



**FACULTY OF COMPUTER SCIENCE AND
INFORMATION TECHNOLOGY
UNIVERSITY OF MALAYA**

WXES 3181

**WEB-BASED SALE AND PURCHASE
ONLINE PRODUCT CATALOGUE AND ORDERING
SYSTEM (OPCOS)**

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ABSTRACT

Web-based sale and purchase is the buying and selling of goods and services on the Internet, especially the World Wide Web. It makes purchasing easier for customer. However, it will cost a corporation a lot of money to build up a dynamic e-commerce website. To overcome this issue, a web-based sale and purchase is developed to create web page to selling the corporation 's products. The proposed project offers a web-based service to let suppliers put their products to sell online. In the meantime, this allows the customers to have more choices in same products and enables to compare the prices in the same web page.

It includes online product catalogue, online ordering system, backend management and database. The dynamic database is hooked up to the existing back-end system for order fulfillment (front-end) and member registration process (front-end).

The aim of this project – Online Product Catalogue and Ordering System (OPCOS) is to develop and design the e-commerce application for a product catalogue, shopping cart and ordering system. This project also defines the objectives, scope, problems and tools to use that should be identified before the development of this system.

Several research and case study had done to do assessment and review about the system. Waterfall Model with prototyping is used as a methodology of the proposed project. Three-tier client/server architecture will be implemented to model the system architecture. In addition, Online Product Catalogue and Ordering System (OPCOS) is planned to be developed by using Hypertext Preprocessor (PHP) and Apache Web Server on the Microsoft Window 2000 Server platform utilizing

database created using MySQL. The system design is dynamic and supporting concurrent users to interact with the system over Internet.

Finally, the intended Online Product Catalogue and Ordering System (OPCOS) should able to produce the web pages that allow users to do online shopping and order their desired products. A database also has to be implemented for storing data that would be retrieved for display and captured from users.

First and foremost, I would like to thank my Supervisor, Assoc. Prof. Dr. Pooch / *(Name)* for her help and support throughout the past project. It gave me the chance to study my final project.

Also, I would like to thank the moderator, Mr. Wong *(Name)* for giving me constructive feedback and suggestions on improving the system. His suggestions and guidance were the perfect boost for my project.

Many thanks also to my team for helping me during the development process of the project and providing full cooperation in order to finish the thesis.

I would like to thank my friends for providing advice and encouragement and to my family for their support.

Last but not least, my sincere gratitude to my family members for being supportive and caring throughout my project development.

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Also, I would like to thank my moderator, Mr. Woo Chaw Seng for giving me constructive feedback and suggestions on improving on the systems. His suggestions and guidance make the project become more practical and valuable.

Many thanks also to my team members for helping me during the development process of this project and showing full cooperation in order to succeed the thesis.

I would like to express my gratefulness to my friends for providing positive encouragement and support while develops the system.

Last but no least, my sincere gratitude to my family members for being supportive, motivate and caring throughout my project development.

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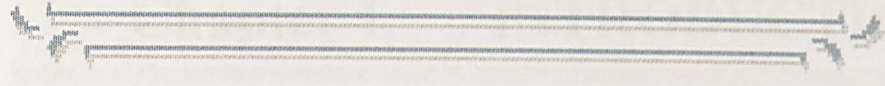
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Introduction

CHAPTER 1



1.1 PROJECT OVERVIEW

Web-based Sales And Purchase System (WBSP)

Web-based sales and purchase system (WBSP) is an essential part of e-commerce system. From its inception, WBSP has included the handling of purchase transactions and funds transfer over computer networks.

As a Computer science student, I have been interested in the development of online systems. I have been working on the development of online systems for the past few years. I have been working on the development of online systems for the past few years. I have been working on the development of online systems for the past few years.

Introduction



CHAPTER 1

1.1 PROJECT OVERVIEW

Web based Sales And Purchase System (WBSP)

Web based sales and purchase system (WBSP) is an essential part of e-commerce solution. From its inception, WBSP had included the handling of purchase transactions and funds transfer over computer networks.

As e-Commerce grows, more and more people are enjoying the convenience of online shopping. Imagine, for example, if a young mother needs to buy an item, she should bring along her children and battle the traffic, noise, and queues. In the other way, she could log on to the Internet at home, order what she wants and have it home delivered. Therefore, we find that nowadays a lot of company involve themselves in developing an e-commerce project.

Unfortunately, many e-commerce solutions are highly complex and expensive to set up. And if your storefront isn't sophisticated, it is difficult to attract and keep customers. Therefore, this project is being developed to overcome the problem faced in the conventional e-commerce business models. This project will offer web-based services to let company put their own product including all of the elements that they would expect in a store such as shopping carts and credit card processing. It makes electronic commerce easier than ever. Company can sign up online and quickly put their products online to sell. Besides, it also enables the corporation to widen its sale coverage and tap new market by providing a dynamic e-commerce web page for the company to selling their own products. In the meantime,

this allows the customers to have more choices in same products and enables to compare the prices in the same web page.

The web based sales and purchase packages are included:

- ✧ Order of products through on-line form
- ✧ Online purchase
- ✧ User-friendly ordering
- ✧ Online Catalogue Search
- ✧ E-shopping with medium-sized catalog of items (20 – 50 items)
- ✧ Credit card processing
- ✧ Secure server

When visitors register as a member of this package, they will get the benefit above. At the same time, this project also included a user-friendly set up wizard administration to keep track the records of customers and suppliers profile and allow customers to administer their products.

The development of this project is decomposed into three major subsystem modules, which comprises the Online Product Catalogue and Ordering System (OPCOS), Administrative Management and Financial Management. This project is emphasized Online Product Catalogue and Ordering System (OPCOS).

1.2 Online Product Catalogue and Ordering System (OPCOS)

I am going to develop OPCOS that is one of the main module in this Web-based sales and purchase project. OPCOS is web-based electronic commerce ordering system developed for a shopping store. It allows customers to order products over the Internet. Companies can display descriptions and pictures of products to help customers determine which products they want to purchase. Basically, the OPCOS can be divided into 2 sections: Customer Section (Front-end model) and Administrator Section (Back end model).

The front-end model is what many people know about e-commerce. The front-end combines transaction processing, security and information storage to enable merchant to sell their product on the web. This is a basic form of e-commerce where the buyer and the seller interact directly. It is designed to function as an online catalogue, which displays all the products available at the web page. It makes the customer easy to navigate through the catalogue of products and ultimately make a purchase. Beside the system also provides images to help the customer understand what is being offered. Users can browse all the related products available in the store or search on certain products by using search engine provided by the system.

Besides, the system will provide a registration system to the new visitors who wish to register themselves as a member via the Internet and a login system for authorized members to shop online. Users are allowed to change their password as their desire. Moreover, the system will also enable existing members to update their own profile and check their order. Furthermore, the shopping cart system will keep

track of users ordering information and enable users to manipulate their orders. This order-processing technology allows customers to accumulate items they wish to buy as they continue to shop at the next time visit. After completing the product selection, users may enter checkout page which the customer is presented with a list of the goods marked for purchase, the total cost, shipping and so on.

For the back-end model, OPCOS will establish another different website for the system administrator. As in this section, administrators are granted to access the system to manipulate administrator profile, customer profile, order records and keep track the suggestion from customer.

1.3 Project Objectives

The objectives of the proposed project are listed below:

- ▶ To design and develop an interactive, user-friendly and reliable web based commerce solution for the shopping store to promote and sell products to its customers.
- ▶ Develop reliable and secure ordering services to the customers to purchase the products being promoted on-line.
- ▶ Improve the convenience, accessibility and quality of interaction between suppliers and customers.
- ▶ Enable administrator to maintain the system through the Internet.
- ▶ To provide a comprehensive ordering system for the medium scale shopping store to conduct their business online. Normally only huge shopping store will plan to conduct their business through the web. Now, medium to small scale shopping store will also be able to promote and sell their products via the Internet.

- Easy maintenance through the Store end site, the suppliers can be easily keep track and maintain customer profile, product information, order record and transaction of the day.
- Facilitate product search and comparison.

1.4 Project Scope

The scope of this project is narrowed down and focuses primarily on front-end and back-end. It is development of a system involving a client environment. This site must be able to provide for all stages of a user's buying experience. The basic flow that the site must provide is illustrated in Figure 1.1.

Front-end is basically an electronic commerce web site that caters for business-to-business transaction.

The scope or features of the front-end is as follow:

1. Registration for new members.
2. Logging in and logging out as customer.
3. Allow existing member to login into the system and update his or her own profile.
4. Categories and product search
5. View products and description
6. Shopping cart
7. Checkout
8. Company profile
9. Suggestion

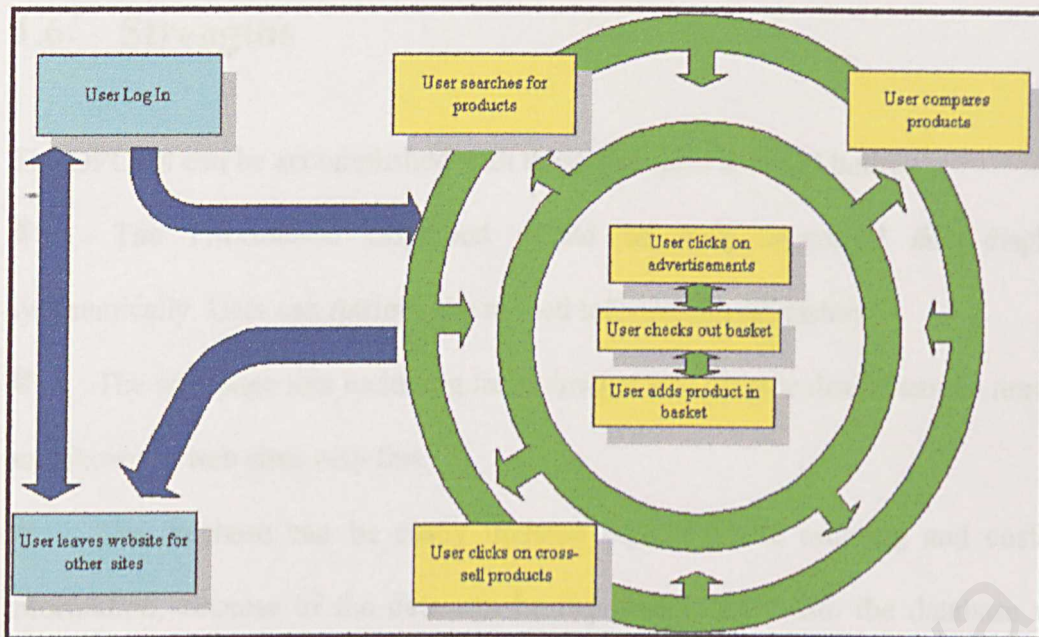


Figure 1.1: Web Site Basic Flow.

Back-end will allow system administrator to access and maintain the database. Facilities provided in this section are:

1. Maintaining and viewing customer 's profile
2. Maintaining and viewing order's profile
3. Keep track the feedback or suggestion from customer

1.5 Project Limitations

There are some limitations in this suggested system due to the limited companies that provide the complete web based sales and purchase in the Malaysia.

1. Currency and language selection are not available. Malaysia Ringgit (MYR) and English language are used as the system default.
2. Site information like site wide setting, site wide color, site wide fonts and column layout can't modify regularly because template setting for web site is not available in this system.

1.6 Strengths

The OPCOS can be accomplished with these strengths as listed below:

- ◆ The information displayed would be well organized and displayed systematically. User can retrieve the related information efficiently.
- ◆ The web page that including many images and graphic design can be retrieved and shown in web sites very fast.
- ◆ The database can be easily updated especially the ordering and customer information, because of the data can be captured directly into the database when customer submit the form in the web.
- ◆ The data of customer, ordering record and suggestion from customer can be updated and maintained by the administrator time to time.
- ◆ Security issue is in emphasis because the users need to be authenticated as a member of the system before they can add the item into shopping cart.
- ◆ The ordering system will be user friendly, systematic, tidy and easily understood by any users.

1.7 Project Schedule

A project schedule is planned as a guideline to manage the time and tasks need to be accomplished. In order to reduce inherent uncertainty in determines the time estimations, the expected time of all the activities will be estimated optimistically. The project timeline is as shown:

ID	Task Name	Start	Finish	2002					2003		
				Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
1	Preliminary Investigation	6/10/02	6/28/02	■							
2	Literature Review	6/25/02	8/23/02		■	■	■				
3	System Analysis	7/15/02	8/15/02		■	■					
4	System Design	8/5/02	9/2/02			■	■				
5	Coding	9/2/02	1/6/03					■	■	■	
6	Evaluation and Testing	1/7/03	2/25/03								■
7	Documentation	6/25/02	2/25/03	■	■	■	■	■	■	■	■

1.8 Report Layout

The purpose of this layout is to give an overview of the major phases involved during development of the project. Below is the report layout.

Chapter 1 Introduction

This chapter gives an overview of the major phases of the project that includes the objective, project overview, project scope and project schedule.

Chapter 2 Literature Review

This chapter gives brief explanation on topics researched and studies that are relevant to this project. It is the combination between literature search and literature review. Among the discuss topics are operating system. Web development technology and database management. Besides that, this chapter also makes a study on exiting web-based sale and purchase in the market.

Chapter 3 Methodology

This chapter will explain the methodology, which has been chosen to develop this project. Besides, the methods to find the information will discuss in this chapter.

Chapter 4 System Analysis

This chapter emphasizes on the analysis of the project's functional requirements and non-functional requirements. It explains how the requirements for this project were acquired and the result of the analysis.

Chapter 5 System Design

This chapter explains the conceptual and technical design of the system. It covers the structure chart, data flow diagram, database design and interface design.

There are three chapters in Part 2

Chapter 6 System Implementation

Under the specified design and development-operating environment, and in accordance to the designed blueprints, the system is developed. Following that, the system is implemented in the usual environment using real-time data. This is discussed in Chapter 5.

Chapter 7 System Testing

The approaches for debugging and testing of the system are described here. The objectives, both achieved and unachieved, are outlined and the proposal of future work is considered.

Chapter 8 System Evaluation

The problems faced and the solutions taken during the development period are highlighted. Following the conclusion on the finished system, the strengths and

limitations of the final product are confirmed. A proposal for future enhancement is forwarded here.

At the end of the report, an overall conclusion based on the project development proposal is provided.

LITERATURE
REVIEW
UNIVERSITY OF MALAYA
CHAPTER 2

Chapter 2 LITERATURE REVIEW

2.1 Introduction

Review of literature is a background study about the knowledge and the information gained to develop this project. The purpose of this review of literature is to get a better understanding on the development tools that can be used to develop a project and also to get a better knowledge on the development methodologies used while developing a project.

Apart from that, literature review also helps to do a comparison on the past-developed projects and study the strengths and weakness of it. It will also provide a better understanding on the development tools and methodologies required to fulfil the requirements needed.

Besides that, reviews of literature are also carried out. This review of literature is explained in this chapter.

2. Project Definition

Web based online applications, which run on the Web or on Internet-based networks such as an Intranet. Meanwhile, sales is defined as selling or being sold something and purchase is buying something. [Prof. Sir Randolph Quirk (1992)]

Web-based sale and purchase (WBSP) provides the capability of buying and selling products and information on the Internet and other online services. WBSP aims to improve the execution of business transactions over various networks.

CHAPTER 2

Chapter 2 LITERATURE REVIEW

2.1 Introduction

Review of literature is a background study about the knowledge and the information gained to develop this project. The purpose of this review of literature is to get a better understanding on the development tools that can be used to develop a project and also to get a better knowledge on the development methodologies used while developing a project.

Apart from that, the review of literature also enables the developer to do comparison on the past-developed projects and study the strengths and weakness of it. It will also provide an overview of how to improve the weakness and fulfil the requirements needed.

Besides that, reviews on the some exiting web-based sales and purchase also been carried out. This review plus additional literature reviews are explained in this chapter.

2.2 Project Definition

Web based means applications, which run on the Web or on Internet-based networks such as an Intranet. Meanwhile, **sales** is defines as selling or being sold something and **purchase** is buying something. [Prof. Sir Randolph Quirk (1992)]

Web-based sale and purchase (WBSP) provides the capability of buying and selling products and information on the Internet and other online services. WBSP endeavours to improve the execution of business transactions over various networks.

Transactions are exchanges that occur when one economic entity sells a product or services to another entity. A transaction takes place when a product or service is transferred across a technologically separable interface that links a consumer (client) with a procedure (server).

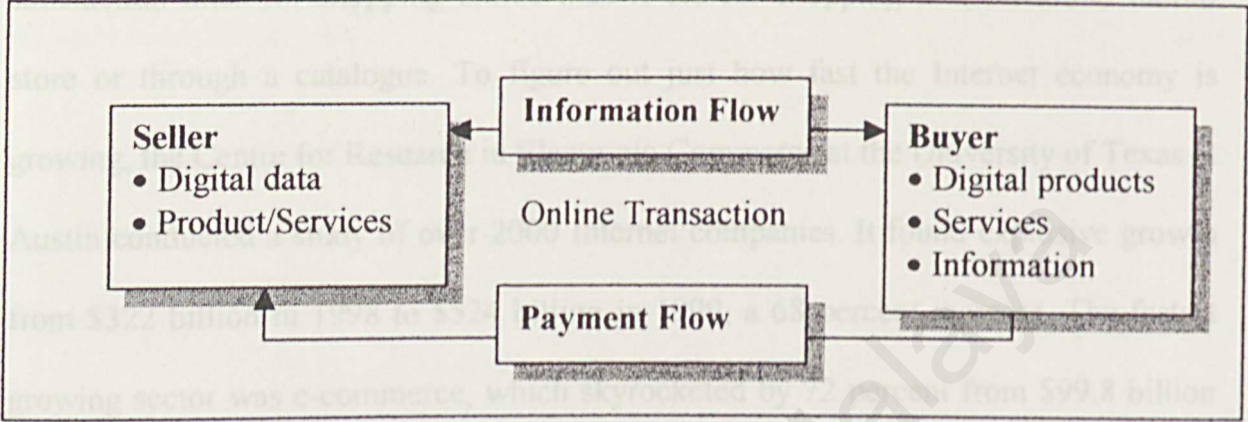


Figure 2.1 Buyer/ Seller Transactions [R, Kalakota & Andrew (1997)]

2.3 Electronic Commerce

2.3.1 Overview

Electronic Commerce (E-Commerce) is about setting business on the Internet, allowing visitors to access website, and go through a virtual catalogue of company's products / services online. E-Commerce is doing business through electronic media. It means using simple, fast and low-cost electronic communications to transact, without face-to-face meeting between the two parties of the transaction. Now, it is mainly done through Internet and Electronic Data Interchange (EDI). This covers a wide range of activities, from using electronic mail (email) and EFTPOS, through to Internet based

sales and transactions and web based marketing. It is a new way of doing business, which will supersede many traditional commercial relationships.

Internet shopping is already beginning to eclipse more traditional modes, according to research done the Christmas season of 1999, which found higher satisfaction rates for shopping online than it did for shopping at a brick-and mortar store or through a catalogue. To figure out just how fast the Internet economy is growing, the Centre for Research in Electronic Commerce at the University of Texas at Austin conducted a study of over 2000 Internet companies. It found explosive growth from \$322 billion in 1998 to \$524 billion in 1999, a 68 percent increase. The fastest growing sector was e-commerce, which skyrocketed by 72 percent from \$99.8 billion to \$171.5 billion. According to researchers' estimates, over 50,000 companies make some or all of their money online. By 2002, over a trillion dollars in revenue will be generated through the Internet. [Deitel, 2001]

A recent report, *E-commerce - Beyond 2000*, predicted that: [Report,2000]

- ⊕ The number of people in Australia who regularly *browse* the Internet will grow from 1.7 million in 1998 to 5.7 million in 2003.
- ⊕ Internet based commerce in Australia will grow from \$61 million in 1997 to \$1.3 billion in 2001; and
- ⊕ The net effect of e-commerce on the Australian economy could add 2.7% to the national output and enhance consumption by \$10 billion over the next decade.

When a visitor wants to buy something he/she likes, they can "add" it to their virtual shopping basket. Items in the virtual shopping basket can be added or deleted, and have virtual checkout counter, which has complete total, and will ask for customer's name, address method of payment (usually via credit card) and so on. Once customer entered all this information (which by the way is being transmitted securely) you can then just wait for delivery.

In short, by implementing E-Commerce, you save money, are online 24 hours a day, 7 days a week, no traffic jams, shopping crowds, carrying overloaded heavy shopping bags and so on.

2.3.2 Types of Electronic Commerce

Electronic Commerce is best understood by looking at who is talking to whom and what technology they are using. Using this definition there are four fundamental types of e-Commerce: [e-commerce, 2002]

1. Person-to-person

It includes telephone, fax and e-mail. The important for this type of communication is that the data is unstructured and provides flexibility.

However, if data has to be processed, then it is necessary to re-key it into a computer, which takes an operator time, introduces delays and the possibility of entry error.

2. Computer-to-computer

It includes Electronic Data Interchange (EDI) transmissions, as well as smart cards and barcode data.

3. Person-to-computer

It includes electronic forms and the Internet, and also Interactive Voice Response (IVR) to telephone services.

4. Computer-to-person

It includes computer-generated faxes, e-mail and paper mail. Although the data in these messages is sourced from a computer database and is sent automatically, the end result is that it must be in a form, which is understandable to a person who will read and act upon it.

2.3.3 Benefit of Electronic Commerce

Electronic Commerce can provide the following benefits to seller and buyer: [Commerce, 2001]

Seller

- **Reduced Costs** - Reduced labour, reduced paper, reduced errors in keying in data and so on.
- **Reduced Time** - Shorter lead times, faster delivery of product.

- **Flexibility with Efficiency** - The ability to handle complex situations, product ranges and customer profiles without the situation becoming unmanageable.
- **Enhanced Long Term Trading Partner Relationships** - Improved communication between trading partners leads to enhance long-term relationships.
- **New Markets** - The Internet has the potential to expand business into wider geographical locations. However, it is necessary to develop the appropriate production capacity and distribution channels to support market demands generated by promoting business to a larger marketplace.
- **Lock in Customers** - The closer seller to their customer and the more their work with them to change from normal business practices to best practice Electronic Commerce, the harder it is for a competitor to upset customer relationship.

Buyer

- **More convenient** – Buyer can shop on the web 24 hours a day and seven days a week.
- **Access to products from around the world** – If buyer lives in a rural area, there may not be a wide variety of stores nearby. The web gives buyer access to products from around the world.

- **Electronic payment can be easier to audit and monitor** – Compare to payment made by cheque, which can help protect against fraud and theft losses.

2.3.4 History of e-commerce

E-Commerce was first developed in the 1960s, with such innovations as electronic fund transfers (EFT). But, the extent of the applications was limited to financial institutions, large corporations and a few small businesses that dare to take the risk.

Then with the introduction of Electronic Data Interchange (EDI), it was expanded from financial transactions to manufacturers, retailers, services and so on. Many other applications followed, ranging from stock trading to travel reservations systems.

With the commercialization of the Internet in the early 1990s and its rapid growth to millions of potential customer, the term electronic commerce was coined and electronic commerce applications expanded rapidly. There were several contributions factors to the rapid expansion of the technology such as the development of networks, protocols, software and specifications. The other reason was the increase in competition and other business pressures.

2.3.5 Future of Electronic Commerce.

In 1997, about \$10 billion worth of business-to-business transaction were conducted over the Internet. Based on Forrester Research Press Release

(www.forrester.com) dated 25 July 2001 [Retail, 2001] total US spending on online sales decreased from \$3.9 billion in May to \$3.2 billion in June 2001 due to the slowdown in the economy in US. The number of households shopping online dropped to 13.1 million in June 2001 from 14.8 million in May 2001. Consumers spent an average of \$245 per person in June 2001, compared with \$265 in May 2001.

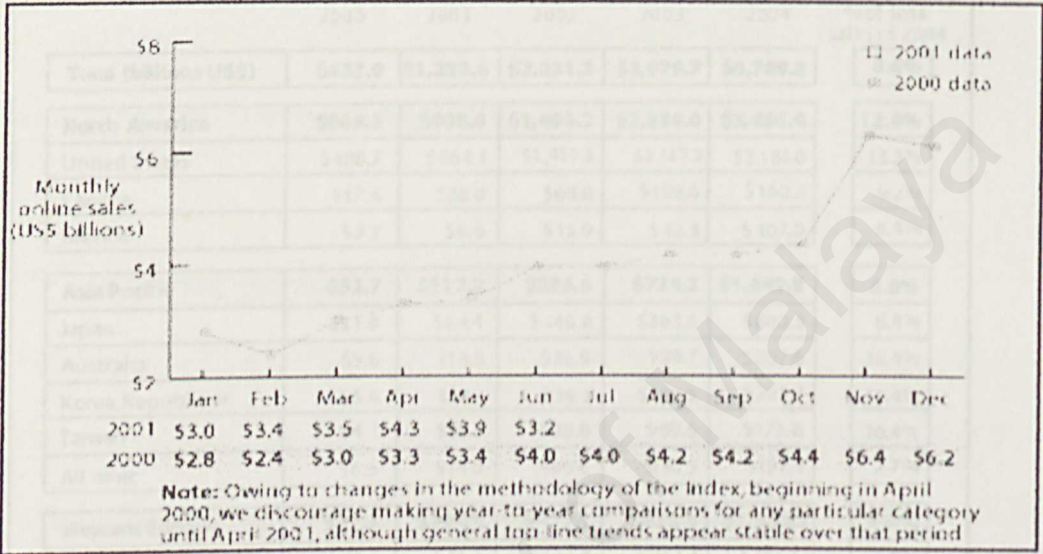
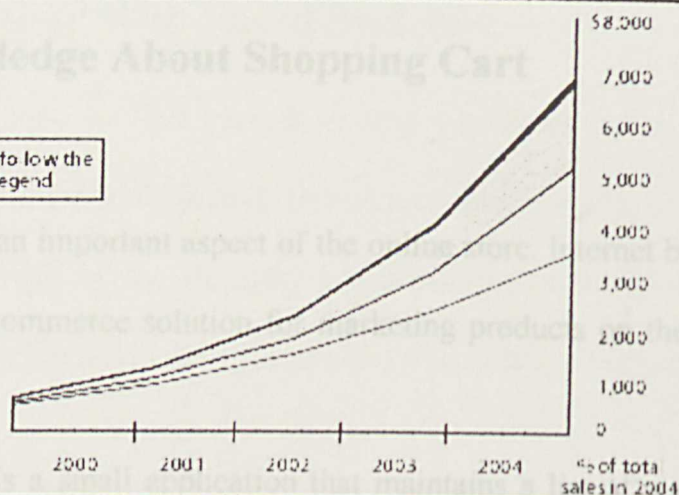


Figure 2.2 *Comparison of Monthly Online Sales between the year 2000 and 2001 in the US market. [Retail, 2001]*

Although current economy is facing a slow down, Forrester Research, Inc forecasted that Worldwide Net commerce, both Business-to-Business and Business-to-Consumer electronic commerce will hit \$6.8 trillion in 2004. North America represents a majority of this trade, but its dominance will fade, as some Asian-Pacific and Western European countries hit hyper growth over the next two years.

- ☐ Rest of world
- ☐ Latin America
- ☐ Western Europe
- ☐ Asia Pacific
- ☐ North America

Regions in the graph follow the same order as in the legend



Total (billions US\$)	\$657.0	\$1,233.6	\$2,231.2	\$3,979.7	\$6,789.8	8.6%
North America	\$509.3	\$908.6	\$1,495.2	\$2,339.0	\$3,456.4	12.8%
United States	\$488.7	\$864.1	\$1,411.3	\$2,197.2	\$3,189.0	13.3%
Canada	\$17.4	\$38.0	\$68.0	\$109.6	\$160.3	9.2%
Mexico	\$3.2	\$6.6	\$15.9	\$42.3	\$107.0	8.4%
Asia Pacific	\$53.7	\$117.2	\$286.6	\$724.2	\$1,649.8	8.0%
Japan	\$31.9	\$64.4	\$146.8	\$363.6	\$880.3	8.4%
Australia	\$5.6	\$14.0	\$36.9	\$96.7	\$207.6	16.4%
Korea, Republic of	\$5.6	\$14.1	\$39.3	\$100.5	\$205.7	16.4%
Taiwan	\$4.1	\$10.7	\$30.0	\$80.6	\$175.8	16.4%
All other	\$6.5	\$14.0	\$60.6	\$130.5	\$197.1	2.7%
Western Europe	\$87.4	\$194.8	\$422.1	\$853.3	\$1,533.2	6.0%
Germany	\$20.6	\$46.4	\$102.0	\$211.1	\$386.5	6.5%
United Kingdom	\$17.2	\$38.5	\$83.2	\$165.6	\$288.8	7.1%
France	\$9.9	\$22.1	\$49.1	\$104.8	\$206.4	5.0%
Italy	\$7.2	\$15.6	\$33.8	\$71.4	\$142.4	4.3%
Netherlands	\$6.5	\$14.4	\$30.7	\$59.5	\$98.3	9.2%
All other	\$25.9	\$57.7	\$123.4	\$240.8	\$410.8	6.0%
Latin America	\$3.6	\$6.8	\$13.7	\$31.8	\$81.8	2.4%
Rest of world	\$3.2	\$6.2	\$13.5	\$31.5	\$68.6	2.4%

(Totals may not equal sum of rows due to rounding)

Source: Forrester Research, Inc.

Figure 2.3 Worldwide E-commerce Growth [Internet, 2001]

2.4 Basic Knowledge About Shopping Cart

2.4.1 Overview

Shopping cart is an important aspect of the online store. Internet business with a Shopping Cart is the e-commerce solution for marketing products on the World Wide Web.

A shopping cart is a small application that maintains a list of a web shopper's selections and can be viewed and modified at any time.

2.4.2 How The Shopping Cart Function

The ways a cart keeps tracks and tend the items are differ from implementation to implementation. It might be tracked for a single session or persist from session to session. The cart can be created on a specific computer or be accessible from many computers.

Shopping cart application can interface with other applications, like an order system, an inventory system, or general Web maintenance and does not implement functionality itself. [Shopping cart basic, Unknown]

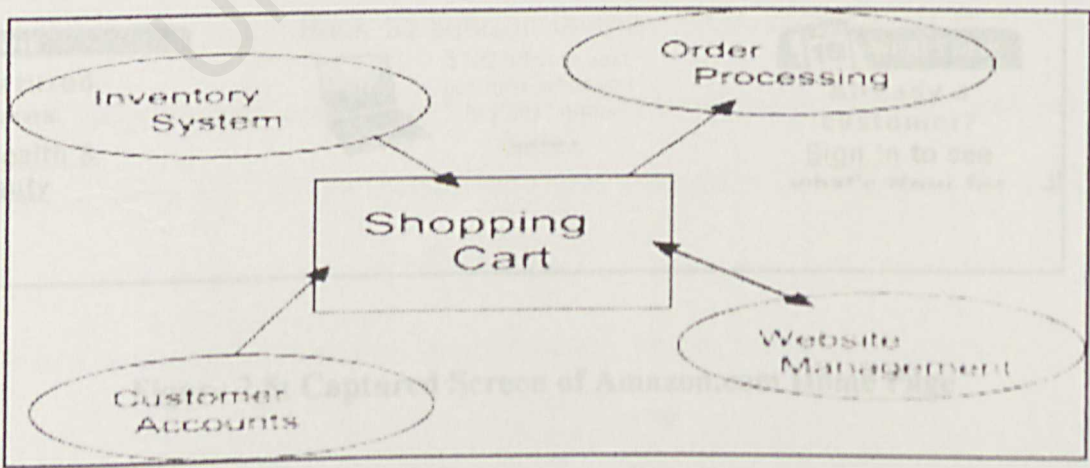


Figure2.4: Shopping cart interface with other application

2.4 Review Of Other Web-based System

A research was done to find various exiting web-based sales and purchase system available on the Internet. Objective to conduct this research is to enable the developer to have an insight of the strengths and weakness of the exiting web site. Through this way, the developer will get an idea of how to improve the project and fulfil the requirements needed.

Among lots of web-based sales and purchase found on the Internet, the following web sites were chosen to discuss.

2.5.1 Amazon.com

URL: www.amazon.com

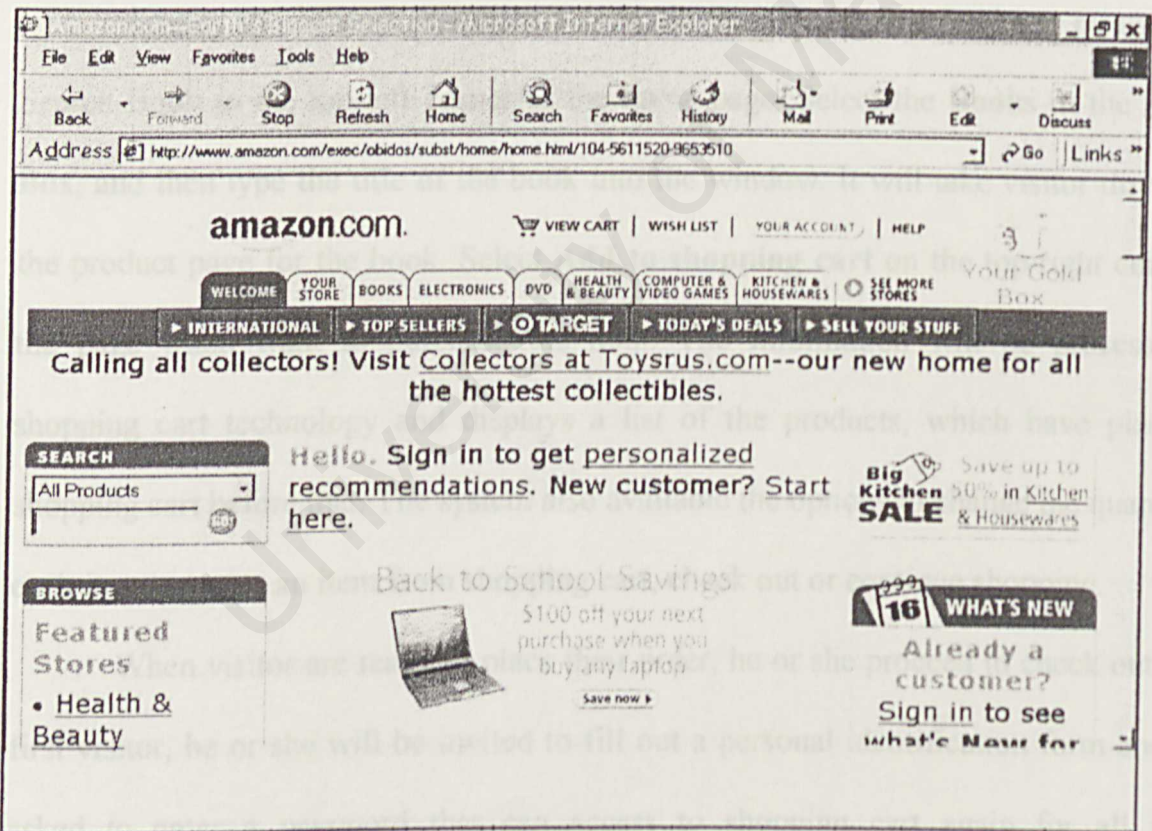


Figure 2.5: Captured Screen of Amazon.com Home Page

Amazon.com is the most popular online bookseller. The company has rapidly become one of the world's largest online retailers. **Amazon.com** offers millions of products to more than 17 million customers in 160 countries. In first few years, **Amazon.com** served as a mail-order book retailer. Now, their line of products has expanded to include music, videos, DVDs, electronic cards, consumer electronics, hardware, tools, beauty items and toys. **Amazon.com** is able to leverage the Internet's capabilities in reducing costs that other "physical" bookstores incur. For example, **Amazon.com** in almost no direct warehousing, sales or rental costs for books because its automated order processing links the buyer directly to the wholesalers, who ship books from the warehouses directly to the buyers [Kambil, 1997].

To buy the product at **Amazon.com**, the visitor can find the book by using the Search Book in the top-left corner of the home page. Select the **Books** in the **Search Box**, and then type the title of the book into the window. It will take visitor directly to the product page for the book. Select **Add to shopping cart** on the top-right corner of the page when want to purchase the item. The information will be processed by shopping cart technology and displays a list of the products, which have placed in shopping cart before that. The system also available the options to change the quantity of each item, remove an item from shopping cart, check out or continue shopping.

When visitor are ready to place their order, he or she proceed to check out. As a first visitor, he or she will be invited to fill out a personal identification form and also asked to enter a password that can access to shopping cart again for all future transaction. Once visitor confirm the information, visitor can place their order.

3. The **Amazon.com** also provides 1-ClickSM system for customer to reuse previously entered payment and shipping information to place an order with just one click of the mouse. [Deitel, 2001]

Analysis:

The **strengths** about this e-commerce site are:

1. **Amazon.com** uses a database on the server side that allows customers on the client side to search for products in the variety of ways. This extensive database makes it possible to cross-reference products. For example, a novel may be listed under various categories, including fiction, best sellers and recommended titles.
2. **Amazon.com** operates on secure servers that will protect customer's personal information. When customer placed their products through Amazon.com, they just need to use last 5 digits of the credit cards number and later complete the order by calling Amazon's customer Services Department to provide the remaining numbers.
3. **Amazon.com** provides the discount to customers but in the hand charges a fee for shipping. It offers shipping options from fast to fastest.
4. **Amazon.com** always sends out holiday gifts like mouse pads via snail mail to attract more visitors buy products through their web site.
5. **Amazon.com** provides complete related information about the online selling products. For example, users who like to order a particular book. The system will display a full description about the book and even the reviews of the book by some experts.

The **weaknesses** of this site are:

1. The web pages are too crowed with too many frame and navigation bar displayed on it.
2. Many promotional offers is being displayed on the web sites. It will make users hard to locate their desired information when they first visit to the sites.

3.The login page is hard to find.

2.5.2 eBay™

URL: <http://www.ebay.com/>

One of the successful methods of e-commerce is an online auction. The leading company in this business is eBay™ (Figure 2.6). The successful online auctions house has its roots in a 50-year-old novelty item –Pez[®] candy dispensers. Linda Omidyar, an avid collector of Pez dispensers, came up with the idea of trading them over the Internet. When she expressed this idea to her boyfriend, Pierre Omidyar (now her husband), he was instantly strunk with the soon-to-be-famous e-business auction concept. In 1995, the Omidyar created a company called Auction Web. The company was renamed eBay and has since become the premier online auction house, with as many as 4 million unique auctions in progress and 450,000 new items added each day.

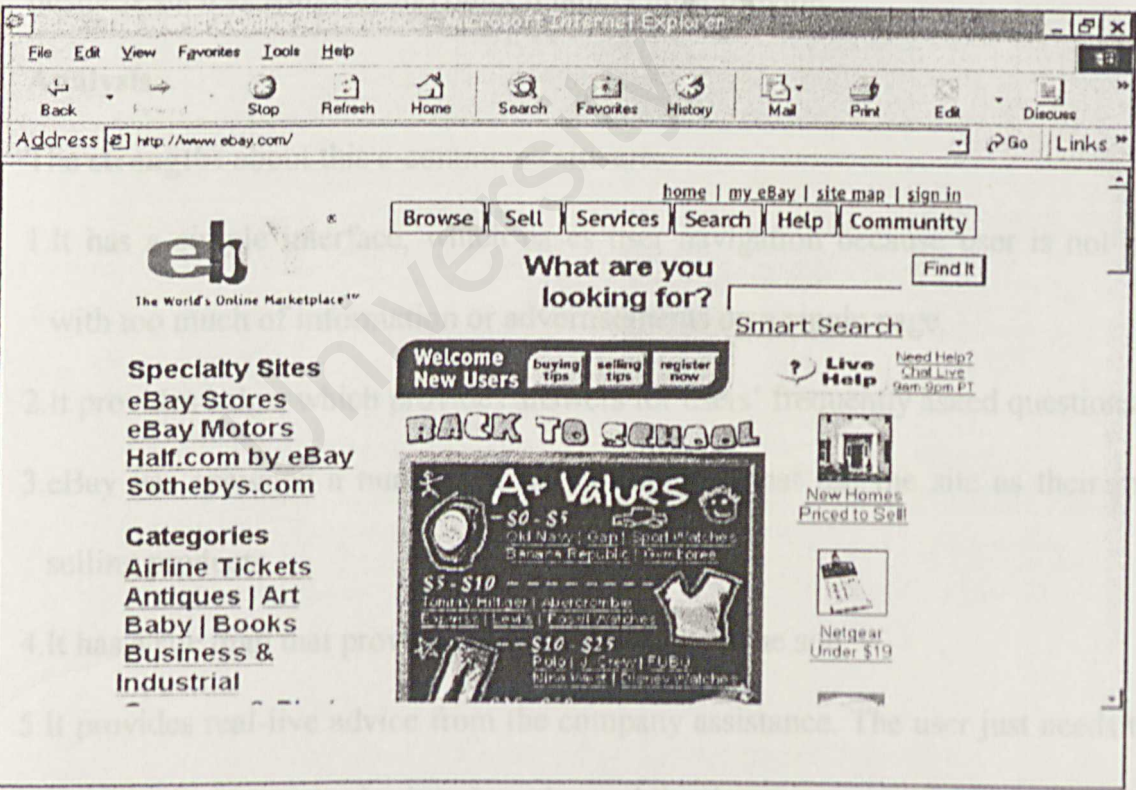


Figure 2.6: Captured of eBay™ home page

On eBay, people can buy and sell just about anything. The company will correct a submission fee plus a percentage of the sale amount. The submission fee is based on exposure of the item. It will be required higher fee if want item to be listed on the eBay home page under **Featured Items**. Products also can list in a boldface font but it will require a small additional charge.

The auction process begins when the seller posts a description of the item for sale and fills in the appropriate registration information. The seller must specify a minimum opening bid. If potential buyers feel this price is too high, the item may not receive any bids. If a successful bid is made, the seller and buyer negotiate the shipping details, warranty and other particulars. eBay serves as a liaison between the parties, which is interface for buyers and sellers conduct their business. eBay does not maintain a costly physical inventory or deal with shipping, handling or other services that business such as Amazon and other retailers must provide.

Analysis:

The **strengths** about this e-commerce site are:

- 1.It has a simple interface, which eases user navigation because user is not occupied with too much of information or advertisements on a single page.
- 2.It provides helps, which provides answers for users' frequently asked questions.
- 3.eBay has spawned a number of new businesses that use the site as their means of selling products.
- 4.It has a site map that provides easier navigation in the site.
- 5.It provides real-live advice from the company assistance. The user just needs to fill in their particulars and submit it. In a short while, the company assistance will call up the user to provide any information that the user needs.

The weaknesses of this site are:

- 1.It provides only normal search for its products and no advanced searching capabilities is provided.
- 2.Users need to click the dropdown or scroll down a lengthy page list to view products categories.
- 3.Intricate registration because customer need to fill out many form.

2.4.3 Staples.com

URL: <http://www.staples.com>

Staples.com (<http://www.staples.com>) is a company that sells products ranging from office supplies, furniture, and technologies gadgets to business services.

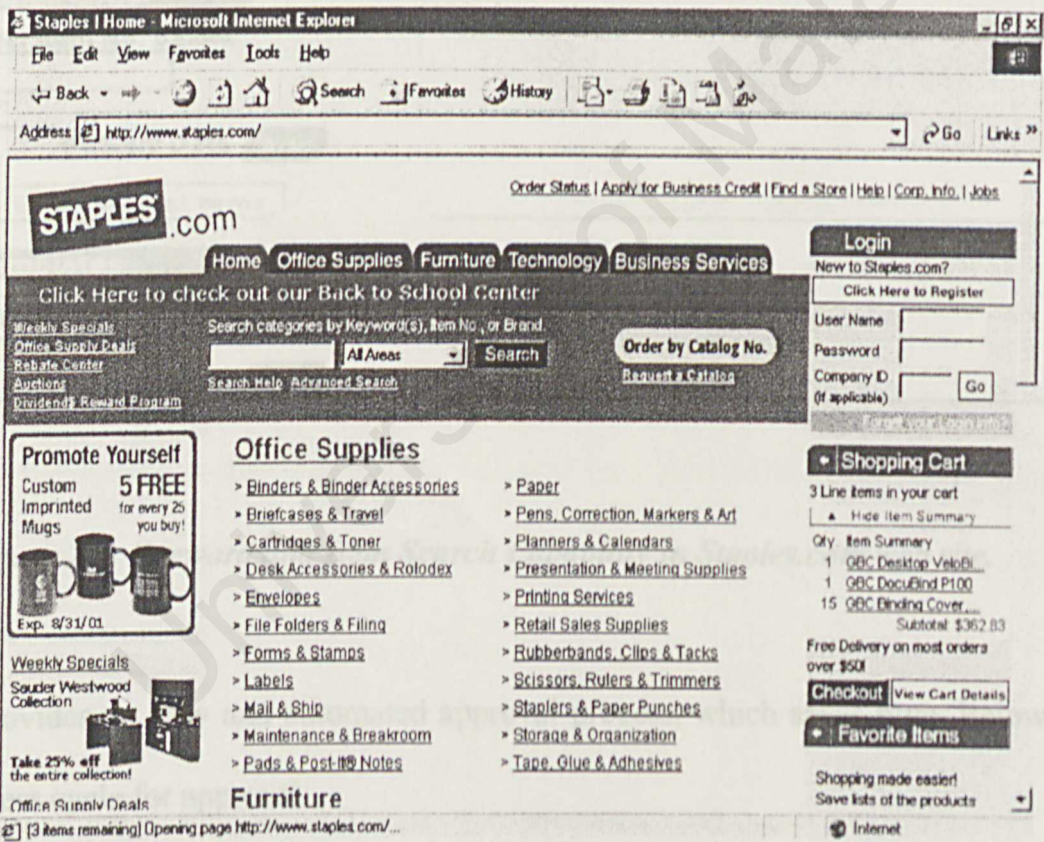


Figure 2.7: Captured of Staples.com Home Page

Analysis:

The **strengths** about this e-commerce site are:

- 1.It provides fast search capability by allowing user to search a product by its item number or product keyword (Figure 2.8). A handy search form appears right on the home page, minimizing the number of links that customers have to click before they can make a purchase.

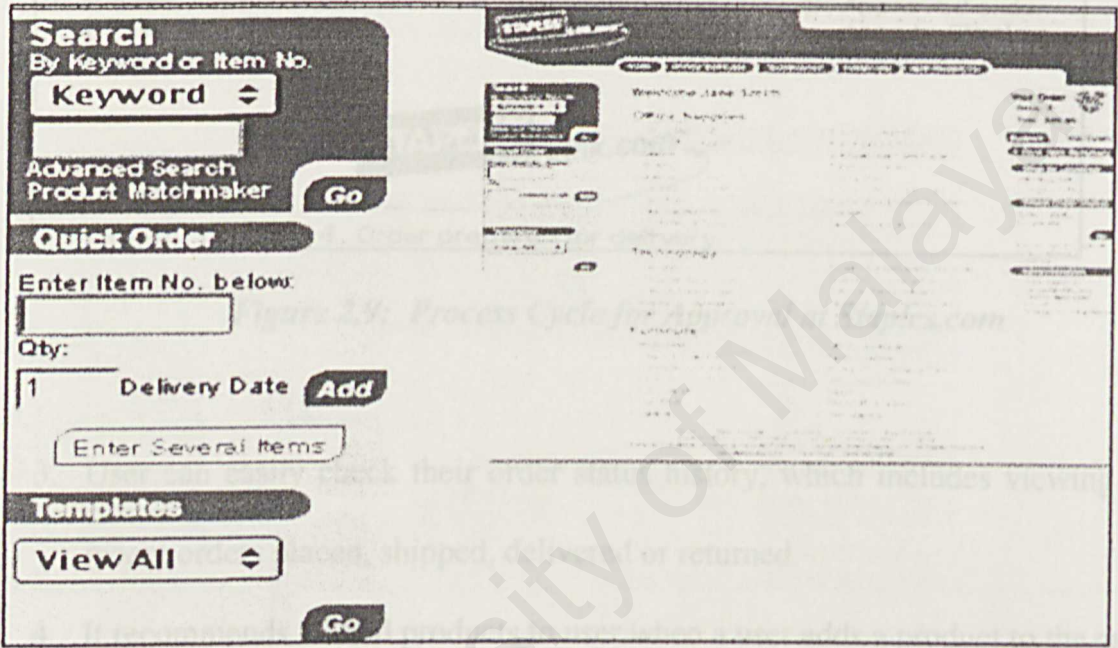


Figure 2.8: Keyword and Item Search Capability in Staples.com web site.

- 2.It provides an easy and automated approval process, which saves time. Below is the process cycle for approval.

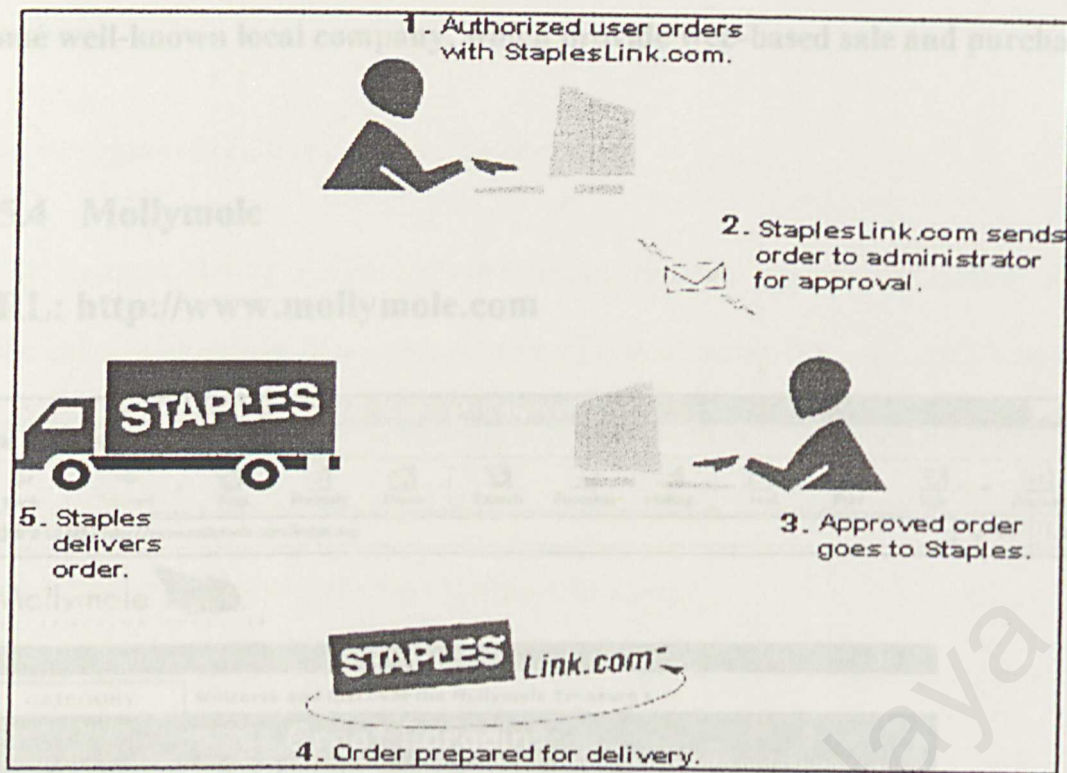


Figure 2.9: Process Cycle for Approval at Staples.com

3. User can easily check their order status history, which includes viewing of all recent orders placed, shipped, delivered or returned.
4. It recommends related products to user when a user adds a product to the cart.
5. It provides profiling capability allowing user the set their own profile in order to enable user to view their preferred product catalogues.

The **weaknesses** of this site are:

1. User interface is too crowded with information that could complicate user navigation.

Some well-known local company, which provide web-based sale and purchase are:

The strengths about this e-commerce site are:

2.5.4 Mollymole

URL: <http://www.mollymole.com>

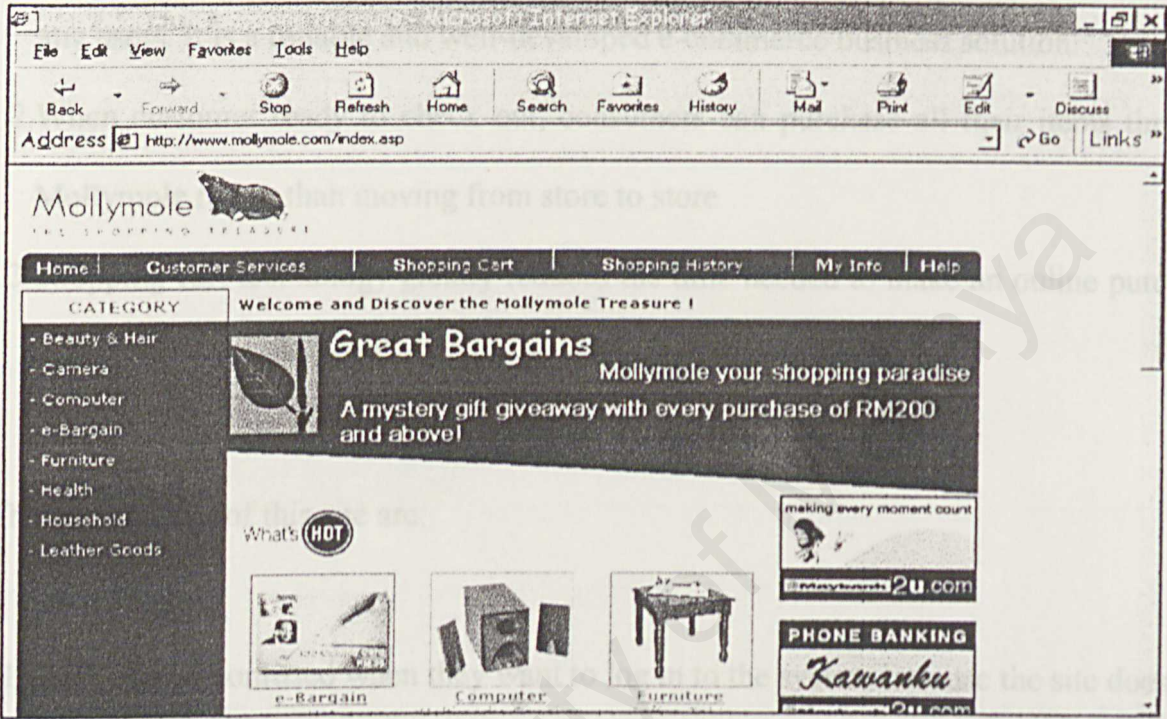


Figure 2.10 Captured of Mollymole Home Page

Mollymole is a web site with a number of categories. It also provides consumers with shopping cart capabilities. Through Mollymole, consumers can link to a variety of online stores adding items to their Mollymole Shopping cart. To participate, a consumer clicks on the shopping cart link at the top of Mollymole's home page.

Analysis:

The **strengths** about this e-commerce site are:

1. Mollymole ordering system provides secure ordering system and quality services to the users. The system design is user friendly, systematic, tidy and easily understood by any users. It is a reliable and well-developed e-commerce business solution.
2. When customer ready to check out, consumers can purchase all their items through Mollymole rather than moving from store to store.
3. Shopping cart technology greatly reduces the time needed to make an online purchase by limiting the number of registration and billing forms.

The **weaknesses** of this site are:

1. Users can be confused when they want to log in to the system because the site does not provide the log in panel when the new users first visit to the sites.
2. Search engine for the products is not provided in web page.
3. The prices of the products are only displayed after a number of sites linking.

Analysis:

The **strengths** about this e-commerce site are:

1. Shopping cart system enables users to perform all the shopping cart function developed by the shopping mall.

2.5.5 Sungeiway.com

URL : <http://www.sungeiway.com>

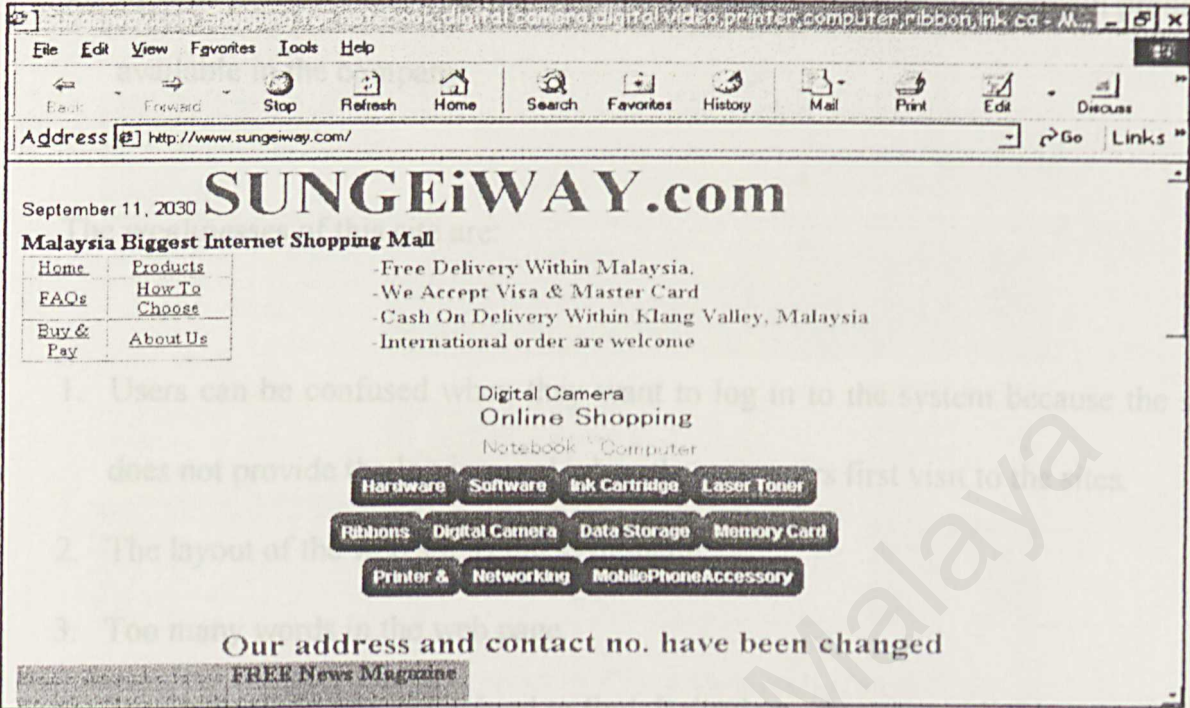


Figure 2.11 Captured of SungeiWay.com Home Page

Sungeiway.com e-commerce web site promote all the software and hardware available in company. The web site provides user-friendly interfaces and many others related information about computer to the users.

Analysis:

The **strengths** about this e-commerce site are:

1. Shopping cart system enables users to perform all the shopping cart function developed by the shopping mall.

2. It has a simple interface. This will not confuse the users when they first visit to this web site.
3. Special promotion. Web page displays the special promotion for certain products available in the company.

The **weaknesses** of this site are:

1. Users can be confused when they want to log in to the system because the site does not provide the log in panel when the new users first visit to the sites.
2. The layout of the web site is not systematic.
3. Too many words in the web page.
4. The price of the product is hard to find. It displays after several linking page.

2.5.6 Crazyshop.com

URL: <http://shop.emasonline.com>

CrazyShop.com is a company that offers various categories. Most of the products sold are casual apparel and business gifts for office wear, trade shows, electronic and computer. The system was developed using Intershop technology together with advance e-commerce technology.

Visitor must register with the site when decide to make the order. After register as member, he or she may begin searching for products within many CrazyShop.com Stores.

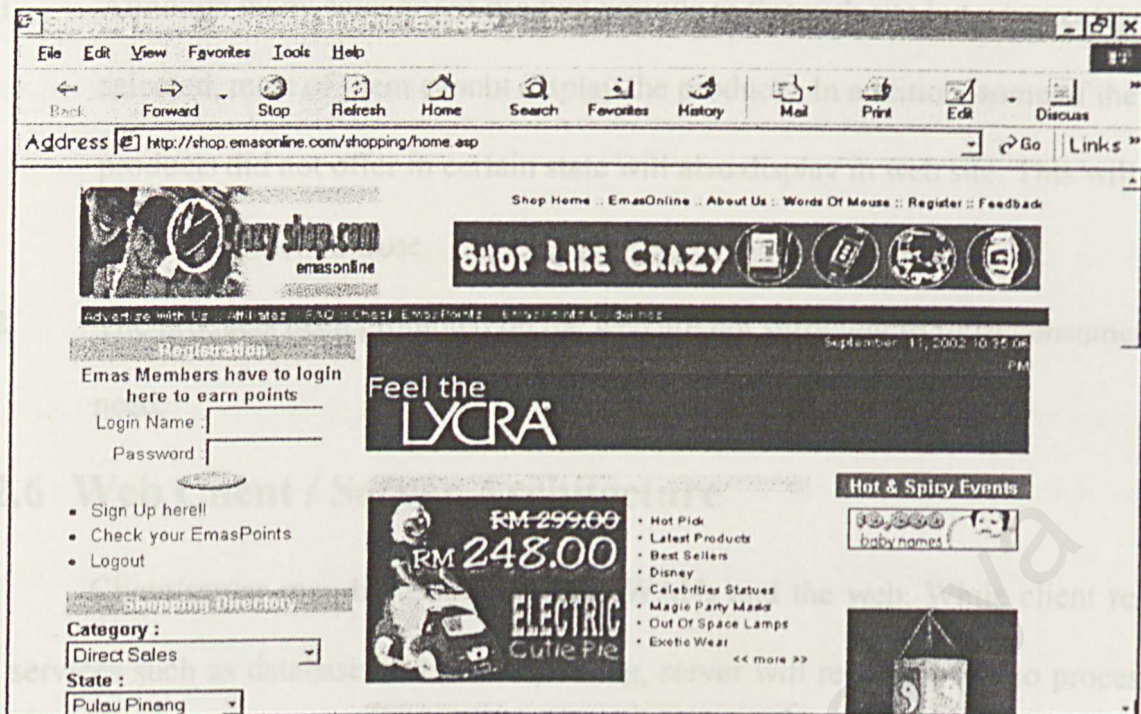


Figure 2.12 Captured of CrazyShop.com Home Page

Analysis:

The **strengths** about this e-commerce site are:

1. Customer can search for a product by selecting a category, conducting a keyword search or visiting one of the Featured Stores. Customer also can search the state, which offer the product.
2. The web page also provides gift registration, hot products and What's Selling Now.
3. It provides a pop-up window when the user clicks for information regarding the company. This help to eliminate the need for user to click the back button when finished browsing the company's information. The user just needs to close the company's information window when completed.

The **weaknesses** of this site are:

1. Although many category of product provide in this web site but when category is selected, most of them cannot display the products. In addition, some of the products did not offer in certain state will also display in web site. This will make customer confuse.
2. The products been promoted on the web are not sufficient to fulfil consumer 's need.

2.6 Web Client / Server Architecture

Client/server may be used on LANs, WANs and the web. While client request services such as database access and printing, server will responsibility to process the client's request.

2.6.1 Two-tier Client/Server Architecture

A two-tier model involves only client and server. All communication takes place between the client on the Internet and server at the other end. On the basic level, this architecture involves the Graphical User Interface (GUI) and business logic directly accessing the database. Usually, the GUI is written in languages like C++, Visual Basic or Power Builder. The database systems typically are Microsoft Access, Lotus Approach or Sybase SQL anywhere.

2.6.2 The Benefit and Limitation Of 2-Tier Architectures

In 2-tier client/server systems, the application logic is either buried inside the user interface on the client or within the database on the server. It sends SQL, file

system calls or HTTP commands over a network to the server. 2-tier uses stored procedures to off-load some of the processing to the server side. Instead of sending SQL requests across the network, stored procedures let you invoke a function that runs within a database.

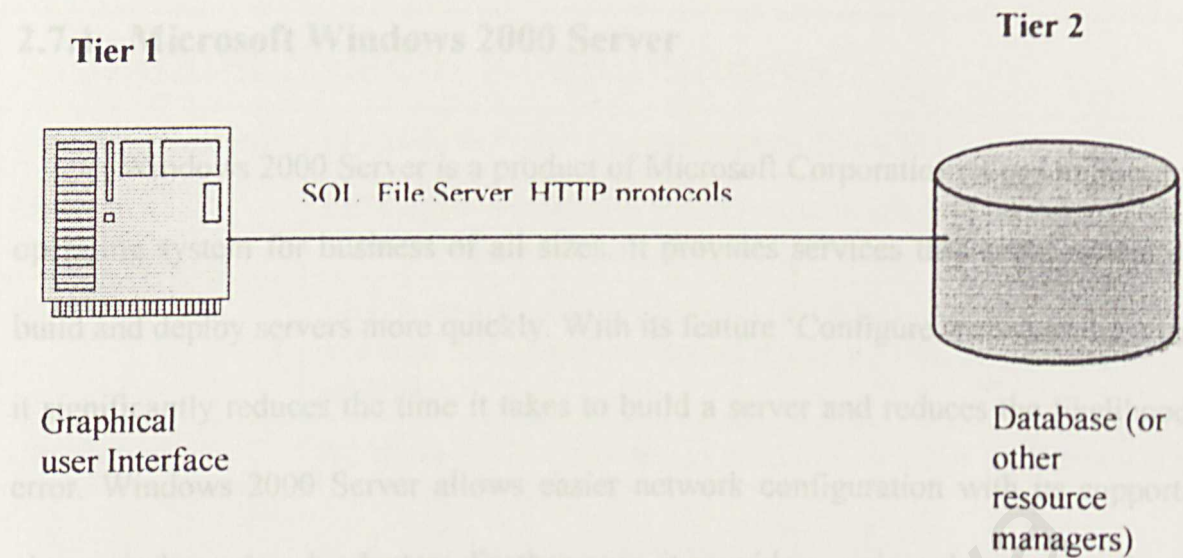
2-tier is great for creating applications using visual builder tools. Typically, there are departmental applications, such as decision support and small-scale groupware, or simple Web-based applications. But as successful departmental applications started to roll out, architects began to depend on 2-tier for mission-critical applications. Applications that worked perfectly well in prototypes and small installations fell apart when put into large-scale production. It becomes not mission-critical. Consequently, applications rollouts were delayed. Projects went over budget to create workarounds. Independent software vendors' products reached architectural barriers to growth.

2.6.3 Three-tier Client/Server Architecture

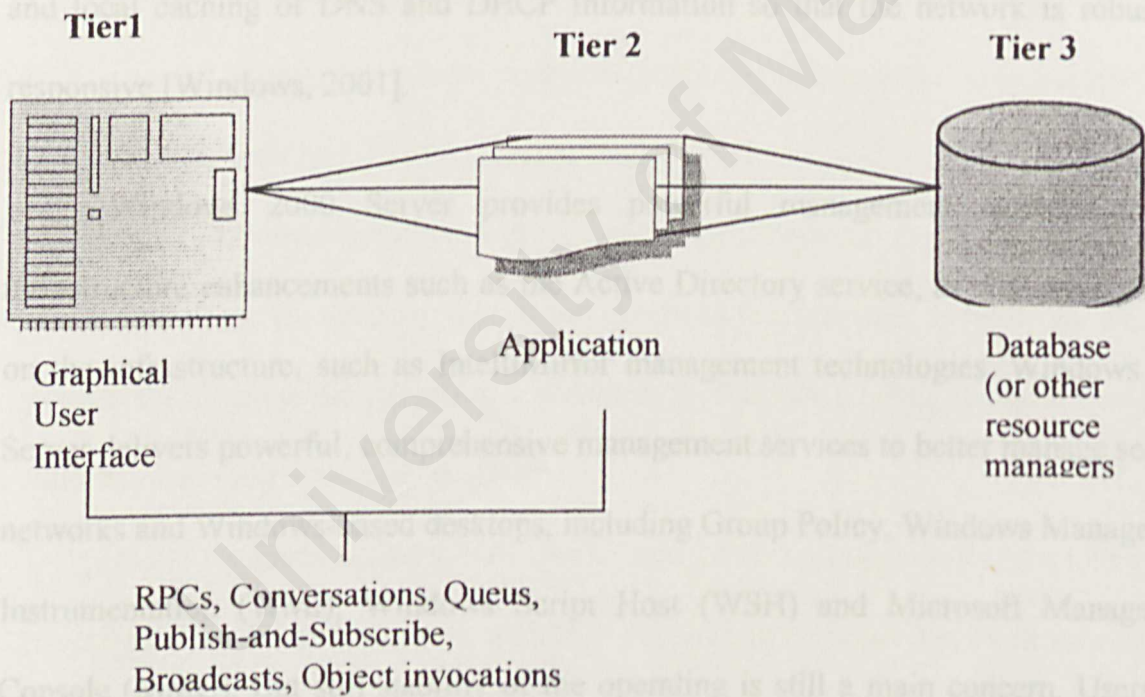
3-tier is the new growth area for client/server computing because it meets the requirements of large-scale Internet and intranet client/server applications. 3-tier applications are easier to manage and deploy on the network. In addition, 3-tier applications minimize network interchanges by creating abstract levels of services. 3-tier substitutes a few server calls for many SQL queries and updates, so it performs much better than 2-tier. It also provides better security by not exposing the database schema to the client and by enabling more fine-grained authorization on the server.

Figure 2.13: 2-tier and 3-tier Client/Server Application Architecture

2.7.1 Microsoft Windows 2000 Server



A 2-tier Client/Server application



A 3-Tier Client/Server Application Architecture

Figure 2.13: 2-tier and 3-tier Client/server Application Architecture

2.7 Operating System

2.7.1 Microsoft Windows 2000 Server

Windows 2000 Server is a product of Microsoft Corporation. It is a multipurpose operating system for business of all sizes. It provides services that enable the user to build and deploy servers more quickly. With its feature 'Configure Your Server' wizard, it significantly reduces the time it takes to build a server and reduces the likelihood of error. Windows 2000 Server allows easier network configuration with its support on plug and play network adapters. Furthermore, it provides services that manage the trust relationships between domains in organization, and it provides automated replication and local caching of DNS and DHCP information so that the network is robust and responsive [Windows, 2001].

Windows 2000 Server provides powerful management services through infrastructure enhancements such as the Active Directory service, as well as tools built on the infrastructure, such as IntelliMirror management technologies. Windows 2000 Server delivers powerful, comprehensive management services to better manage servers, networks and Windows-based desktops, including Group Policy, Windows Management Instrumentation (WMI), Windows Script Host (WSH) and Microsoft Management Console (MMC). But still stability of the operating is still a main concern. Users still faces "blue screen of death" showing the system hangs.

Table 2.1: System Requirements for Microsoft Windows 2000 Server

Minimum System Requirements	
Computer/Processor	133 MHz or higher Pentium-compatible CPU
Memory	256 megabytes (MB) of RAM recommended minimum [128 MB minimum supported; 4 gigabytes (GB) maximum]
Hard Disk	2 GB hard disk with a minimum of 1.0 GB free space. (Additional free hard disk space is required if you are installing over a network.)
CPU Support	Windows 2000 Server supports up to four CPUs on one machine

2.7.2 UNIX

UNIX is a popular operating system that traditionally used on minicomputers.

UNIX is now available on personal computer and the business community has started to choose it for its openness. [Tania H. Gottschalk (1996)]

UNIX like any other operating system is a layer between the hardware and application that run on the computer. It has functions that manage the hardware and functions that manage the executing application. Besides that, UNIX includes the traditional operating components.

One of the greatest strength of UNIX is the consistent way in which it treats files. It is very easy for the users to work with files because users no need to learn special commands.

2.7.3 Microsoft Window 98

Windows 98 (called "Memphis" during development and previously called "Windows 97" based on an earlier schedule) is a widely installed product in Microsoft's evolution of the Windows operating system for personal computers. In Windows 98,

Microsoft's Internet Explorer is an integral part of the operating system. Using the Active Desktop of Windows 98, you can view and access desktop objects that reside on the World Wide Web as well as local files and applications. The Windows 98 desktop is, in fact, a Web page with HTML links and features that exploit Microsoft's ActiveX control. [Window, 2001]

2.8 Web Server

2.8.1 Apache Web Server

Apache server is a powerful and flexible web server. It is compliant with HTTP/1.1 and implements the latest protocols, including HTTP/1.1 (RFC2616). Apache web server is highly configurable as it is in open source code and extensible with third-party modules and can be customised by writing 'modules' using the Apache module API. Moreover, it provides full source code and comes with an unrestrictive license.

Apache web server runs on Windows NT/9x, Netware 5.x, OS/2, and most versions of Unix, as well as several other operating systems. The web server is actively being developed and encourages user feedback through new ideas, bug reports and patches. The features of Apache web server includes DBM databases for authentication, customisable responses to errors and problems, multiple DirectoryIndex directives and unlimited flexible URL rewriting and aliasing. It is compatibles with Windows 2000, NT, Linux, NewWare 5.0 (with Service Pack 5), 5.1 (with Service Pack 1), UNIX, BSD, HP MPE/iX 6.0 or higher and TPF version 4.1 PUT09 [Apache, 2001].

2.8.2 Microsoft Internet Information Server (V.5.0)

Internet Information Services 5.0 (IIS) is the Windows 2000 Web service that makes it easy to publish information on the intranet for the Internet. It is completely integrated with Windows NT Directory Services and includes Crystal Reports, a visual reporting tool.

Internet Information Server 5.0 has many new features to enable user to create a scalable and flexible web applications. It allows administrators to configure servers, sites, virtual directories, subdirectories and files individually. It also includes crash protection that allows users to run multiple applications reliably. Moreover IIS includes tools to analyse and manage web server content and supports multiple web sites on one IP address [IIS, 2001].

2.9 Web database

2.9.1 Oracle 9i Database

Oracle 9i Database is the latest database product from Oracle Corporation. It provides transparent application scalability by sharing cluster-wide caches for coordinated data access. It also includes business intelligence capabilities. With its open framework, programmatic access, centralized management, and multi-channel delivery of Internet services can be provided to users.

Besides that, Oracle 9i database is designed with integrated manageability that creates a complete business view of all components powering e-business processing. As any other database software in the market, Oracle 9i provides multiple layers of security to prevent any unauthorized access to the database. Oracle 9i is compatible with UNIX

and Windows NT [Oracle, 2001]. But, the cost of the Oracle software is more expensive compared to other database software.

2.9.2 Microsoft SQL 2000

Microsoft SQL 2000 is an enterprise-level database and is the latest version of Microsoft SQL 7. It is enhanced with Extensible Markup Language (XML) support that enables data return in XML and also enables XML be used to insert, update, and delete values in the database. SQL Server 2000 supports enhancements to distributed partitioned views that allow users to partition tables horizontally across multiple servers. Its full-text search includes change tracking and image filtering.

In the security point of view, SQL Server 2000 uses Kerberos to support mutual authentication between the client and the server, as well as the ability to pass the security credentials of a client between computers, so that work on a remote server can proceed using the credentials of the impersonated client. [SQL,2000].

Table 2.2: System Requirements for Microsoft SQL 2000

System Requirements	
Compatibility	Windows NT Server 4.0 with SP5+, Windows NT Server 4.0 Enterprise Edition with SP5+, Windows 2000 Advanced Server, Windows 2000 Datacenter Server
Networks supported	AppleTalk; Banyan/Vines; Novell NetWare; TCP/IP; Windows NTS 4.0
Technologies	Client-Server
Minimum RAM recommended	128 MB
Minimum RAM required	64 MB
Disk space	95-270 MB (Server); 250 MB (Typical installation)
Additional hardware/software required	Intel or compatible Pentium 166 MHz or higher

processor; Microsoft Internet Explorer 5.0 or later; CD-ROM drive; VGA or higher resolution monitor

2.9.3 MySQL

MySQL is an open source relational database management system (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database. Because it is open source, anyone can download MySQL and tailor it to their needs in accordance with the general public license. MySQL is noted mainly for its speed, reliability, and flexibility.

The MySQL relational database system was first released in January 1998. It is fully multi-threaded using kernel threads, provides application program interfaces (APIs) for C, C++, Eiffel, Java, Perl, PHP, Python, and Tcl, allows for many column types, and offers full operator and function support in the SELECT and WHERE parts of queries. MySQL currently runs on the Linux, UNIX, and Windows platforms.

2.10 Server-side scripting

2.10.1 PHP (Hypertext Preprocessor)

PHP is a programming language created to enable Web developers to quickly create dynamic Web application. PHP is a script language and interpreter that is freely available. Unlike ASP or ColdFusion, PHP is open-source and cross-platform. PHP runs on Windows NT and many Unix versions, and it can be built as an Apache module and as binary that can run as a CGI. PHP runs on the web server, not in web browser.

It is an HTML-embedded programming language syntactically similar to C, Perl and Java. This might prove a barrier to people with no prior programming experience, but if they have a background in either language then they might be able to use PHP easily.

2.10.2 Active Server Pages (ASP)

Active Server Pages (ASP) is Microsoft-developed technology for building dynamic web content. ASP communicates between clients and web servers via HTTP protocol of the World Wide Web. It is normally in the form of a HTML document to display in the browser. It can be other format such as images and binary data [ASP, 1999].

Active Server Pages utilizes VBScript and JavaScript as its web scripting language. Normally, Active Server Pages will differentiate between client-side scripting and server-side scripting. Active Server Pages includes several modern technologies such as Advanced Data Connector (ADC) that provides client database access, ActiveX Database Objects (ADO) that enables dynamic connection of data in database to web pages.

2.10.3 Java Server Pages

Java Server Pages allows web developers and designers to rapidly develop and easily maintain, information-rich, dynamic web pages that leverage existing business systems. As part of the Java family, Java Server Pages enables rapid development of web-based applications that are platform independent.

2.12 Together, JSP technology provides an attractive alternative to other types of dynamic web scripting/programming that offers platform independence, enhanced performance, separation of logic from display, ease of administration, extensibility into the enterprise and most importantly, ease of use [JSP, 2002].

2.11 Client-side scripting

2.11.1 Hypertext Markup Language (HTML)

HTML (Hypertext Markup Language) is the set of markup symbols or codes inserted in a file intended for display on a World Wide Web browser page. The markup tells the Web browser how to display a Web page's words and images for the user. Each individual markup code is referred to as an element (but many people also refer to it as a tag. Some elements come in pairs that indicate when some display effect is to begin and when it is to end.

HTML is a formal Recommendation by the World Wide Web Consortium (W3C) and is generally adhered to by the major browsers, Microsoft's Internet Explorer and Netscape's Navigator, which also provide some additional non-standard codes.

2.11.2 JavaScript

JavaScript is an interpreted programming or script language from Netscape. It is somewhat similar in capability to Microsoft's Visual Basic. In general, script languages are easier and faster to code in than the more structured and compiler languages such as C and C++. Script languages generally take longer to process than compiled languages, but are very useful for shorter programs.

2.12 Other Development Tools

2.12.1 EditPlus Text Editor

EditPlus is an Internet-ready 32-bit text editor, HTML editor and programmer's editor for Windows. While it can serve as a good replacement for Notepad, it also offers many powerful features for Web page authors and programmers. [EditPlus, 2002]

2.13 Chapter Summary

All the researches were done to gain information for developing this project. Most of the information discussed above was obtained from the Internet. This information covers development methodologies, web development tools, exiting web-based system and others.

For the development methodologies, research focuses mainly on three development models – waterfall with prototyping model, prototyping model and System Development Life Cycle (SDLC). Each model has its own feature, which are different from the others. The development model that has been chosen for this project is mentioned in the following chapter (**Chapter 3- Methodology**).

The information gathered on development software for this project was analyzed. All the information gathered for development software was obtained from the different sources. The software chosen for this project is also mentioned in the **chapter 4-analysis**.

The exiting web-based sales and purchase has given a guideline for the development of this project.

All the information gained from this literature review will be used effectively and efficiently for the development of this project.

3.1 Fact Finding Techniques

A system is a regularly interacting or independent group of elements forming a unified whole. Thus, a system is a collection of related parts treated as a unit where its components interact. Therefore, different systems can be developed in different ways. To develop a system, a lot of information need to be gathered about the system itself, the procedures involved to develop the system and the methodologies used to develop the system. All this information is gathered by fact finding techniques.

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The fact finding techniques used in this study are sampling existing documents and hard data, interviewing, questionnaires, site visits and prototyping.

A combination of these techniques is used to fulfill the system's purpose. Information gathering techniques used in this study are Reading about e-commerce, Internet research, interview, user surveying such as carry out questionnaire, review of existing systems on the web and other methods are done in order to gather data and requirements for building the Customer System.

CHAPTER 3

3.1.1 Reading about E-commerce

All the printed materials are approached from the point of view of this system, which involves journals, books, encyclopedias, handbooks, dictionaries and others that contain relevant information. All the materials were obtained from the Main Library at

Chapter 3 METHODOLOGY

3.1 Fact Finding Techniques

A system is a regularly interacting or independent group of elements forming a unified whole. Thus, a system is a collection of related parts treated as a unit where its components interact. Therefore, different systems can be developed in different ways. To develop a system, a lot of information need to be gathered about the system itself, the procedures involved to develop the system and the methodologies used to develop the system. All this information can be obtained from various sources [Silver, 1989].

There are several systematic and structured fact finding techniques including sampling exiting documents and hard data, interviewing, observing, questionnaires, site visits and prototyping.

A combination of these techniques is essential in order to fulfil the system's purpose. Information gathering is required to know what is needed in a system. Reading about e-commerce, Internet research, interview, user surveying such as carry out questionnaire, review of exiting systems on the web and other methods are done in order to gather data and requirement for building the Customer System.

3.1.1 Reading about E-commerce

All the printed materials are approached from the point of view of this system, which involves journals, books, encyclopaedias, handbooks, dictionaries and others that contain relevant information. All the periodicals were obtained from the Main Library of

University of Malaya, document room of Faculty of Computer Science and Information Technology, University of Malaya and National Library of Malaysia.

One of the weaknesses is some of the contents in the printed materials are not updated. This will become a problem when answer to a question involving a recent event.

3.1.2 Internet Research

The information about E-commerce, ordering system and knowledge on Web development also collected through browsing the Web. Feedback from some Frequently Ask Questions (FAQ) sessions and joining the E-commerce related newsgroup will help to clear up misconceptions or erroneous.

Many web sites were visited to get the information on things such as software to be used, exiting e-commerce sites and many others. The Internet search engine has been used to search the information in clued Yahoo!, Lycos, Google and MSN. Keyword that used in search engine in the Internet were web-based, sales and purchase, e-commerce and many more. Some of the sources came from the electronic books.

Existing online system also help a lot in giving ideas and guidance on the features of the system that is going to be developed.

3.1.3 Interview

An interview is defined as a meeting with a person whose views are requested (Ruse, 1989). Information-gathering interview is directed conversation with a specific purpose that uses a question and answer format. In the interview the opinions of the interviewee and his or her feelings about the current state of the system, organizational

and personal goals and informal procedures are required. Their opinions may be important and more revealing than facts. (Kendall, 1998)

3.1.4 User survey - Questionnaire

Questionnaire is an information technique that allows the studying of attitudes, beliefs, behaviours and characteristics of the end users (Kendall & Kendall, 1999). It allows the analyst to collect information and opinions from respondents.

3.1.5 Review of Existing Systems

After review of some existing web-based sales and purchase in the Internet, it is found that a straightforward presentation of the information links, user-friendly and easy to understand application web site is needed to build to attract the customers.

Investigation and analysis of the existing system available in the market is important. This is a critical step at the project planning to determine the scope of the proposed system. The purpose to conduct this research is to ensure the proposed system will not carry and repeat the same weakness in the existing application.

From the research of this web site, the author realizes that haven't any company in Malaysia provide facility of sales and purchase online. Most of them are just provide the information and profile of the company, product and services.

Studying from some existing web site, the design elements and how they are functioning will give the author the idea to develop this project.

3.2 Data Collection Analysis

3.2.1 Analysis of Questionnaire

Author had chosen the shopping centre in Petaling Jaya to carry out this survey. From the 30 questionnaires that author has distributed, there are some missing data occurs in some of the questionnaire. The result of the analysis is presented in bar charts.

3.2.1.1 Analysis on respondents that had ever bought products/services through web site

Table 3.1 Statistical Result On respondents that had ever bought products/services through web site

Answer	Total (x/30)	Percentage (%)
Yes	7	23.3
No	23	76.7

The statistics show that 76.7% of the respondents never bought products/services through web site and only 23.3% because online shopping is still new and not popular in Malaysia. Even though some of the company has distributed the online shopping to the users, but it still not common in Malaysia.

3.2.1.2 Analysis on products that respondents prefer to buy through web site

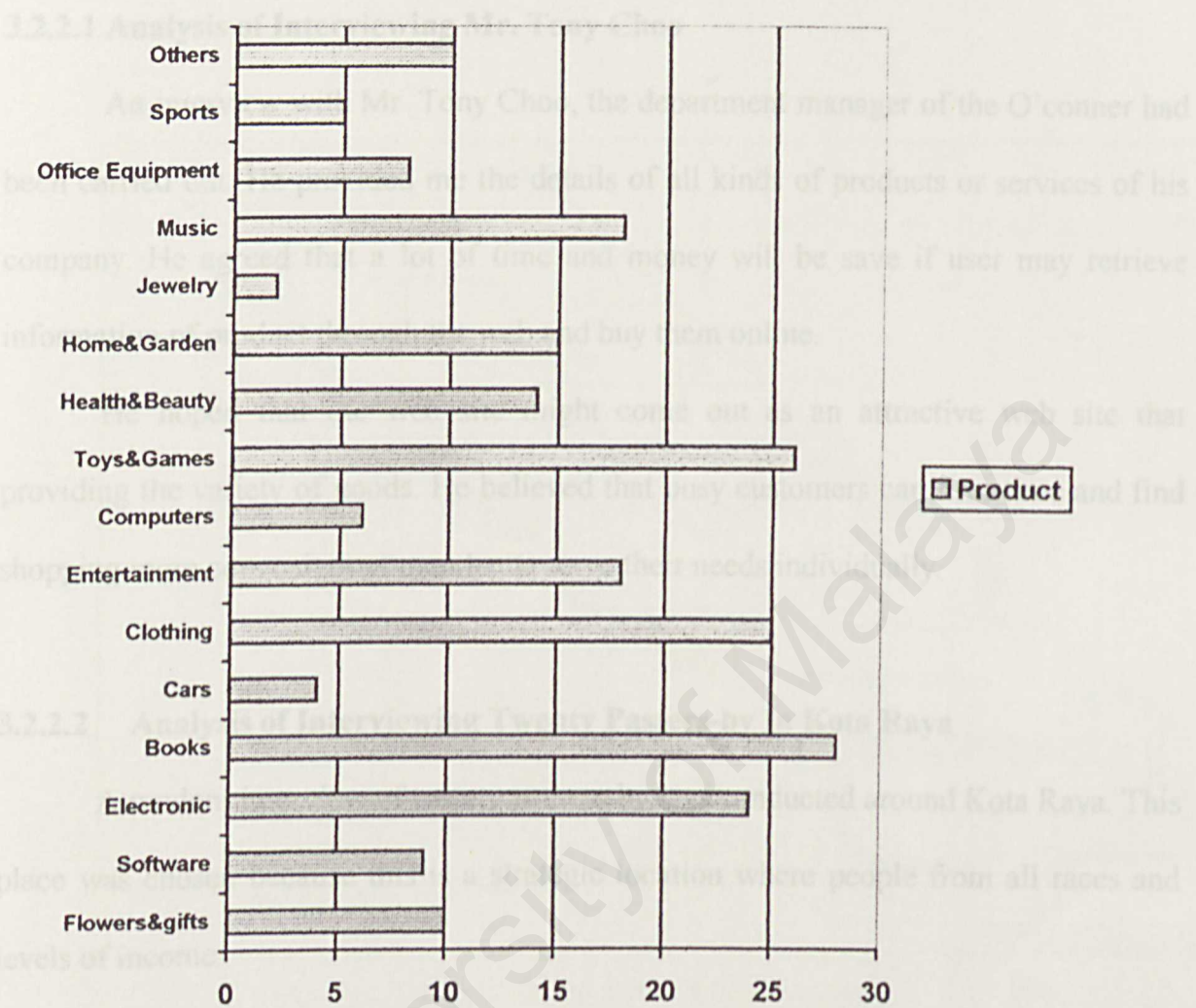


Figure 3.1 Bar Chart For The Products That Respondents Prefer To Buy Through Web Site

Figure3.1 depicts bar chart shows products that respondents prefer to buy through web site. From the chart, majority of the respondents prefer to buy books, clothing, toy & games and electronics. However, still have some of them prefer to buy software, cars, jewellery and others such as house, ticket of movie and so on. From the bar chart above we know that the product, which with the high price is not popular.

3.2.2 Analysis of Interview

3.2.2.1 Analysis of Interviewing Mr. Tony Choo

An interview with Mr. Tony Choo, the department manager of the O'conner had been carried out. He provided me the details of all kinds of products or services of his company. He agreed that a lot of time and money will be save if user may retrieve information of product through the web and buy them online.

He hoped that the web site might come out as an attractive web site that providing the variety of goods. He believed that busy customers can save time and find shopping more convenient as merchants serve their needs individually.

3.2.2.2 Analysis of Interviewing Twenty Passers-by In Kota Raya

A random interview of twenty passers-by was conducted around Kota Raya. This place was chosen because this is a strategic location where people from all races and levels of income.

From the twenty respondents, most of them said they never use Internet to visit any e-commerce web site. The reason is that if they want to buy goods, they will just go to shopping mall or shops. For those who had used the system, they support the web-based sales and purchase system can provide them better information and greater selection.

Most of the passers-by agreed that it will save their time and cost if there are a website that provide buying variety goods online. The features they wanted in system are user-friendly and easy to use and understand.

3.3 Process Model

The waterfall model with prototyping (Figure 3.2) is implemented to develop the Customer System.

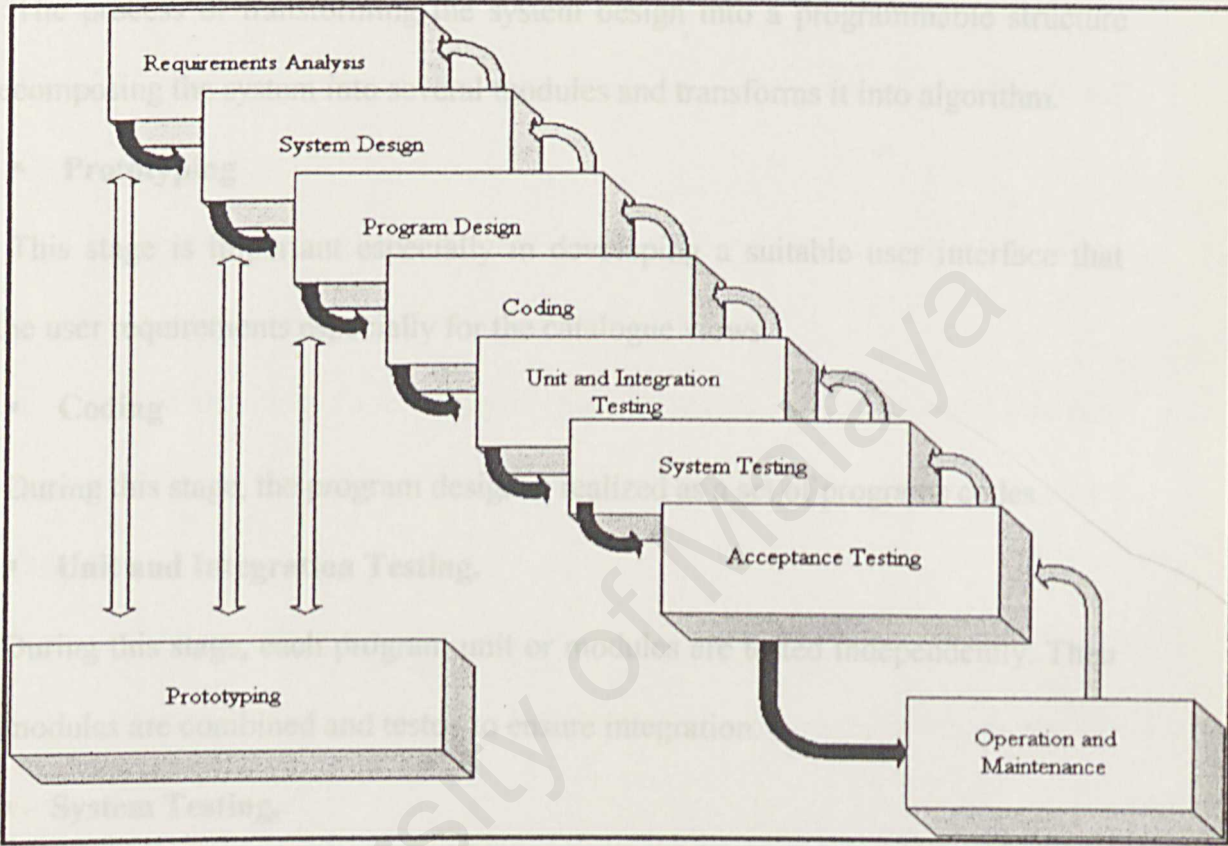


Figure 3.2: The Waterfall Model with Prototyping.

The phases for customer system development are as follow:

- **Requirements Analysis**

In order to fulfil the system’s purpose, the features of the system are captured in this process. The requirements can be divided into two main categories, which are the functional and non-functional requirement. The requirement specification document, which will specify everything that the final system has to produce is a product of the requirement phase and will be the input to the next phase.

- **System design.**

The process of transforming the problem into a solution, which then incorporated into the system.

- **Program Design.**

The process of transforming the system design into a programmable structure such decomposing the system into several modules and transforms it into algorithm.

- **Prototyping**

This stage is important especially in developing a suitable user interface that meets the user requirements especially for the catalogue views.

- **Coding**

During this stage, the program design is realized as a set of programs codes.

- **Unit and Integration Testing.**

During this stage, each program unit or modules are tested independently. Then several modules are combined and tested to ensure integration.

- **System Testing.**

All the modules are combined to form the whole system and then it is tested in its actual or similar environment when the system is implemented.

- **Acceptance Testing.**

During this stage, the actual user is given the opportunity to use the system. The purpose is to enable the users to determine if the system really meets their needs and expectations.

- **Operation and Maintenance.**

The system is ready to be implemented. This includes training of users to use the system, system maintenance and enhancement to meet new requirements.

There are several reasons for choosing the waterfall model with prototyping to model the system. There are:

1. It presents comprehensive steps on what happens during the development circle.
2. The simplicity of the waterfall model can make it easy to explain to end users who are not familiar with software development.
3. With the integration of prototyping, it makes the requirement analysis, system design and program design much more accurate and easier to be captured and done.
4. It is easier to identify milestones.
5. It presents a very high level view of what goes on during development.

3.4 Chapter Summary

The methodology used in this project is waterfall model with prototyping. This methodology is chosen because it suits most to the development environment of the system.

In this chapter, the author also discussed the methods used to find the information in order to fulfil the system's purpose.

Chapter 4 SYSTEM ANALYSIS

4.1 Introduction

In order to get an overview of the system requirements, an intensive analysis is needed. System analysis and design is a systematic approach to identify problems, opportunities, objectives, analyzing the information flow and designing computerized information system to solve a problem. As information proliferates, a systematic, planned approach to the introduction, modification and maintenance of information system is essential (Kendall & Kendall, 1998).

System analysis is the one of the important phase, which focus on understanding a system domain and the requirement. System analysis is conducted with the following objectives:

- ◆ Determine the functional requirement and non-functional requirement for web-based sale and purchase.
- ◆ To determine the tools that will be used in web-based sales and purchase.
- ◆ To determine the programming language, databases and hardware needs of web-based sales and purchase.

4.2 Functional Requirements

Functional requirement is a function or feature that must be included in an information system to satisfy the business need and acceptable to the users. Basically, the functional requirement for Online Product Catalogue And Ordering System can be divided into 2 modules, which are front-end module and back-end module.

4.2.1 Front-end Module

4.2.1.1 Authenticate Module

The system provides most of the functionality of the login and logoff process. User verification will be based on user identification and password. System will allow authorized user, who has registered and a valid member of the system to login to the shopping cart. Member need to key in the appropriate user name and password to log in into the system and continue browsing through the web pages to make order. After login, user can either add the new order to the shopping cart or continue the previous transaction. Meanwhile if they are a new user to the system, user is invited to register as the member.

4.2.1.2 Registration Module

This module will enable new user or non-member to register with the system when they interest to buy the product. The system will require user to enter their particular details, user ID and password for security control in future and the user information will be kept in the database to process.

4.2.1.3 Customer Services Module

This module is available to all users. It can be divided into three sub-module; Customer Profile sub-module, Customer Orders sub-module and Suggestion sub-module.

Customer Profile sub-module will enable authorized user to update his or her profile if any changes occur and to change their password as their desire. Database will be updated the particular user's information after user filled the customer updating form.

The Customer Orders sub-module allows users to view a list of their orders and details of specific orders. When users enter the Customer Orders module, they are shown a list of their existing orders.

In the suggestion system, user can give comment or suggestion by filling in the form in this module. When users submit the form, the data will save into the database and comment will show out for all the users.

4.2.1.4 Search Engine Module

Search engine is another function that is provided by WBSP system. It provides an efficient, powerful and easy way to search desired product. This module will enable user to search for their desired products. All of the product under that category will display after user choose the category they like from the dropdown list.

4.2.1.5 Shopping Carts Module

Once the user has been successfully registered on the system, the next phase of the application will allow the user to select their desired products from the store.

Shopping carts let shoppers simply click on a button to add a product to their cart, which can accumulate the items being chosen.

The integrated Side Bar Shopping Cart is the feature of the system. It allows customers to view the number of items in their shopping cart at any time during their shopping experience without having to leave the store itself. Users can save shopping cart so that they can return to the site and purchase the items at next visit to web site. When a user adds an item into the shopping cart, the product will be directed add to the shopping cart. . It is a small application that maintains a list of a web shopper's selections and can be viewed and modified at any time.

When the shopping session is complete, the cart system will allow them to "checkout". Then a summary of complete order is displayed to the user. After displaying the summary, user is directed to purchase order page to enter their payment info. The user is given a confirmation that the order is received by e-mail and providing an order number to the user. Checkout is where all of the final elements of the transaction are handled.

4.2.1.7 Product Catalogue Module

This module provides a mechanism for browsing and searching the category of the product. User is allowed to browse the sets of catalogues displayed on screen. Users can choose their desired category. After that the system will bring user to another page, which display all the products under that category.

Besides that, product catalogue module enables to display product information in detail when the user enquires it. During the browsing process, user is allowed to add any item to the shopping cart whenever users login into their shopping cart. This module will

provide all the products information in the business organization but for the purpose of this project, I will only concentrate on the some products.

4.2.1 Back-end

4.2.2.2 Order Module

This module enables administrator to search, view and delete order records in the database. After administrator login to the system, he or she can view all of the order whether is new order, progress order or complete order. Besides, the system also can view and print the transaction of the day so that administrator can easily make the order from suppliers.

4.2.2.2 Customer Module

This module enables administrator to keep track with all the customers registered to the web page. It is allowed to search, view and delete customer records in the database. After administrator login to the system, customer profile can be viewed and deleted from the customer records. The suppliers also can search or retrieved the customer detail dynamically. Once the user has been successfully registered on the system, he or she will receive an email from company to ensure the information is correct. It enables administrator to email customers during transaction being done.

4.2.2.3 Keep Track and Reply The Suggestion

The administrators always need to keep track the suggestion from customer. The suggestion will give some ideas for the administrator so that they can further improve the web site.

4.3 Non-Functional Requirement

A non-functional requirement or constraint describes a restriction on the system that limits one choice for constructing a solution to the problem (Pfleege, 2001)

4.3.1 Correctness

Correctness is the extent to which a program satisfies its specification and fulfils user 's requirements and objectives.

4.3.2 Reliability

The system will be developed in a way that is reliable and will not cause any unnecessary failure at the overall operation. System will not cause any technical or costly failures when it is used in a reasonable manner. Any information displayed will be risk-free.

4.3.3 User Friendly

The system must be considered as an attractive and easy-to-use application with the provided user-friendly interface with windows, Icon, Menu and Pointing Device) feature. Icons and buttons will help the user to use the system with more convenient. The back-end monitoring system should display error message if invalid data input, invalid password or invalid transaction occur.

4.3.4 Response Time

The data retrieval time should be considered within a reasonable interval time. All the desired information should be available to users at any point in time. The user should not be asked to tolerate with slow response time.

4.3.5 Expandability

Expandability measures the capability of a system to be upgraded or enhanced in the future. It is important when an existing system needs enhancement to overcome the changes in environment and requirements. Expandability of a system also determines whether a system can be integrated with subsystem to increase its functionality.

4.3.6 Security

Security requirement place restriction on unauthorized access to data (information that a user is not supposed to have access to), unauthorized use of system, unauthorized modification of data and unauthorized system modification. Besides that, security also maintains a log of activities in the system.

4.4 Client / Server Architecture

A 2-tier and 3-tier client/server model is used to determine the capacities and work responsibilities associated with the Internet and the World Wide Web or perhaps a LAN or WAN. The 3-tier web client/server architecture has been chosen because it is more beneficial to electronic commerce.

4.4.1 Comparison Between 2-tier client/server and 3-tier client server

Table 4.1: Two-Tier versus Three-tier Client/Server

	2-Tier	3-Tier
Security	Low (data-level security)	High (fine-tuned at the services or method level)
Encapsulation of data	Low (data tables are exposed)	High (the client invokes services or methods)

Performance	Poor (many SQL statements are sent over the network: selected data must be down-loaded for analysis on the client)	Good (only services requests and responses are sent between the client and server.)
Scale	Poor (limited management of client communications links)	Excellent (concentrates incoming sessions; can distribute loads across multiple servers)
Application reuse	Poor (monolithic application on client)	Excellent (can reuse services and objects)
Ease of development	High	Getting better
Server-to-server infrastructure	No	Yes (via server-side middleware)
Legacy application integration	No	Yes (via gateways encapsulated by services or objects)
Internet support	Poor	Excellent
Heterogeneous database support	No	Yes
Rich communication choices	No	Yes
Hardware architecture flexibility	Limited (have a client and a server)	Excellent
Availability	Poor (can't fail over to a backup server)	Excellent (can restart the middle tier components on other servers)

4.4.2 The Reason chooses 3-tier Web Client/server Architecture

- ⊕ It has the capacity to track purchase/preferences and other market-related information that is not in HTML form.
- ⊕ Increased performance and reduced network traffic by replacing SQL requests with remote procedure calls. Reducing the number of messages the applications use is necessary to enable user access over wide area networks, like the Internet.
- ⊕ Support for a variety of user interfaces by separating the user interface from the application.
- ⊕ Upward scale by integrating a TP Monitor to funnel client requests, manage server loads and distribute the application across any number of servers.
- ⊕ Better inter-application communication using publish and subscribe.

4.5 Platform and Web Server Consideration

4.5.2 Development Platform Consideration

Development platform provides support for the other development tools and programming languages. An operating system is software that performs basic tasks for the computer on which it resides. These tasks include running programs, allocating computer resources such as memory and disk space to program and providing input and output services to devices connected to the computer. There are 2 development platforms had taken into consideration by the team members for the proposed WBSP system, which are UNIX and Microsoft Window 2000 Server.

For the development of WBSP system, **Microsoft Window 2000 Server** has been chosen as the operating system in my project.

4.5.1.1 The Reason Chooses Microsoft Window 2000 Server

- ⊕ It is complete powerful platform that provides server operating system.
- ⊕ Microsoft Window 2000 Server is tightly integrated with the Window Exchange 2000 server.
- ⊕ It serves as a platform to publish and share information in a secure way over Internet and intranets.
- ⊕ It provides services that enable the user to build and deploy servers more quickly.
- ⊕ With its feature 'Configure Your Server' wizard, it significantly reduces the time it takes to build a server and reduces the likelihood of error.
- ⊕ Windows 2000 Server allows easier network configuration with its support on plug and play network adapters.

4.5.2 Web Server

Web server is a piece of software running on a computer that distributes Web pages to user on demand and provides an area in which to store and organize the pages of a Web site. It runs all the time and waits for Web clients (such as Explorer or Navigator) to connect to it and request data. It uses the client/server model and the World Wide Web 's Hypertext Transfer Protocol (HTTP), serves the files that form Web pages to Web users (whose computers contain HTTP clients that forward their requests).

For the development of WBSP system, **APACHE** has been chosen as the web server in my project.

4.5.2.1 The Reason Chooses APACHE Web Server

- ⊕ It is free to download, install and the source code is also available for no cost.
- ⊕ It performs very efficiently.
- ⊕ It can run on many operating systems and the hardware that supports them.
- ⊕ It is open source. That means everyone uses it can access to the source code.
- ⊕ Currently, PHP is chosen for server-side scripting. Apache Web Server is chosen because it integrates easily with MySQL database to host PHP application.
- ⊕ PHP compiled faster in Apache.

4.6 Web database

Database is one of the most important elements in Online Product Catalogue and Ordering System because it will be used to store product information, customers' profile, ordering records, administrators' profiles and other related information. My SQL has been chosen as the web database in my project.

4.6.1 The Reason Chooses My SQL web database

- ⊕ There are lots of PHP tools to manage and maintain MySQL databases. The feature set is complete compared to other databases. There are some very useful functions like mysql_insert_id and mysql_affected_rows, which are not available for other database products.
- ⊕ It is scalability. MySQL can handle an unlimited number of simultaneous users and 50 million records.
- ⊕ It is easy to manage database management system.

⊕ Most Web sites serve thousands of Web pages a day, but perform fewer data updates. A typical data transaction is simple single table update for user logins or forum posts. So a database with speedy SELECTs and lousy INSERTs and UPDATEs like MySQL is a good trade-off in this environment.

4.7 Server-side scripting

From the result of analysis, PHP (Hypertext Preprocessor) is the most suitable server-side scripting for this WBS system. PHP is an application that runs on a web server. Therefore, Apache Web Server has been chosen because it integrates easily with MySQL database to host PHP application. Besides, PHP can compile faster in Apache.

4.7.1 Comparison Between PHP, JSP, ASP and CGI

Table 4.2: Comparison Between PHP, JSP, ASP and CGI

[<http://www.ebiz-intellect.com/page.cfm?0number=36>]

	PHP	ColdFusion	ASP	JSP
Language In Page	PHP	CFML	VBScript, JScript	Java
OS Platform	Unix (Linux), Windows, MacOS, OS/2	Windows NT, Solaris, Linux	Windows 9x, NT, other platforms requires third-party ASP porting products	UNIX, Microsoft Windows, Mac OS, Linux
Supported Web server	Apache only (version 3.0) IPlanet/Netscape Enterprise Server (NSAPI), MS Internet Information Server (IIS), Apache, Zeus, fhttpd, etc. (version 4.0)	IIS, Netscape Enterprise Server, Apache, Website Server (WSAPI), CGI	IIS, Personal Web Server (PWS), other servers with third-party products	Any Web server, including Apache, Netscape and IIS
Supported Database	MySQL, mSQL, ODBC, Oracle, Informix, Sybase, etc.	ODBC, OLE DB, DB2, Oracle, Informix, Sybase, etc.	Any ODBC-compliant database	Any ODBC- and JDBC-compliant database
Portability	Poor	Good	Fair	Good
Scalability	NO	Good	Good	Good

Component Support	NO	COM, CORBA, JavaBeans	COM components	JavaBeans, Enterprise JavaBeans
Learning curve	Medium (C, Perl)	Low	Medium (VBScript, Jscript)	High (Java)

4.7.2 The Reason Chooses PHP

- ⊕ PHP is speed and robustness. PHP sites rarely, slow down the server because of the heavy loads.
- ⊕ PHP is free to download and install. It is open source.
- ⊕ PHP is database-friendly. It can connect to Sybase, MySQL, mSQL, Oracle, Generic ODBC, PostgreSQL and many others
- ⊕ PHP provides session management function which very useful for development e-commerce.
- ⊕ PHP provides support for accessing a wide range of database.
- ⊕ PHP can support services such as IMAP, POP3, NNTP and HTTP.
- ⊕ PHP source is distributed; it can be compiled on many different platforms including Linux, FreeBSD, and even Windows.

4.8 Client-side scripting

4.8.1 Hyper Text Markup Language (HTML)

HTML is used to define the structure and to some extent, the layout and design of a Web page. In others word, HTML is used to determine how that content will be displayed. As for this project, HTML is used in files that PHP code is embedded in

standard HTML and then processed by the Apache web server to generate complete Web pages to be displayed in users' browsers. HTML is tag-based languages that usually have beginning and ending tags.

4.8.1.1 The Reason Chooses Hyper Text Markup Language (HTML)

- ⊕ Its flexibility. The developers do not have to create different HTML documents for different types of computer.
- ⊕ Any computer that has a web browser installed can display web pages, including computers running a Unix, Window or Macintosh operating system.

4.8.2 JavaScript

As for this project, JavaScript code will be embedded in the HTML pages in the client-side interfaces to perform simple functions such as clearing form fields and make the client interfaces more presentable. Only simple JavaScript coding will be included in the client-side scripting.

4.8.2.1 The Reason chooses JavaScript

JavaScript enables developers to create interactive web applications. Even if the Internet connection is slow, it can speed up the response time because the interaction does not need to involve the server but can take place in users own browser. Moreover, JavaScript has the capability to enhance user's interface and make it more "intelligent" and presentable.

4.9 Application Software Configuration

4.9.2 Adobe Photoshop

Adobe Photoshop has been chosen as the image-editing tool because it contains many powerful features such as layering and picture rendering utilities. It provides easy to use shape and colour palettes. Using this graphic editor software, high quality graphic object can be created easily.

4.9.3 Macromedia Flash

Flash is the foremost authoring software for creating scalable, interactive animation for the web. For the project, the software is going to be used to design and manipulate the animated icons, web site navigation control and short-form animation.

4.10 Web Security

Secure Sockets Layer (SSL) has been chosen in order to protect the customer's right and privacy of the system. The SSL security protocols provide data encryption, server authentication, message integrity and optional client authentication for TCP/IP connection.

4.11 Internet Browser

Microsoft Internet Explorer 5.5 has been chosen as the application browser.

4.11.2 The Reason chooses Microsoft Internet Explorer 5.5

- ⊕ Internet Explorer provides free and easy upgrade of its browser from time to time.
- ⊕ Microsoft provides strong on-line supports for its Internet Explorer.

4.12 Project Software Configuration

Table 4.3 Project Software Configuration

Software	Description
Apache	Web server host
MySQL	Server database
Microsoft Window 2000 Server	Client operating system
PHP	Server-side scripting & it is a web development tool
JavaScript	Client-side scripting
HTML	Web programming languages
Notepad	Coding for HTML document
EditPlus Text Editor	Coding for PHP & HTML document
Adobe Photoshop	Image design and manipulation
Macromedia Flash	Image Design and manipulation
Microsoft Internet Explorer	Client web server

4.13 System Requirement

The choice of hardware and software used in a system development is very important. It has a profound impact on the cost, quality and productivity of the system.

4.13.2 Hardware Requirement

Server computer hardware requirements:

- ⊕ Intel Pentium III Xeon 1000-MHZ Processor
- ⊕ 128MB PC133MHz SDRAM DIMM Memory
- ⊕ Network Interface Card (NIC) and network connection with recommended bandwidth at 10Mbps.

- ⊕ The OS Support are: Microsoft Window 2000 Server; Microsoft Window NT; Novell Netware and other which compatible
- ⊕ 1.44 MB Diskette Drive
- ⊕ High Speed IDE CD-ROM Drive

Client computer hardware requirement:

- ⊕ Any compatible PC with recommended at least Pentium MMK processor and 64MB RAM.

4.13.3 Software Requirement

- ⊕ Web server service – Apache 1.3.12
- ⊕ Database - MySQL v3.22.32.
- ⊕ Operating System – Microsoft Window 2000 Server
- ⊕ Development Tool – PHP 4.0.3
- ⊕ Web Technologies – HTML 4.01
- ⊕ Programming Technologies & Languages – JavaScript
- ⊕ Text Editor – EditPlus v2.10, Notepad
- ⊕ Authoring Tools - Adobe Photoshop 6.0, Macromedia Flash 5.0
- ⊕ Web Browser - Microsoft Internet Explorer 4.0 and above
- ⊕ Web Security – Secure Sockets Layer (SSL)

4.14 Background Apache + PHP + MySQL

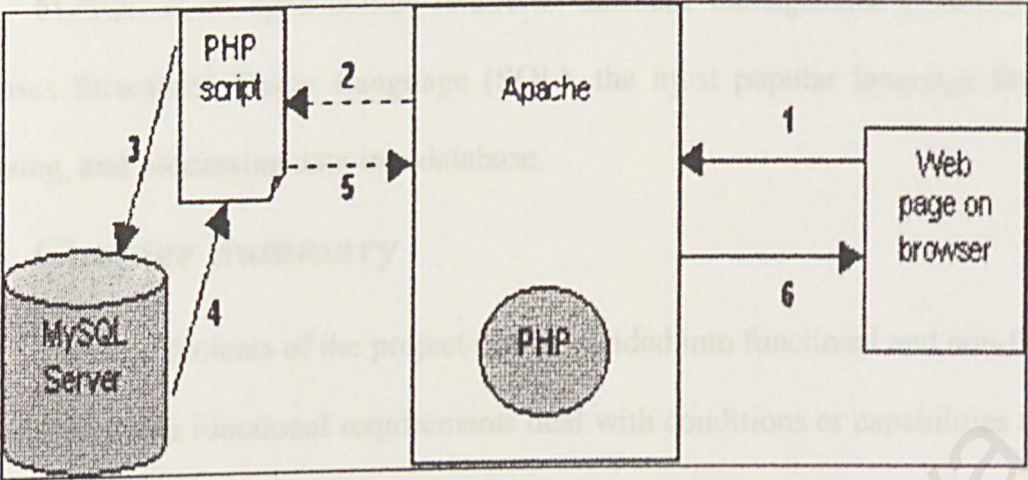


Figure 4.1 Combination APACHE, PHP and MySQL

This proposed project is running at the Apache web server with MySQL as the database backend, PHP as the server-side scripting language on a Microsoft Window 2000 Server. This combination is the most ideal and the best combination to developed a large-scale web sites.

Apache is web server software. It is responsible for listening on a particular port (usually 80, 8000, 8080, or equivalent) for incoming requests for files (usually by a Web browser such as Netscape or Mosaic). Upon receiving a request for a file, Apache returns its contents to the Web browser, which is responsible for displaying the hypertext mark-up language (HTML) document contents (images, media, and so forth).

PHP is a hypertext preprocessor. When integrated with web server software, Apache, it becomes a powerful mechanism for adding intelligent scripts inside of HTML documents. Certain pages requested from the web browser are passed through the PHP engine before being returned to the web browser. The PHP engine examines the page for PHP script, executes the script and returns an HTML document to the browser. The

power of the scripting language stems from its tight integration with major databases, MySQL. [PHP, 2002]

MySQL is an open source relational database management system (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database.

4.15 Chapter Summary

The requirements of the project can be divided into functional and non-functional requirements. The functional requirements deal with conditions or capabilities that must be met or processed by a system while non-functional requirements deal with restrictions on the system that limits one choices for constructing a solution to the problem. The project's functional requirements consist of twelve main requirements. While for the project's non-functional requirements, it consists of six requirements.

Besides describing the functional and non-functional requirements, this chapter also discusses the application architecture has been chosen.

At the end of the chapter, a list of the proposed development tools is mentioned and the reason chooses them.

Chapter 5 SYSTEM DESIGN

Design is the creative process of transforming the problem into a solution and the description of the solution (Pfleeger, 2001). This chapter will describe in detail of how this system will be meet the requirements identified during system analysis.

The objectives of system design are as following:

- ⊕ Meet the user requirements
- ⊕ Specify logical design elements

SYSTEM DESIGN



CHAPTER 5

5.1 Online Product Catalogue and Shopping System Architecture

Online Product Catalogue and Shopping System Architecture extends the traditional client-server architecture to the Web. Basically, it can be divided into 3 distinct layers: user application, business application and database application.

5.1.1 User Application

User Application level is the level that will interact directly with users. This is the level where all the input will be collected from the user and formatted through HTML, PHP and JavaScript code before being sent to the next tier for processing. The processed data later is sent back to this level and display the results to the user. PHP will be used in this application.

Chapter 5 SYSTEM DESIGN

Design is the creative process of transforming the problem into a solution and the description of the solution [Pfleeger, 2001]. This chapter will describe in detail of how this system will be meet the requirements identified during system analysis.

The objectives of system design are as following:

- ⊕ Meet the user requirement
- ⊕ Specify logical design elements
- ⊕ Provide software specification
- ⊕ Confirm to design standards.

5.1 Online Product Catalogue & Ordering System Architecture

Online Product Catalogue & Ordering System is designed to leverages the traditional client/server architecture and extend it to the Web. Basically, it can be divided into 3 distinct tiers user application, business application and database application.

5.1.1 User Application

User Application level is the level that will interact directly with users. This is the level where all the input will be collected from the user and formatted through HTML, PHP and JavaScript code before being sent to the next tier for processing. The processed data later is sent back to this level and display the results to the user. PHP will be used in this application.

5.1.2 Business Application

All the function and procedures that deal manipulation of database calculation will be placed in this level. A request for application is initiated at the User Application level and will be sent to this level to be processed and interact with the database for create, update and delete purposes.

5.1.3 Database Application

At the database application level, a repository of the relevant data stored in the MySQL database, is available to support the work performed at the previous level. All the database manipulation tasks will be perform in this level.

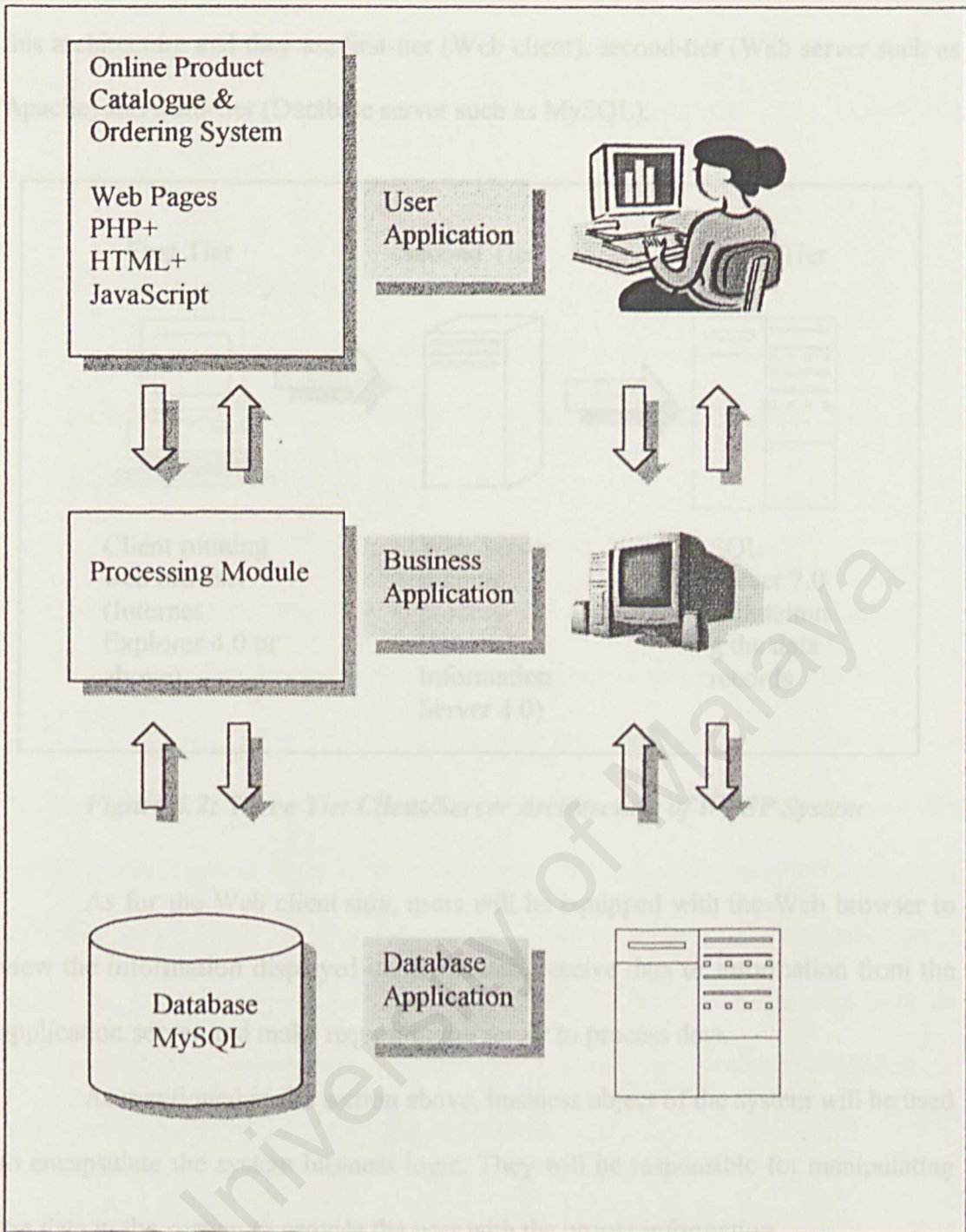


Figure 5.1: OPCOS Architecture

5.2 Three Tier Architecture

Generally, the system architecture of Online Product Catalogue & Ordering System (OPCOS) is three-tier software architecture. There are three layer or tier in

this architecture and they are first-tier (Web client), second-tier (Web server such as Apache) and third-tier (Database server such as MySQL).

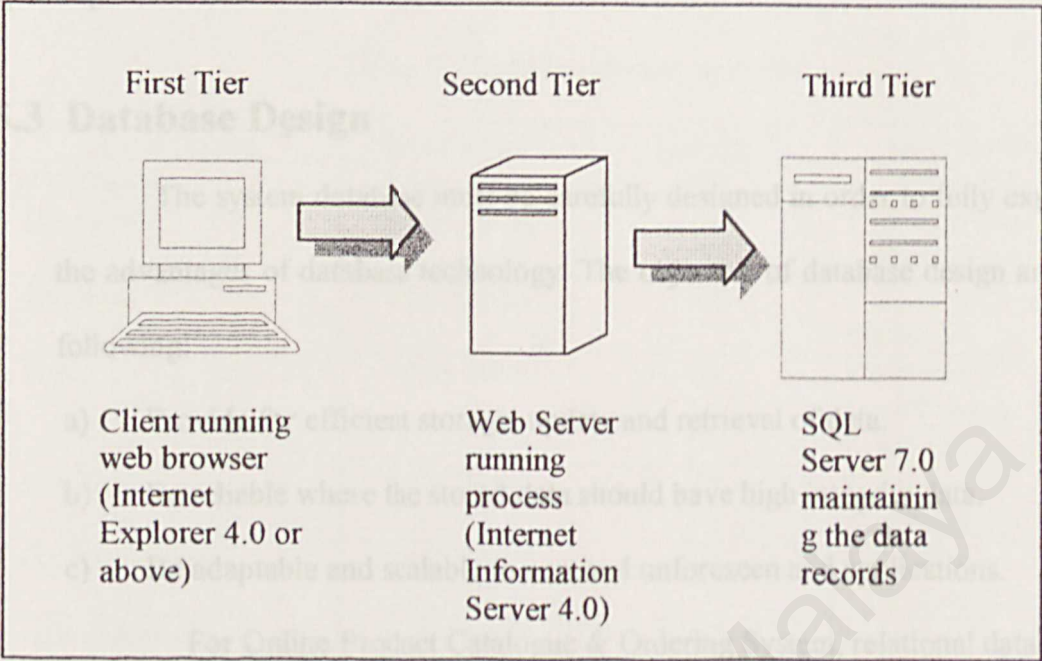


Figure 5.2: Three Tier Client/Server Architecture of WBSP System

As for the Web client side, users will be equipped with the Web browser to view the information displayed on the screen, receive data or information from the application server and make request to the server to process data.

As mentioned in the section above, business object of the system will be used to encapsulate the system business logic. They will be responsible for manipulating the data in the system to provide the user with the proper information.

If user requests data, which resides in the database server (MySQL), the program/business object will connect to the database server and retrieve the required records from the database. The data will be then be presented to the user through Web pages.

During the process of retrieving information, the business object will do additional tasks such as validation and conversion that are transparent to the user.

The user will not directly update the database. Instead, it sends updating requests to the application server and the business object in the transaction server will handle the updating.

5.3 Database Design

The system database must be carefully designed in order to fully exploit the advantages of database technology. The objective of database design are as following:

- a) Provide for efficient storage, update and retrieval of data.
- b) Be reliable where the stored data should have high integrity data.
- c) Be adaptable and scalable to new and unforeseen and applications.

For Online Product Catalogue & Ordering System, relational database model is chosen since it enables data stored in a way that minimizes duplicated data and eliminates certain types of processing errors that can occur when data are stored in other ways. Each table in the system is stored in rows and columns form. However, not all relations are equally desirable. For some relations, changing the data can have undesirable consequences, called modification anomalies, is considered and emphasized during database design.

5.3.1 Table Master

There are 8 tables in the OPCOS database including customer account, product catalogue, order tracking, cart and suggestion. Primary key of table will mark

5.3.1.1 Table customer_account

Table 5.1 is the customers' table, which contains type of particulars for different customers that register as the member of company.

Table 5.1 Table customer_account

Field Name	Data Type	Length	Description
* username	VARCHAR	10	Customer ID
password	VARCHAR	10	Customer's login password
fullname	VARCHAR	20	Customer's Full Name
icno	VARCHAR	16	Customer's identity card number
phoneno	VARCHAR	20	Customer telephone
companyname	VARCHAR	30	Customer's Company Name
emailaddress	VARCHAR	45	Customer's email address
Address	VARCHAR	80	Customer's address
City	VARCHAR	10	City
State	VARCHAR	10	State
postalcode	VARCHAR	15	Postal Code
Age	INTERGER	3	Customer's age
Gender	VARCHAR	6	Customer's gender

5.3.1.2 Product Catalogue Table

In term of the database entity relations below, 3 tables will be needed to drive the product catalogue.

- 1. The categories entity is a one-to-may relation upon itself.
- 2. The products entity is a many-to-many relation with the categories entity.

a) parentproduct Table

Table 5.2 will hold the names of parents. Since the ID will only be used internally, MySQL auto number will be used to generate them. ID field will be used to identify records so it will set as primary key of this table.

Table 5.2 : Table parentproduct

Field Name	Data Type	Size	Description
* parentID	INTEGER	5	The ID for the parent product
* parentname	VARCHAR	20	The name of parent
Enterdate	DATE		The date when new parent product insert

b) Table Category

Table 5.3 will hold the names of categories. Since the ID will only be used internally, MySQL auto number will be used to generate them. ID field will be used to identify records so it will set as primary key of this table.

Table 5.3 Table Category

Field Name	Data Type	Size	Description
* categoryID	Auto Number		An internal identifier (ID) for this category
Parented	INTEGER	5	The ID of the parent category
categoryname	VARCHAR	25	A description for this product
categorydesc	VARCHAR	100	The price of this product
Enterdate	DATE		The date when new category insert

c) Table Product

Table 5.4 depicts product account, which will hold the information about all products available.

Table 5.4 Table Product

Field Name	Data Type	Size	Description
*productID	Auto Number		An internal identifier (ID) for this product
Parented	INTEGER	5	The ID for parent product
CategoryID	INTEGER	5	The ID for category product
productname	VARCHAR	50	A name for this product
Image	VARCHAR	30	Path to image file
descproduct	VARCHAR	200	A description for this product
Rprice	FLOAT	5,2	The price of this product
Price	FLOAT	5,2	The price after discount.
Enterdate	DATE		The date when new product insert
Lastmodify	DATETIME		The last modified date.
SupplierID	VARCHAR	10	SupplierID of the supplier.
ShipFrom	VARCHAR	15	Place that product ship from

5.3.1.3 Order Tracking Tables

2 tables are needed to track customer orders, which are order table and order_item table. There is a one-to-many relation between orders and order_items because an order can have one or more order items and order items can belong to one or more orders.

a) Table Ordering

Table 5.5 to hold the order details.

Table 5.5 Table Ordering

Field Name	Data Type	Size	Description
OrderID	Auto Number		Order ID

UserID	VARCHAR	15	The userID of the customer who initiated the order
Order_time	Datetime		The date/time when the order was created.
Payment_time	Datetime		The date/time when the payment was authorized or declined.
Status	VARCHAR	20	A status of the authentication process
Status_Detail	VARCHAR	100	Describe the status of the authentication process.
Comments	VARCHAR	100	Any special instructions or comments to go with the order.
Amount	FLOAT	5,2	The amount the customer was billed

b) Table order_item

Table 5.6 show to hold the items that are a part of an order.

Table 5.6 Table order_item

Field Name	Data Type	Size	Description
OrderID	INTEGER	5	The order ID to which this item belongs
ProductID	INTEGER	5	The item that was ordered.
Quantity	INTEGER	5	The quantity order

5.3.1.4 Table Feedback

Table 5.7 below is the feedback table that will be used to follow-up feedback by administrator.

Table 5.7 Table Feedback

Field Name	Data Type	Size	Description
suggID	Auto Number		The senderID which will generate automatically.
Date	DATE		The date of entered.
email	VARCHAR	40	E-mail address of the sender
sender	VARCHAR	20	The name of sender
Topic	VARCHAR	50	The topic to discuss
message	VARCHAR	250	Message from sender

5.3.1.5 Table Cart

Table 5.8 show the item in shopping cart

Table 5.8 Table Cart

Field Name	Data Type	Size	Description
cartid	Auto_Number		CartID which will generate automatically
username	VARCHAR	10	Username who order the product
productID	INTEGER	5	ProductID have been ordered.
qty	INTEGER	11	Quantity have been ordered.

5.3.1.6 Table price_range

Table 5.9 show the price range

Table 5.9 Table price_range

Field Name	Data Type	Size	Description
priceID	Auto_Number		PriceID which generate automatically.
start	FLOAT	5,2	Start price
end	FLOAT	5,2	End price

5.4 Program Design

The program specifications produced at the end of program design must ensure the program satisfies user requirements. The program should be easy to read and understand so that other persons can amend it later. The program should accommodate system changes that occur after the system is built. Structure Chart and Data Flow Diagram are helpful in developing well-structured programs.

5.4.1 Structure Chart

WBSP is based on the functionality modules. There are three main modules, which are online product catalogue and ordering system, administrative and financial management. It is used to depict high-level abstraction of a specified system. Apart from this, system structure chart also describes the interaction between modules in a system.

OPCOS is divided into two major components, which are the back-end and front-end. Each of these two components is then divided into few modules. After that, each of the modules will be further broken into the processes. The following figure will illustrate the whole OPCOS's structure chart.

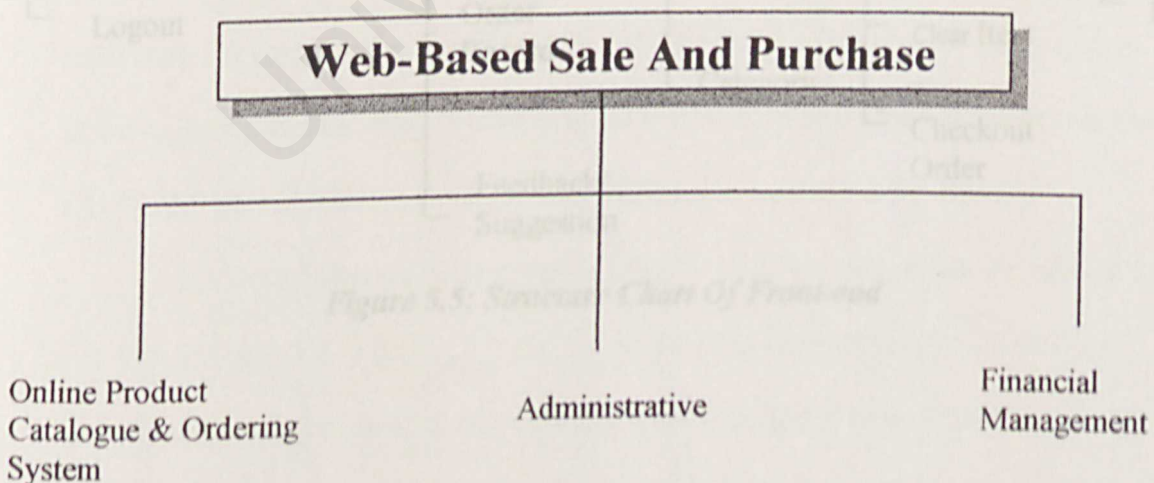


Figure 5.3: Structure Chart Of Web-based Sale And Purchase

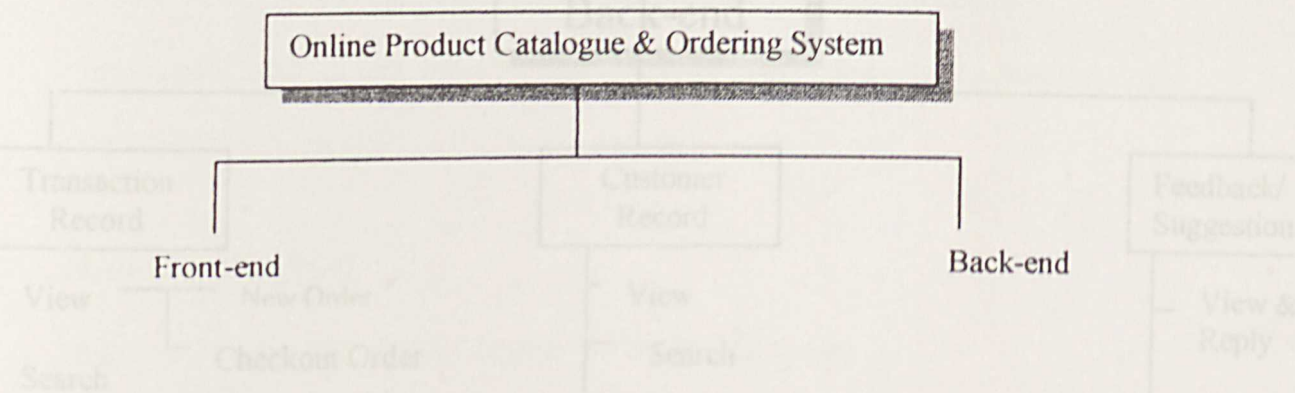


Figure 5.4: Structure Chart Of Online Product Catalogue and Ordering System

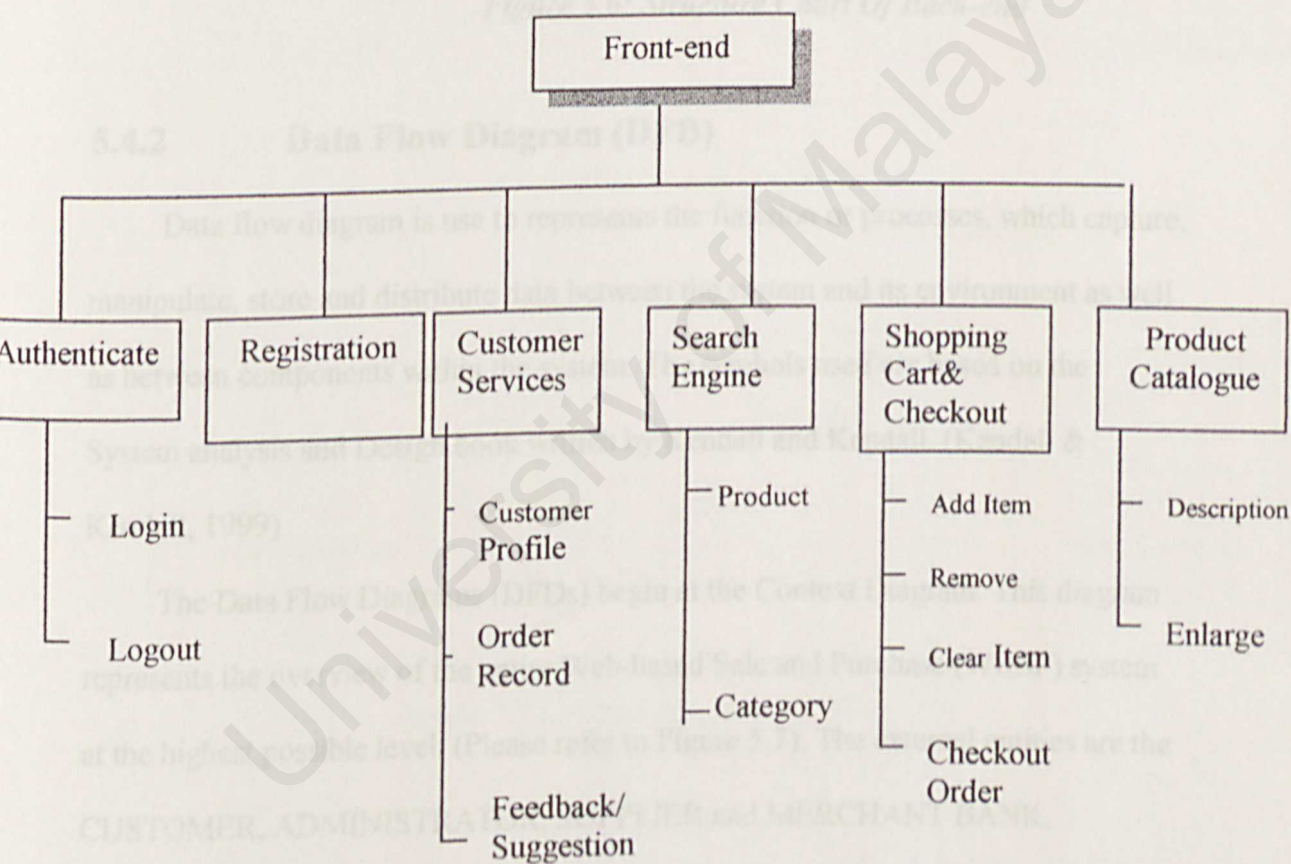


Figure 5.5: Structure Chart Of Front-end

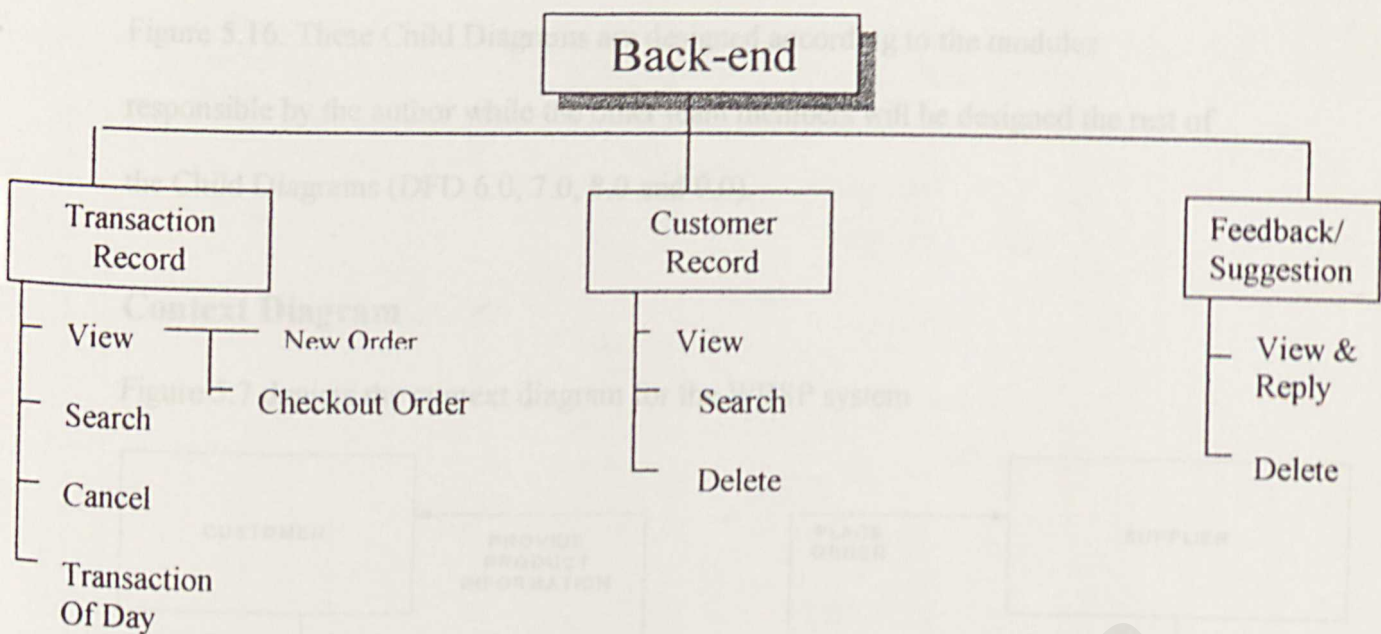


Figure 5.6: Structure Chart Of Back-end

5.4.2 Data Flow Diagram (DFD)

Data flow diagram is use to represents the function or processes, which capture, manipulate, store and distribute data between the system and its environment as well as between components within the system. The symbols used are based on the System analysis and Design book written by Kendall and Kendall. (Kendall & Kendall, 1999)

The Data Flow Diagrams (DFDs) begin at the Context Diagram. This diagram represents the overview of the entire Web-based Sale and Purchase (WBSP) system at the highest possible level. (Please refer to Figure 5.7). The external entities are the CUSTOMER, ADMINISTRATOR, SUPPLIER and MERCHANT BANK.

The Context Diagram is decomposed into 9 sub-processes, which are labeled as 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0 and 9.0 in the Data Flow diagram 0 (Figure 5.8) and they are further refined to few other sub-processes in the Data Flow Diagram 1.0, 2.0, 3.0, 4.0 and 5.0 or also known as the Child Diagrams as shown in Figure 5.9, Figure 5.10, Figure 5.11, Figure 5.12, Figure 5.13, Figure 5.14, Figure 5.15 and

Figure 5.16. These Child Diagrams are designed according to the modules responsible by the author while the other team members will be designed the rest of the Child Diagrams (DFD 6.0, 7.0, 8.0 and 9.0).

Context Diagram

Figure 5.7 depicts the context diagram for the WBSP system

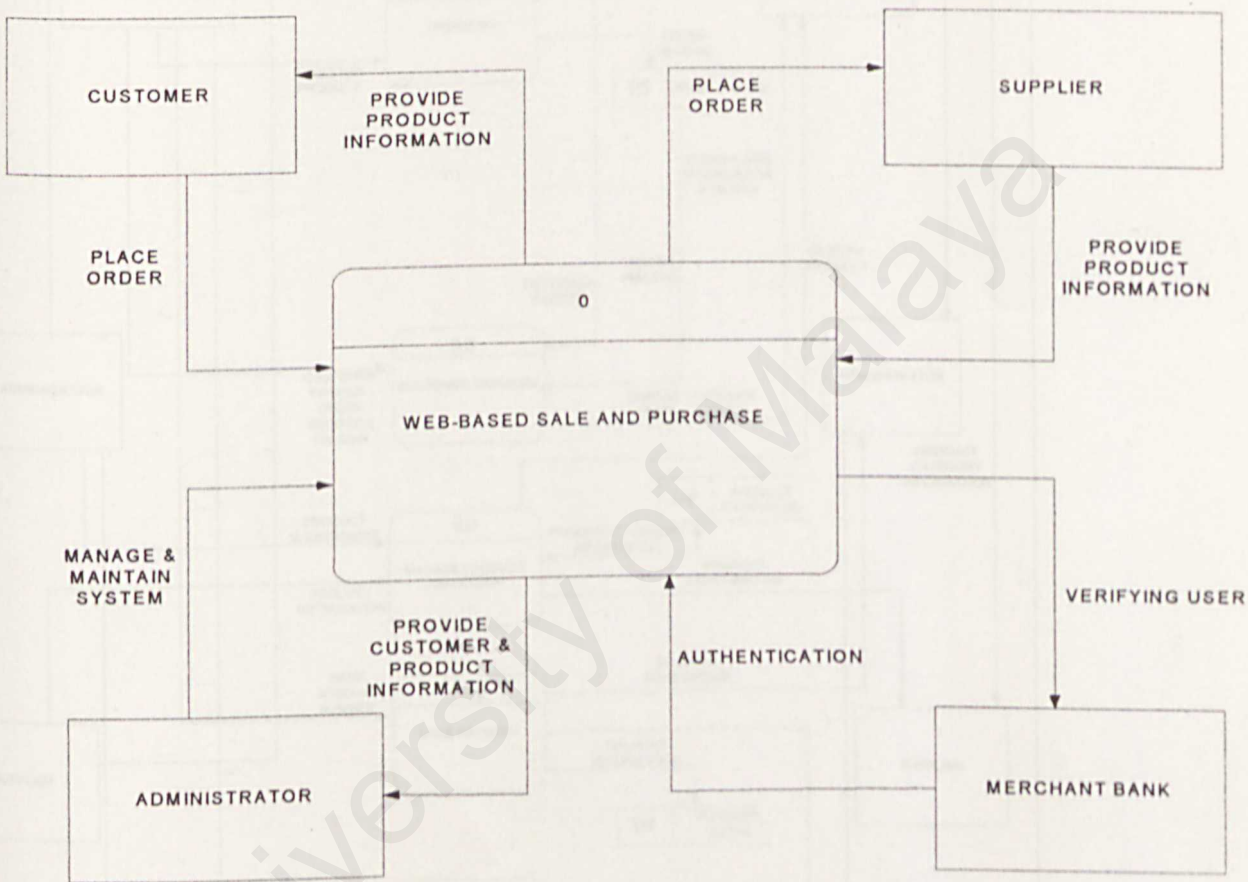


Figure 5.7 Context Diagram Of WBSP

Data Flow Diagram 0 (DFD 0)

Figure 5.8 shows the Data Flow Diagram for the whole system of WBSP. This diagram is also known as DFD 0. It shows on how the data flow from one function to another.

Figure 5.8 Data Flow Diagram Of WBSP

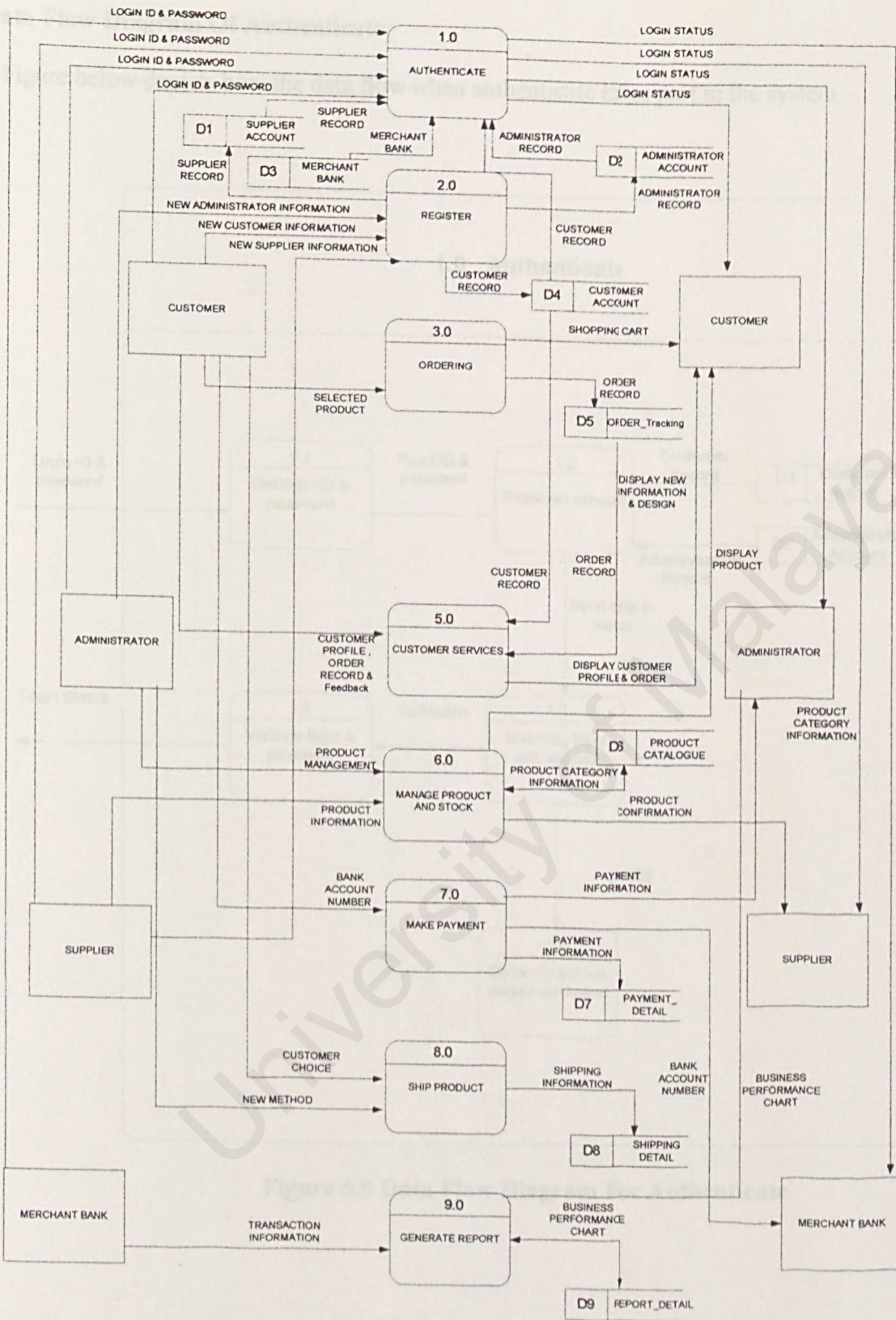


Figure 5.8 Data Flow Diagram Of WBSP

Data Flow Diagram Of Authenticate

Figure below depicts how the data flow when authenticate takes part in the system.

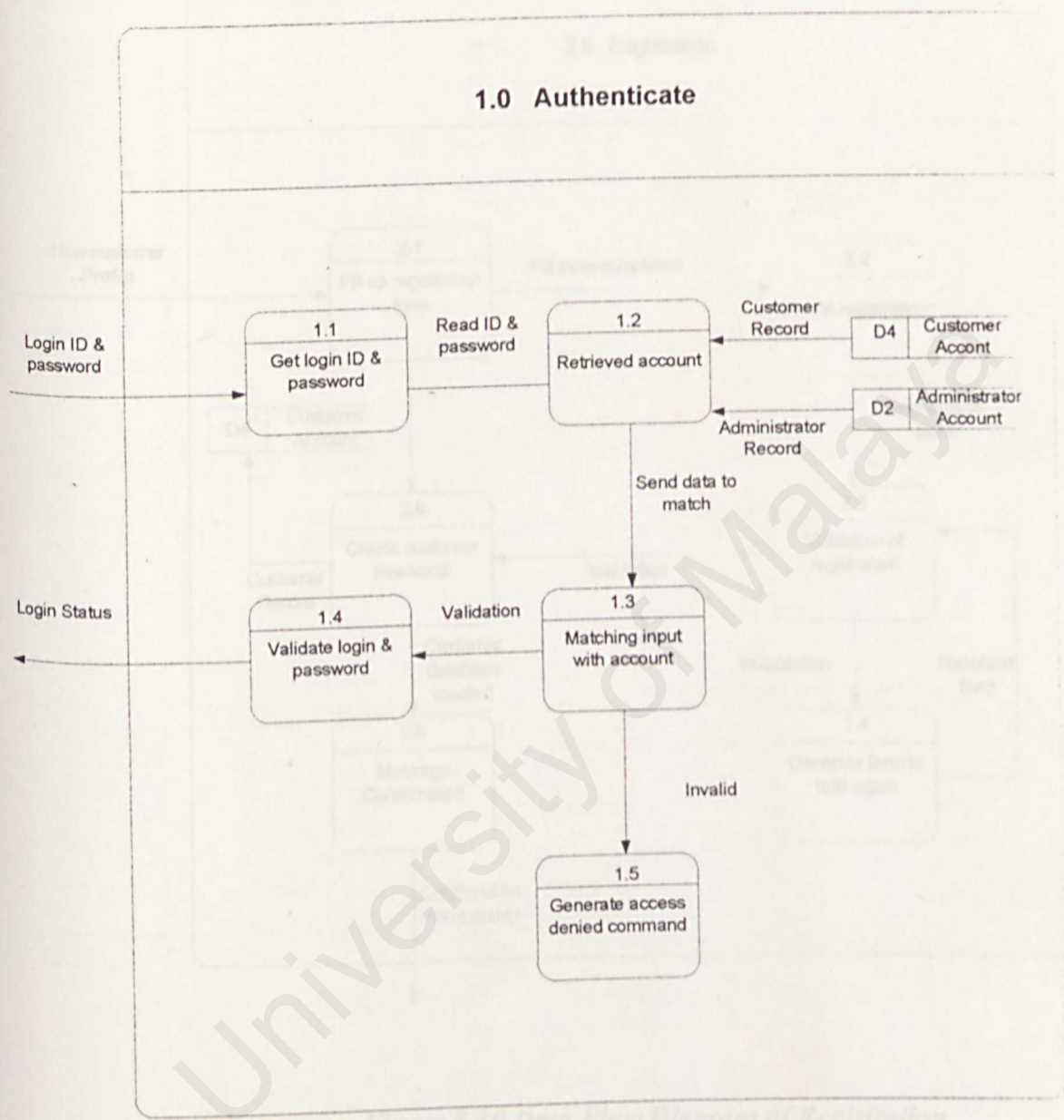


Figure 5.9 Data Flow Diagram For Authenticate

Data Flow Diagram of Registration

Figure 5.10 is the Data Flow Diagram for the registration module

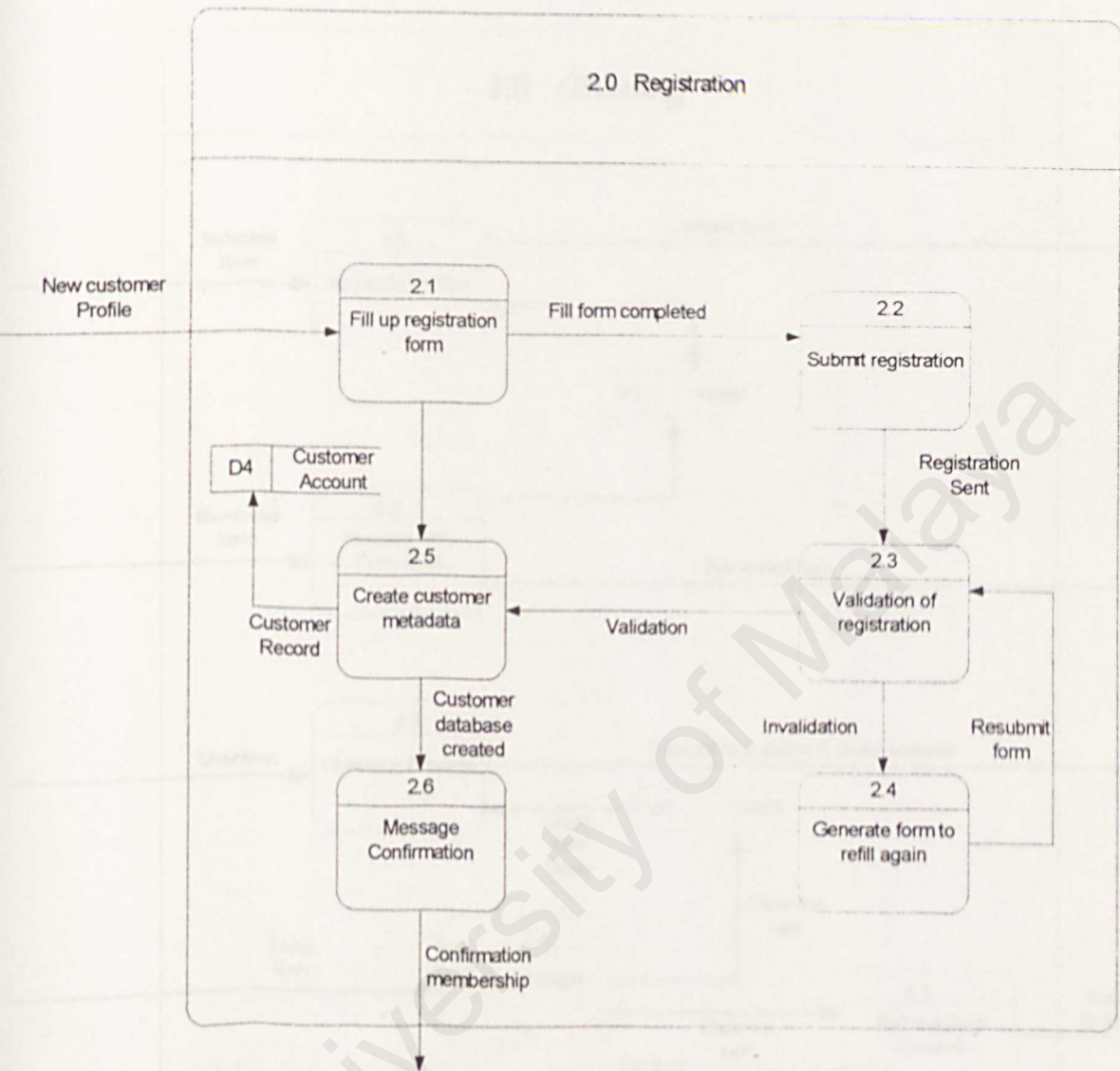


Figure 5.10 Data Flow Diagram of Registration

Data Flow Diagram For Ordering

Figure below is the Data Flow Diagram for the ordering.

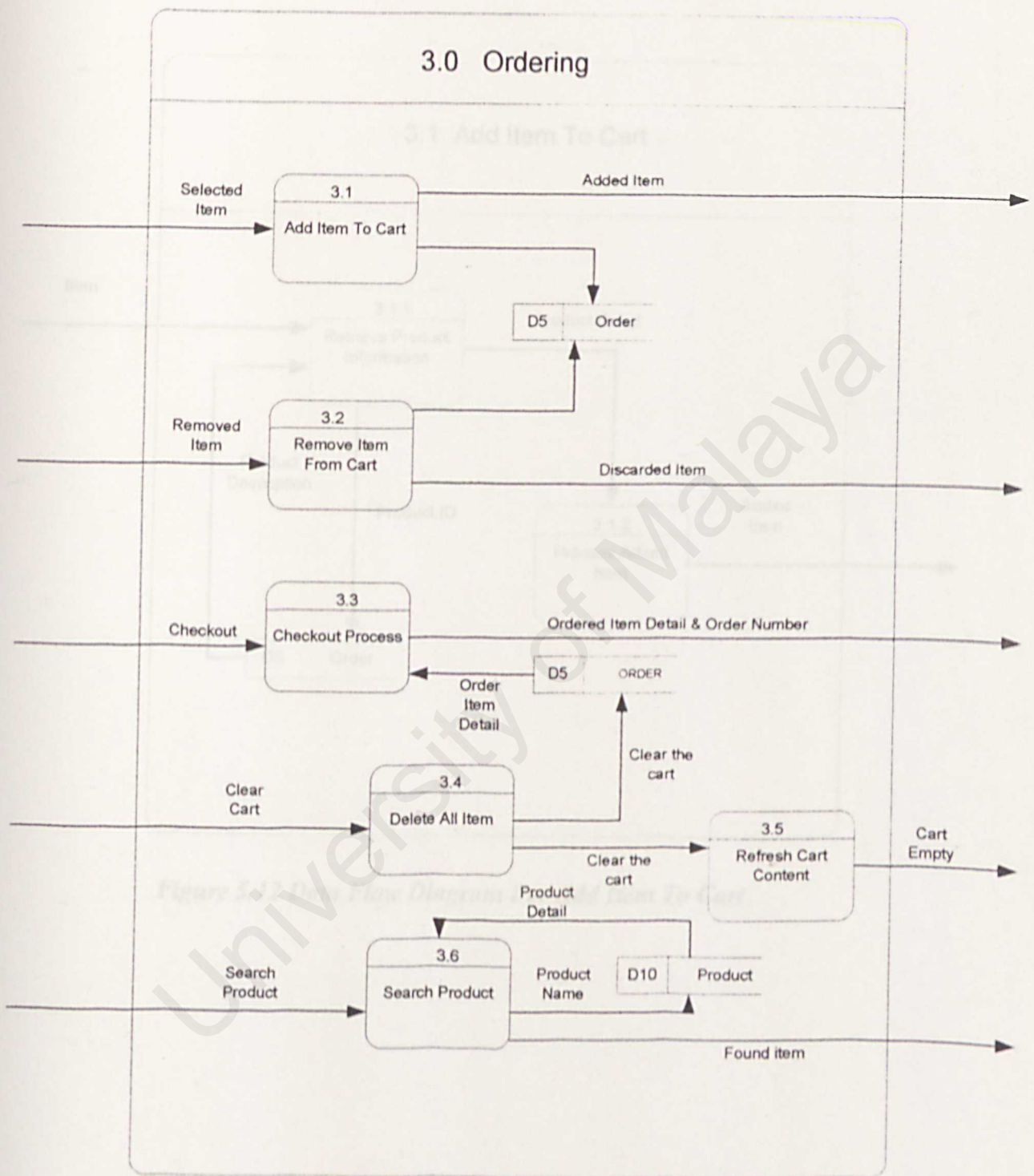


Figure 5.11 Data Flow Diagram For Ordering

Data Flow Diagram For Add Item To Cart

Figure 5.12 shows how the item adds to the cart how it stores in database.

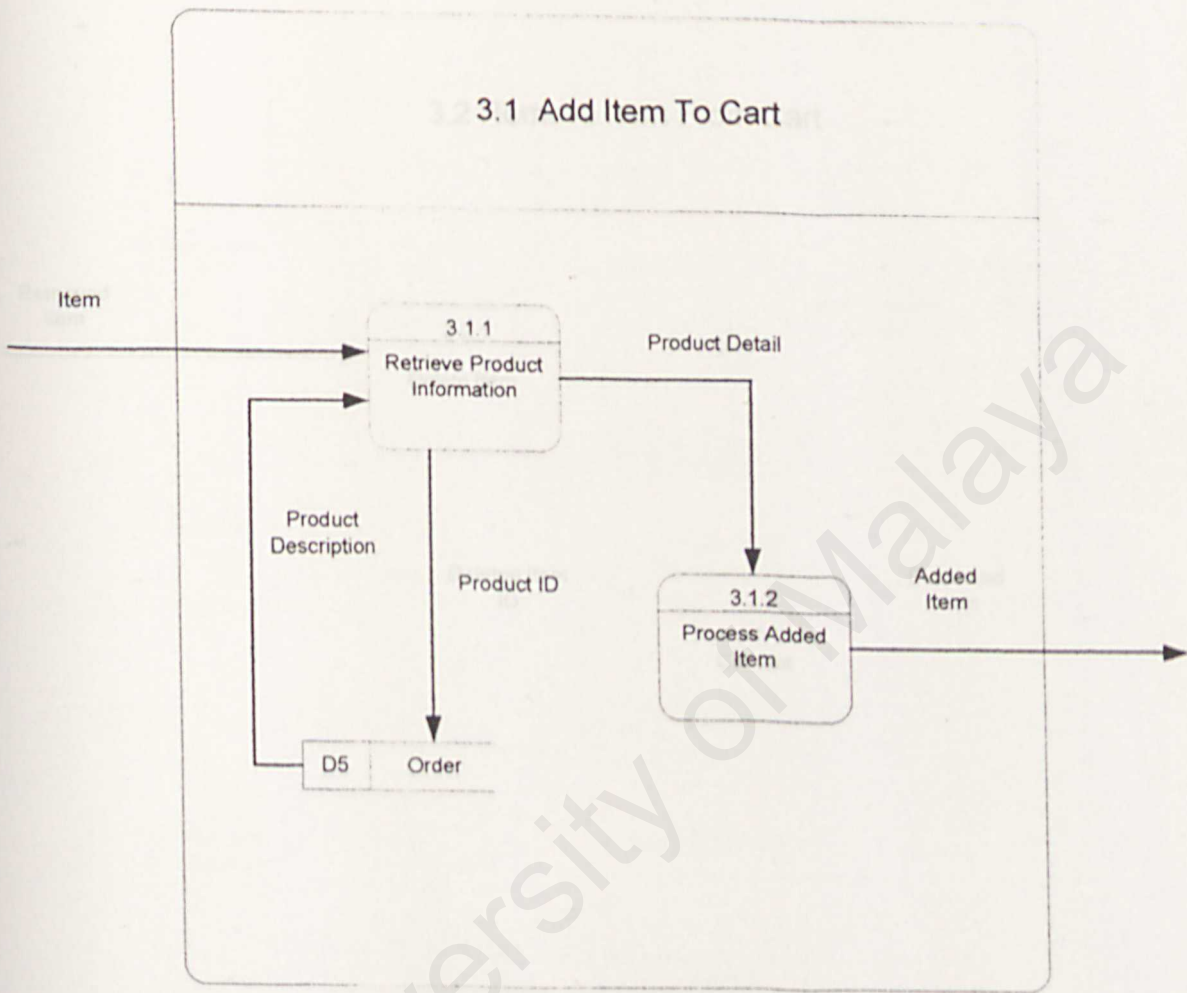


Figure 5.12 Data Flow Diagram For Add Item To Cart

Data Flow Diagram For Remove Item From Cart

Figure 5.13 shows how the item removes to the cart how it deletes from database.

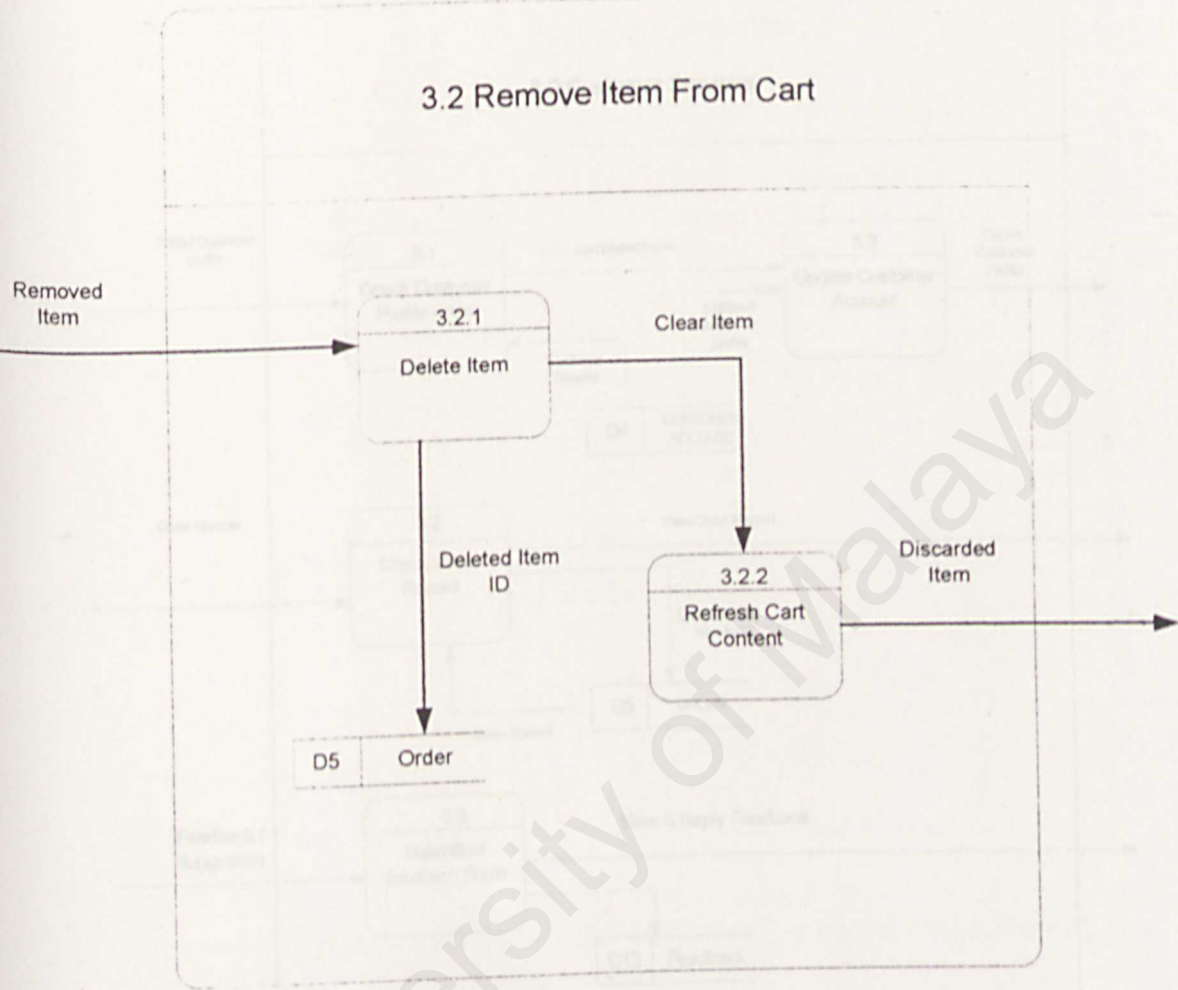


Figure 5.13 Data Flow Diagram For Remove Item From Cart

Data Flow Diagram For Customer Services

Figure 5.13 depicts how the user can delete the order record.

Figure 5.14 shows how the item adds to the cart how it stores in database.

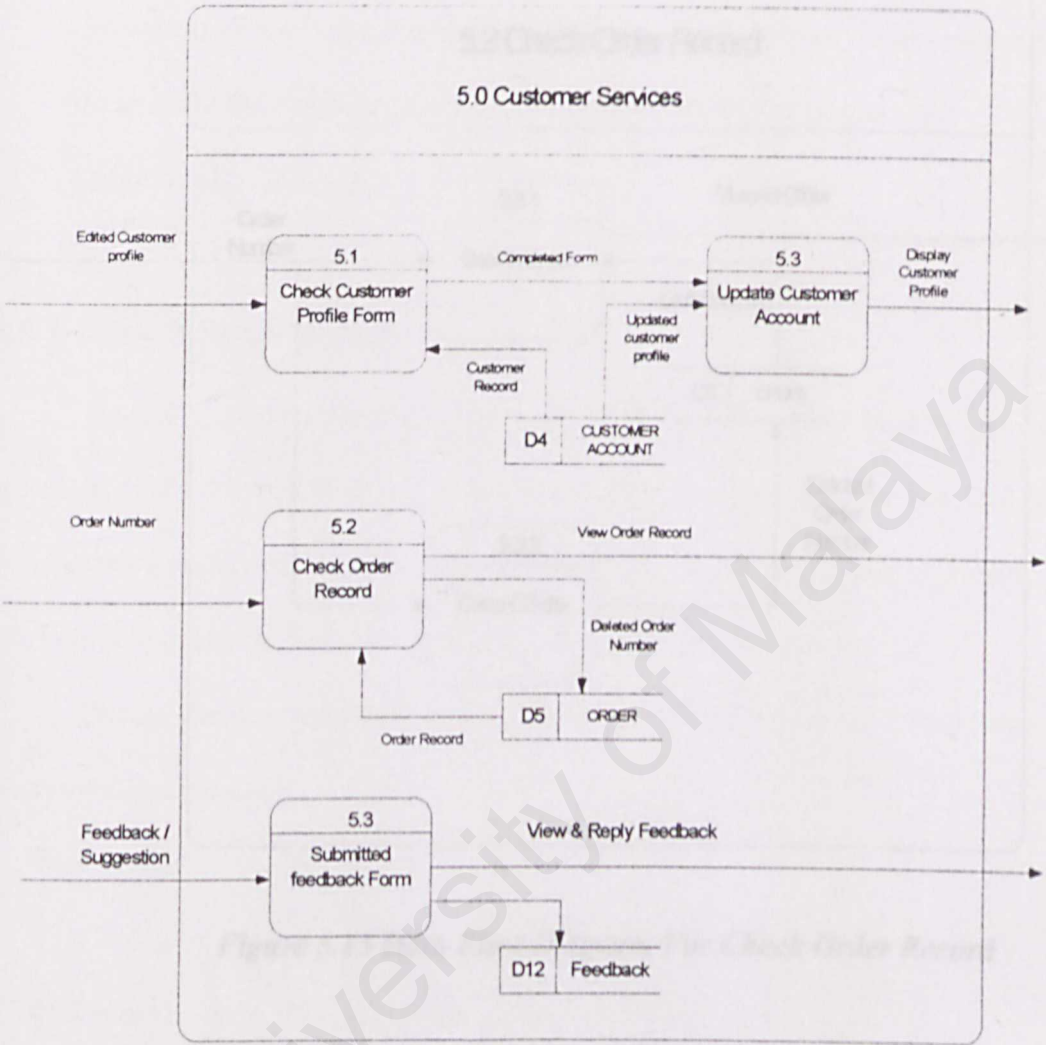


Figure 5.14: Data Flow Diagram For Customer Services

Data Flow Diagram For Check Order Record

5.5 User Interface Design

Figure 5.15 depicts how the users can check the order record`.

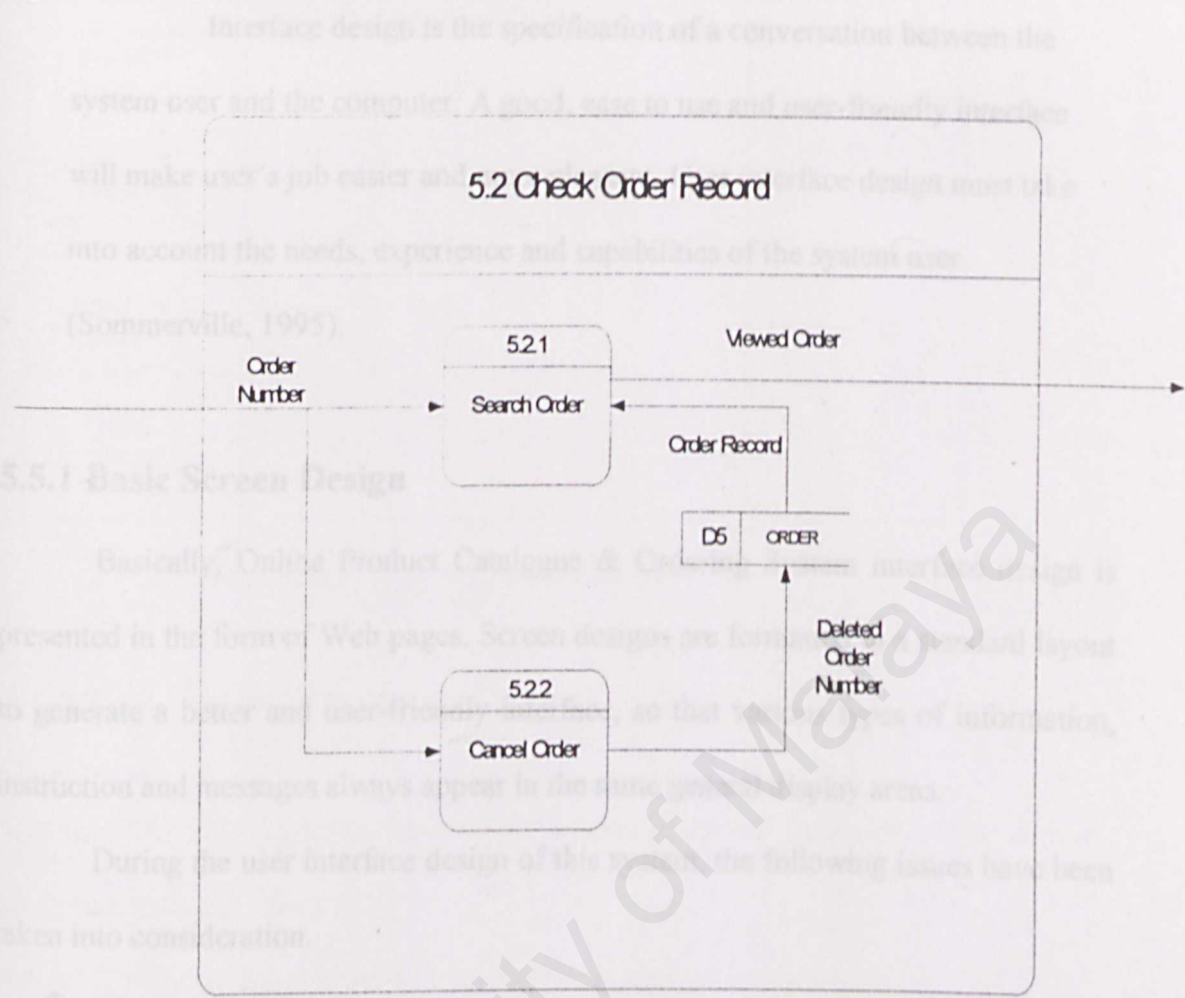


Figure 5.15 Data Flow Diagram For Check Order Record

5.5 User Interface Design

Interface design is the specification of a conversation between the system user and the computer. A good, ease to use and user-friendly interface will make user's job easier and more pleasant. User interface design must take into account the needs, experience and capabilities of the system user (Sommerville, 1995).

5.5.1 Basic Screen Design

Basically, Online Product Catalogue & Ordering System interface design is presented in the form of Web pages. Screen designs are formatted in a standard layout to generate a better and user-friendly interface, so that various types of information, instruction and messages always appear in the same general display areas.

During the user interface design of this system, the following issues have been taken into consideration.

- ⊕ File size
- ⊕ Consistent font and colour
- ⊕ Error checking and error message for the invalid input

The interface design of Online Product Catalogue & Ordering System (OPCOS) provides the user with an easy way to navigate the categories and see the products under each one.

Below is simple layout for the web page

Header		
Search Product	Content	Member Login
Cart Summary		
Category Listings		Registration
Price Range		

Figure 5.17 simple Layout For OPCOS

5.5.2 Description of the layout

Header: The site header is the standard header. It shows the name of the current page and company name.

Search Product: The normal and advanced search engine display.

Category Listing: This is where the entire category that are available for sale. When a user clicks on the category, they should be taken to the product under the current category.

Price range: This is the area in which users can choose their budget. All the products under that range will be displayed.

Content: This is the area shows the content of the current page.

Member login: Customers can login to the shopping cart in this area. New users also can register as a member.

Cart summary: Here will display a summary of the customer's shopping cart. It will show the number of items in their shopping cart as well as the total price.

Interface Design For The Main Page Of ES.Shopping

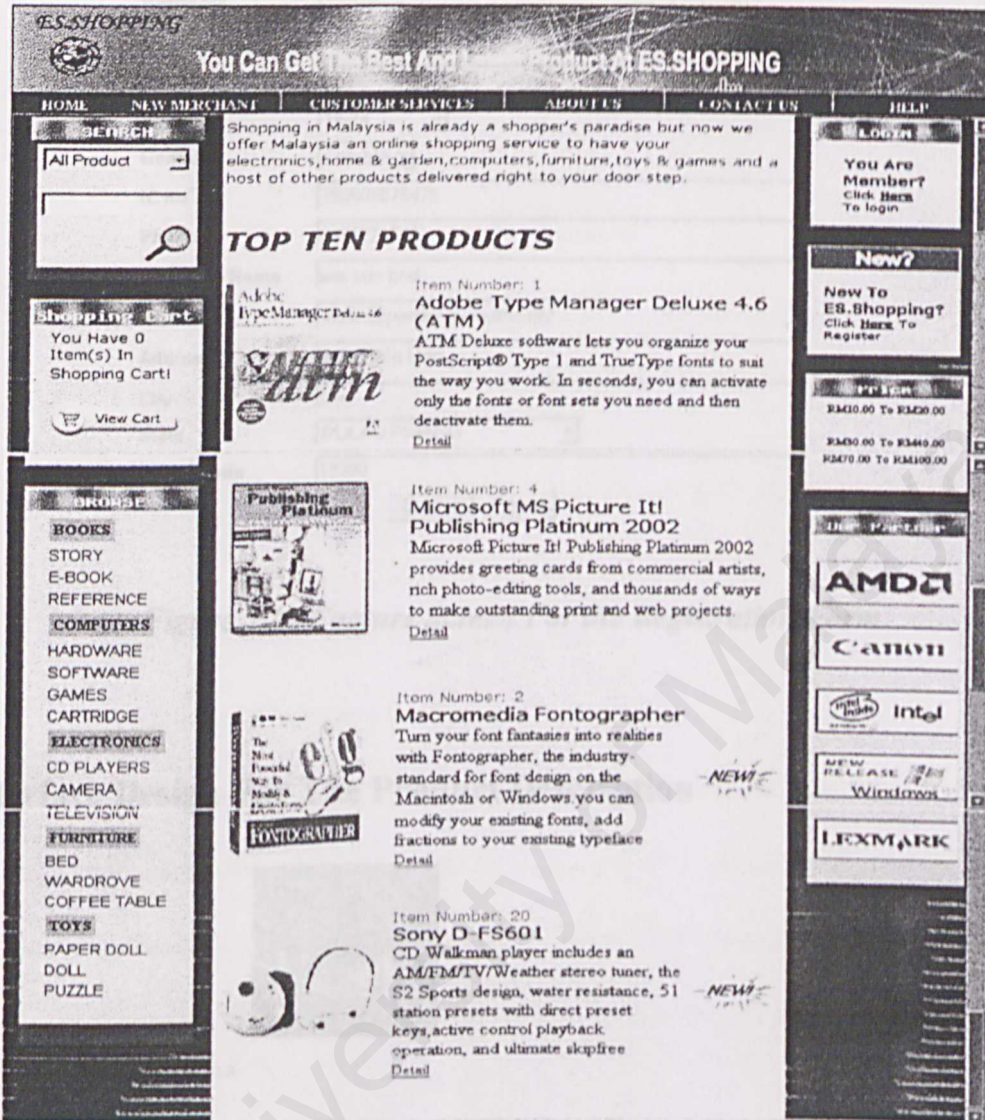


Figure 5.18 Capture Screen For the Main Page

Figure 5.21 Capture Screen For The Product Description

Interface Design For The Registration Form

User Registration Form

Username*

mailin

Password*

(min 8 characters)

Confirm Password*

(min 8 characters)

FullName*

mailin

Age

18-24

Gender

Female

IC No*

790509075478

Phone

0377271546

Company Name

wai sdn bhd

Email

mailin@perdana.um.edu.my

Address

1, Jln Raja Uda

City

Bw

State

PULAU PINANG

Postal Code


12300

Submit

Reset

Figure 5.19 Capture Screen For the Registration Form

Interface Design For The Product Description



Item Number: 13

Product Name: HARRY POTTER & THE SORCERER'S STONE

Description: Format: Hardcover; 320 pages.
Publisher: Levine, Arthur A. Books
(09/01/1990)

Real Price: RM99.00

On special Price: RM 80.00

You Have Saved 11 %

Ship From: Selangor

[Zoom The Product](#)

ADD TO CART

Figure 5.21 Capture Screen For The Product Description

Interface Design For The Shopping Cart

I want purchase the following item				
S. No.	Item name	Quantity	Price(Ench)(RM)	Sub-total(RM)
1	KIM'S PAPER DOLL COLOURING BOOK	1	35.00	35.00
2	ADOBE TYPE MANAGER DELUXE 4.6 (ATM)	1	230.00	230.00
Total:				265.00

Confirmation

Figure 5.23 Capture Screen For Checkout Page

5.6 Expected Outcome

There are some of the expected outcomes from the system after the completion of this OPCOS.

1. Making the system appears as an effective web site, so that user will enjoy staying and exploring the web site.
2. Produce a user-friendly web site with graphical user interface that is easy-to-use by everyone no matter what kind of computer background.
3. Provide the user (Customer) the capabilities of performing online shopping.
4. Provide the administrator an easy and efficient way to manage and maintain the portal.

5.7 Chapter Summary

This chapter provides a description of the system design. It begins with the architecture, which has been chosen to develop the OPCOS system.

Due to the enormous amount of tables in these databases, only tables that showed relevant importance to this project are shown in this chapter. A table is used to list out the entire relevant table. Besides, data flow diagram also included in this

chapter. It provides a general idea of the process flow. The data flow diagram can be decomposed into several layers according to its level of abstraction.

Several interface designs are shown in this chapter. These interface designs are based on reviews of the current systems as described in chapter 2. The interface designs are merely prototypes and subject to changes as the development process progress. Lastly, a statement of expected outcome of the project is stated.

SYSTEM IMPLEMENTATION

CHAPTER 6

6.1 Introduction

In the system development phase, the design has to be transfer into workable modules and the coding must be written according to the system design and business logic. This is an important phase and developer must be very careful because an error or mistake in this phase will affect the performance of whole system.

SYSTEM IMPLEMENTATION

6.2 Development platform configuration



CHAPTER 6

hardware and the software needed.

Using the suitable hardware and software will not only help to speed up the system development but also determine the success of the project. The hardware and software tools used to develop the entire system are as follows below.

6.2.1 Hardware Requirement

The hardware used to develop the system are as listed below.

Chapter 6 SYSTEM IMPLEMENTATION

6.1 Introduction

In the system development phase, the design has to be transfer into workable modules and the coding must be written according to the system design and business logic. This is an important phase and developer must be very careful because ant error or mistake in this phase will affect the performance of whole system.

In order to reduce the mistake and increase the quality and performance, the following steps must be considered when develop a system:

1. Development platform configuration
2. System Development

6.2 Development platform configuration

Development environment has certain impact on the development of a system. To produce a high quality and error free system, the development environment must be configured correctly. Normally the platform consists of hardware and software. Therefore, platform configuration means to configure the hardware and the software needed.

Using the suitable hardware and software will not only help to speed up the system development but also determine the success of the project. The hardware and software tools used to develop the entire system are as discuss below.

6.2.1 Hardware Requirement

The hardware used to develop the system are as listed below

-733 MHz Pentium III Processor

-256 MBRAM

-10GB hard disk

-15" 256-colour monitor capable of 800 x 600 resolution

-52X CD-ROM Drive

-Other standard desktop PC components

6.2.2 Software Tools Requirement

Software Tools for Design and Report Writing

There are a lot of software tools, which can be used in designing and writing report. The design process involves the drawing of structure chart, data flow diagram and others that form the foundation of the software development. The purpose of this graphically logical design is to provide an overall view of system and interconnection between the modules. Visio professional is used to design and Microsoft word for report writing.

Software Tools for Development

A vast array of software tools was used in this system. Table 6.1 below depicts the software used to develop this system.

Table 6.1 Software Tools For Development

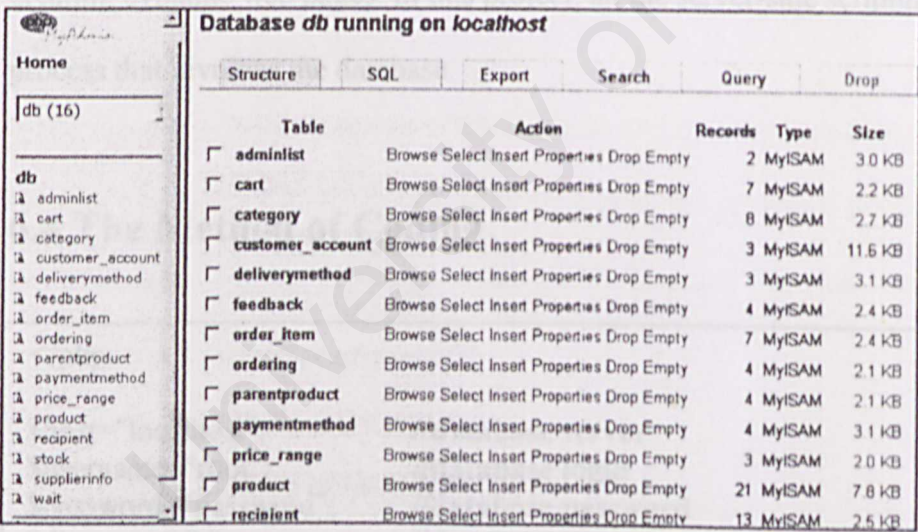
Software	Description
Microsoft Window 2000 Professional	Operating System
PHPTriad 2.11	Apache web server, PHP & MySQL
EditPlus v2.10c	PHP editor
Microsoft Internet Explorer 5.0 and above	Web browser
Adobe Photoshop 7.0	Graphics Editor
Notepad	HTML editing

6.3 System Development

6.3.1 Database Development

The first step in the system development is to develop the system's database based on the logical data model for the Online Product Catalogue and Ordering System (OPCOS) created during the system design phase. The database used for the initial development stage of the Web Based Sales and Purchase System (WBSP) was PHPMyAdmin(MySQL).

The database development was started by creating an empty database called *db*. A primary key id allocated for each table in the database. Figure 6.1 shows captured screen of list of tables in the database development of WBSP using PHPMyAdmin.



Database db running on localhost				
<div>Structure SQL Export Search Query Drop</div>				
Table	Action	Records	Type	Size
<input type="checkbox"/> adminlist	Browse Select Insert Properties Drop Empty	2	MyISAM	3.0 KB
<input type="checkbox"/> cart	Browse Select Insert Properties Drop Empty	7	MyISAM	2.2 KB
<input type="checkbox"/> category	Browse Select Insert Properties Drop Empty	8	MyISAM	2.7 KB
<input type="checkbox"/> customer_account	Browse Select Insert Properties Drop Empty	3	MyISAM	11.6 KB
<input type="checkbox"/> deliverymethod	Browse Select Insert Properties Drop Empty	3	MyISAM	3.1 KB
<input type="checkbox"/> feedback	Browse Select Insert Properties Drop Empty	4	MyISAM	2.4 KB
<input type="checkbox"/> order_item	Browse Select Insert Properties Drop Empty	7	MyISAM	2.4 KB
<input type="checkbox"/> ordering	Browse Select Insert Properties Drop Empty	4	MyISAM	2.1 KB
<input type="checkbox"/> parentproduct	Browse Select Insert Properties Drop Empty	4	MyISAM	2.1 KB
<input type="checkbox"/> paymentmethod	Browse Select Insert Properties Drop Empty	4	MyISAM	3.1 KB
<input type="checkbox"/> price_range	Browse Select Insert Properties Drop Empty	3	MyISAM	2.0 KB
<input type="checkbox"/> product	Browse Select Insert Properties Drop Empty	21	MyISAM	7.8 KB
<input type="checkbox"/> recipient	Browse Select Insert Properties Drop Empty	13	MyISAM	2.5 KB

Figure 6.1 Captured Screen: List of Table for WBSP database in PHPMyAdmin

6.3.2 Coding

The design must be translated into the form that can be understood by the machine. The code generation step performs this task. Since this is a web-based ordering system, the scripts are coded using HTML, server side script and client side script that should support and enhance the web application.

6.3.3 Server-Side Scripts

A script that is interpreted by the web server is called a server-side script. A server-side script is an instruction set that is processed by the server, and which generates HTML. The resulting HTML is sent as part of the HTTP response to the browser.

6.3.4 Personal Home Page (PHP)

PHP is coded using EditPlus. It is a server-side scripting language used for creating dynamic web pages. In this project, all the server-side scripting is written for process that involves the database.

6.4 The Method of Coding

```
<?php

$host="localhost";           //database server
$username="root";             //database login
$password="password";        //database password
$dbname="db";                 //database containing the tables
$connection=mysql_connect($host, $username, $password)
$docroot = "shopping";       //Path, where application is installed

?>
```

Figure 6.2 The coding of database connection (database.php)

This example file is called *database.php* file. It is included in every *.php file in the system. Every database connection requires the name of the database, database server, database login ID and database password. HTTP (Hypertext Transfer Protocol) is the protocol your web browser users when you access the web sites. Since this system is applied as intranet, so the *\$host* is "localhost".

```
header("Location:http://$host/$docroot/main.php");
```

Figure 6.3 Example PHP coding of sending HTTP header statement

The header function is to direct the browser to another page. It includes the name of the file and the path where application is installed.

6.4.1 Authenticate Module

The Authenticate Module is required customers login to the WBSP web site when they wish to place their order.

Every protected page in WBSP is protected by using session, which catches the user’s particular ID. Once the customer logout, the session is destroyed and the customer is not allowed to access to that particular page. The customer will be redirected again to the main page.

Table 6.2 Lists of Filename and its Description for Authenticate Module

No	Filename	Description
1	login.php	Checking authentication and redirect to correct page.
2	validate.php	Validate customer’s login information
3	logout.php	Session is destroyed and is redirected to OPCOS main page.


```

<?
session_start();
session_register("aUser", "aPass"); //register session

//check from database whether valid username and password

$query2="SELECT * FROM Customer_account WHERE password='$pw' AND
username='$username'";
if($validate=="true") {
    $chk2=mysql_db_query($dbname, $query2, $connection) or die("Ralat
penyata query: $query2".mysql_error());
    $num2=mysql_num_rows($chk2);
    if($num2==0) {
        echo "Invalid password. Please re-enter again!</font><BR><BR>";
        $validate="false";
        $invalid_pw=1;
    }
}
// if username and password valid

if($validate=="true")
{
    setcookie("username", $username, time()+1200);
    setcookie("pass", $pw, time()+1200);
    header("Location: mainpage.php");
    exit;
}
else
{include("login.php");}

?>

```

Figure 6.4 Sample Code: Session Register (validate.php)

```

<?
session_start();
if(!empty($aUser) || !empty($aPass)) {
    session_unset();
    session_destroy();
}
header("Location:main.php");
?>

```

Figure 6.5 Sample Code: Session Destroy (logout.php)

6.4.2 Registration Module

Registration form is designed to let customer to register their required particulars so that the administrator can retrieve the data for further use of functions.

Table 6.3 depicts list of filename and its description for the registration module.

Table 6.3 depicts list of filename and its description for the registration module.

No	Filename	Description
1	registration.php	Customer registration form
2	register.php	Insert user's particulars in the database

Post Form Data

The post form data method used in the OPCOS is the *post method* instead of the *get method*. The reason is that the *get method* limits the size of the data passed to the server where else the *post method* does not. Apart from there, the *get method* provides customer with the opportunity to change the values and it also shows the variable names entered by customer.

<form name=form1 action="login.php" method=post>

Insert data in the database

Before the data is submitted, validation of data is done using Javascript. Once user submits the registration form, using HTTP_POST_VARS in PHP code collected

the data. Some specific data is compared with records in database so that there is no duplicate data. Then, data is inserted into database using INSERT query in SQL statement.

The following codes show the insert query into database

```
<?
include("database.php");

// collect the data from server

global $HTTP_POST_VARS;
$usem = $HTTP_POST_VARS['userID'];
$pw1 = $HTTP_POST_VARS['password1'];
$pw2 = $HTTP_POST_VARS['password2'];
$fullname = $HTTP_POST_VARS['fullname'];
$phoneno=$HTTP_POST_VARS['phone'];
$icno = $HTTP_POST_VARS['icno'];
$companynome=$HTTP_POST_VARS['company'];
$email = $HTTP_POST_VARS['email'];
$address = $HTTP_POST_VARS['address'];
$city = $HTTP_POST_VARS['city'];
$state = $HTTP_POST_VARS['state'];
$postalcode = $HTTP_POST_VARS['zip'];
$age = $HTTP_POST_VARS['age'];
$gender = $HTTP_POST_VARS['gender'];

//insert into database

$query1="insert into customer_account (username, password, fullname, icno,
phoneno, companynome, emailaddress, address, city, state, postalcode, Age,
Gender) values ('$usem', '$pw1', '$fullname', '$icno', '$phoneno',
'$companynome', '$email', '$address', '$city', '$state', '$postalcode', '$age',
'$gender')";
$result1=mysql_db_query($dbname, $query1, $connection) or die ("Error in
query: $query1".mysql_error());

?>
```

Figure 6.6 Sample Code: Registration (register.php)

6.4.3 Customer Services Module

Customer Services is designed to let customer to change their profile, change password, get their password if they forget, check their order and give their suggestion to administrator.

Table 6.4 depicts list of filename and its description for the customer services module.

No	Filename	Description
1	updatecustomer.php	Let customers edit their own personal profile.
2	update2.php	Update the new profile in database.
3	chgpw1.php	Let customers to insert the new password.
4	chgpw2.php	Update the password in database.
5	forgetpass.php	User required the password if they forgot.
6	forgetpass1.php	Send email to particular customer with the password. (Auto-generate)
7	feedback.php	Customer is allowed to post their suggestion in this form.
8	suggestion.php	Insert the suggestion in database so that the administrator can reply the customer when needed.

6.4.4 Search Engine Module

Search engine is designed to let customer easy to search for their desired products. *SELECT* query have been used to select the particular result from database.

Table 6.5 shows the filename and its description for search engine module.

No	Filename	Description
1	sideleftbar.php	Let customers select category from list box or type the name of product in advanced search.
2	search.php	Search from database.


```

<?
//select parent product and empty advanced search

if(!empty($parent) && empty($advan)&&$parent!='allproduct')
{
    $sql1="select categoryID,categoryname,categorydesc,enterdate from
    category where parentID='$parent'";
    $check1=mysql_db_query($dbname, $sql1, $connection);
}

//select from list box and enter advanced search

if(!empty($parent)&&!empty($advan)&&$parent!='allproduct')
{
    $sql2="select
    product.productID,product.productname,product.image,product.enterdate
    from (product inner join category on
    product.categoryID=category.categoryID) WHERE
    (product.parentID='$parent' AND product.productname like
    '%$advan%') OR (product.parentID='$parent' AND
    category.categoryname like '%$advan%')";

    $check2=mysql_db_query($dbname, $sql2, $connection); }

?>

```

Figure 6.7 Some part of the Code: Search engine (search.php)

6.4.5 Shopping Carts Module

Shopping cart will view the number of items selected by customers.

Customers are allowed to update the quantity of items or remove the items as their desired.

Table 6.6 shows the filename and its description for the shopping cart module.

No	Filename	Description
1	addtocart.php	Add the product have been selected to the cart.
2	cart_action.php	Update and remove the items depended on the requirement of customer.
3	display.php	Display the items have been selected into table.

6.4.6 Product Catalogue Module

View the all the product and provide all the information about the product.

User is allowed to browse the sets of catalogues displayed on screen.

Table 6.7 shows the filename and its description for the product catalogue module

No	Filename	Description
1	product.php	Display the summary information of the product.
2	prodesc.php	Display the detail information of the product.

6.4.7 Back-end

The functions are search, view, edit, delete and print the customer record, transaction record and suggestion record. Administrator enables to reply the suggestion and question of the customers.

Table 6.8 shows the filename and its description for the back-end

No	Filename	Description
Maintenance the customer record		
1	menu.php	Menu to maintenance the customer record
2	cusdelete.php	Delete the record of the customer after get the result from search.
3	cusdelete1.php	Delete the record of the customer from view the customer record.
4	searchcus.php	Form to let administrator search the customer record.
5	searchcus2.php	Search from the database
6	cusEdit.php	Show the customer record and enable administrator to edit the record.
7	updatecus.php	Update the customer record that has been edited.
8	userdetail.php	View the detail of customer record after update.

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5	searchcus2.php	Search from the database
6	cusEdit.php	Show the customer record and enable administrator to edit the record.
7	updatecus.php	Update the customer record that has been edited.
8	userdetail.php	View the detail of customer record after update.

9	viewcus.php	List box, which enable administrator to sort the customer record by fullname, username or identity card number.
10	viewcus2.php	Search from database.
11	viewdetail.php	View all the detail of customer record.
Maintenance the transaction record		
11	menuorder.php	Menu to maintenance the transaction record
12	deleteproduct.php	Delete the items have been ordered.
13	searchID.php	Let administrator searches the order by enter orderID.
14	searchID1.php	View, edit and delete the detail of the ordering.
15	product.php	View all the items have been ordered when get the ordered.
16	updateproduct.php	Update the items have been ordered.
17	viewnew.php	View all order with new status
18	viewcheckout.php	View all order with checkout status
19	selling.php	View top 10 products
20	viewday.php	List box, which enable to select the date of transaction.
21	viewday2.php	View the detail transaction of the day
Keep track the suggestion		
22	suggestion.php	View all the suggestion from customer and enable to delete the record.
23	replymail.php	Reply the customer's suggestion

6.5 Chapter Summary

The most important things in the system implementation are development environment and system development. The development environment consists of hardware and software requirements. Generally, the system development consists of database development, user interface development and application development.

Chapter 7 SYSTEM TESTING

7.1 Introduction

Testing is the process of exercising or evaluating a system by manual or automatic means to verify that it satisfied requirement or to identify differences expected and actual results. It is also a critical element of software quality assurance and represents the ultimate review of specifications, design and coding.

SYSTEM TESTING

1. Testing is a process of exercising a system or a component of a system to verify that it meets the requirements.
2. To reveal different types of errors and to identify the causes of errors.
3. To assure the customer that the system that was build for them.

CHAPTER 7

Testing is not the first phase in the software development process, but testing is focused on finding faults and there are many ways to make the testing efforts more efficient and effective. The strategies used for testing are unit testing, module testing, integration testing and system testing.

7.2 Unit Testing

The unit testing was conducted throughout the implementation as a new unit was successfully built up. Each unit is tested independently to ensure that it operates correctly. Functions and procedures in each unit are implemented carefully for errors.

Chapter 7 SYSTEM TESTING

7.1 Introduction

Testing is the process of exercising or evaluating a system by manual or automatic means to verify that it satisfied requirement or to identify differences expected and actual results. It is also a critical element of software quality assurance and represents the ultimate review of specifications, design and coding.

Although the main purpose of testing process is to find the errors in the system, but it also have others objective stated as below:

1. Testing is a process of executing a program with the intent of finding an error.
2. To reveal different types of error with a minimum amount of time and efforts.
3. To assure the customers that the system they requested is the system that was build for them.

Testing is not the first place where faultfinding occurs, but testing is focused on finding faults and there are many ways to make the testing efforts more efficient and effective. The strategies used for testing are unit testing, module testing, integration testing and system testing.

7.2 Unit Testing

The unit testing was conducted throughout the implementation once a new unit was successfully built up. Each unit is tested independently to ensure that it operates correctly. Functions and procedures in each module are examined carefully for errors.

For this system, every module is tested separately. It is to ensure that every function in the module is performed as desired.

For page that process user's input data such as registration function for new member, user input validation is tested in this stage to ensure proper entry for every fields in the registration form.

7.3 Module Testing

A module consists of a collection of dependent components to perform a particular task or function. Module testing is performed without other system modules. This testing was carried out to ensure that the codes under the module function accordingly when all units of code are integrated. If an error detected in a particular module, then related part of the module that goes wrong will be identified also.

7.4 Integration Testing

After integration, the system as a whole is tested again. Integration testing is carried out to test the system that proved to work correctly and meet the objectives. In this stage of testing, each module contains functions and procedures is checked and tested carefully. These sub-functions may call other sub-functions and tests are carried out to ensure all possible paths are tested. Besides, all links in the web pages are tested. It is to ensure that every one of the hyperlink can lead to an existing and correct destination page.

7.5 System Testing

Testing the system is very different from unit and integration testing. The system testing is to ensure that the entire application works accordingly. In this project, system testing used is:

(a) Function Testing

This testing focuses on system functionalities. Each function can be associated with system components that accomplish it. Function testing checks that system performs its functions as specified in the requirements. For example, in this system, there is a function to pump a student list into database, which required function testing to confirm that this functions working properly.

(b) Performance Testing

Once the functions work properly as specified, the performance test compares the components with non-functional system requirements. These requirements include security, accuracy and reliability. This is to test the run time performance of software within the context of an integrated system. It requires both hardware and software instrumentation. Stress testing is done to determine whether a program has fulfilled the requirements design for it. Timing testing is used to evaluate the requirements dealing with time to respond to a user and time to perform a function. For example, a performance test of this system evaluates the speed with which the data are manipulated and how fast the system complete the works of sending email.

Figure 7.1 Testing Strategies

(c) Acceptance Testing

At this point, the WBSP operates the way that the designers intended. The main objective of the user acceptance test is to ensure that the system is ready for punctuation at the end of user acceptance test. So far, the developers, based on their understanding of the system and its objectives, have run all the tests. After completing functional and performance testing, WBSP is determined to be able all requirements specified during initial stages of its development.

7.6 Chapter Summary

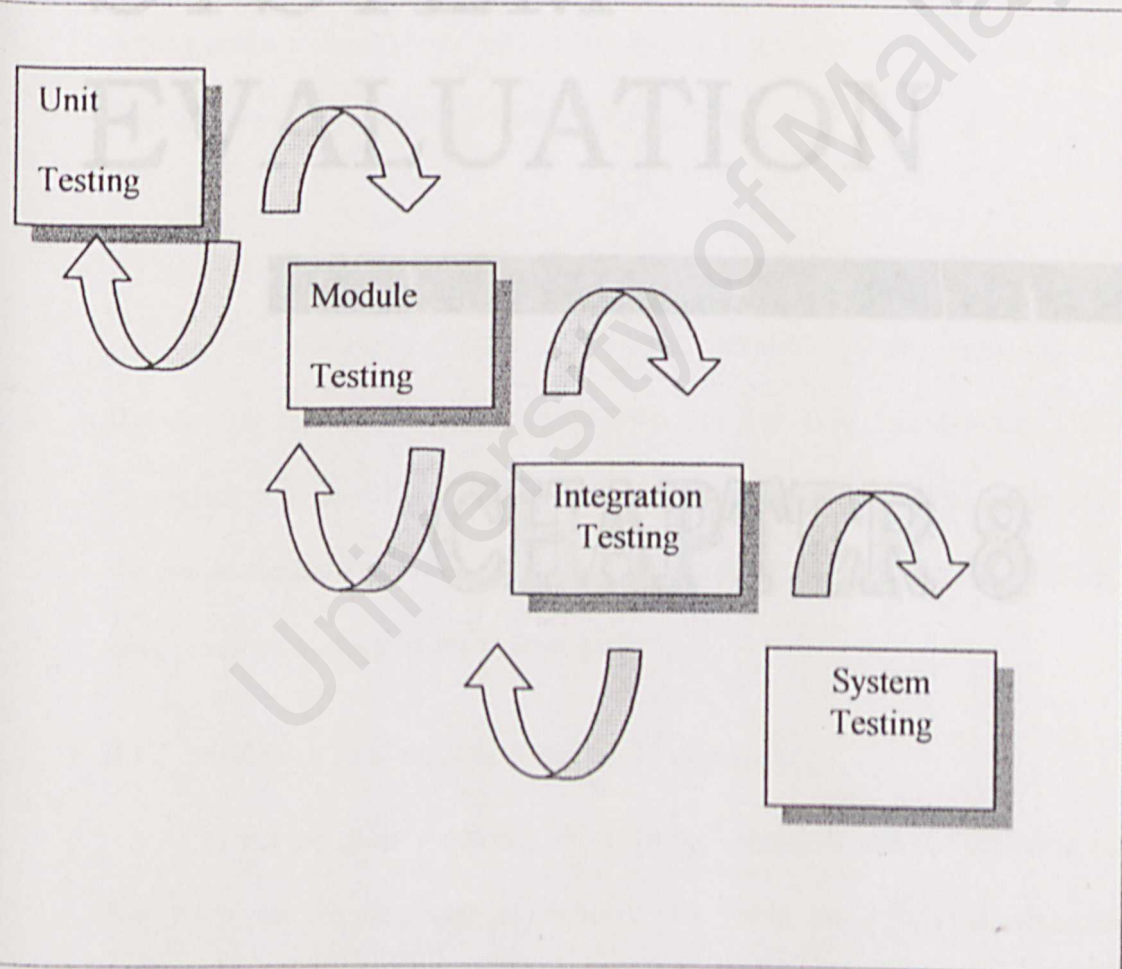


Figure 7.1 Testing Strategies

In this phase, Online Product Catalogue & Ordering System (OPCOS) was evaluated to identify its strengths, limitations, and proposals were made for the future enhancements.

8.1 Problems Encountered and Solutions

As this project has to be done within a short span of time and a lot of technical issues need to be resolved, a number of problems were encountered. Solutions have been sought during testing and reference check with course mates. Encountering these problems has

SYSTEM EVALUATION

8.1.1 Difficulties

It is impossible to build a complete system within the short time frame. Not all the existing features are put into the system. The project supervisor gave some advice during the project during the initial stages. Online Product Catalogue & Ordering System have given an overview of the system scope.

CHAPTER 8

8.1.1 Problems In Choosing Tools And Language

There are quite a number of scripting languages. All the scripting language and tools allows the user to achieve the same end-result that dynamic web application. Thus, it is difficult to determine the most appropriate language and tools for the development of Online Product Catalogue & Ordering System.

Chapter 8 SYSTEM EVALUATION

In this phase, Online Product Catalogue & Ordering System (OPCOS) was evaluated to identify its strengths, limitations, and proposals were made for the future enhancements.

8.1 Problems Encountered and Solutions

As this project has to be done within a short span of time and a lot of technical issues need to be resolved, a number of problems were encountered throughout the development of this system. Solutions have been sought during testing and reference check with course mates. Encountering with these problems has been proven to be a valuable learning experience.

8.1.1 Difficulties In Determining The Scope Of The System

It is impossible to build a full-scale complete system within the short time frame. Not all the ordering alternatives are put into the system. The project supervisor gave some advices and opinions to outline the scope of the project during the initial stages. On the other hand, the results of studying on the existing system have given an outlook of the system scope.

8.1.2 Problems In Choosing Tools And Language

There are quite a number of scripting languages. All the scripting language and tools allows the user to achieve the same end-result-that dynamic web application. Thus, it is difficult to determine the most appropriate language and tools for the development of Online Product Catalogue & Ordering System.

To gain more information of web-based and determine the most appropriate approach to use, in depth studies and research on the web based programming language was carried out in the earlier stage of the development.

These activities include Internet surfing, reading topic related magazine and reference books and studying the existing system. Besides, discussions with group members and course mates engaging in similar project were conducted to collect their opinions and ideas.

8.1.3 Lack Of Knowledge In The Languages And Tools

As there is no prior knowledge in programming in a web-based environment, a lot of studies need to be done. Due to the time constraint, learning and developing process was done in parallel. New programming languages like PHP and HTML need to be learnt within a short time span. During the development of the system, a lot of time spent in looking for solutions to solve the problems that were occurred during the time.

Without a strong base of the PHP language, a lot of time has been taken to self-studies to improve my knowledge about PHP. These problems were solved through the Internet surfing by downloading tutorial notes and finding solution in forums such as devarticles.

8.2 System Strengths

There are several advantages of this system as listed below:

8.2.1 User Friendliness

The system interface design is attractive, user friendly and easily understood by any users. It tells the users how to work with this system. Users have the controls

of the system function flow by just click on the button. It incorporates a standard homepage with a consistent environment.

8.2.2 Easy Accessible

This system is a web-based application and can be accessed easily using the web browser such as Microsoft Internet Explorer 5.0 or Netscape Navigator 4.7, which both are the domain web browser in the market at the moment.

8.2.3 Reminder for those who forgot password

The system also provide a tool that will send mail to remind the user's password, in case the user forgets his or her password. The tool is auto-generated when users require getting the password.

8.2.4 Relatively Fast Response In Document Retrieval from Server

Each web page is designed to be lightweight. The response time to retrieve information such as customer profiles, product available in the store and shopping cart is within a reasonable interval time to ensure users need not wait too long to view the pages. Heavy graphics is avoided.

8.2.5 Reliable System with Effective Errors Handling

Data input of user is validated and verified to prevent errors caused by the invalid input. If there is an input failure, an error message is prompted to inform the user about the error. For example, there is an error message prompted for retry login when user input the invalid login ID or password and also for the invalid entry in the new member registration form.

8.2.6 Accuracy on Calculation

The system is precise on computations and control. Online Product Catalogue & Ordering System (OPCOS) is designed to calculate, remove, delete and recalculate customer 's selected items precisely without any errors.

8.2.7 Flexibility in changing data in database

WBSP admin site can be considered as the back-end system for WBSP. It is the site that makes use by the administrator to manipulate data in the database. The administrator can choose to add, search, modify, delete or view customer record, transaction record and suggestion from customer.

8.3 Weaknesses and System Limitations

However, there are limitations in this system that are not resolved yet.

8.3.1 Limited Functionality

This system provides only a few functions to user. Shopping for placing product in the wishing list does not exist in this system. On the other hand, OPCOS also does not provide advertisement that link to another web page. Even though above-mentioned functionality is out of the scope of this system, it is an advantage to enhance the system.

8.3.2 Web Browser Limitations

These web pages are developed using Microsoft Internet Explorer 6.0. It is not fully tested in all web browser such as Netscape Navigator or latest version of Microsoft Internet Explorer. Thus, it may not display correctly by using other web browser except Microsoft Internet Explorer 5.0.

8.3.3 Template for maintenance the web site

The system does not provide the function maintain the layout of web site. Template for administrators to maintain the web site does not provided in this system. As a result, administrator can't update the layout and colour of web site frequently and customer will bore with the same design of user interface.

8.4 Future Enhancements

The system should be maintained throughout the lifetime of the system because the user requirements might vary from times to times. Enhancement in the future will extend the usability of this system. Moreover, the system limitations should be improved to enhance functionality.

Here are some suggestions and possible future enhancements:

8.4.1 Enhance User Interface

User interface should enhance from time to time. Multimedia elements such as animated graphics and Flash movies should be added to increase its attractiveness, impressive and interactive. However, complex graphics has its pros and cons, for example the download time. The web page needs to be changed frequently and it is vital that the information is up-to-date.

8.4.2 More Functionality Added

More order alternatives such as placing an order in a wishing list before checkout should be added to provide more interactivity. Templates for maintain the web page provided so that customer will not boring with the same user interface. A web site that has more functionality provides more flexibility and interactivity to users.

8.4.3 Develop For Other Platform

The web page should be designed to enable it to be viewed properly in other browser such as Netscape Navigator. It is because not every Internet User using Microsoft Internet Explorer 5.0 or higher.

8.4.4 More than one language

As for the system, future rework can be done to more than one language like Malay language or Chinese language so that customer who not understanding English but only understand other language can browse the system also.

8.5 Conclusion

In conclusion, this system has fulfilled its objectives and requirements. The aim of this project is to develop Online Product Catalogue & Ordering System (OPCOS) for a company provides an e-commerce development package for the suppliers. OPCOS is not only an online shopping system useful for user but also includes an administration module for the system administrator.

With this project, suppliers can put their products online to its customers. Therefore, this project has been proposed to develop and to apply with the initiative, idea and motivation toward realizing the objectives of the system.

This project is very important and beneficial. In the process of developing the system, a lot of useful knowledge and valuable experience were gained. These include knowledge in setting up PHPTriad, Internet technologies, and concepts in coding, programming in HTML, PHP, MySQL and others are valuable experiences.

Besides, experience in graphic editing using Adobe Photoshop and Macromedia Flash also provides me a great chance to learn these tools.

The most important I have learned a lot of how to find out the solution whenever I encountered problems about developing an application.

Finally, there are many individual skills can learn from this project. Mainly it is the communication skills with people for asking opinions, advices, guidance and help. Besides, this project has given me a profound impact in management. All the problems faced and experience gained during the system development would be useful in my future career since era is now moving towards Internet technology that requires decent technical and practical knowledge in development of web application. In conclusion, involving in e-commerce system development is a valuable experience for me.

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1.0 PHP Triad

1.1 Installation Guide

1. Browse the CD and click on the PHPTriad set up to start the set up of PHPTriad into your PC.

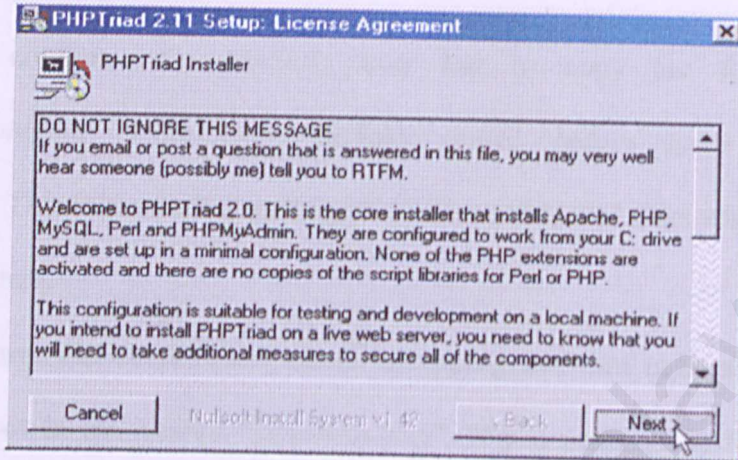



Figure 1.1 Installing PHP Triad

2. Follow all the instruction of installing PHP Triad. Click **Next** button
3. After the set up process is complete, open the folder named *“apache”* in the directory where you install PHPTriad.
4. In the *“apache”* folder, open the folder named *“mysql”*, next continue by open the folder named *“bin”*, click on the *“winmysqladmin.exe”* icon as

shown below:  winmysqladmin.exe

apache → mysql → bin → winmysqladmin.exe

5. Then, it will prompt a window named WinMySQLAdmin 1.0 and user is required to enter the **user name as user** and **password as password** for the MySQL database server.

Warning: The same username and password has to be appear in the **\$username** and **\$password** in file named “database.php” in “shopping” folder.

\$username = user

\$password = password

6. After configure the MySQL, user has to copy the folder named “shoppingcart” in the CD into the folder named “htdocs” under the “apache” folder. This folder includes all the PHP files and HTML files which is used in the system.

Warning: The same folder name “shoppingcart” has to be appear in the **\$docroot** in file named “common.php”. If you change the folder name, you also has to change the value assigned for **\$docroot** as well.

7. Next, copy the folder named “db” in the CD into the folder named “data” under the “mysql” folder in “apache” folder. This “db” folder contains the database data in my system. So, now PHPTriad will create a database named “db” for you.

1.2 Start Apache

1. Start the Apache Webserver. Now run the server by selecting start menu, Program, PHPTriad. (Repeat this step for every time before you want to browse my system.)

Start Menu → Programs → PHPTriad → Start Apache

2. Start the database server

Start Menu → Programs → PHPTriad → Start MySQL

In the address field of the browser, open file by enter
“http://\$http_host/\$docroot/file name”

- a. For Customer Section (Front-End)

Enter: <http://localhost/shopping/main.php>

- b. For Administration Section (Back-End)

Enter: <http://localhost/min/adminmain.htm> (go to customer button at banner)

The default admin id and password is: admin & admin

3. If you want to access to the database of the online product catalogue & ordering system (OPCOS), open the PHPMyAdmin in your browser.

Start Menu → Programs → PHPTriad → PHPMyAdmin

Select the database named “db” in the left menu of the PHPMyAdmin. It will display the tables available in the database. You can browse the content of the tables by clicking the hyperlink text “Browse” on the corresponding table.

4. If you want to check your database username and password, you can open the WinMySQLAdmin 1.0, which appear at the startup menu (“right conner bottom at the screen and it look like a traffic light”), right hand click and choose “show me”.

Under the “*my.ini Setup*” tab in WinMySQLAdmin 1.0, it will show the database server username and password. After that, click button named “*Hide me*” under the “*Environment*” tab.

2.0 Hardware and Software Requirements

2.1 Hardware Requirement

The hardware requirements to run this system are:

- ⊕ At least 32 MB of RAM
- ⊕ At least 100MB of free space in Hard disk.

- ⊕ Network connection through existing network configurations or modem.
- ⊕ 256-color monitor capable of resolution 800 X 600 pixels.

2.2 Software Requirement

- ⊕ Windows 95/98/2000/XP
- ⊕ Microsoft Internet Explorer 5.0 or above
- ⊕ Flash Player 5.0

3.0 Online Product Catalogue And Ordering System (OPCOS)

3.1 Introduction

Basically, the Product Catalogue and Ordering System can be divided into 2 sections: Customer Section (Front-end) and Administrator Section (Back-end).

The customer section is designed to function as an online product catalogue, which displays all the products available at the web page. Users can add the related products available into their shopping cart. The shopping cart system will keep track of users ordering information and enable users to manipulate their orders.

For the administrator section, the system administrators are granted to access the system to manipulate customer profile, order records and suggestion from customer.

OPCOS system is very easy to use and understood by any users. All the functions in the system can be easily executed by a simple click on the link or button. This user manual provides the instruction on how to use this system.

3.2 Front-End (Customer)

Customer Section is a series of web pages that will allow customers from browsing the content of the web site and making order through the ordering system and updating their own profile.

3.2.1 Main Page For Customer Section

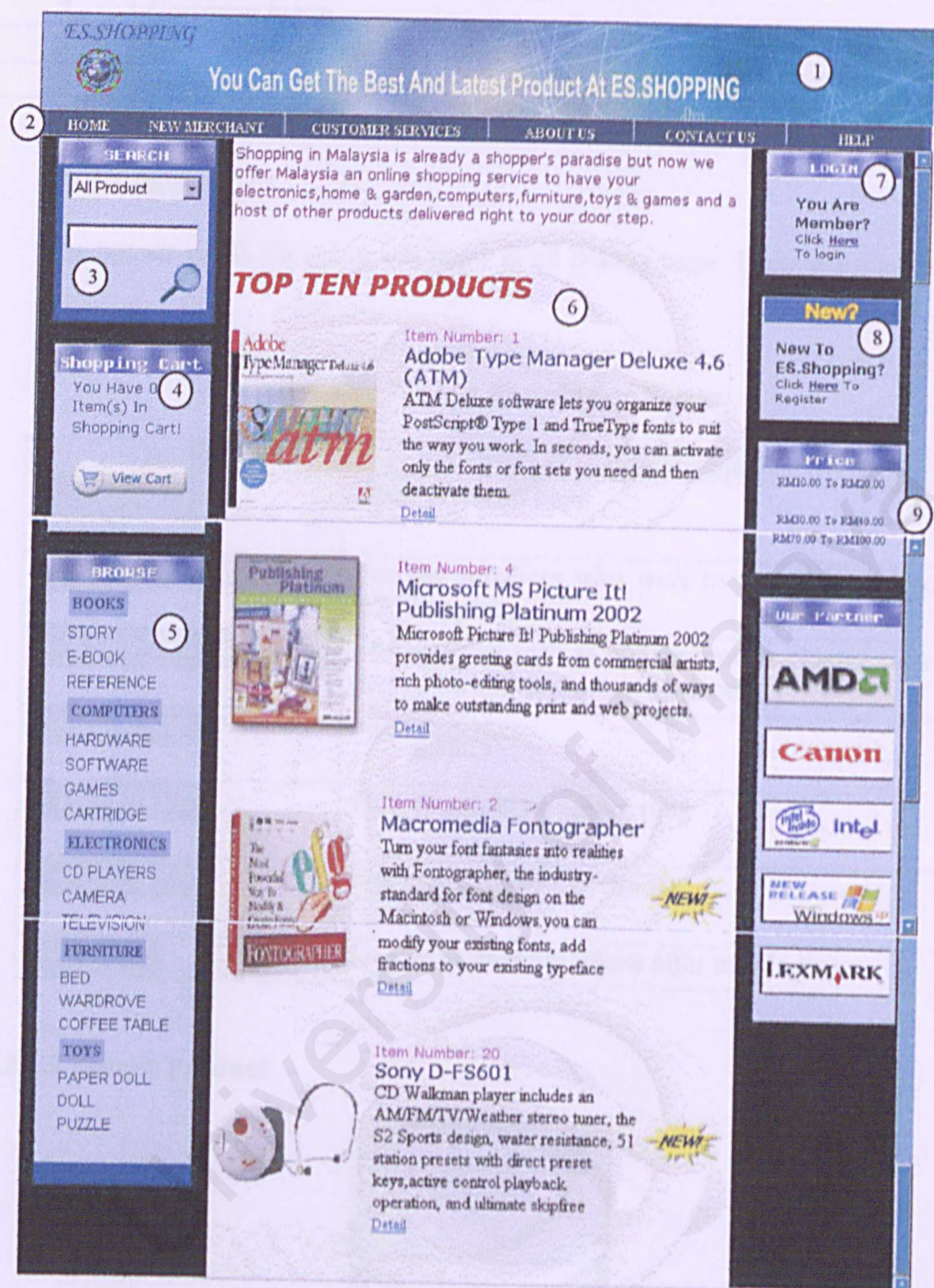


Figure 3.1 Main Page of the Web Page

Table 3.1 Items In Main Page

Item	Description
1	Flash banner, which include the company name and company logo.
2	Button navigation
3	Search engine for the product which provided by company
4	Display the number of items selected.

5	Browse the category of product
6	Top 10 Selling product
7	Customer log in
8	New customer register
9	Price range of the product

3.2.1.1 Banner

The banner of ES.shopping will show in all linking page. There are 6 buttons at the banner.

Table 3.2 The Function of Button

Button	Description
HOME	Back To Main Page
NEW MERCHANT	For the suppliers who wish to put their products in ES.Shopping.
CUSTOMER SERVICES	The services such as update profile, change password and so on will find when click on it.
ABOUT US	About company.
CONTACT US	How to contact ES.Shopping
HELP	The guide for new customer
LOGOUT	Logout as member (show after user login)

3.2.1.2 Search Product

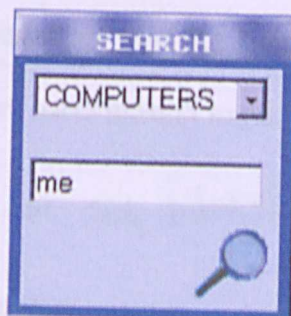



Figure 3.2 Search the Product

Users can use the search engine at the side bar to search for their desired products. Users can either select the category from list box or type the product's

name in advance search to search for the products and then click on the  button. The search result will be shown at the right frame as below (Figure 3.3).

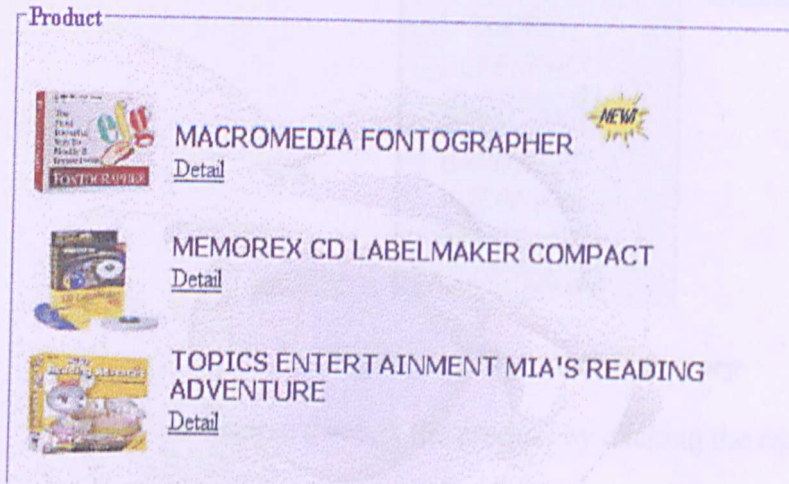


Figure 3.3 Search Result

3.2.1.3 Simple cart

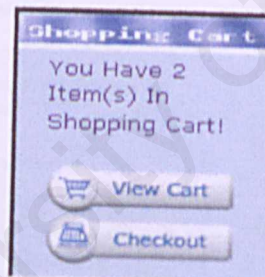
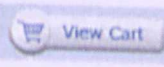
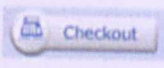


Figure 3.4 Simple Cart

This will show the number of item has been selected into shopping cart. If user's shopping cart is empty or users haven't login, it will show 0 item. When users want to view the shopping cart, click  button. If users want to checkout, click  button.

3.2.1.4 Browse Product

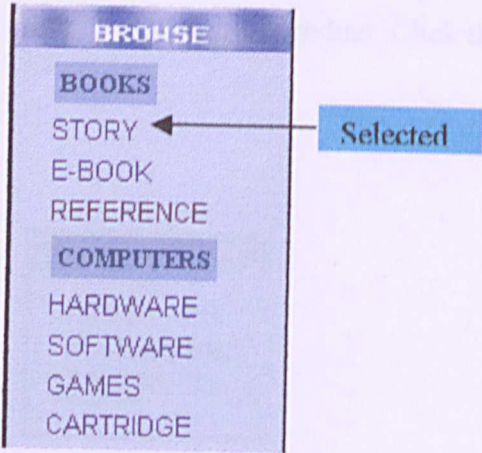


Figure 3.5 Browse the category

User can browse through the product by clicking the category at the side bar. The product under that category will display at the right frame as below (Figure 3.6).

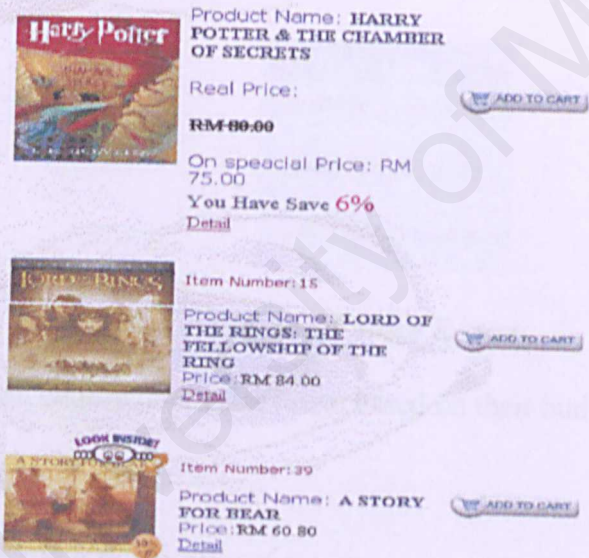


Figure 3.6 Product under category of story books

3.2.1.5 Log in

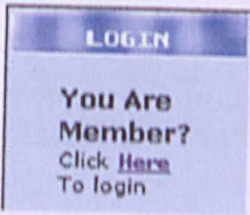


Figure 3.7 Links to login page

If user has been registered as a member, system will encourage user to log in so that they can enjoy and get more information of product. Click the [Here](#) to enter the log in page.

3.2.1.6 Registration

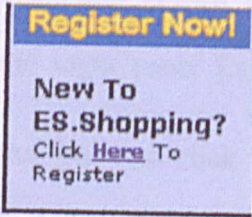


Figure 3.8 Links To Registration Form

If users haven't register as a member, click [Here](#) to enter the registration form. As a member, user can get more benefit from the company.

3.2.1.7 Price Range



Figure 3.9 Price Range

Users can choose their price range based on their budget.

3.2.2 Log in System

To sign in to your account, enter your username and password below and click the "Login" button.

Please login	
Username:	<input type="text" value="wailin"/> 1
Password:	<input type="password"/> 1
<input type="button" value="Login"/>	
lost your password? Not a ES.SHOPPING member, yet? Click here to register.	

Figure 3.10 Log in System

Table 3.3 Log in system

Item	Description
1	Input a valid username
2	Input a valid password

The system will provide a login system for authorized members to shop online. Figure 3.10 illustrates the login panel for the member. User key in their username and password in the text box and click [Login](#). Authorized member of Online Product Catalogue & Ordering System can enter the user identification (username) and password to login into the system. Errors handling take place too. Failure to log in will prompt the error message to appear (Figure 3.11). If users forget the password, click [lost your password?](#) to get the password. After user has successfully login, the top frame of the page will display the user 's name.

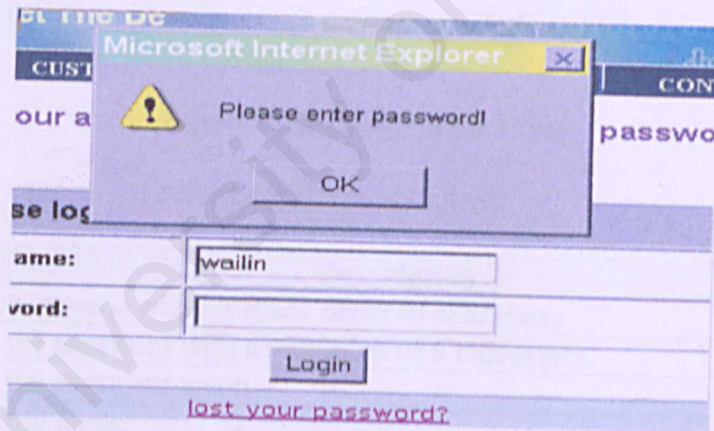


Figure 3.11 Error message in log in system

3.2.3 Registration Form

Figure 3.12 illustrates the registration form for the new member. As this page will process user's input data in registration function, so user input validation is tested in this stage to ensure proper entry for very fields in the registration form. An error message box will displayed to inform the user to re-enter the missing data field

and invalid data field such as invalid email address and inconsistent entry for password (Figure 3.13). After they are successfully registered to the system, a successful message (Figure 3.14) would be displayed and they will take back to the login panel by click on the hyperlink [here](#). At the same time, user will receive an email, which is confirmation of joining with ES.Shopping.

User Registration Form

Username* weilin 1

Password* Abcd123456 2 (min 8 characters)

Confirm Password* Abcd123456 3 (min 8 characters)

FullName* weilin 4

Age 18-24 5

Gender Female 6

IC No* 790509075478 7

Phone 0377271546 8

Company Name wei sdn bhd 9

Email weilin@perdana.um.edu.my 10

Address 1, Jln Raja Uda 11

City Bw 12

State PULAU PINANG 13

Postal Code 12300 14

Submit Reset

Figure 3.12 Registration Form

Table 3.4 Registration form

Item	Description
1	Input username without space between characters.
2	Input the password with a minimum of 8 characters.
3	Input the password again
4	Input full name
5	Select the range of age from list box
6	Select the gender from list box
7	Input identity card number
8	Input phone number
9	Input company name
10	Input a valid email address
11	Input residential address
12	Input city
13	Select the state from list box
14	Input postal code
Button	Description
Submit	After input the entire field with red *, click this button to submit the form.

Reset	Undo the all the data.
-------	------------------------

The screenshot shows a web browser window titled 'Microsoft Internet Explorer'. In the background, there is a registration form with the following fields: 'FullName*' (containing 'wailin'), 'Age', 'Gender', 'IC No*', 'Phone', 'Comp', and 'Email' (containing 'wailin'). An error message box is overlaid on the form, displaying a yellow warning icon and the text 'Invalid email address'. The message box has an 'OK' button.

Figure 3.13 Error message in registration form

Registration Completed - Welcome to ES.SHOPPING!

Write down your password and the information below for future reference.

Your loginID : wailin.

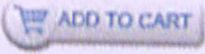
Your Alternate Email : wailin@.

Click [here](#) to continue.

Thank You For Registering With Us. Your username and password have been send to your mailbox.

Figure 3.14 Process Registration Successful

3.2.4 Product Description

When user clicks the [Detail](#), the detail information about the product will display. The detail description and discount price will show to user. To see for the larger image, user can click [Zoom The Product](#) (Figure 3.16). If users wish to buy the product, he or she can click  to insert the product into shopping cart.

3.2.5 Customer Service

Customer service is the help given to the public, change payment, change the

password, and other things that are related to the system.



Item Number: 13

Product Name: HARRY POTTER & THE
SORCERER'S STONE

Description: Format: Hardcover: 320 pages.
Publisher: Levine, Arthur A. Books
(09/01/1990)

Real Price:

RM90.00

ADD TO CART

On special Price: RM 80.00

You Have Saved **11%**

Ship From: Selangor

[Zoom The Product](#)

Figure 3.15 Product Description



Figure 3.16 Zoom the product

3.2.5 Customers Services

Customers services include update the profile, change password, forget the password, order status and give the suggestion or post the question.

Customer Services
Update Customer Profile
Change The Password
Forget The Password
Order Tracking
Customer Suggestion

Figure 3.17 Customer Services

3.2.5.1 Update Customer Profile

Users can update their own profile. This part will enable authorized user to edit his/her own personal profile as any changes occur. User must login before they can update their profile. After user filled the customer updating form, database will be updating the particular user 's information into the customer table by clicking

Update

Update User Profile	
FullName*	<input type="text" value="wailin"/>
Age	<input type="text" value="18-24"/>
Gender	<input type="text" value="Female"/>
Phone	<input type="text" value="0377271546"/>
Company Name	<input type="text" value="wai sdn bhd"/>
Email	<input type="text" value="wailin@perdana.um.edu.my"/>
Address	<input type="text" value="1,Jln Raja Uda"/>
City	<input type="text" value="Bw"/>
State	<input type="text" value="PULAU PINANG"/>
Postal Code	<input type="text" value="12300"/>
<input type="button" value="Update"/>	

Figure 3.18 Update Customer Profile

3.2.5.2 Change The Password

Change Password

Username:

wailin

1

Password:

akakakakakak

2

New Password:

akakakakakak

3

Confirm New Password:

akakakakakak

4

Change

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Figure 3.19 Change the Password

Table 3.5 Change The Password

Item	Description
1	Input username
2	Input old password
3	Input new password with at least 8 characters.
4	Input new password again
Button	Description
Change	After input the entire field, click this button to submit the form.

3.2.5.3 Forget Password

System will require user to input username and identity card number. System will validate the input field. If the identity card number didn't match the username in database, system will require user to register as member. System will send the password to user's mailbox if user success to enter the true information.

Forget Your Password?
Please Enter Your Username and Identity Number

Username: wailin (1)

Identity Number(ICNO): (2)

Get Password

Figure 3.20 Forget The Password

Table 3.6 Forget The Password

Item	Description
1	Input username
2	Input identity card number

3.2.5.4 Order Tracking

User can check the information and status about their order by input their order ID and username. User can check the item the order and status of order every time they online. If users forget the order ID, he or she can get the order ID by clicking [lost your orderID?](#).

lost your orderID?'."/>

Order Tracking
Please Enter Your OrderID and Username

OrderID: 7

Username: wailin

Search

[lost your orderID?](#)

Figure 3.21 Order Tracking

Table 3.7 Order Tracking

Item	Description
1	Input order ID
2	Input username

3.2.5.5 Customer Suggestion

Users can post their suggestion and question at here. Administrator will reply them soon.

We are looking to improve ES shopping all the time and as such we are never too proud to listen to what you have to say and act upon your suggestions.
Thanks for taking the trouble to let us know what you think.

Date	Sender	Topic	Message
2003-01-31	lin	When can i get the items	May I know when can I get the item after i checkout?
2003-01-31	Lulu	Make Order	How can i make the order?
2003-01-31	Jaclyn	Detail of products	Please display more detail about the product.Thank You!
2003-01-31	Jacrice	How to change my detail?	How to change my detail if my address have been changed.

Suggestion

Date

05/02/2003 01:02:18 AM

Email

Sender

Topic

Message

Please add more category of product like food

POST

RESET

Figure 3.22 Customer Suggestion

3.2.6 Shopping Cart

The shopping cart system will keep track of users ordering information and enable users to manipulate their orders. Users are allowed to modify the order information including adding new items, changing item’s quantity, removing ordered items and updating order quantity whenever they like.

If the users want to order more of the same item that they have placed in the cart, they can just change the quantity and click on button.

On the other hand, to remove an item from the cart, just click on button on the corresponding item. If the input data in the “Quantity” field is not an

integer type, the system will prompt an alert box to inform the user for the invalid entry. The system also will calculate the total value of the selected items.

After completing the product selection, users may checkout to proceed to the finance system. Figure 3.24 illustrates the final stage of the Shopping Cart and Ordering System, which will display the total balance of the order.

Following items are in your cart						
S. No.	Item name	Quantity	Price(Each)(RM)	Sub-total (RM)	Update	Remove
1	KIM'S PAPER DOLL COLOURING BOOK	<input type="text" value="1"/>	35.00	35.00	<input type="button" value="Update"/>	<input type="button" value="Remove"/>
2	ADOBE TYPE MANAGER DELUXE 4.6 (ATM)	<input type="text" value="1"/>	230.00	230.00	<input type="button" value="Update"/>	<input type="button" value="Remove"/>
Total					265.00	
checkout						

Figure 3.23 Shopping Cart

I want purchase the following item				
S. No.	Item name	Quantity	Price(Each)(RM)	Sub-total(RM)
1	KIM'S PAPER DOLL COLOURING BOOK	1	35.00	35.00
2	ADOBE TYPE MANAGER DELUXE 4.6 (ATM)	1	230.00	230.00
Total				265.00

Figure 3.24 Final page of the system after customer checkout

3.2.7 About Us, Contact Us And Help

“About us” is the information about the company. If users face the problem with ordering or get any detail information can contact the company administrator

through email or phone. "Help" is the guide for new customers who first time visit the web page. It contents the information how to place the order.



ES.SHOPPING

Do you sometimes feel that things are just getting too much for you? You have to do the shopping, cleaning, take the kids to school, buy the necessities for the house and also make sure that you arrive to work on time. For you 24 hours is just too short a day for you? Or maybe you like shopping but hate the crowds, the checkout counters and most of all the traffic!

We are a Web-based retailer offering a home delivery service for products such as electrical products, house ware, toys and games etc. In fact we have something for everyone. We also offer you the flexibility of shopping 24 hours a day, seven days a week without ever leaving the comfort of your home. Thereby leaving you lots of time to spend with your loved ones. We are constantly adding more products to our existing range so check us out regularly.

Since we are here to serve you it would be good to know what kind of products you would like us to deliver to your doorstep so that we can truly assist you and maybe play a small role in making your life a little easier.

Figure 3.25 About Us

As a user, you may have certain questions or you may be faced with certain problems; in such a situation, please send an email to our support [ES.SHOPPING](mailto:esshopping@hotmail.com). We shall be of quick assistance to you in the best possible way.

Contact our support at:

Email: esshopping@hotmail.com

Tel: (603) 77271546

Fax: (603) 777271545



Figure 3.26 Contact Us

Assistance for New Customers

Placing Your First Order

Finding Items

Adding Items To Your Shopping Cart

Proceed To Checkout

Enter A Shopping Cart

Provide Method Of Payment

Review And Submit Your Order

Tracking Your Order

Placing Your First Order

Placing an order with ES Shopping is easy. There's no need to create an account first. You will have done that once you've placed your first item online. (We cannot accept orders by phone, fax or e-mail. All orders must be placed online.)

Enduser Terms

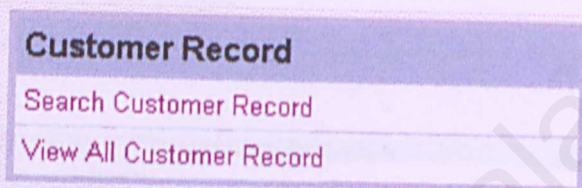
Figure 3.27 Help

3.3 Back-end (Store)

The main user is administrator of company. After login as administrator, click the Customer Info button to maintain the customer record, transaction record and suggestion

3.3.1 Customer Record

Users can search, view and delete customer record.

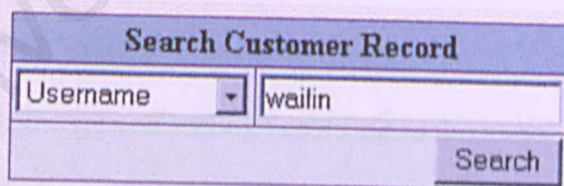


A screenshot of a web application menu titled "Customer Record". It contains two links: "Search Customer Record" and "View All Customer Record".

Figure 3.28 Customer Record

3.3.1.1 Search Customer Record

The user can search or retrieved the customer detail dynamically. By enter the required search keyword – username, full name or identity card number of the customer and click the Search button, the system will start searching into the customer table. (Figure3.29)



A screenshot of a web application form titled "Search Customer Record". It features a dropdown menu labeled "Username" with a downward arrow, a text input field containing the text "wailin", and a "Search" button.

Figure 3.29 Search Customer

If the keyword matches with the keyword, which entered by user in the table, it will display the customer detail. In the customer detail page, the user is given option to delete the user record or edit the detail of that customer. Meanwhile, if no record found, the system will require the administrator to re-enter the keyword to continue the searching process.

From edit page, user can edit the customer record if needed.

Username	Fullname	Identity Number	Email Address	Edit	Delete
wailin	wailin	790509075478	wailin@perdana.um.edu.my	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>

Figure 3.30 Customer Detail

Table 3.7 Customer Detail

Button	Description
<input type="button" value="Edit"/>	Edit the customer profile
<input type="button" value="Delete"/>	Delete the customer profile

Figure 3.31 Edit Customer Record

3.3.1.2 View all customer Record

Users can choose the type of sorting according to the users' need.

Figure 3.32 Sorting Customer Record

System will enable administrator to manipulate authorized users' profile. It will display a list of authorized member for the store. Administrator can delete the

user or view his/her profile by click on [Delete](#) or [View All](#) buttons on the corresponding user.

From view customer detail, user can print the detail of customer by click on

the  button.

Customer Record	
Username	wailin
Password	11111111
Fullname	wailin
Age	18-24
Gender	Female
Identity Number	790509075478
Phone Number	0377271546
Company Name	wai sdn bhd
Email Address	wailin@perdana.um.edu.my
Address	1,Jln Raja Uda,
City	Bw
State	
Postal Code	12300


[Back](#) 

Figure 3.33 Detail Customer Record

3.3.2 Transaction Record

System will enable administrator to manipulate order's records. User can search order record, view the transaction of the day, view new and checkout order and view best selling list.

Transaction Record
Search Order Record
View Transaction of The Day
View All New Order
View All Checkout Order
Best Selling List

Figure 3.34 Transaction Record

3.3.2.1 Search Order Record

Users insert the order ID to search the order. The status order will display as figure 3.36.


Search Order	
OrderID:	<input type="text"/>
	

Figure 3.35 Search Order

OrderID = 7 (View Items) Delete	
Username	wailin (View Detail)
Order Time	2003-02-05
Status	New Order -
Status Detail	new order -
Comments	<input type="text"/>
Amount of Item	RM 89.00
Total Amount(include shipping)	RM 102.00
Update	
Back	


Figure 3.36 Order Detail

User can click on [Update](#) to update the detail of order or click on [Delete](#) to delete the transaction. To view the items click on [\(View Items\)](#). User can modify the quantity of item by click on [Update](#) button or remove the item by click on [Delete](#) button.

ProductID	Product Name	Quantity	Price (RM)	Total (RM)	Update	Delete
1	ADOBE TYPE MANAGER DELUXE 4.6 (ATM)	<input type="text" value="1"/>	230.00	230.00	Update	Delete
2	MACROMEDIA FONTOGRAPHER	<input type="text" value="1"/>	0.00	0.00	Update	Delete

Figure 3.37 Item In Order

3.3.2.2 View Transaction of the day

Users can search the transaction record for certain day according to the date of the transaction by click on  button (Figure 3.38). The order in that day will display. If users wish to view the item click on the orderID.


View Transaction Of The Day		
Transaction Record For Day		
<input type="text" value="5"/>	<input type="text" value="February"/>	<input type="text" value="2003"/>
		

Figure 3.38 View Transaction of the day

3.3.2.3 View All New Order

All new order will display. The system can let users print out the report according to their need.

OrderID	Username	Status	Status Detail	Comments	Amount
2	wailin	new	new order		89.00
3	wai	new	new order		0.00
6	thong	new	new order		0.00
7	wailin	new	new order		89.00

Figure 3.39 New Order

3.3.2.4 View All Checkout Order

All checkout order will display. The system can let users print out the report according to their need.

There are 2 transaction in

OrderID	Username	Status	Status Detail	Comments	Amount
4	thong	Checkout	checkout order		2070.00
5	thong	Checkout	checkout order		1000.00

Figure 3.40 Checkout Order

3.3.2.5 Best Selling Product

View best selling product according to the total quantity ordered by customer.

ProductID	Product Name	Quantity
1	Adobe Type Manager Deluxe 4.6 (ATM)	15
20	Sony D-FS601	4
4	Microsoft MS Picture It! Publishing Platinum 2002	3
2	Macromedia Fontographer	2

Figure 3.41 Best Selling Product

3.3.3 Suggestion

Suggestion Management					
Date Entered	Sender	Topic	Message	Reply	Delete
2003-01-31	LIN	WHEN CAN I GET THE ITEMS	May I know when can I get the item after i checkout?	Reply	Delete
2003-01-31	LULU	MAKE ORDER	How can i make the order?	Reply	Delete

Figure 3.42 Suggestion from customer

Users can click on [Reply](#) button to reply the question and suggestion to customer by e-mail. Figure 3.43 illustrates the reply form to customer. Click on [Send Mail](#) to send the answer to customer mailbox. The [Delete](#) button is to delete the suggestion.

Reply Customer Suggestion

To Customer:	<input type="text" value="wailin@perdana.um.edu.my"/>
From:	<input type="text" value="eshopping@hotmail.com"/>
Subject:	<input type="text" value="Re:How Can make the order"/>
Message:	<div><div></div></div>

Figure 3.43 Reply Form

Questionnaire For Web Based Sales and Purchase

1. Do you agree that the Internet is a good communication tool in today's society?

☐ Yes

☐ No

Give reasons (if necessary)

2. Do you know what is online shopping?

☐ Yes

☐ No

APPENDIX B

3. If you have you ever bought products online from website?

☐ Yes

☐ No

4. If you haven't, do you plan to buy them in future?

☐ Yes

☐ No

5. What products do you intend to buy from web site?

☐ Flowers & gifts

☐ Cars

☐ Toy & Video Games

☐ Jewelry

☐ Software

☐ Clothing

☐ Toy & Video Games

☐ Music

☐ Furniture

☐ Entertainment

☐ Health & Beauty

☐ Office Equipment

☐ Books

☐ Computers

☐ Home & Garden

☐ Sports

☐ Others

Survey Form

Questionnaire For Web Based Sales and Purchase

1. Do you agree that the Internet is a good communication tool in today's society?

☐ Yes

☐ No

Give reasons (If necessary) _____

2. Do you know what is online shopping?

☐ Yes

☐ No

3. If yes ,have you ever bought products/services from website?

☐ Yes

☐ No

4. If you haven't ,do you plan to buy them in the future ?

☐ Yes

☐ No

5. What products do you prefer to buy from web site?

☐ Flowers & gifts

☐ Cars

☐ Toy & Video Games

☐ Jewelry

☐ Software

☐ Clothing

☐ Toy & Video Games

☐ Music

☐ Furniture

☐ Entertainment

☐ Health & Beauty

☐ Office Equipment

☐ Books

☐ Computers

☐ Home & Garden

☐ Sports

☐ Others _____

6. Information that you would like to be included in web page:

☐ Own Site's Search Engine

☐ Ability to view the different of images.

☐ Print out the catalogue

☐ Description of the product

☐ Prices of product

☐ Others. Please state

7. Specialized information

☐ Promotion of the product

☐ Links to other beneficial sites

☐ Ability to order product

☐ Ability to download catalogue

8. List favourite and elaborate

Sites :	
Why :	

9. If you prefer online shopping,

Give Reasons

Comments

<input type="checkbox"/> Convenience	
<input type="checkbox"/> Ability to view products	
<input type="checkbox"/> Time Saving	
<input type="checkbox"/> Cost Saving	
<input type="checkbox"/> Other Reasons	

10. If not, give reasons

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