_num_rows($result) == 1) {

        //Login Successful

        session_regenerate_id();

        $member = mysql_fetch_assoc($result);

        $_SESSION['SESS_USER_ID'] = $member['user_id'];
        $_SESSION['SESS_FIRST_NAME'] = $member['firstname'];
        $_SESSION['SESS_LAST_NAME'] = $member['lastname'];

        session_write_close();

        header("location: member-login.php");

        exit();

    }else {

        if(mysql_num_rows($adm_return) == 1) {

            session_regenerate_id();

            $member = mysql_fetch_assoc($adm_return);

            $_SESSION['admin_id'] = $member['admin_id'];
            $_SESSION['admin_name'] = $member['username'];

            session_write_close();

            header("location: admin_login.php");

            exit();

        }else{

            //Login failed

            header("location: login-failed.php");

            exit();}

    }

}else {die("Query failed");}

```

Figure 2: Login Function



```

//Check for duplicate login ID

if($username != "") {
    $qry = "SELECT * FROM user WHERE username='$username'";
    $result = mysql_query($qry);
    if($result) {
        if(mysql_num_rows($result) > 0) {
            $errmsg_arr[] = 'Login ID already in use';
            $errflag = true;}
        @mysql_free_result($result);}
    else {die("Query failed");}}

//If there are input validations, redirect back to the registration form
if($errflag) {
    $_SESSION['ERRMSG_ARR'] = $errmsg_arr;
    session_write_close();
    header("location: register-form.php");
    exit();}

//Create INSERT query
$qry = "INSERT INTO user(firstname, lastname, address, email, hpno,
username, password)
VALUES('$fname','$lname','$address','$email','$hpno','$username','$password')";

$result = @mysql_query($qry);

//Check whether the query was successful or not
if($result) {
    header("location: register-success.php");
    exit();}else {
    die("Query failed");}

```

Figure 3: Coding for user registration

```

$id = $_SESSION['SESS_USER_ID'];

extract($_POST);

$query = "UPDATE user SET firstname='$firstname', lastname='$lastname',
address='$address', ".email= '$email', hpno= '$hpno' WHERE user_id='$id'";

$result=mysql_query($query) or die ("could not execute query in kemaskini.php ");

if($result){

    echo "<script type='text/javascript'> window.location='member-
profile.php'</script>";

}

```

Figure 4: Coding for customer edit profile

```

$tarikh =date("d-m-y",time());

$masa = date("H:i:s",time());

$query = "INSERT INTO sale
VALUES(',$id','$name','PENDING',",", '$tarikh','$masa)";

$result = @mysql_query($query);

//Check whether the query was successful or not

if($result) {

    header("location:member-product-oder-status.php");

    exit();

}else {

    die("Query failed");

}

```

Figure 5: Coding for customer makes order

```
$name = $_SESSION['SESS_FIRST_NAME'];

$qry="SELECT saleId FROM sale WHERE firstname='$name'";
$result2=mysql_query($qry);
while($take2 = mysql_fetch_array($result2)){
    $saleid = $take2["saleId"];
}
$id =$saleid;

$query="UPDATE sale SET appointdate='$theDate', appointTime='$theTime'
WHERE saleId = '$id'";

$result = @mysql_query($query);

//Check whether the query was successful or not
if($result) {
    header("location:member-product-oder-status.php");
    exit();
}else {
    die("Query failed");
}
```

Figure 6: Coding for customer appointment

```
<script type="text/javascript">
function showHint1(str)
{
    if (str.length==0)
    {
        document.getElementById("txtHint").innerHTML="";
        return;}
    if (window.XMLHttpRequest)
    {
        // code for IE7+, Firefox, Chrome, Opera, Safari
        xmlhttp = new XMLHttpRequest();
    }
    else
    {
        // code for IE6, IE5
        xmlhttp = new ActiveXObject("Microsoft.XMLHttp");
    }
    xmlhttp.onreadystatechange = function()
    {if (xmlhttp.readyState == 4 && xmlhttp.status == 200)
        {document.getElementById("txtHint").innerHTML =
xmlhttp.responseText;}
    }
    xmlhttp.open("GET","process4.php?q="+str, true);
    xmlhttp.send();
}
</script>
```

```

if($q=="wired"){ //2.
    echo "<div id='invi'>";
    echo "</div>";

    $query = "INSERT INTO msg VALUES('1')";
    $result=mysql_query($query);

    echo '2.Do you want it to be remotely?<br />';

    echo '<input type="radio" value="yes1" name="remote" id="remote"
onclick="showHint2(this.value)"/>Yes<br/>';

    echo '<input type="radio" value="no1" name="remote" id="remote"
onclick="showHint2(this.value)"/>No<br/>';

    echo '<p><span id="txtHint2"></span></p>';}

if($a=="1"){
    $sql="SELECT * FROM rule WHERE type ='0'";

    $result = mysql_query($sql);

    while($row = mysql_fetch_array($result))
    {
        $a= $row['product_id'];

        $sql2="SELECT product_pic FROM product WHERE
product_id ='IWD001'";

        $result2 = mysql_query($sql2);$row2 = mysql_fetch_array($result2);
        $b = $row2['product_pic'];

        echo "<div class='as'>";

        echo "<img src='$b' width='20%'>";

        echo "<br/ >";

        echo "<a href='result.php?id=". $a." '>". $a."</a>";

        echo "</div>";

        }
    }

```

Figure 7: Coding for product selection

```

$q=$_GET["q"];

$sql="SELECT product_name FROM product WHERE product_name LIKE '%" . $q .
"%";

$result = mysql_query($sql);

while($row = mysql_fetch_array($result))
{
    $a= $row['product_name'];
    echo "<a href='result.php?id=".$a."'>".$a."</a>";
}

```

Figure 8: Coding for product search

```

$query = "INSERT INTO product
VALUES('$id','$name','$hr','$ipd','$mi','$ratio','$infared','$lens','$gc','$weight','$body','
.mysql_real_escape_string($newname).')";

$result=mysql_query($query);

    if($result){
        echo"<script type='text/javascript'>window.location='admin-manage-
product.php' </script>";
    }else {
        die("Query failed");
    }

```

Figure 9: Coding for admin add product

```

extract($_POST);

$id2 = $pid;

$query = "UPDATE product SET product_name='$pname',
horizontal_resolution='$h_r', imagepickupdevice='$im',
min_illumination='$min_illu', ratio='$sn', ir='$ir', lens='$lens', gain_control='$g_c',
weight='$w', body='$body', product_pic='' .mysql_real_escape_string($newname).''
WHERE product_id='$id2'";

$result=mysql_query($query) or die ("could not execute query in kemaskini.php ");
if($result){
    echo "<script type='text/javascript'> window.location='admin-manage-
product-view.php'</script>";
}

```

Figure 10: Coding for admin edit product

```

$id2 = $_GET['id'];

$query = "DELETE FROM product WHERE product_id='$id2' ";

$result = mysql_query($query);

if($result){
    echo "<script type='text/javascript'>alert('Product Deleted!');
window.location='admin-manage-product.php'</script>";
}

```

Figure 11: Coding for admin delete product

```
extract( $_POST)

$query = "INSERT INTO faq VALUES('','$topic','$solution')"
$result=mysql_query($query);

if($result){

    echo "<script type='text/javascript'>window.location='admin-support-
addissue.php' </script>";

}
```

Figure 12: Coding for add issue

```
$id2 = $_GET['id'];

$query = "DELETE FROM faq WHERE faq_id='$id2' ";
$result = mysql_query($query);

if($result){

    echo "<script type='text/javascript'>window.location='admin-
support-addissue.php'</script>";

}
```

Figure 13: Coding delete issue



## **APPENDIX C**

### **USER ACCEPTANCE TEST PLAN**

 The logo of Universiti Malaysia PAHANG features a stylized 'U' composed of blue and green geometric shapes. To the right of the 'U', the text 'Universiti Malaysia PAHANG' is written in blue, with 'PAHANG' in a larger font. Below this, the tagline 'Engineering • Technology • Creativity' is written in a smaller font. Universiti Malaysia PAHANG Engineering • Technology • Creativity	<b>FACULTY of COMPUTER SYSTEM &amp; SOFTWARE ENGINEERING</b>
	<b>UNIVERSITI MALAYSIA PAHANG</b>

## **USER ACCEPTANCE TEST PLAN**

**Prepared by**

ANG TZY GUAN

(Developer of Online Product Selection System of REH Trading)

**Validate by**

Mr. LEONG TUCK LEONG

(CEO of REH Trading)

## Introduction

User acceptance testing (UAT) is a formal testing conducted to determine whether a completed system satisfies its acceptance criteria and to enable the user to determine whether to accept the system or not. The acceptance criteria are based on following:

- I. Major functionality
- II. Interface appearance
- III. Different level of access
- IV. Performance
- V. Capacity
- VI. Accuracy
- VII. Reliability
- VIII. Security
- IX. Usability
- X. Exception handling

The UAT is categorized to ten acceptance criteria as mention above to test out. Testing action is design to evaluate the criteria of the OPSS. Each of them exercises a particular operating condition of the user's environment or features of the system, and will result in a pass or fail. The sign off and acknowledgment of the company is after the result together with the summary of the result of UAT on OPSS.

No.	User Acceptance Testing Action	Pass/Fail	Date	Initials
	<b>Major Functionality</b>			
1	Do all modules work based on the requirement?	PASS	20/5/2012	
2	Are the company background and information introduced?	PASS	20/5/2012	
3	Does the system provide customer login and registration?	PASS	20/5/2012	
4	Does the customer allowed to make product order?	PASS	20/5/2012	
5	Does the system provide profile management for customer?	PASS	20/5/2012	
6	Does the system provide support issue regarding product?	PASS	20/5/2012	
7	Dose the system admin able to monitor the customer registration, sales and support?	PASS	20/5/2012	
	<b>Interface Appearance</b>			
1	Does the system design appropriate for industrial user?	PASS	20/5/2012	
2	Are all fonts, colors, shading and background consistent with standards in every interface?	PASS	20/5/2012	
3	Are all images match with the theme?	PASS	20/5/2012	
4	Are all header, footer, right and left panel match and consistent with standards in every interface?	PASS	20/5/2012	
	<b>Different Level of Access</b>			
1	Does the system provide company staff and customer login?	PASS	20/5/2012	
2	Do the system modules is only available for registered customer only?	PASS	20/5/2012	
3	Do the system modules for management is only available for admin only?	PASS	20/5/2012	

	<b>Performance</b>			
1	Is the system webpage load in short period?	PASS	20/5/2012	
2	Is the system react fast when operation done by user?	PASS	20/5/2012	
	<b>Capacity</b>			
1	Is there a capacity for the system to store data?	PASS	20/5/2012	
	<b>Accuracy</b>			
1	Do the window titles correctly identify each module?	PASS	20/5/2012	
2	Does each link navigate to the correct module?	PASS	20/5/2012	
3	Are field labels appropriate?	PASS	20/5/2012	
4	Do all dates display correctly when making appointment?	PASS	20/5/2012	
5	Can you print the order details correctly?	PASS	20/5/2012	
6	Does the search bring up the expected results correctly?	PASS	20/5/2012	
7	Do all product's information listed correctly?	PASS	20/5/2012	
	<b>Reliability</b>			
1	Does the system recover from failure in a short time?	PASS	20/5/2012	
2	Does the system pop up alert message box to alert user when errors occur?	PASS	20/5/2012	
	<b>Security</b>			
1	Does the system need to key in password to login?	PASS	20/5/2012	
2	Does the system use session?	PASS	20/5/2012	
	<b>Usability</b>			
1	Does the system found ease to use?	PASS	20/5/2012	
2	Do all modules have brief description?	PASS	20/5/2012	
3	Is there hint text available for all applicable items?	PASS	20/5/2012	
4	Does the system guide user in a proper way?	PASS	20/5/2012	
	<b>Exception Handling</b>			

1	Are error, warning, information and confirmation messages accurate and understandable?	PASS	20/5/2012	
2	Does the system provide validation and error handling when user input errors occur?	PASS	20/5/2012	
3	Does the system disable Sunday and the date before for making appointment?	PASS	20/5/2012	
4	Does the system disallow the customer to make second order while the first order still pending to approve?	PASS	20/5/2012	

## Sign Off and Acknowledgement

I understand that by agreeing to participate in this testing though the execution of the testing plan, I approve of the activities defined as documented for the successful implementation of this system. I, Leong Tuck Leong, client of Ang Tzy Guan, hereby indicate by way of my sign below that the OPSS delivered the complete functionality for my requirement as described previously and it is completely acceptable and fit to user.



Date: 11-June 2012

---

Name: LEONG TUCK LEONG

CEO REH Sdn Bhd.