ONLINE ORDERING SYSTEM OF PCK ENGINEERING

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BORANG PENGESAHAN STATUS TESIS

JUDUL: **ONLINE ORDERING SYSTEM OF PCK ENGINEERING**

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ONLINE ORDERING SYSTEM OF PCK ENGINEERING

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JUNE 2012

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DEDICATION

Special dedication to my beloved family,

my lecturer, my fellow friends,

and all faculty members.

For all your support and believe in me.

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ABSTRACT

Online Ordering System of PCK Engineering is an web-based system that helps PCK Engineering to manage their business digitally, and allow customer to make order online. As one of the largest and fastest growing company, online enterprise system becoming a need compared to manual method. Therefore, this system has been developed to helps PCK Engineering to manage their sales and services online. It is a better approach to optimize the relationship between PCK Engineering and customers. There are two target users in this system, admin staff and the customers of PCK Engineering. The system consists of ten modules: login and registration, customize stock specification, make appointment and order, manage order and profile, search product, manage stock and specification, approve order and appointment, advisory administration for admin side function, LiveChat and sales report. Rapid Application Development (RAD) model has been used in this project. The four phases are requirements planning, user design, construction and cutover. The implementation of interface and coding to each module in the system has been completed. The testing shows that the acceptance criteria of the system has achieve the objectives of this project.

ABSTRAK

Sistem talian pesanan *PCK Engineering* adalah sistem web yang membantu *PCK Engineering* untuk menguruskan perniagaan mereka secara digital,dan membenarkan pelanggan untuk membuat pesanan atas talian. Sebagai salah satu syarikat yang paling cepat berkembang dan terbesar, perusahaan sistem atas talian menjadi keperluan berbanding dengan kaedah manual. Oleh itu, sistem ini telah dibentukkan untuk membantu *PCK Engineering* untuk menguruskan jualan dan perkhidmatan mereka secara online. Ia adalah satu pendekatan yang lebih baik untuk mengoptimumkan hubungan antara *PCK Engineering* dengan pelanggan. Terdapat dua pengguna sasaran dalam sistem ini, iaitu staff dan pelanggan. Sistem ini terdiri daripada sepuluh modul: pendaftaran masuk, pemilihan spesifikasi produk, membuat temujanji dan tempahan, mengurus tempahan dan profil, pencarian produk, menguruskan produk dan spesifikasi, meluluskan pesanan dan temujanji, pentadbiran forum untuk fungsi staff, *LiveChat* dan laporan jualan. *Rapid Application Development (RAD)* telah digunakan dalam projek ini. Terdapat empat tahap iaitu perancangan keperluan, rancangan pengguna, pembinaan dan pengubahsuaian.. Pelaksanaan antara muka depan dan pengekodan bagi setiap modul dalam sistem telah selesai. Ujian yang telah dijalankan menunjukkan bahawa sistem ini berjaya mencapai matlamat dan objektif projek ini.

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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
IIS	Internet Information Services
RAD	Rapid Application Prototype
RUP	Rational Unified Process
UAT	User Acceptance Testing
OOSPE	Online Ordering System of PCK Engineering

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

Internet is very important to us nowadays because it plays an important role in our life no matter in what aspect. People had experienced that today's technology is progressing faster than anyone has ever expected and is changing the way people live in their lives. Consequently, the usage of internet is expanding and become more and more powerful like for example downloading files, search information or even online shopping. In a study of Yang and Tung (2004) internet provides a new communication medium that enables access to vast amounts of information across a wide variety of topics. These advantages eventually attract many business companies to make full use of these services when dealing with customers. Unfortunately the growth of the online services in local industrial companies business is still not convincing in our country compare to other international companies.

When come to industry, most of the people feel that industrial work is more technical based and rely on hand on task. It is hard to describe and express in a verbal way or using natural language. It is a great challenge for the industrial side companies to put their sales or services online. PCK Engineering is one of industrial companies that facing these problems. Previously their customers prefer to call for booking appointment, make orders and customer support. However, as technology in this era has greatly improved, more and more customers prefer ecommerce. Online shopping market increased very fast since the early of 1990's and it has been indicated that the internet are changing the way of customers purchasing. According to a recent report by Forrester and Shop.org, the value of online sales in US was $219.9 billion in 2006, which are representing 6% of total retail sales in 2006 (Li, 2009). Through ecommerce, customers not only can save their time and cost, at the same time they can get what they wanted as well. Not only that, through ecommerce, company managed to evaluate all aspects of organization and performance (Tan et al., 2009).

Therefore, the Online Ordering System of PCK Engineering is developed to ease the company's customers when dealing with the company. The system will provide basic information and the background of the company such as location and contact and some basic history of the company. The system is strictly controlled by the admin of the company. Only trusted customers are allowed to maintained membership although registration is open to public. Admin are authorized to delete any members who do not have business and moral ethnic from membership immediately. Customer can manage their own profile and stock order list.

1.2   Problem Statement

PCK Engineering is a contractor and supplier of oil and gas as well as shipbuilding and involve in design, engineering and drafting services. They deal with other country like Middle East Saudi Arabia in upgrading electrical power station project. However, previously they do not optimize the usage of internet services on their business which means to start online business although they have been doing sales for so many

years. Until recently, they finally come to a conclusion to expand their business network. Hopefully through internet they can improve their visibility and thus to enlarge their business to earn more profit.

1.3   Objectives

The objectives of this project are:

      i)   To design and develop an online ordering system of PCK Engineering

      ii)   To apply text-based information retrieval using keyword matching based on keyword occurrence.

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 stocks overview that allows customers to order.
   c. The system can provide customers to make appointment for further discussion or to collect their order.
   d. Customer can manage and update their profile themselves.
   e. The system can provide support forum platform for customers to discuss critical issues or giving and getting feedback from others.

ii) Admin
   a. The system can provide simple basic information and the background of the company.

b. Current products specification can be updated and new items can be added by admin too.

c. Appointment will have to wait to be approved by admin.

d. The forum topic and comment is control and manage by admin.

e. Admin can manage their members and their sales.

f. Admin can view their sales report.

1.5   Thesis Organization

This thesis consists of three chapters such as Chapter 1 is Introduction, Chapter 2 is Literature Review, and Chapter 3 is Methodology.

Chapter 1 is to introduce about the Online Ordering System of PCK Engineering.This chapter contains five parts. First part is the introduction of the project to explain briefly about the system and the related issues. Second part is highlighting the problems of the manual system which prompt a new system to be developed. Third part is listing down the objectives for developing the system. Forth part is to discuss on the scope of the system according to the objectives. Last part is the summaries of the sequence for each chapter in the thesis.

Chapter 2 is to explain about the review for the Order and Support System for PCK Engineering. 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 Ordering System of PCK Engineering.

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.

1.6   Summary

Basically this chapter is to introduce the concept of Online Ordering System of PCK Engineering (OOSPE). The background is stated with simple explanation and the problem statement is made. There are two objectives in this project and the scopes of this project consists of two parties which is user and admin.

CHAPTER 2

LITERATURE REVIEW

This chapter briefly describes the review on existing techniques related with Order and Support System that will be developed later. This chapter comprises four sections: The first section describes the comprehensive review on existing related systems. Then, the second section will be describing the development tools. Third section describes the review on method, equipment, and technology that are previously used in the same domain. Last section will be focus on the methodology.

2.1   Online Ordering System of PCK Engineering

An order management system, or OMS, is a computer software system used in a number of industries for order entry and processing. Orders can be received from business, consumers, or a mix of both, depending on the product. Offers and prices for particular product maybe available via catalogues, websites or broadcast advertisements.

Nowadays, there is several business domains which use OMS for different purposes but the core reason remain the same. One of the business domain that using OMS comes from retails. Large retails companies use OMS to keep track of orders to the system, change, cancel, and update their orders. An OMS should also allow ones to access information on orders entered into the system, including details on all orders and previous completed orders.

A support system is a network of facilities and people who interact and remain in informal communication for mutual assistance. It can also be define as a network

of personal or professional contacts available to a person or organization for practical or moral support when needed. Support system is there to help ones to solve their problem faced by providing professionals or expert's advice, through discussion, user manual or person to contact. There will be a forum or discussion room for customer or clients to raise their question in order to seek for solutions. Other than that, some of them will provide a user manual for the client to download so that they can get better understanding of the stock that they purchase. Or, they can even contact the person in charge to look for solutions.

Combining order management system and support system together ,we come out with the order and support system. In order and support system, the system will able to accept the order from clients and provide support or help to the client when they met problems.

Since this is an order and support system, it is important that the owner have to maintain his or her stock's quantity so that he or she can continuously receive the order from clients. Thus, it is important to be aware of the amount of stocks so that he or she can continuously supply the stock to the clients. Owner has to control and manage their stock from time to time.

2.2   Systems that Similar with Order and Support System

There are a lot of sales and support system online and the best three that are similar with the Online Ordering System of PCK Engineering function were chosen to do critique and comparison.

2.2.1 National Instruments Corporation System

The National Instruments Corporation System mainly sell design, prototype, and deploy systems that involve different of engineering and science field.

The National Instruments Corporation System main page as shown in Figure 2.1 (National Instrument Corporation System, 2011a) consists of navigation bar that link to other function of the system. It provide login and account registration function on the page. It also provides account and profile setting for existing user. Search tools are prepared for user to search specific information. International call is available for user to contact their company instantly by clicking the link at the page.

The main page eases the existing user to login, account and profile setting. The navigation bar is well organized to increase the usability of the system. But the system lack of brief introduction of the company and instruction to guide them at the main page and eventually will confuse the user which is first time visiting.
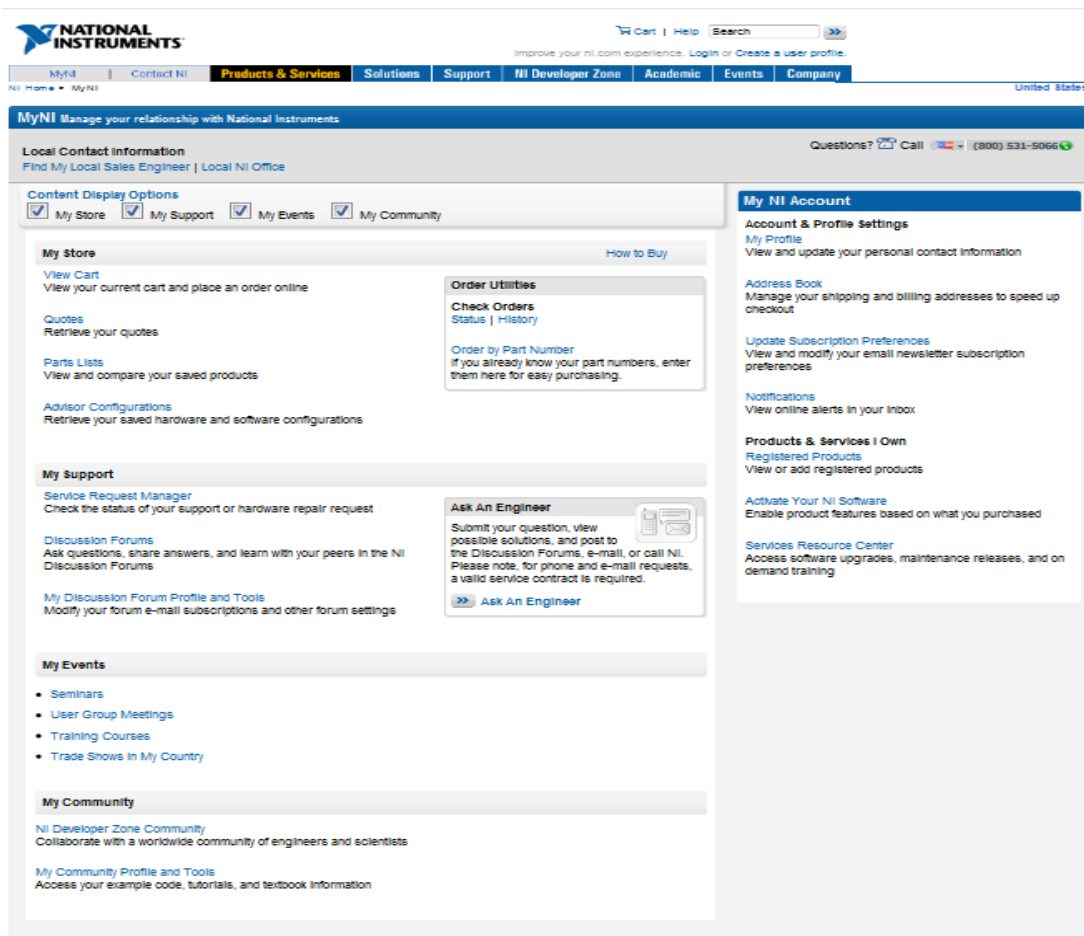

Figure 2.1: National Instruments Corporation System - Main Page (National Instrument Corporation System,2011a)

The National Instruments Corporation System solution page as shown in Figure 2.2 (National Instrument Corporation System, 2011b) consists of various type of solution article for the user to view and study. Those articles are gather from all over the world wrote by experts. The solution articles are categorized and place it on the side bar for the user to select. Search tools are prepared for user to search specific solution in the database.

There is a large database full of solution all around the world for the user to search for solution. And it provides direct access to view those solutions free. But it is quite hard and waste of time to read the whole article just to get a step of solution at the end from the article. It does not provide simple step by step guidance for some common solutions.

Figure 2.2: National Instruments Corporation System - Solution Page (National Instrument Corporation System, 2011b)

The National Instruments Corporation System support page as shown in Figure 2.3 (National Instrument Corporation System, 2011c) consists of resources for all kind of technical support function. For example, the resources categorize into product manuals, drivers and updates, knowledgebase, tutorials, discussion forums and example code. It also provide support service assistance that enable user to call in enquire, email and others. Search tools are prepared for user to search specific service available and famous searches shown. And user can download all the manual or driver free of charge.

User able to get support easily from different platform provide from the system that ease the user from different background. But too many supports sometimes will confuse the user which one is the best to choose and different resources provide different support too.

Figure 2.3: National Instruments Corporation System - Support Page(National Instrument Corporation System, 2011c)

2.2.2 Microscan System

Microscan system is mainly focus on precision data acquisition and control solutions serving a wide range of automation and OEM applications.

The Microscan System main page as shown in Figure 2.4 (Microscan, 2011a) consists of navigation bar that link to other function or section of the system. It provides changing language function. Latest company news also appears at the main page wall. Search tools are prepared for user to search specific information.

The system provides different type of languages pack that able to change according to the understanding of users. Colourful banner and flash able to attract first time visit user. But the system do not provide user registration and user login function.

Figure 2.4: Microscan System - Main Page (Microscan, 2011a)

The Microscan System product overview page as shown in Figure 2.5 (Microscan, 2011b) consists of overview of product with all kind of product information and can view the full details of the product by pressing the link on the icon of the product. It categorize out to several type of product.

All the product is shown in grid view with the details of each product is also clearly stated out. But no product customization and choosing specifications function for the users.

Figure 2.5: Microscan System - Product Overview Page (Microscan, 2011b)

The Microscan System solution page as shown in Figure 2.6 (Microscan, 2011c) consists of all the solution from different field that related to the product from different aspect. Clear explanation with picture is shown.

The solution is simple and easy to understand by users. Clear explanation with picture is shown for the user to have a clear picture what is going on in the real case.

Full description is provided. But there is no step by step solution guidance given to solve a technical problem.

Figure 2.6: Microscan System - Solution Page (Microscan, 2011c)

The Microscan System support page as shown in Figure 2.7 (Microscan, 2011d) consists of three different kind of support service function which is; quick find technical instruction, search help desk question and answers and download centre. Submit help desk request function is available for the support side. It also provides additional support information for user to view. Customer survey function is on the page too.

The system page provides submission and uploads of question or problems to enquire for help easily. But neither forum nor discussion group for user to interact and exchange their ideas.

Figure 2.7: Microscan System - Support Page (Microscan, 2011d)

2.2.3 Dell System

Dell System is a sales and support system that mainly focus on computer hardware. The system delivers the most effective computing solutions to meet the users' needs.

The Dell System main page as shown in Figure 2.8 (Dell, 2011a) consists of complete navigation bar that link to other function or section of the system. It

provides login account function on the page. Search tools are prepared for user to search specific information. The main page shows a flash on the latest product they are promoting.

The main page navigates the user where to go with complete link of functions in the main page. But it has too many links that will confuse the user and do not provide registration link for new user to register.
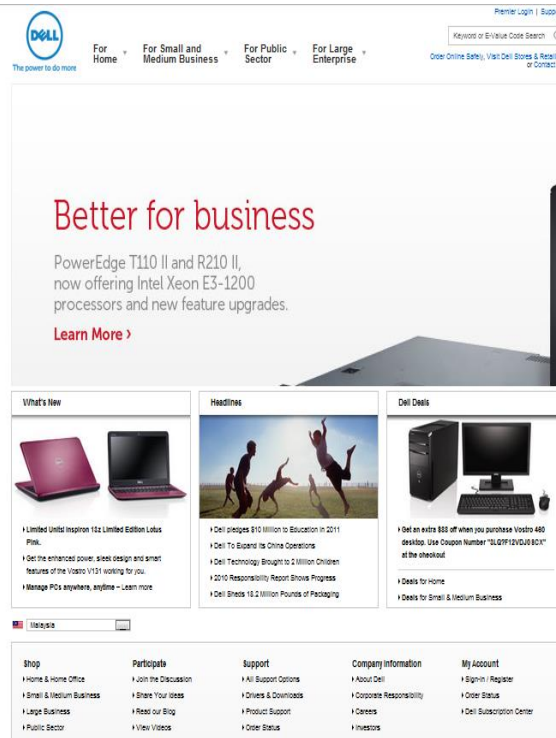
Figure 2.8: Dell System - Main Page (Dell, 2011a)

The Dell system component customization page as shown in Figure 2.9 (Dell, 2011b) consists of all the system component specification details for user to customize. It includes accessories or upgrade the product component and payment cart function. The user can switch to grid icon for a clearly view for the system component. The side bar provides detail information to guide the user for the configuration and customization. The page provides live chat function with the technician of the company to help the user that has doubts about the customization.

The system provides a full inventory system with product customization. It guides the user step by step until the user successfully buys the product. But it lack of some specification and explanation of the product component.

Figure 2.9: Dell System - Component Customization Page (Dell, 2011b)

The Dell system support solution page as shown in Figure 2.10 (Dell, 2011c) consists of step by step rule-based expert system function that gives solution to help the user to handle their product problem. But the user need to key in the service tag, product model and the list of problem facing when using the product. The user can choose other support option at the side bar too.

The system page provides step by step guideline for the user so that they can clearly know what to do next and won't get lost. But these function only for those who registered and own a product of that company.
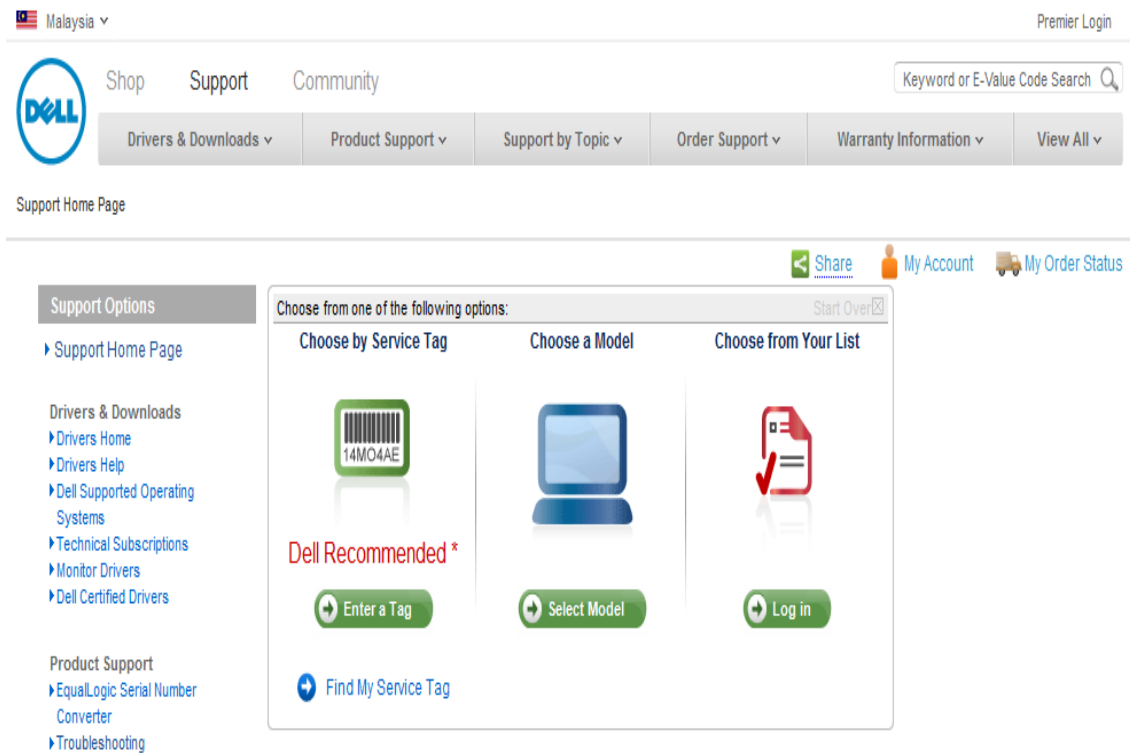
Figure 2.10: Dell System - Support Solution Page (Dell, 2011c)

The Dell system support service page as shown in Figure 2.11 (Dell, 2011d) consists of many options for all kind of technical support function. For example, the resources categorize into drivers and download, product support and troubleshooting, manuals, warranty status, my system and peripherals, enterprise support forum. It also provide problem searching function, online chat with technical support, warranty contracts, and customer service. The system has an extra enterprise support resources for large enterprise company support. And those features item for the famous problems are listed there too.

The users are able to get help easily from different platform. But too many support services confuse the user which one is the best to choose and different

resources provide different support. So it is better to provide just a few options not more than five.

Figure 2.11: Dell System - Support Service Page (Dell, 2011d)

The Dell system forum page as shown in Figure 2.12 (Dell, 2011e) consists of various category of discussion group that has a lot interesting topic discuss within the small community there. Some problem and solution solved are posted at the forum too. It has helpful answer link that the user can view and the topic keywords tag by other user based on the favourite keyword user always search.

User has a platform to sound out their idea and opinion or exchange some information. But the forum has too many sub topics that can confuse the user which forum is the right one to post their ideas.

Figure 2.12: Dell System - Forum Page (Dell, 2011e)

2.2.4 Comparison of Systems that Similar with Order and Support System

The table below as shown in Table 2.1 consists of comparison of systems that similar with the system that are going to developed which is the Order and Support System that located at the first column of the table that already highlighted in yellow colour. The system compares all the function available with the existing similar systems.

Table 2.1: Comparison of Systems that Similar with Order and Support System (Steven, 2010)

	Order and Support System	**National Instruments Corporation System**	**Microscan System**	**Dell System**
Basic information of the company	Yes	Yes	Yes	Yes
Login and register user	Yes	Yes	No	Yes
Product overview	Yes	No	Yes	Yes
Product customization and order	Yes	Yes	No	Yes
Online appointment	Yes	No	No	No
Customer and sales profile overview	Yes	Yes	Yes	Yes
Technical support service	Yes	Yes	Yes	Yes
Support Forum	Yes	No	No	Yes

For all the system, they do have their basic information of the company, customer and sales profile overview and technical support. What is different from the system is that Microscan System do not provide user to login or register and customization and order. Secondly, National Instrument Corporation System does not have product overview. Only order and support system had the online appointment and stock replenishment notification embedded in the system.

From the Table 2.1, we can see that the order and support system had all the details of company, enable to login and register user, product overview, product customization and order, online appointment, customer and sales profile overview and forum. The system unites all the advantages that other systems have and combines it in a system.

2.3   Development Tools

The development tools to develop the Order and Support System will be identified and chosen based on which would be more suitable for the development of the project at the end of the research. That will be the same for the programming language, programming tools and database are in the consideration.

2.3.1 Programming Language

A programming language is an artificial language designed to express computations that can be performed by a machine (Wikipedia, 2011a)

2.3.1.1 Hypertext Preprocessor (PHP)

PHP was originally created by Rasmus Bergdorf 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" (Php Language, 2011).

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 (The Php Group, 2011).

2.3.1.2 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 Phython 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, 2010).

2.3.1.3 Java Server Pages (JSP)

A JSP page is a page created by the web developer that includes JSP technology-specific and custom tags, in combination with other static (HTML or XML) tags. JSP technology uses XML-like tags that encapsulate the logic that generates the content for the page. By separating the page logic from its design and display and supporting a reusable component-based design, JSP technology makes it faster and easier than ever to build Web-based applications.

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, ease of use (Oracle, 2010).

2.3.1.4 Comparison of Advantages and Disadvantages of Programming Languages

The table below as shown in Table 2.2 consists of 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 (Steven, 2010)

	PHP	ASP.NET	JSP
Code price	Free	Free	Free
Platform price	Free	Not free	Free
Language code style	C	VB	Java
Efficiency	Strong	Weak	Weak
Security	Strong	Strong	Weak
Platform	Any	Microsoft platforms only	Any
Source available	Yes	No	Yes
Object Oriented Programming	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, 2011b).

2.3.2.1 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, 2011c).

Adobe Dreamweaver CS5 software empowers designers and developers to build standard-based websites with confidence. Design visually or directly in code, develop pages with content management system, and accurately test browser compatibility (Adobe, 2011).

2.3.2.2 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, 2011d).

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 Corporation, 2011).

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, 2011).

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

The table below as shown in Table 2.3 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 Programming Tools (Steven, 2010)

	Adobe Dreamweaver CS5	Microsoft Visual Studio 2010	Netbeans IDE 6.9
Software price	Not free	Not free	Free
Memory usage	High	High	Low
OS Compability	Any	Window only	Any
Server and client side scripting	Yes	Yes	Yes
Platform	Any	Microsoft platforms only	Java platforms only
Code coverage	Large	Limited	Limited
GUI	Good	Good	Good
System Requirement	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, 2011e).

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, 2011).

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, 2011f)

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, 2011).

2.3.3.4 Comparison of Advantages and Disadvantages of Database

The table below as shown in Table 2.4 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 (Steven, 2010)

	MySQL	Microsoft SQL Server R2	Oracle Database 11i/11g
Software price	Free	Not free	Not Free
Simplicity	Yes	Yes	No
Access speed	Fast	Slow	Fast
Server side scripting language	Any	Any	Any
Platform	Any	Microsoft	Any

		platforms only	
Security	Strong	Strong	Strong
GUI	No	No	Yes
Storage	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, 2011g).

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, 2011).

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, 2011h).

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, 2011).

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, 2011).

2.3.4.4 Comparison of Advantages and Disadvantages Web Server

The table below as shown in Table 2.5 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 (Steven, 2010)

	Apache HTTP Server	IIS	NGINX
Server price	Free	Not free	Free
Platform	Any	Microsoft platforms only	Any
Security	Strong	Strong	Weak
Architecture	Complete	Complete	Complete
Control	Full	Full	Partial
Reliability	Yes	Yes	Yes
Support	Yes	Yes	Yes
Access Authentication	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 Online Ordering System of PCK Engineering which is as below:

i)   Spiral Model
ii) Rapid Application Prototype (RAD)
iii) Rational Unified Process (RUP)

2.4.1 Spiral Model

Spiral model was originally created by Barry Boehm in 1988 to address the inadequacies of the Waterfall Model and it is also referred as Boehm-Spiral software engineering methodology. Spiral Model actually is a combination of Software Development Life Cycle (SDLC), prototype and iterations. The essential and major concept of Spiral model is to reduce risk by the frequent usage of prototypes. The spiral model works and starts at the centre of the spiral.

According to Boehm, "the major distinguishing feature of the Spiral Model is that it creates a risk-driven approach to the software process rather than a primarily document-driven or code-driven process. It incorporates many of the strengths of other models and resolves many of their difficulties" (Boehm, 1988). As shown in Figure 2.14 (Freetutes.com, 2007) each completed cycle along the spiral represents one stage of the process. With each loop of the spiral, the customer can evaluates the work done to the project so that the customer can present suggestions for modification to be done. As the spiral process continues, the software is further developed and enhances to make it more mature and in line with the project goals and requirements.
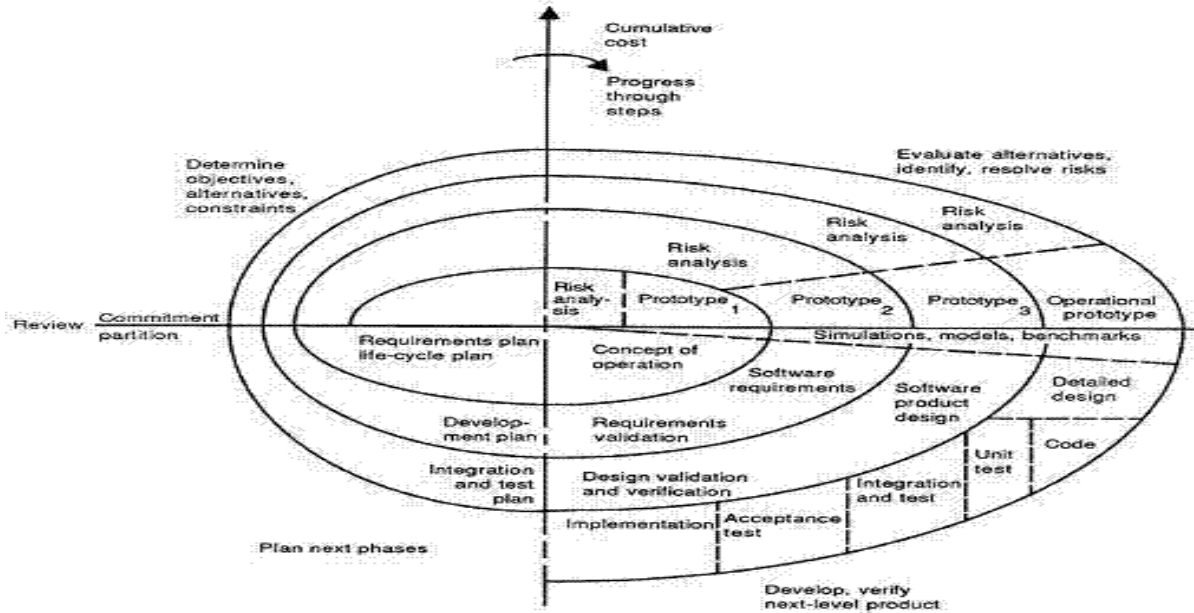
Figure 2.13: Spiral Model (Freetutes.com, 2007)

The steps of Spiral Methodology (Freetutes.com, 2007):

i) System requirements are defined in the most detail ways as possible which usually involves interviewing a number of users that are vital in the aspects of the existing system.

ii) A preliminary design is created for the new system.

iii) Prototype of the system is constructed from the preliminary design and usually is a scaled-down system and represents an approximation of the characteristics of the final system.

iv) Second prototype is released and evolved based on four steps which are, evaluating the first prototype and identify its strengths, weaknesses and risks. Define the requirements of the second prototype. Plan and design the second prototype and finally construct and test the second prototype.

v) Project might be aborted when the risks identified are too great because risk factors could cause development cost to overrun, miscalculation of operating cost and will end up providing a final

product that fails to meet its goals and requirement set in the beginning of the project.

vi) Existing prototype will be evaluated just like how the prototype was evaluated earlier in the steps and if necessary another prototype will be developed.

vii) Steps are iterated until the customer or user is satisfied that the refined prototype represents the final product desired and then the final system will be constructed based on the refined prototype.

viii) Finally, the final system will be thoroughly evaluated and tested and routine maintenance is carried out to identify any problems that surfaces and rectify it to enhance the system and make it more stable and in the same time minimizing serious failures and downtime.

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 (Chief Information Officer, 1999).

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. As shown in Figure 2.15 (Steven, 2010), 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.
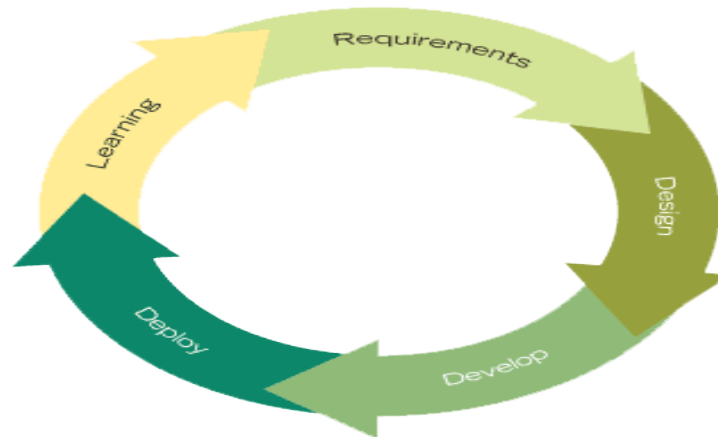
Figure 2.14: Iterative Rapid Application Development Model (Shelly et all., 2008)

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

i) Requirements planning

- All the vital information such as scope, key issues, needs and goals of the project will be identified and finalize. 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 finalize 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 finalize 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 on going 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.

2.4.3 Rational Unified Process (RUP)

The Rational Unified Process is a software engineering process. It is developed by the Rational Software Corporation which goal is to ensure the development and production of the software and system meets the needs of its end-users within a predictable schedule and budget. RUP is not a specific or single process framework but it is a process framework that can be adapt and tailored accordingly by the developer and software project teams by selecting the right components and elements of the processes framework which are the most appropriate to apply to their projects and needs.

RUP is supported by tools where developer can used to automate and visualize large parts of the process they are dealing with. It also helps the developer to create and maintains various models of the system such as a visual

modeling. Basically, the tools allow the project manager and developers to rapidly add or remove usable parts of processes to rectify certain problem that arises throughout the development stage. One of the most common tools used is the IBM Rational Method Composer.

RUP embrace the six best practices for modern software engineering which are:

i) Develop software iteratively
ii) Manage requirements
iii) Use component-based architectures
iv) Visually model software
v) Verify software quality
vi) Control changes to software

As shown in Figure 2.16 (Steven, 2010), RUP consist of four development phases which guides the software developers in developing their system. Each phase consist of multiple executable small projects which is also called as iteration at the end of each phase
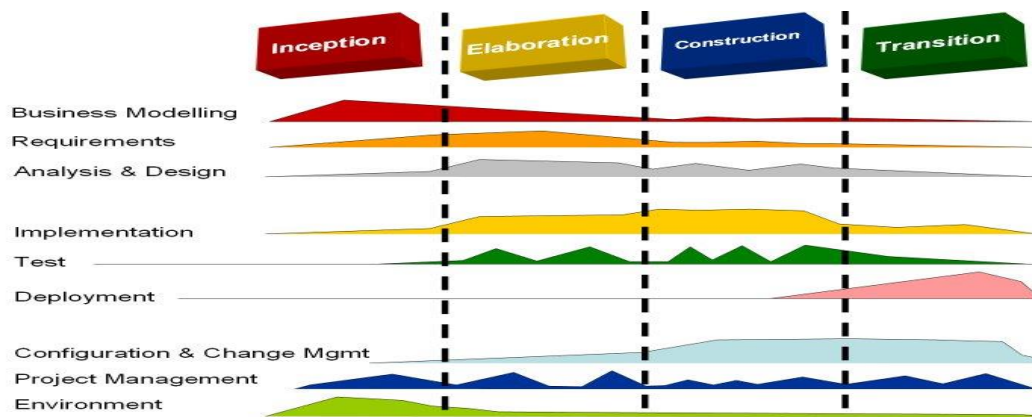
Figure 2.15: RUP Model (Steven, 2010)

The four phases of RUP are (Rational, 1998):

i) Inception

- A business case will be established to provide a guideline and objectives of the project and also to set a limit for the project scope. Business case would include the success criteria, user requirements, time and resources needed.

ii) Elaboration

- In depth research and analysis will be conducted to determine the architecture foundation of the project and system. Risks of the project will be identified to further understand the challenges face in the project development stages and timeline. Project scope will be redefined through new findings within the project.

iii) Construction

- Components and features of the system will be integrated into the product or prototype and all the features will be thoroughly tested to ensure it is working well and without errors. Basically this is the stage where the system are designed and implemented and put into test to ensure that the system are built in line with the scope stated in inception phase.

iv) Transition

- This is the stage where the software or system is released to the users. Reviewing and identifying the issue arise base on the users comment and feedback will help the developers to correct and rectify problems and enhance certain features and functionalities.

2.5   Summary

Basically this chapter is about the review for the Online Ordering System of PCK Engineering. There are some brief explanation of online order system, researches that had been developed by others and present computer projects which are related to the current project. Here there are also include the explanation about the development tools and the methodology that are used in constructing the project.

CHAPTER 3

METHODOLOGY

In this chapter we will discuss about the methodology that will be used in the development of Online Ordering System of PCK Engineering, For develop Online Ordering System of PCK Engineering the Rapid Application Development (RAD) method had been chosen because RAD had several characteristic that is suitable for the development of Order and Support System for PCK Engineering. There are three section consists in this chapter. The first section explains about the introduction of the RAD development method and the reason to choose the RAD approach. The next section discuss about the implementation of RAD method in Online Ordering System of PCK Engineering development. The last section will elaborate about the hardware and software that was used in the development of Online Ordering System of PCK Engineering

3.1 Rapid Application Development (RAD)

The term Rapid Application Development (RAD) was first coined by James Martin in his book "Rapid Application Development" (Martin, 1999). In his book, Martin wrote "Rapid Application Development (RAD) is a development lifecycle designed to give much faster development and higher-quality results than those achieved with the traditional lifecycle. It is designed to take the maximum advantage of powerful development software that has evolved recently." Martin states that there exist four

fundamental aspects of fast development which are tools, methodology, people and management.

Kettemborough (1999) further defined RAD as "an approach to building computer system which combines Computer-Assisted Software Engineering (CASE) tools and techniques, user-driven prototyping, and stringent project delivery time limits into a potent, tested, reliable formula for top-notch quality and productivity. RAD drastically raises the quality of finished systems while reducing the time it takes to build them". Agarwal et al. (2000) believes no universal definition of RAD exists and classifies RAD into two. The first term describes as a methodology that prescribes certain phases in software development and second, as a set of tool that allows speedy objects development, graphical user interface, and reusable code for client/server applications.

Advantages gained from using RAD are as described in Table 3.1. By using RAD it is easier to implement as the development focuses on each requirement development at a time. User involvement while developing product helps in improving user satisfaction as more communication occurs while developing products and user can see the product progress. Another advantage is that it takes shorter time to be implemented in working environment.

Table 3.1 Advantages of Rapid Application Development RAD (Nik Daud et al., 2010)

Advantages of RAD
Ease of implementation
Improved user satisfaction
Shorter time-to market

3.2 Implementation of Rapid Application Development (RAD) in Order and Support System Development

There have four main life cycle phases in the RAD life cycle as refer to figure 3.1 (Steven, 2010) which is:

a. Requirement Planning

b. User Design

c. Construction

d. Cutover
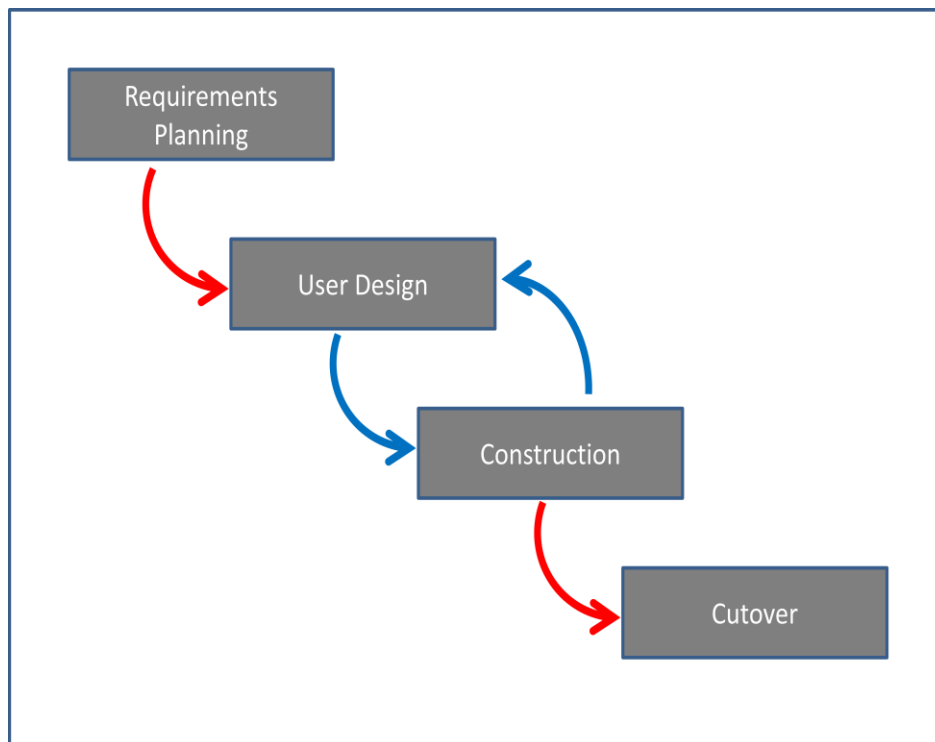
Figure 3.1 Rapid Application Development Lifecycle

3.2.1   Requirement Planning Phase

All the vital information such as scope, key issues, needs and goals of the project will be identified and finalize. 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 finalize requirements and after authorization.

3.2.1.1 Research On Current Situation

The requirements planning are the early stage of the system development. All the vital information such as scopes, key issues, needs and goals of the project are obtain from the client which is Mr. Leong from PCK Engineering. A few conversations through phone has been made with Mr. Leong who is representative of PCK Engineering, he stated some of the background of the company and some issues facing by their company. After that, a meeting is made with the stakeholders of the company. Mr. Leong, Mrs. Leong and their assistant are attending for the meeting. Every requirement that likely to have in the online system is recorded.

3.2.1.2 Analyze and Finalize Requirement

After all the calls and meeting that are made, we can finalize all the requirements from the representative of PCK Engineering, Mr. Leong. As stated, the Online Ordering System of PCK Engineering requirements are listed as below:

i. The system provides basic information and the background of the company.

ii. The system able to register customers in database.

iii. The system provides online product overview and allows customers to order but without the online purchasing and payment.

iv. The system allows customers to set appointment to meet and further discussion on the product or collect the product and wait to be approved.

v. The system provides customer and sales profile for customer to manage.

vi. The system provides advisory that will provide solution according to issues for support.

vii.   The system provides forum platform for the customers to discuss some critical issues or giving expert experiences and some services support.

viii.   Admin able to manage the registered customers in the database.

ix.   Admin able to manage current product specification and add new stock in the system.

x.   Admin able to approve the appointment time.

xi.   Admin able to update current solutions or add new issues for support.

xii.   Forum topic and comment is manage and control by the admin

xiii.   LiveChat is a platform for a real time conversation between members and admin.

xiv.   Admin can view their sales report.

3.2.2   User Design Phase

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 finalize 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 on going to allow the users to understand and commence any changes if necessary.
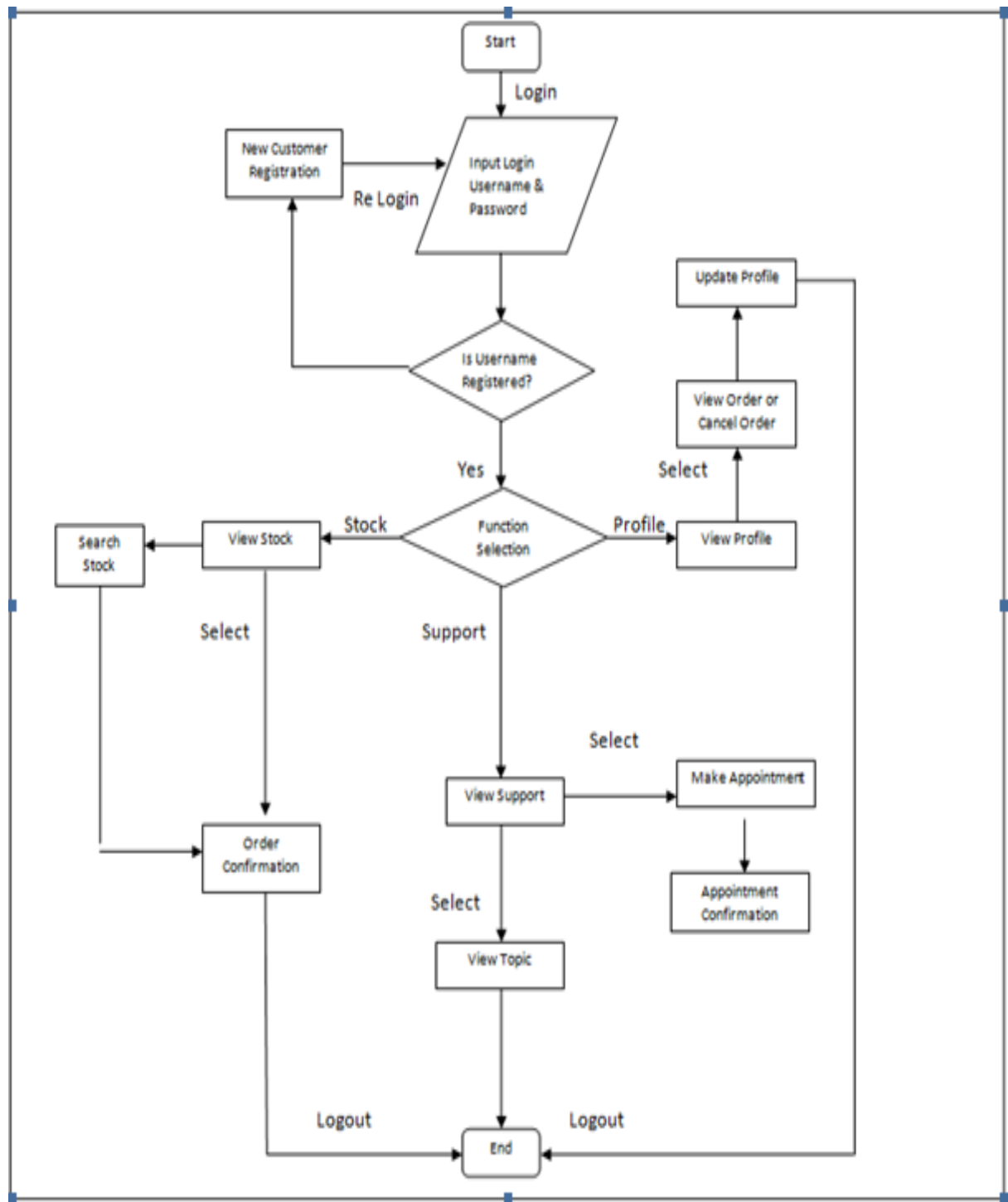
Figure 3.2: Flow chart for registered customer

Start

Login

Input Login
username &
password for
admin

Retry

No

Registered
Admin?

Yes

Customer Overview

View Customer

Product Overview

Function
Selection

Support
Overview

Sales Overview

Select

View Forum

Select

Manage
Customer

View Products

View Pending Order
with Appointment

Manage
Thread

Add or delete
Product

Approve Order

Manage
Topic

Logout

Logout

Logout

Manage
Comment

Logout

End

Figure 3.3: Flow chart for admin

Start

Register

View

Member's
Registration

Function
Selection

Company
Background

View Stock

Search
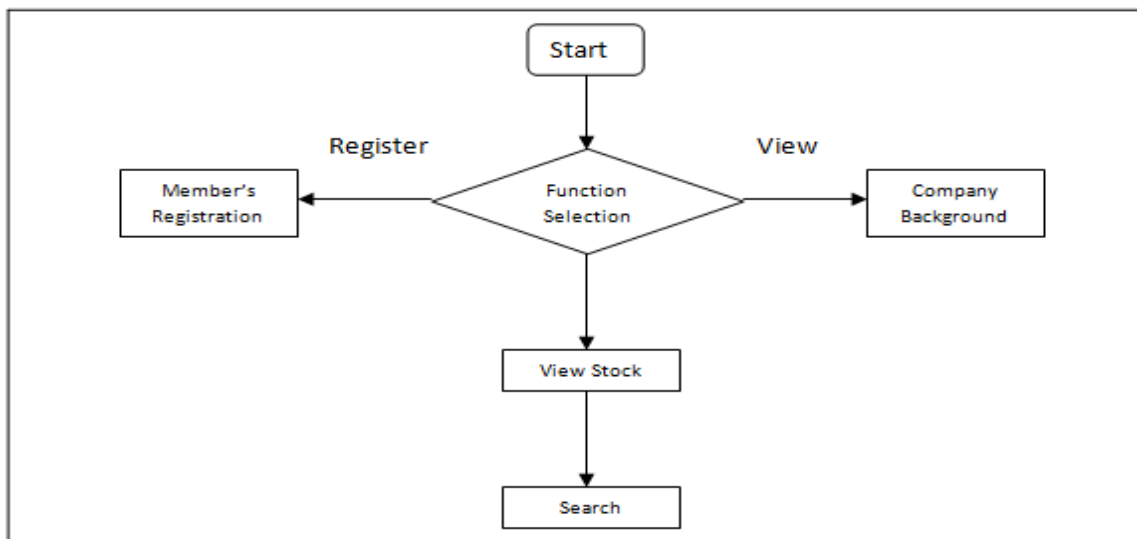
Figure 3.4: Flow chart for public user

3.2.3   Construction Phase

Prototypes are built using software tools. The development of prototypes and techniques of the system is based on the modules or function that mentioned earlier. When all the modules are developed, all the sub modules in every module will be integrated into a complete system. Participation of users is continuing 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.

3.2.4   Cutover Phase

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 delivering and place in operation much sooner. Unit testing is involved every module testing including the functionality and non functionality of the module. After the unit testing is done, integration testing will be carry on. Integrating 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 acceptance testing will be done too. In RAD, all these tasks are compressed which causes the final system to be able to be delivered and place in operation much sooner. Besides that, other activities such as training the users how to use the system is undergo. Converting or installing the server system for the company. Lastly, all the necessary documentation for the system will be completed.

3.3   Software and Hardware Tools

Several software and hardware have been used to in the development of Online Ordering System of PCK Engineering. Hardware is the physical aspect of the computer,

while software is a general term or part for the various kinds of program used to operate computer and other devices.

3.3.1 Hardware

The hardware specification for the system is base on the system requirement of the chosen development tools. Table 3.2 below shows the list of hardware that is used during the development of the system.

Table 3.2 Hardware Specification for Order and Support System

Hardware	Specification	Purpose
Laptop	-Intel(R) Core(TM)2 Duo CPU T6500 @ 2.10GHz -4 GB RAM -320 GB Hard Disk	To run the operating system for development
Printer	Canon MP145	Print out the documentation
External Hard Disk	Western Digital 320GB Hard Disk	Backup data
USB Flash Disk	Kingston 8 GB Data Traveller	Transferring data
CD	700 MB 48x	System backup and delivery

3.3.2   Software

After an in depth 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 Ordering System of PCK Engineering after comparing all the possible tools. Table 3.3 below shows the list of software that is used during the development of the system.

Table 3.3 Software Specification for Order and Support System

Software	Purpose
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 3.93	File compress and decompress
Foxit Reader 5.0.2.0718	Reading pdf files
Google Chrome 15.0.874.121 m	Browse and test system
Window 7 Professional 32bit Operating System	Operating system used in development
Avast! Pro Antivirus 6.0.1289	Protect from virus and spyware

3.5   Summary

Basically this chapter is to discuss about the approach and framework for the project. It included the method or approach that will be used and have been used in designing and implementing the Online Ordering System of PCK Engineering. Not only that, this chapter also explains about the justification of method or approach used and both hardware and software needed for the project.

CHAPTER 4

IMPLEMENTATION

This chapter will be devoted to the implementation of database, interface and coding into the system.

4.1   Database Implementation

The Online Ordering System of PCK Engineering (OOSPE) needs database to store the data for the company to manage the sales and support. OSSPE is using phpMyAdmin as the database management system. It has 9 tables in the database named pck as shown in Figure 4.1.

Figure 4.1: OOSPE Database

The OOSPE need a server to host and link to the database. OOSPE 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.

```php
<?php
$connect = mysql_connect("127.0.0.1", "root", "") or die("Could not connect to database"); //connect server host
$db = mysql_select_db("pck") or die("Could not select database"); //connect database
```

Figure 4.2: Database and Server Connection

4.2 System Interface and Implementation

System interface is the key point of interaction between user and the system. The OOSPE interface is designed using CSS and HTML code while the OOSPE module function is using PHP and MySQL codes. The coding implementation is shown is Appendix B.

4.2.1 Main Page

The main page design frame with logo and banner, header, footer and navigation bar will be the same in other page. The main page has brief introduction on what is this system all about. The main page has navigation bar to link to home page, about us page, why PCK page, contact us page and live chat page. The main page has navigation bar to link to the function provided by the system too as shown in Figure 4.3.

Figure 4.3: OOSPE Main 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 4.4.

Figure 4.4: Login Interface

This module also provides the capability to register new customer as shown in Figure 4.5.

Member Registration

LOGIN INFOMATION

USERNAME :   Enter username..

PASSWORD :   ....

VERIFY PASSWORD :   ....

PROFILE INFOMATION

NAME :   Enter full name..

IC :   Enter IC number..

COMPANY :   Enter company name..

EMAIL :   Enter email.. (xxx@xxx.com)

ADDRESS :   Enter home address...

CONTACT :   Enter contact number..

FAX :   Enter fax number..
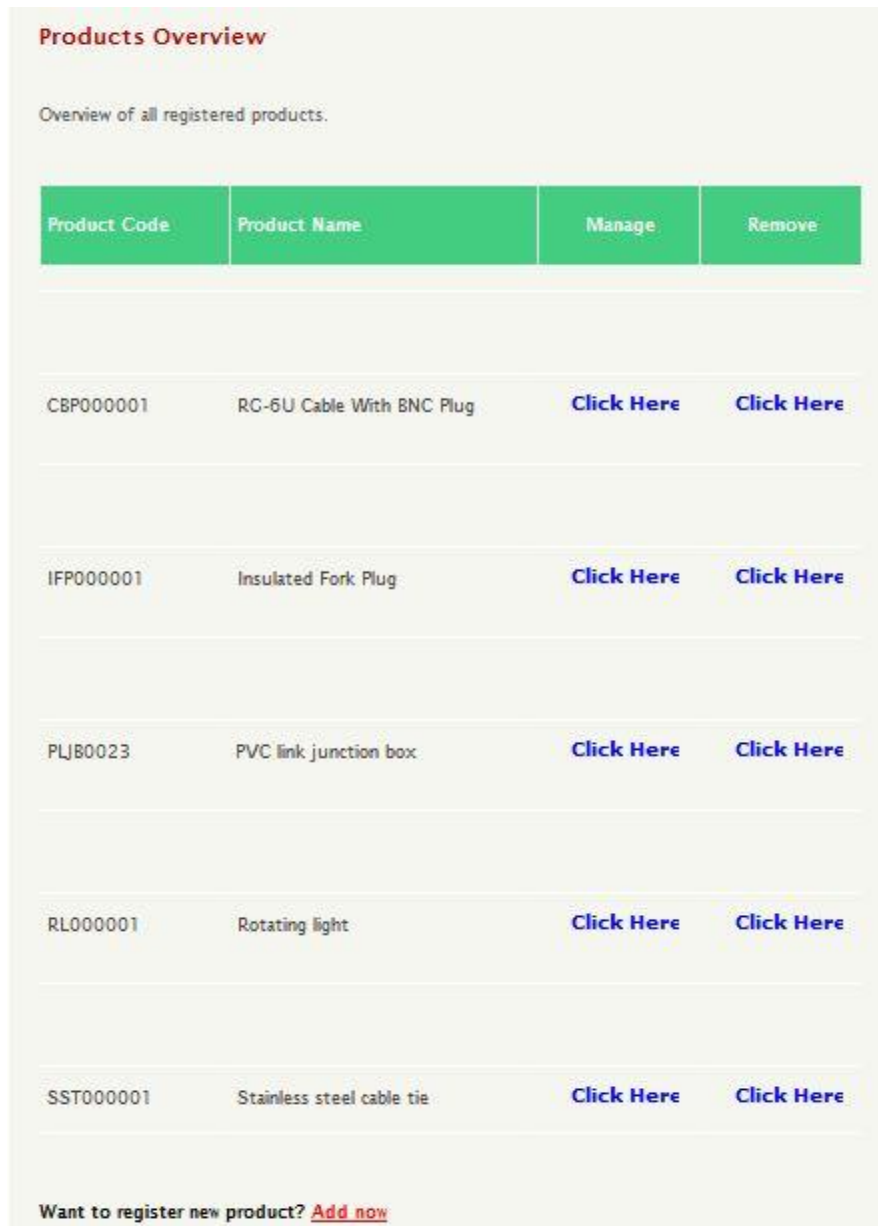
Register   Reset

Figure 4.5: Registration Interface

4.2.3 Customize Product Specification Module

This module provides the capability for admin to view and customize the product as shown in Figure 4.6. After that it can customize the specification of the selected product as shown in Figure 4.7.

Products Overview

Overview of all registered products.

Product Code	Product Name	Manage	Remove
CBP000001	RG-6U Cable With BNC Plug	Click Here	Click Here
IFP000001	Insulated Fork Plug	Click Here	Click Here
PLJB0023	PVC link junction box	Click Here	Click Here
RL000001	Rotating light	Click Here	Click Here
SST000001	Stainless steel cable tie	Click Here	Click Here

Want to register new product? Add now

Figure 4.6: Product Interface

Product Customization

Customize your product according your preferable specification.

PRODUCT INFOMATION

PRODUCT CODE :   IFP000001

PRODUCT NAME :   insulated fork plug

PRODUCT DESCRIPTION :   designed to offer maximum performance under heavy-duty applications and it is ideal for use in applications, which are subjected to continuous mechanical vibrations viz. engines, railways, moving components

PRODUCT IMAGE :

PRODUCT SPECIFICATION INFOMATION

SIZE / DESCRIPTION :   Please choose one..

COLOR :   Please choose one..

QUANTITY :   Please choose one..
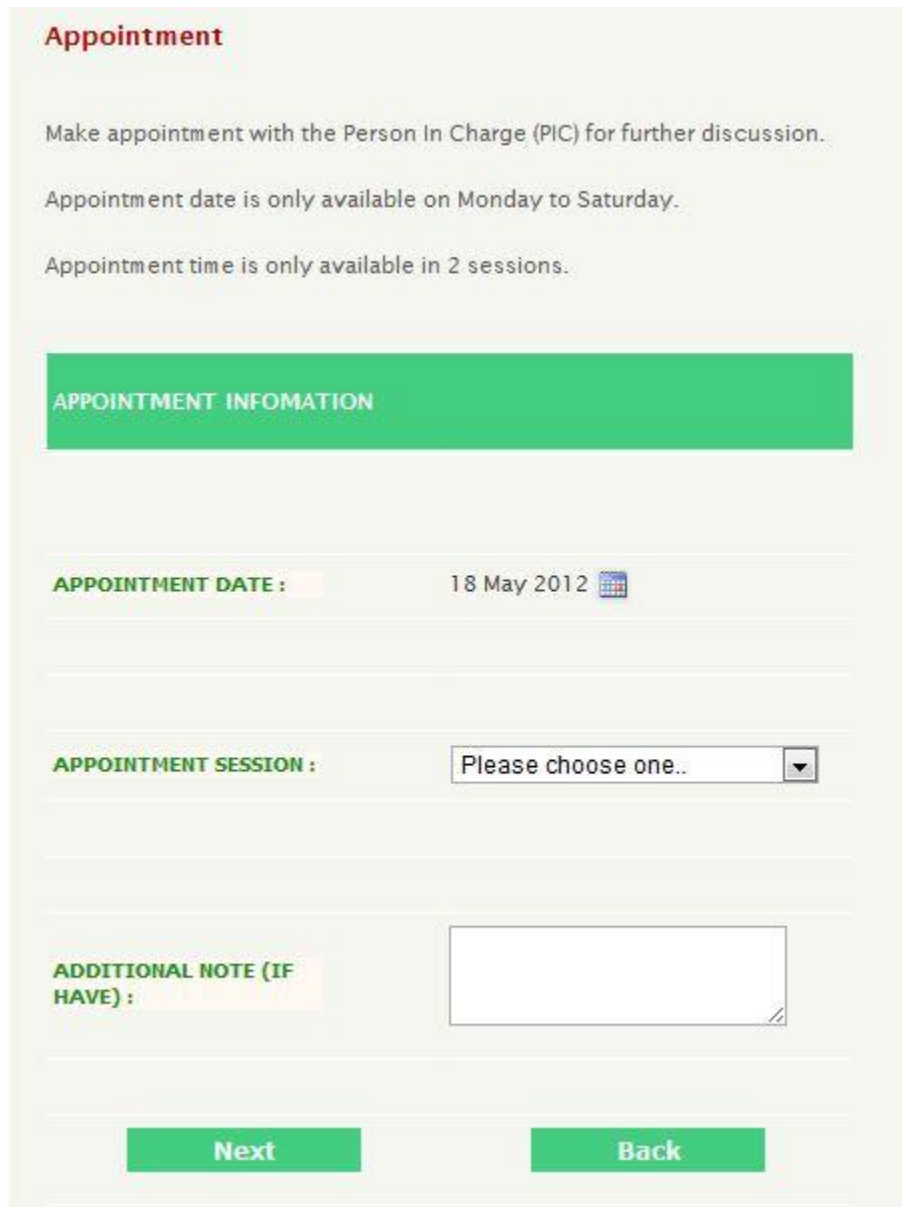
Next	Back

Figure 4.7: Customize Specification Interface

4.2.4 Make Appointment and Order Module

This module provides the capability for customer to make appointment as shown in Figure 4.8.

Figure 4.8: Make Appointment Interface

This module also provides the capability for customer to confirm the order as shown in Figure 4.9.

Figure 4.9: Confirm Order Interface

4.2.5 Manage Order and Profile Module

This module provides the capability for customer to manage and view the order as shown in Figure 4.10. The order details can be viewed as shown in Figure 4.11.

Figure 4.10: Profile Interface

Order Details

ORDER REF NUMBER :	1
CUSTOMER NAME :	Lee Chee Wei
CUSTOMER IC :	890106075375
ORDER DATE :	2012-04-02
PRODUCT CODE :	CBP000001
PRODUCT NAME :	RG-6U Cable With BNC Plug
SIZE / DESCRIPTION :	16m
COLOR :	red
QUANTITY :	100
APPOINTMENT DATE :	2012-04-10
APPOINTMENT SESSION :	Afternoon (2.00pm - 5.00pm)
ADDITIONAL NOTE :	ASAP

Print   Back

Figure 4.11: Order Details Interface

This module also provides the capability for customer to update their personal details as shown in Figure 4.12.

Figure 4.12: Update Profile Interface

4.2.6   Searching Product Module

This module provides the existing customers, public or admin to search for product in a fastest way instead of looking one by one as shown in Figure 4.13.
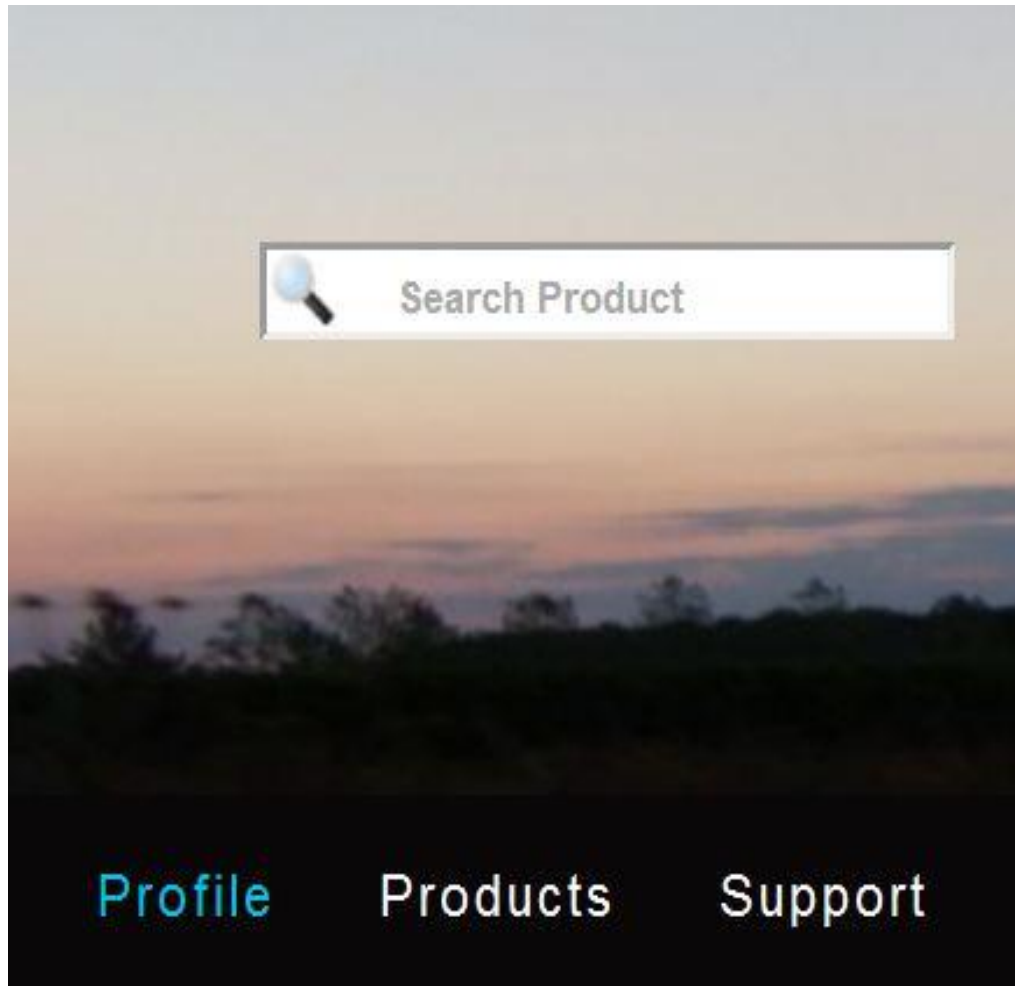
Figure 4.13: Search Product Interface

4.2.7   Manage Product and Specification Module

This module provides the capability for admin to manage the product as shown in Figure 4.14. Admin can update the product specification as shown in Figure 4.15. Admin can add new product too as shown in Figure 4.16.

Products Overview

Overview of all registered products.

Product Code	Product Name	Manage	Remove
CBP000001	RG-6U cable with BNC plug	Click Here	Click Here
CBP000002	RG-10U cable plug	Click Here	Click Here
IFP000001	insulated fork plug	Click Here	Click Here
PLJB0023	PVC link junction box	Click Here	Click Here
RL000001	rotating light	Click Here	Click Here
SST000001	stainless steel cable tie	Click Here	Click Here

Want to register new product? Add now

.

Figure 4.14: Product Overview Interface

Products Updates

Please alter the information of the product that want to update.

PRODUCT INFOMATION	
PRODUCT CODE :	RL000001
PRODUCT NAME :	rotating light
PRODUCT DESCRIPTION :	warning light
PRODUCT IMAGE :	

Choose File   No file chosen

PRODUCT SPECIFICATION INFOMATION	
SIZE / SPECIFICATION :	220 VAC
	230 VAC
	240 VAC
COLOR :	Red
	Blue
	Yellow
QUANTITY :	10
	20
	50

Update   Cancel

Figure 4.15: Update Product Specification Interface

Products Registration

Please fill in all the required information for registration of new product.

PRODUCT INFOMATION

PRODUCT CODE :   Enter new product code here..

PRODUCT NAME :   Enter new product name here..

PRODUCT DESCRIPTION :   Enter new product description here...

PRODUCT IMAGE :   Choose File   No file chosen

PRODUCT SPECIFICATION INFOMATION

SIZE / DESCRIPTION :   Enter first option..

                               Enter second option..

                               Enter third option..

COLOR :   Enter first option..

                               Enter second option..

                               Enter third option..

QUANTITY :   Enter first option..

                               Enter second option..

                               Enter third option..

Register   Cancel
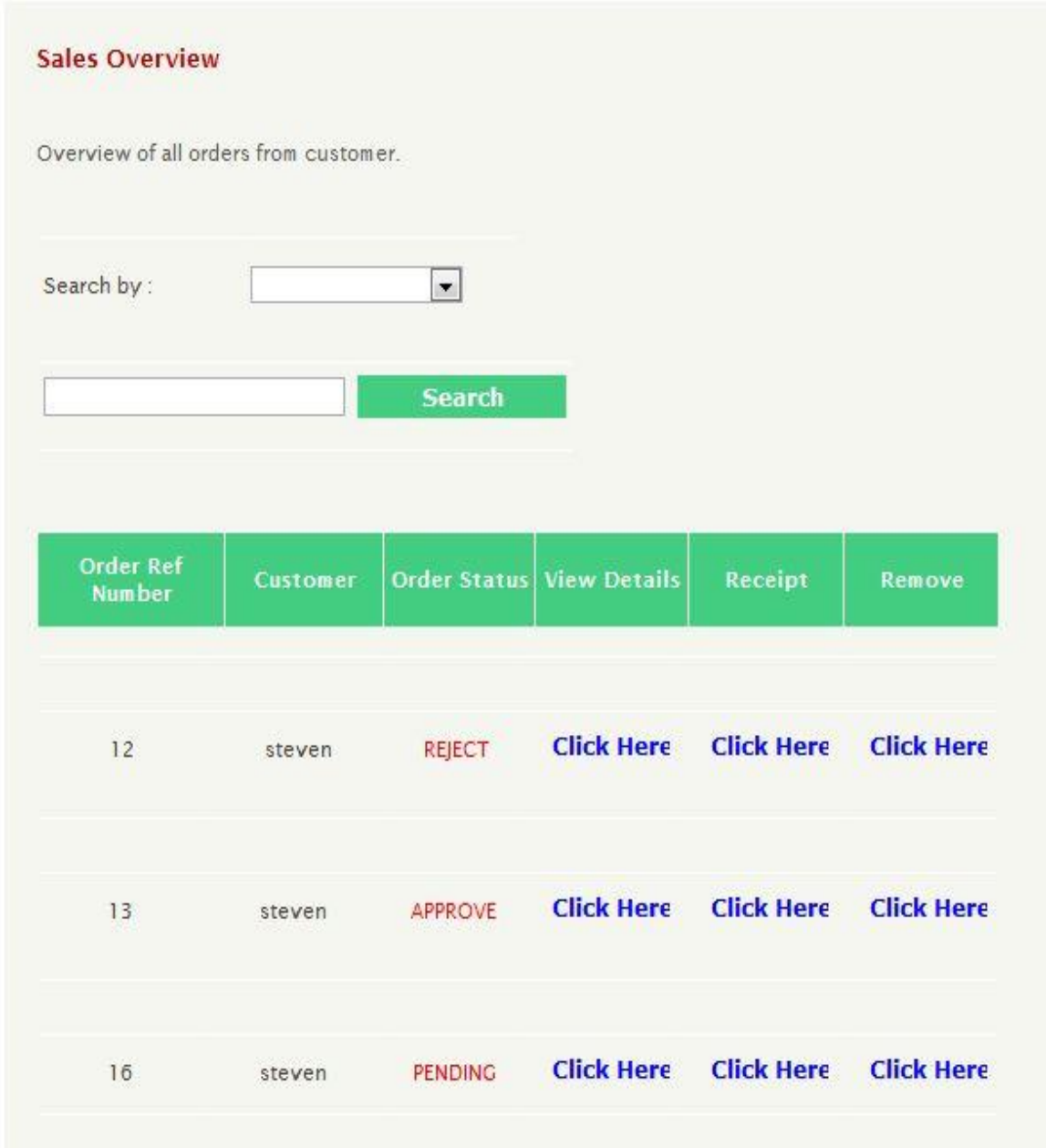
Figure 4.16: Add New Product Interface

4.2.8 Approve Order and Appointment Module

This module provides the capability for admin to manage the machine sales as shown in Figure 4.17. Admin can approve or reject the order as shown in Figure 4.18.

.

Figure 4.17: Sales Overview Interface
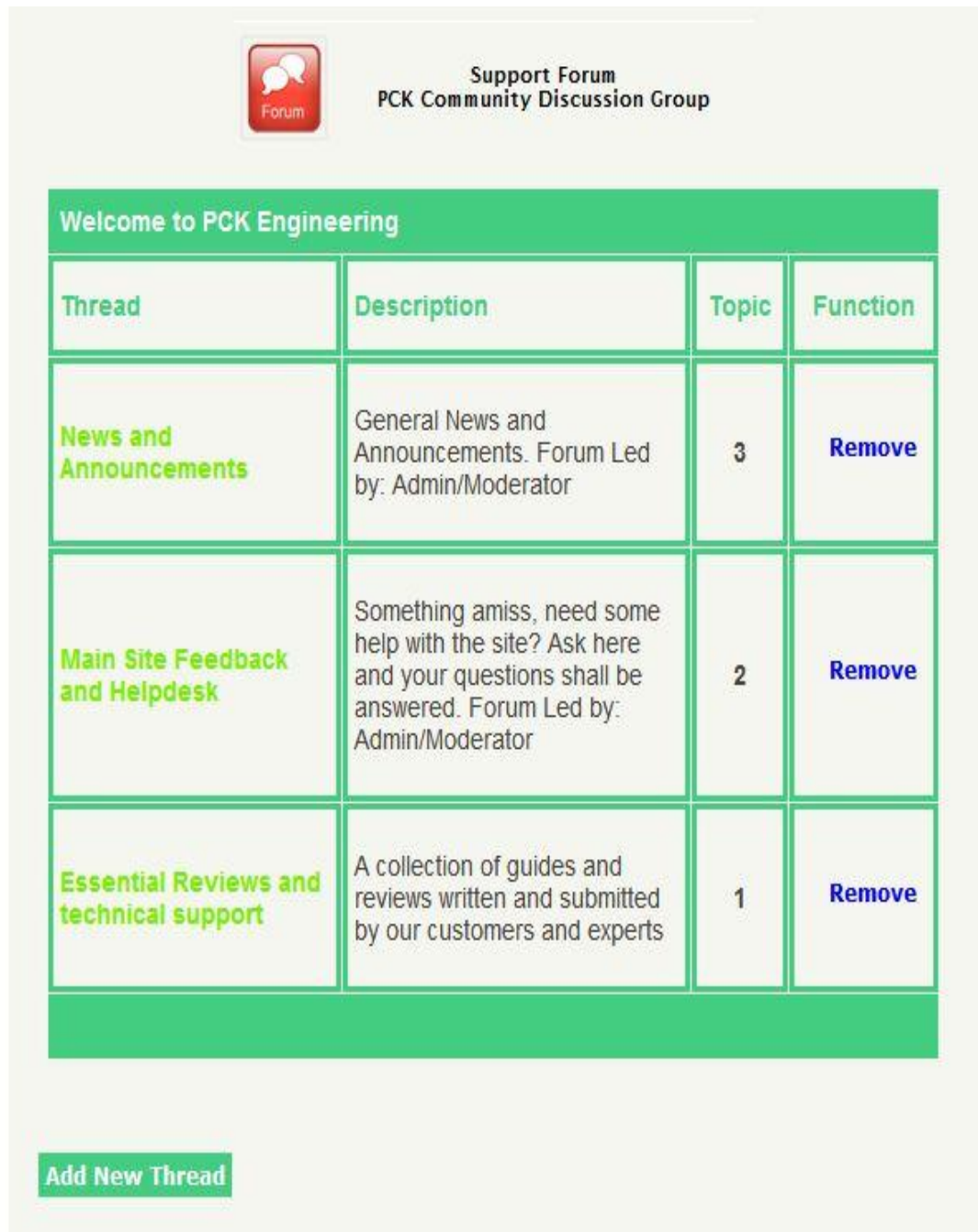
Order Details

ORDER REF NUMBER :	12
CUSTOMER NAME :	Lee Chee Wei
CUSTOMER IC :	890106075375
ORDER DATE :	2012-05-21
PRODUCT CODE :	RL000001
PRODUCT NAME :	rotating light
SIZE / DESCRIPTION :	230 VAC
CCOLOR :	Blue
QUANTITY :	10
APPOINTMENT DATE :	2012-05-28
APPOINTMENT SESSION :	Afternoon (2.00pm - 5.00pm)
ADDITIONAL NOTE :	
ORDER STATUS :	REJECT

Approve   **Reject**

Back

Figure 4.18: Order Details Interface

4.2.9 Forum Administration Module

This module provides the capability for admin to manage the forum thread as shown in Figure 4.19. Admin can add new thread as shown in Figure 4.20.

Figure 4.19: Forum Thread Interface

Figure 4.20: Add New Thread Interface

4.2.10 LiveChat Module

This module provides a medium for public which is non members of PCK Engineering to have a live chatting with others to gain information they needed or to solve their questions as shown in Figure 4.21.
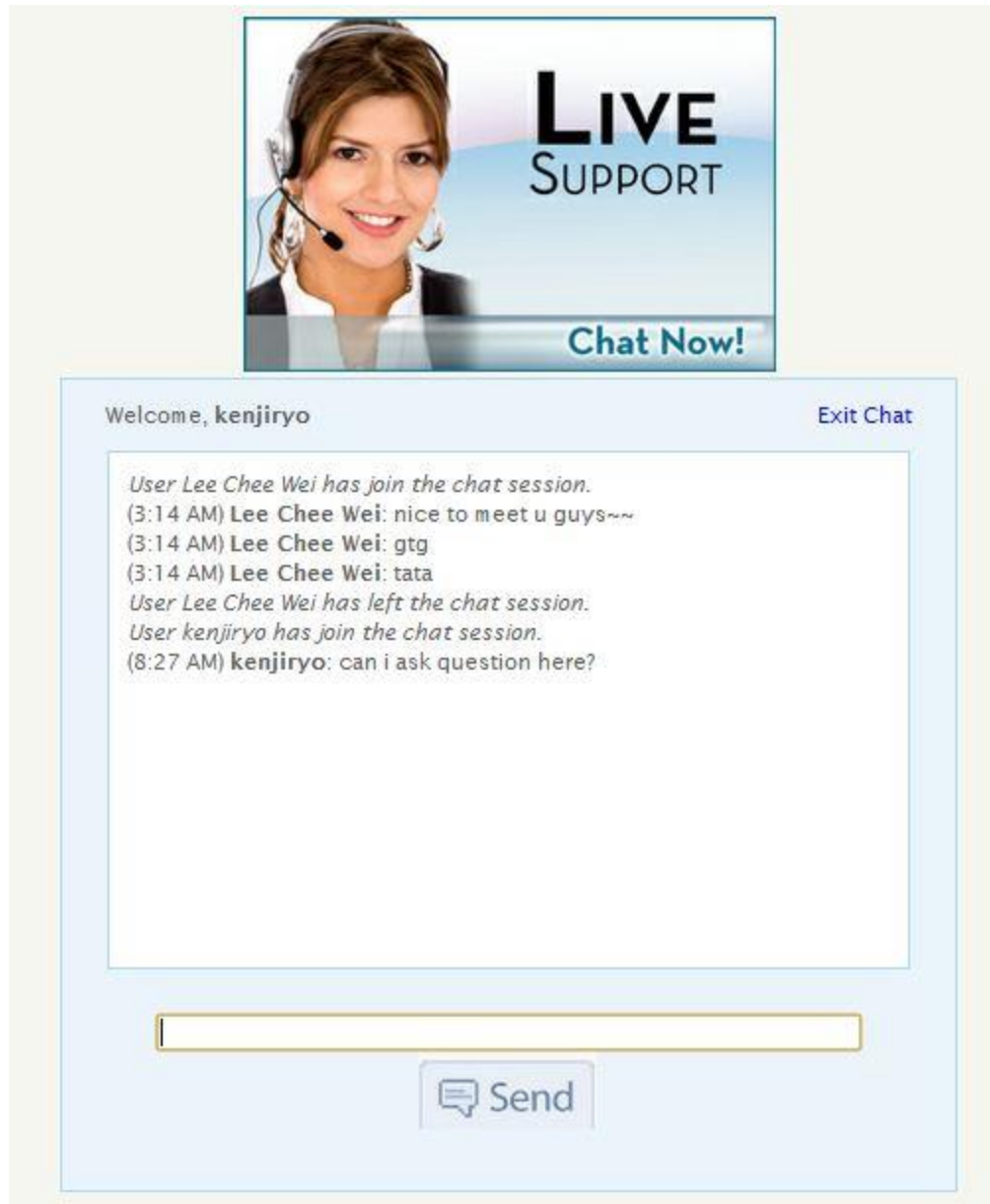
Figure 4.21: LiveChat Interface

4.2.11 Sales Report Module

This module provides a sales report of PCK Engineering so that admin can obtain the sales quantity as shown in Figure 4.22

.

Figure 4.22: Sales Report Interface

4.2.12 Summary

Basically this chapter is about the interfaces for all the 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. The test cases for this system are show in Appendix C. Several test cases are execute to test the user implementation and admin implementation. Result shows that the system developed is efficiently achieve and meet the scopes where user implementation and admin implementation work well.

5.2   Analysis of Result

The purpose of this chapter is to identify and discuss the result of the OOSPE. 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 OOSPE has meets user requirement. The developments of OOSPE are based on the two objectives which have been met in this system.

I.   The first objective for developing this system is to design and develop an online ordering system of PCK Engineering. It was

already achieved by developing this system with manage sales order function that able to approve or reject the order made from the customer online. Furthermore, all the records of order from the customers are kept well in database instead of recorded in paper.

Figure 5.1: Admin Approval Interface

Figure 5.1 above shows the example of the page which admin can decide whether to approve or reject the order from a customer. It proved that the first objective is achieved.

These system is support by providing a forum platform in figure 5.2 for customers to interact and share their opinion and information and also a search section for public, existing customers and admin to search for product information.
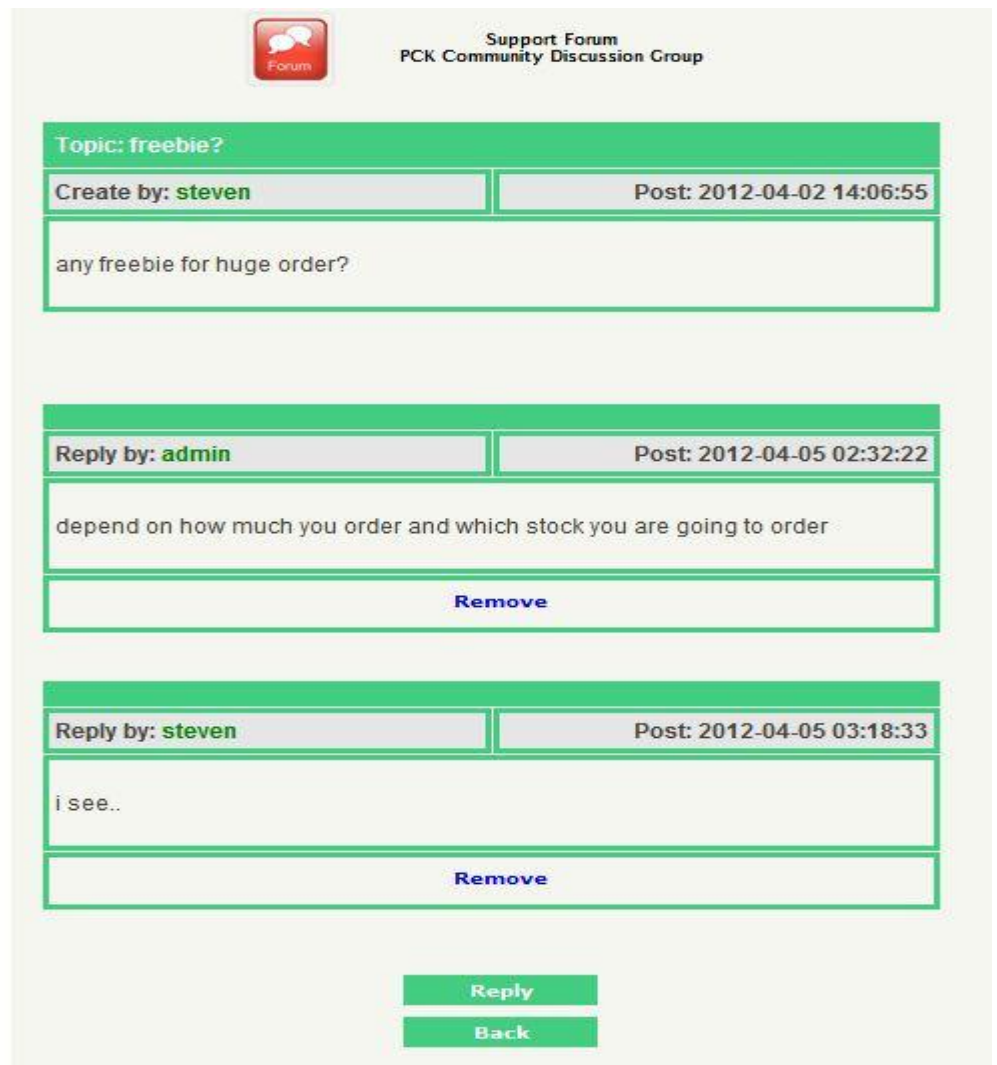
Figure 5.2: Forum Topic Interface

II.   The second objective has been met by developing this system with text-based information retrieval keyword matching based on keyword occurrence.

Figure 5.3: Search Product Interface

In Figure 5.3, result of searching for the word "e" is display after being calculated and sort according to the number of occurrence the word "e" appear in the name of the product.

5.3   System Constraint

OOSPE is a web based prototype to help PCK Engineering to manage their sales services. The constraint during the development of the OOSPE is the time constraint because of the need of time to allocate for projects, assignments, tests, quizzes for other subjects too.

The constrains of OOSPE are as following:

I.   Admin has only one access account that no need to registered and share by all admin of the company to manage the system.

II.   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.

III.   No payment or any transaction on the system.

IV.   No email or SMS notification when order is successfully made or being rejected.

.

5.4   Suggestion and Improvement

There are few suggestions to enhance OOSPE by implement new features into it since the system still can be improved. 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. Payment and 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 OOSPE 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.

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 Ordering System of PCK Engineering is proposed to develop for management of sales and support. This system is developed to solve the current problem faced by the PCK Engineering 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. There are total of two targeted users in this system, which are the admin staff and the customers of PCK Engineering. This system main functions are login and registration, customize machine specification, make appointment and order, 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 live chatting for public. 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 advisory for problem faced and enable searching of customers or public for product information.

6.2 Project Contribution

The development of Online Ordering System of PCK contribute in solving the current problem faced by the PCK Engineering 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 OOSPE 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, customize machine specification, make appointment and order, 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 live chatting for public.

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APPENDIX A

USER MANUAL

System's Name : Online Ordering System of PCK Engineering (OOSPE)

Folder to install : i) system   ii) database(pck)

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 OOSPE.

III.   Go to your C Drive. Find XAMPP folder and look for htdoc. Once you found it, paste the OOSPE system in the folder and named it as pck. (C:\xampp\htdoc)

IV.   Next, open the browser, either Mozilla or Google Chrome and enter this location : http://localhost/phpmyadmin/. Then create a database name pck and import the pck.sql into this database.

V.   Now, type this location on your browser : http://localhost/pck/ and user and operate the system start from here.
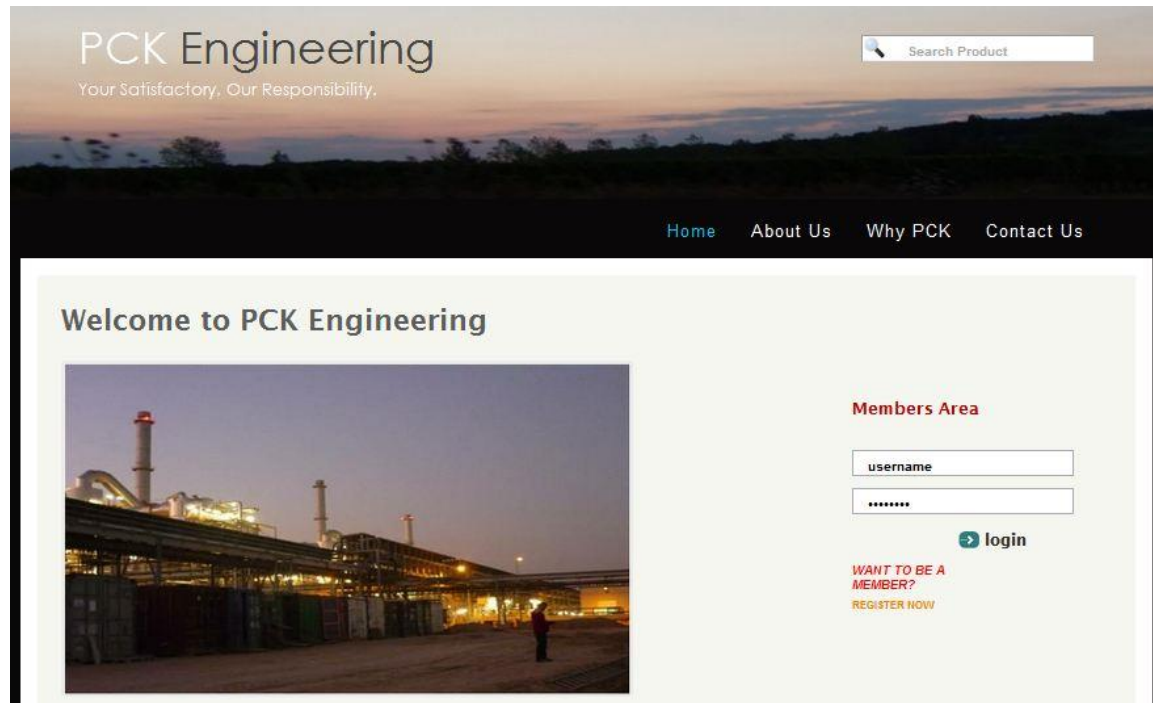
Figure 1: Home Page

Figure 1 is the homepage for OOSPE. In this page, user can obtain the basic information of PCK Engineering. There are four options on menu bar which is Home, About Us, Why PCK and Contact Us.
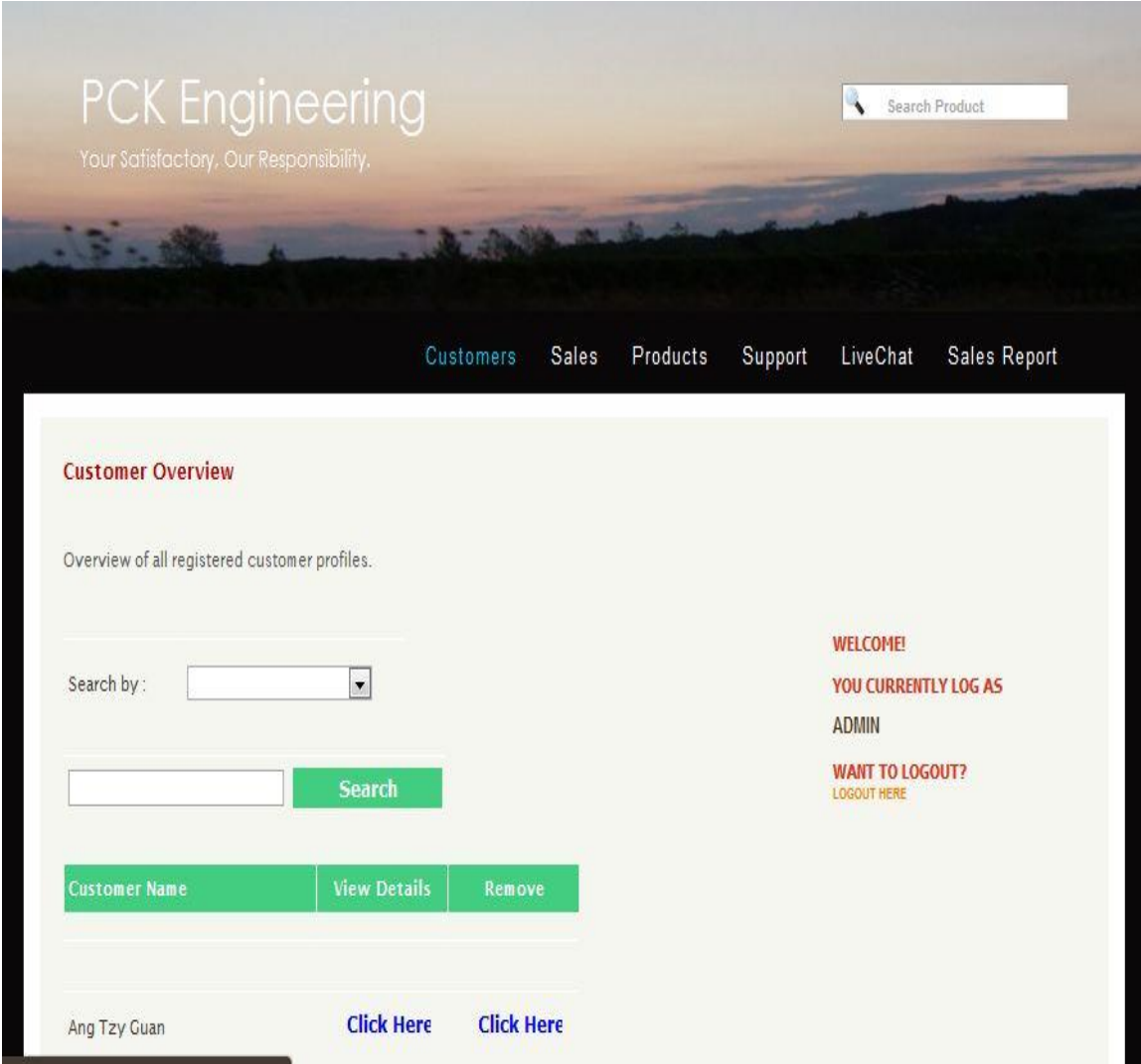
Menu	Description
Home	Briefly explain about the services and the coverage of PCK Engineering
About Us	Display the information and background of PCK Engineering
Why PCK	List of the services provided to the customer that makes PCK different from others
Contact Us	List of ways to contact the company

Admin or user have 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 of password.

Figure 2 : Message box for invalid username of password

Admin

Figure 3: Admin manage customer of PCK Engineering

Figure 4 : Admin manage sales of PCK Engineering

     Admin can approve customer's order by clicking the **Click Here** View Details column. Also, admin can print the sales receipt by clicking the **Click Here** under the Receipt column. Not to forgot that admin can also remove the sales record under the Remove column.

Figure 5 : Admin manage product of PCK Engineering

Admin can customize the product, add new product or remove product here. **Click Here** under Manage column is for admin to customize their product, **Click Here** under Remove column is for admin to remove the product and **<u>Add now</u>** is for admin to add new product.
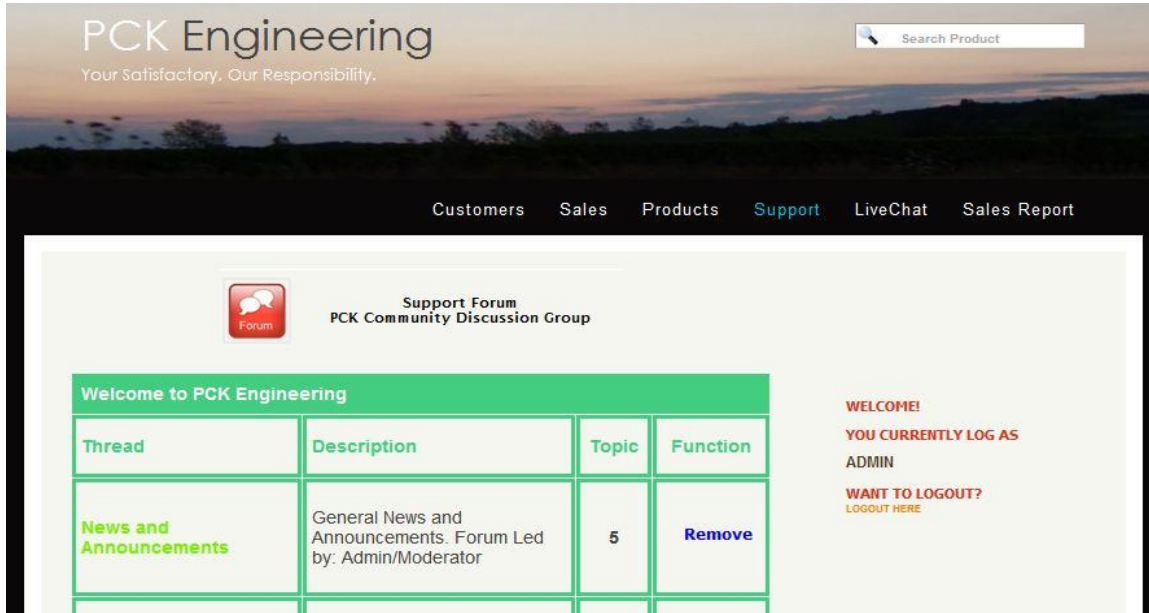
Figure 6 : Admin manage forum thread of PCK Engineering

Admin can manage the forum here. He or she can add new thread to the forum, remove comment or reply comment.

Figure 7 : Admin and members of PCK Engineering can have a live chatting here
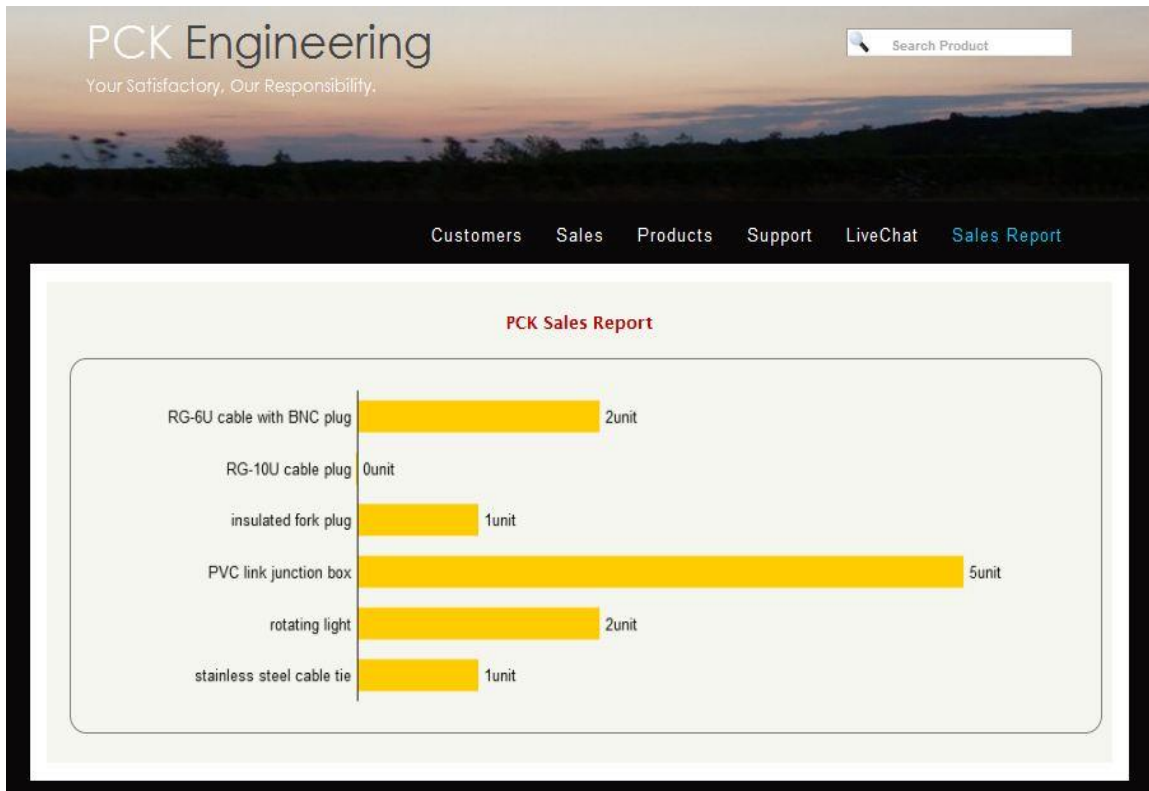
Figure 8 : Admin can view the sales report

Customer

Figure 9 : Customer profile

Customer can manage their own profile or update their profile in this page. **Add now** button allow customer to update their own profile while **Click Here** allow them to view their previous sales.

Figure 10 : Product for customer to order

Figure 11 : Appointment

After customer had made their order, they have to set an appointment date to collect their order. The appointment date is only valid from Monday to Saturday, each day have only two session which is morning from 9-12pm or afternoon session from 2-5pm.

Figure 12 : Support Forum of PCK Engineering

Customer can add a new topic themselves and they are allow to reply the topic, but they can only delete their own comment.

Figure 13 : LiveChat for customer of PCK Engineering

APPENDIX B

CODING

```
if (isset($_POST['login'])) {  //when login button clicked

if (($_POST['username']=="") || ($_POST['password']=="")) { //check username and password
echo "<script language='javascript'>
alert('You did not fill in the required field!');
location.href='index.php';
</script>";
}


else{
$username = addslashes($_POST['username']);
$password = addslashes($_POST['password']);
$sql = "SELECT * FROM user WHERE userLogin='$username' and userPass='$password'";
//retrive data from user table
$sql2 = "SELECT * FROM admin WHERE adminLogin='$username' and
adminPass='$password'"; //retrive data from admin table
$result = mysql_query($sql);
$result2 = mysql_query($sql2);
$count = mysql_num_rows($result);
$count2 = mysql_num_rows($result2);
if($count > 0){   //login as user if match
while($row = mysql_fetch_array($result)){
session_start();
$_SESSION['userLogin'] = $username;
mysql_close($connect);
echo "<script language='javascript'>
alert('Welcome to UMP Gambang FM!');
location.href='index.php';
</script>";
}
}

elseif ($count2 > 0){ //login as admin if match
while($row2 = mysql_fetch_array($result2)){
session_start();
$_SESSION['adminLogin'] = $username;
mysql_close($connect);
echo "<script language='javascript'>
alert('Welcome back!');
location.href='index.php';
</script>";
}
}

else { //exception handling
echo "<script language='javascript'>
```

```
alert('Incorrect username or password! Please try again.');
location.href='index.php';
</script>";
}
}
}
```

Figure 1: Login Function

```php
<?php
        //Start session
        session_start();

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

        //Array to store validation errors
        $errmsg_arr = array();

        //Validation error flag
        $errflag = false;

        //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");
        }

        //Function to sanitize values received from the form. Prevents SQL injection
        function clean($str) {
                $str = @trim($str);
                if(get_magic_quotes_gpc()) {
                        $str = stripslashes($str);
                }
                return mysql_real_escape_string($str);
        }

        //Sanitize the POST values
        $username1 = clean($_POST['username1']);
```

```php
$password1 = clean($_POST['password1']);

        $name = clean($_POST['name']);
        $ic = clean($_POST['ic']);
        $company = clean($_POST['company']);
        $email = clean($_POST['email']);
        $address = clean($_POST['address']);
        $contact = clean($_POST['contact']);
        $fax = clean($_POST['fax']);


        //Check for duplicate login ID
        if($username1 != '') {
                $qry = "SELECT * FROM customer WHERE customerLogin='$username1'";
                $result = mysql_query($qry);
                if($result) {
                        if(mysql_num_rows($result) > 0) {

                        echo "<script language='Javascript'>
                        alert('Sorry the username already in use!');
                        location.href='register.php';
                        </script>";
                        }
                        @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.php");
                exit();
        }

        //Create INSERT query
        $qry = "INSERT INTO customer
(customerLogin,customerPass,customerName,customerIC,customerCompany,customerEmail
,customerAddress,customerContact,customerFax,images)
VALUES
('$username1','$password1','$name','$_POST[ic]','$company','$email','$address','$_POST[co
ntact]','$_POST[fax]', 'pictures/default.gif')";
        $result = @mysql_query($qry);
```

```
        //Check whether the query was successful or not
        if($result) {
                            echo "<script language='Javascript'>
                                    alert('Register succesfully complete! \\nKindly
proceed to login.');

                                    location.href='index.php';
                                    </script>";
        }else {
                die("Query failed");
        }
?>
```

Figure 2: Register Function

```php
<?php
session_start();

$connect = mysql_connect("127.0.0.1", "root", "") or die("Could not connect to database");
$db = mysql_select_db("pck") or die("Could not select database");

if (isset($_POST['confirm'])) { //when confirm button clicked
$theCustomer = $_SESSION['customerLogin'];
$check = mysql_query("SELECT orderStatus, customerLogin FROM orders WHERE orderStatus
= 'PENDING' AND customerLogin = '$theCustomer'") //check the customer order status (one
order per time)
or die(mysql_error());
$check2 = mysql_num_rows($check);

if ($check2 != 0) {
echo "<script language='Javascript'>
alert('Sorry your pervious order not yet approved! \\nYou only can make one order per
time.');
location.href='product.php';
</script>";
}

else
{

$note = addslashes($_POST['note']);
$id = addslashes($_POST['id']);

$insertdata = "INSERT INTO orders
(orderCurrent,orderSystem,orderUPH,orderInput,orderDate,orderTime,orderNote,orderStatu
s,customerLogin,productID)
```

```
VALUES
('$_POST[current]','$_POST[system]','$_POST[uph]','$_POST[input]','$_POST[date]','$_POST[t
ime]','$note','PENDING','$_SESSION[customerLogin]','$id')"; //register new order into
databse

                                         if (!mysql_query($insertdata)) //exception handling
                                         {
                                                 die('Error: ' . mysql_error());
                                         }
                                         echo "<script language='Javascript'>
                                         alert('Order successfully submitted! \\nYou can view
your order details and status at the profile page.');
                                         location.href='profile.php';
                                         </script>";
}
}

mysql_close($connect);
?>
```

Figure 3: Customize Specification Function

```
if (isset($_POST['next'])) {
$theDate = isset($_REQUEST["date5"]) ? $_REQUEST["date5"] : "";
$theTime = $_POST['time'];
$check = mysql_query("SELECT orderDate FROM orders WHERE orderDate = '$theDate' AND
orderTime = '$theTime'") //check available date and time
or die(mysql_error());
$check2 = mysql_num_rows($check);

if ($check2 != 0) {
echo "<script language='Javascript'>
alert('Sorry the date/time is booked by others!');
location.href='appointment.php';
</script>";
}

else
{ //create appointment table
$createtable = "CREATE TABLE appointment (
appointmentID INT PRIMARY KEY NOT NULL AUTO_INCREMENT
,appointmentDate DATE NOT NULL
,appointmentTime VARCHAR(40) NOT NULL
,appointmentNote VARCHAR(200) NOT NULL
)";
```

```
                                        if (!mysql_query($createtable)) //exception handling
                                        {
                                                die('Error: ' . mysql_error());
                                        }

$note = addslashes($_POST['note']);

$insertdata = "INSERT INTO appointment
(appointmentDate,appointmentTime,appointmentNote)
VALUES ('$theDate','$_POST[time]','$note')"; //register new appointment into database

                                        if (!mysql_query($insertdata)) //exception handling
                                        {
                                                die('Error: ' . mysql_error());
                                        }
                                        echo "<script language='Javascript'>
                                        location.href='order.php';
                                        </script>";
}
}
```

Figure 4: Make Appointment Function

```
if(isset($_SESSION['customerLogin'])){
$username = $_SESSION['customerLogin'];
$password = addslashes($_POST['password1']);
$name = addslashes($_POST['name']);
$ic = $_POST['ic'];
$company = addslashes($_POST['company']);
$email = addslashes($_POST['email']);
$address = addslashes($_POST['address']);
$contact = $_POST['contact'];
$fax = $_POST['fax'];
mysql_query("UPDATE customer SET customerPass = '$password' WHERE customerLogin =
'$username'"); //update profile
mysql_query("UPDATE customer SET customerName = '$name' WHERE customerLogin =
'$username'");
mysql_query("UPDATE customer SET customerIC = '$ic' WHERE customerLogin =
'$username'");
mysql_query("UPDATE customer SET customerCompany = '$company' WHERE
customerLogin = '$username'");
mysql_query("UPDATE customer SET customerEmail = '$email' WHERE customerLogin =
'$username'");
mysql_query("UPDATE customer SET customerAddress = '$address' WHERE customerLogin =
'$username'");
```

```
mysql_query("UPDATE customer SET customerContact = '$contact' WHERE customerLogin =
'$username'");
mysql_query("UPDATE customer SET customerFax = '$fax' WHERE customerLogin =
'$username'");
        echo    "<script language='Javascript'>
                        alert('Profile succesfully update!');
                        location.href='profile.php';
                </script>";
}
else{
header( "Location: profile.php" ); //exception handling
}
```

Figure 5: Update Profile Function

```
function getmicrotime()
{
   list($usec, $sec) = explode(" ", microtime());
   return ((float)$usec + (float)$sec);
}
                                extract( $_POST);
if($name == ''){
        echo  ' <b>Sorry, you do not insert any key word(s).</b>';
        echo  ' <br /><br /><b>Therefor there are no result to display.</b>';
}
                if ($name != ''){
                $string = $name;
                $start_search = getmicrotime();

        $query="SELECT * FROM product WHERE  productName LIKE '%" . $name . "%' OR
productDescription LIKE '%" . $name . "%'";
$query2="SELECT
 *,
 CAST((LENGTH(productName) - LENGTH(REPLACE(productName, 'e'))) / LENGTH('e') AS
UNSIGNED) AS count
FROM product
ORDER BY count DESC ";

$result= mysql_query($query);
 $stop_search = getmicrotime();
    //calculating the search time
   $time_search = ($stop_search - $start_search);
echo "Searching result for <b>'$name'</b>... (";
echo sprintf("%01.4f", $time_search);
echo " seconds) ";
        while($row = mysql_fetch_array($result)){
```

```php
        $productID = $row["productID"];
                $productName =$row['productName'];
            $productDescription = $row['productDescription'];

include_once "color.php";
include_once "color1.php";
$string = $productName;
$words = array($name);
$string =  highlightWords($string, $words);
$string1 =$productDescription;
$words1 = array($name);
$string1 =  highlightWords1($string1, $words1);
        ?>
    <table width="550" border="0">

                <tr>
                <td width="120" height="1"> </td>
                <td width="150" height="1"> </td>
      <td width="200" height="1"> </td>
      <td width="100" height="1"> </td>
      </tr>

      <tr>
       <td><?php echo $productID;?></td>
       <td><?php echo $string;?></td>
       <td><?php echo $string1;?></td>
       <td><center><input type="button" name="manage" id="manage" class="button1"
value="Click Here" onclick="location.href='customize_product.php?id=<?php echo
$row['productID'];?>';"/></center></td>
      </tr>

<?php
        }
        ?>
        </table>
        <?php
        $num_rows = mysql_num_rows($result);
$i=1;
        if($num_rows == 0) {
echo '<p><br /><b>There are no existing product in the database.</b></p>';
}
        }
```

Figure 6: Search Product Function

```
$code = addslashes($_POST['code']);
$system1 = $_POST['system1'];
$system2 = $_POST['system2'];
$system3 = $_POST['system3'];
$uph1 = $_POST['uph1'];
$uph2 = $_POST['uph2'];
$uph3 = $_POST['uph3'];
$input1 = $_POST['input1'];
$input2 = $_POST['input2'];
$input3 = $_POST['input3'];
mysql_query("UPDATE product_spec SET productSSystem1 = '$system1' WHERE productID =
'$code'"); //update the product specification
mysql_query("UPDATE product_spec SET productSSystem2 = '$system2' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSSystem3 = '$system3' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSUPH1 = '$uph1' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSUPH2 = '$uph2' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSUPH3 = '$uph3' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSInput1 = '$input1' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSInput2 = '$input2' WHERE productID =
'$code'");
mysql_query("UPDATE product_spec SET productSInput3 = '$input3' WHERE productID =
'$code'");

        echo      "<script language='Javascript'>
                         alert('Product succesfully updated!');
                         location.href='admin_product.php';
                  </script>";
```

Figure 7: Update Product Specification Function

```
$num = $_POST['num'];
$customer = addslashes($_POST['customer']);
$statuscheck = addslashes($_POST['status']);
$to = mysql_query("SELECT customerEmail FROM customer WHERE customerName =
$customer");

if (isset($_POST['approve'])) { //when approve button clicked
$check = mysql_query("SELECT orderStatus FROM orders WHERE orderStatus = 'PENDING'")
//check order status
or die(mysql_error());
$check2 = mysql_num_rows($check);
if ($check2 != 0) {
```

```
mysql_query("UPDATE orders SET orderStatus = 'APPROVE' WHERE orderID = '$num'");
//update order status
//mail($to,$subject,$message_a,$headers);
        echo    "<script language='Javascript'>
                        alert('Order approved!');
                        location.href='admin_sales.php';
                </script>";
}

else
{ //exception handling
echo "<script language='Javascript'>
alert('Sorry the order already approved or rejected!');
location.href='admin_sales.php';
</script>";
}
}

if (isset($_POST['reject'])) { //when reject button clicked
$check = mysql_query("SELECT orderStatus FROM orders WHERE orderStatus = 'PENDING'")
//check order status
or die(mysql_error());
$check2 = mysql_num_rows($check);

if ($check2 != 0) {
mysql_query("UPDATE orders SET orderStatus = 'REJECT' WHERE orderID = '$num'");
//update order status
//mail($to,$subject,$message_b,$headers);
        echo    "<script language='Javascript'>
                        alert('Order rejected!');
                        location.href='admin_sales.php';
                </script>";
}

else
{ //exception handling
echo "<script language='Javascript'>
alert('Sorry the order already approved or rejected!');
location.href='admin_sales.php';
</script>";
}
}
```

Figure 8: Approve and Reject Order Function

```
if (isset($_POST['create'])) { //when create button clicked
$threadcheck = addslashes($_POST['thread']);
$check = mysql_query("SELECT forumThread FROM forum WHERE forumThread =
'$threadcheck'") //check existing thread
or die(mysql_error());
$check2 = mysql_num_rows($check);
if ($check2 != 0) { //thread exsited
echo "<script language='Javascript'>
alert('Sorry. \\nThe thread already exist!');
location.href='forum.php';
</script>";
}
else
{
$thread = addslashes($_POST['thread']);
$desp = addslashes($_POST['description']);
$insertdata = "INSERT INTO forum (forumThread,forumDescription,forumLevel)
                                    VALUES ('$thread','$desp','$_POST[level]')";
//register new thread into database
                                    if (!mysql_query($insertdata)) //exception handling
                                    {
                                            die('Error: ' . mysql_error());
                                    }
                                    echo "<script language='Javascript'>
                                    alert('New thread succesfully created!');
                                    location.href='forum.php';
                                    </script>";
}
}
```

Figure 9: Add New Thread Function

```
$(document).ready(function(){
        //If user submits the form
        $("#submitmsg").click(function(){
                var clientmsg = $("#usermsg").val();
                $.post("post.php", {text: clientmsg});
                $("#usermsg").attr("value", "");
                return false;
        });

        //Load the file containing the chat log
        function loadLog(){
                var oldscrollHeight = $("#chatbox").attr("scrollHeight") - 20;
                $.ajax({
                        url: "log.html",
                        cache: false,
                success: function(html){
```

```
                                    $("#chatbox").html(html); //Insert chat log into the #chatbox
div
                                    var newscrollHeight = $("#chatbox").attr("scrollHeight") - 20;
                                    if(newscrollHeight > oldscrollHeight){
                                            $("#chatbox").animate({ scrollTop:
newscrollHeight }, 'normal'); //Autoscroll to bottom of div
                                    }
                        },
                });
        }
        setInterval (loadLog, 10);          //Reload file every 0.5 seconds

        //If user wants to end session
        $("#exit").click(function(){
                var exit = confirm("Are you sure you want to end the session?");
                if(exit==true){window.location = 'livechat.php?logout=true';}
        });
});
```

Figure 10: LiveChat Function

```
<script>
window.onload = function (e)
{
var hbar = new RGraph.HBar('cvs', <?php print($data_string) ?>);
hbar.Set('chart.units.post', 'unit');
hbar.Set('chart.colors', ['FFCC00']);
hbar.Set('chart.labels.above', true);
hbar.Set('chart.vmargin', 8);
hbar.Set('chart.background.grid', false);
hbar.Set('chart.labels', <?php print($labels_string) ?>);



hbar.Set('chart.xlabels', false);
hbar.Set('chart.gutter.left', 250);
hbar.Set('chart.gutter.right', 120);
hbar.Set('chart.gutter.top', 25);
hbar.Set('chart.noxaxis', true);
hbar.Set('chart.noytickmarks', true);
RGraph.isOld() ? hbar.Draw() : RGraph.Effects.HBar.Grow(hbar);
}
</script>
```

```
</head>
<script type="text/javascript">
function validate5(){

        var select1 = document.getElementById('select');
        var search1 = document.getElementById('search');
        var passport = false;

        if(madeSelection(select1)&&notEmpty(search1)){
                if(confirm("Are you confirm with the search?")==true){
                        passport=true;
                }
        }
        return passport;
}

function madeSelection(elem){
if(elem.value == ""){
        alert("Please choose the search category!");
        elem.focus();
        return false;
}else{
        return true;
}

}
function notEmpty(elem){
        if(elem.value.length == 0){
                alert("Please key in the keyword to search!");
                elem.focus();
                return false;
        }
        return true;
}
</script>
```

Figure 11: Sales Report Function

APPENDIX C

USER ACCEPTANCE TEST PLAN

	FACULTY of COMPUTER SYSTEM & SOFTWARE ENGINEERING
	UNIVERSITI MALAYSIA PAHANG

USER ACCEPTANCE TEST PLAN

Prepared by

Lee Chee Wei

(Developer of Online Ordering System of PCK Engineering)

Validate by

Mr. Leong Hong Lin

(Technical Manager of Gulf Interglen Company(KSA) and P.I.C. for PCK Engineering)

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 OOSPE. 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 OOSPE.

No.	User Acceptance Testing Action	Pass/Fail	Date	Initials
	Major Functionality			
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 allow customizing their	PASS	20/5/2012	

	preferable product specifications?			
5	Does the system provide profile and sales management for customer?	PASS	20/5/2012	
6	Does the system provide live chat platform for public?	PASS	20/5/2012	
7	Does the system provide forum platform for user?	PASS	20/5/2012	
8	Dose the system admin able to monitor the customer registration, sales and support?	PASS	20/5/2012	
	Interface Appearance			
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	
	Different Level of Access			
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	
4	Is the user restricted to post in some forum thread where only admin allowed to post?	PASS	20/5/2012	
	Performance			
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	
	Capacity			
1	Is there a capacity for the system to store data?	PASS	20/5/2012	
	Accuracy			
1	Do the window titles correctly identify each	PASS	20/5/2012	

	module?			
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	
	Reliability			
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	
	Security			
1	Does the system need to key in password to login?	PASS	20/5/2012	
2	Does the system provide logout and auto logout user that inactive after 15 minutes?	PASS	20/5/2012	
	Usability			
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	
	Exception Handling			
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 Hong Lin, client of Lee Chee Wei, hereby indicate by way of my sign below that the OOSPE delivered the complete functionality for my requirement as described previously and it is completely acceptable and fit to user.

Date: 24/5/2012

Name: Leong Hong Lin

Technical Manager,

Gulf Interglen Company(KSA)

P.I.C. for PCK Engineering.

PCK ENGINEERING
Co. Reg: CR 001910603-M
11A, Jalan Sam Ah Chow, 11200
Tanjung Bunga, Pulau Pinang.
Tel: 04-8905381

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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	
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4	Does the system disallow the customer to make second order while the first order still pending to approve?	PASS	20/5/2012	