WXES3182

PROJEK ILMIAH TAHAP AKHIR II
Online Business Card

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ABSTRACT

Online Business Card is a web-site that offers the customer to design, create and order the business card. The main idea of this project is to let the customer to design, create and order a business card for themselves. Besides that, the customer also can upload the picture that they desire for developing or designing a business card for their own company. This system also provides the log-in system for the customer during customizing and payment process. The customer can create the business card by using any pictures and sentiments provided. The option, either they can start designing the business card by upload their own image or select any template that shown in this web-site.

There are few advantages that are crucial to ensure the success of this Online Business Card of web-site. Most importantly, customer can create heir own desired business card by lower charges, provided log-in system and have many picture to select for designing the business card or the customer can upload the image that they want to design a business card. Besides that, it is also time-consuming for the businessman who very busy. They just have to create and order the business card by online.

This report introduces the project and provides a description on the topics studied and searched during the literature survey. The methodology for the system development is also discussed which is the waterfall with prototyping model. And finally, this report also included the system development tools chosen plus, the details of system designing of Online Business Card.

ACKNOWLEDGEMENT

During the development of the project's report, I have been fortunate to have sources of inspiration and support. Throughout the duration of the project development, many people have been very kind and helpful, giving invaluable advice and encouragement.

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To my family, thank you for your constant support and encouragement. And lastly, I would also like to express my gratitude to my friends especially Leos Toh and fellow course-mate that have helped me in one way or another.

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LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENT

Chapter 1: Introduction

1.1 Introduction of the Project

This proposal is about develop an online system for creating and printing a business card for one organization. There is a web-site that has an interface that convenient the user to do the creating and ordering business card transaction. In the web-site, there include some description of the products or services of online business card, the catalog of the layout of business card, the features for online creating and ordering of the business card.

In the Online Business Card, the server always keep in track of their customers profile, needs, requirements and the customers behavior according to their life-style to satisfied the customers needs and put ourselves in the latest trend. The server also has to keep track in and manage their daily business transactions in manageable, effectively and efficiently way. Because of this the developing of this system needed to manage and manage an interaction between the staff and their customers in real-time system. Besides that, this system also has a database to store the data of their each customer's details. Not only that, the database also provides the facilities to edit, add new data and delete the old data to reprocess or process a useful information for one organization to make decision or planning for their business strategies.

Purpose for developing this online business card is too convenient the customers to create and order their own business card. In this system, the customers only have to sit in front the computer and order the business card that they already created. Not like the ordinary online business card system, they charge their customers for high payments for printing the business card. Not only have that, the color that printed out from the system also not so good quality. So many customers prefer to go to the shop and ask the worker

to create and print the business card. It is waste energy, time and money of the customers.

Advantages of online business card: 1) It is convenient the users because they can create and order their own business card just by online; 2) They only have to do the payment by internet; 3) Save time and energy to do others things; 4) Create the business card more quickly, not need to do the procedures like the ordinary traditional transaction when one to create a business card; 5) More attractive because we can choose the layout and the color that we want and the that we want; 6) The server also can manage their daily business transaction in effectively, manageable, efficiency and fast way and; 8) The server can always have the updated information for them to make decision or planning.

The steps during creating and printing the online business card: 1) Choosing a picture; 2) Choosing a business card type style; 3) Choosing business card format and; 4) Ordering the business card that have chosen.

Business cards can serve many functions beyond simply displaying your name and address. The business card is used for the purpose of promoting business, but also serves as a calling card, with the purpose of providing even basic contact information and with the ability to add additional notes that can be associated with the business or the business contact. You can enhance your business's image and build customer recognition by printing directions to your business, a mini-list of your products or services, a photo of you or of your business, and much more.

In conclusion, this online business card is proposed as a solution to the customers for creating and printing the business card, and also to the server itself during managing and controlling the customers' information and request. It is a very useful and efficiency system to both server and customers.

1.2 Problem Statement

After all the study and research conducted, it is clear and understandable of why this online business card should be built. It actually mirrored to a few major problems which seems to be inherited since before. During developing this online business card project, there are some problems that we have faced: 1) Don't have knowledge about using programming languages to set-up the website. So it is very difficult to choose an appropriate programming language for developing the web-site for the online business card. 2) Beside of this, the sources that for us to search also not so much. Some the journal not related to our journal. It takes so many times. Have to do many references from many resources. 3) The time for us to do the researching is not so enough and for us to learn the programming language.

For developing this online business card project, these are the problems that have identified and need to be given a change: 1) They charge the customer in high prices. 2) Besides that, current online business card web-site provides only few choices for the customers to choose the layout and picture for creating their business card. It is make the customers not interest to use their facilities. 3) No logged-in system for the current online business card web-site. The customer's only do the creating and payment processes without logged-in into the system. It is very insecure because the pin number of the customers' credit card will be known by the hackers.

1.3 The Method or Approach Proposed to Solve the Problem

For developing this online business card system, we have to find the solution to solve some problems that we have faced: 1) Don't have knowledge about using programming languages to set-up the website. So have to do the references to many

resources to search the best programming language for the online business card web-site and to learn it. 2) Beside of this, the sources that for us to search also not so much. Some the journal not related to our journal. So we have to use others engine search to search our journal. It takes so many times. 3) The time for us to do the researching is not so enough and for us to learn the programming language. So we spend more time to search and develop the online business card system.

For developing this online business card project, these are the problems that have identified and need to be given a change: 1) In this system, we provide the facilities for customers to create and order business card by themselves with less charges. 2) Besides that, this online business card web-site provides multiple choices for the customers to choose the layout and picture for creating their business card. 3) Provide logged-in system for the customers during do the transaction of this online business card web-site. The customer's only do the creating and payment processes with logged-in into the system.

1.4 Objectives

This new online business card is said to be next facilities needed in the online business card market. There are some major objectives for developing this new online business card project: 1) Able let the customers to create their own business card. 2) Secure and privacy because have logged-in system. 3) Easy to use.

1.5 Scope

There are some scopes in this online business card system. It is to make sure the manageable, effective and efficient business transaction in the organization. There are

4

three types of modules in this application server:

1) The Users' Modules

   o For user account management

   o Able user to create and design their own business card

   o Provide logged-in system

2) Product Catalog Modules

   o For inventory management

   o Promote the business card

   o Business card searching and selection

3) Administrators/ Server Modules

   o To view the customers details

   o To admin to add new type of business card details and delete

   o Has a database system that provides information for their clients and provides an interaction between them with their customers in real-time system

1.6 Expected Output

The expected outputs of this system are:

   o An online business card system that allow customers to create and order their own business card

   o A system that provides more secure system for customers because have the logged-in system

   o A web-site that provides many choices for the customers to choose their pictures for the business card

   o A system that easy to use because provides understandable buttons for the

customers

1.7 Project Schedule

Below are Gantt Charts which are done by Microsoft Office Project 2003.
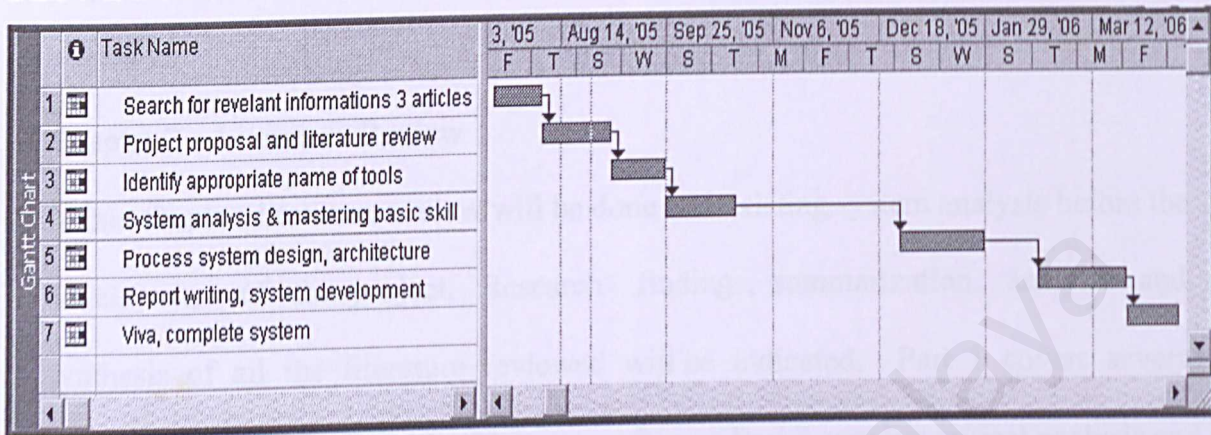
Gantt Chart I

		Task Name	Duration	Start	Finish	Predecessors
1		Search for revelant informations 3 articles	19 days	Mon 7/18/05	Fri 8/5/05	
2		Project proposal and literature review	28 days	Sat 8/6/05	Fri 9/2/05	1
3		Identify appropriate name of tools	21 days	Sat 9/3/05	Fri 9/23/05	2
4		System analysis & mastering basic skill	28 days	Sat 9/24/05	Fri 10/21/05	3
5		Process system design, architecture	33 days	Mon 12/26/05	Fri 1/27/06	4
6		Report writing, system development	35 days	Sat 2/18/06	Fri 3/24/06	5
7		Viva, complete system	21 days	Sat 3/25/06	Fri 4/14/06	6

Gantt Chart II

1.8 Chapter Summary

This section summarizes all the chapters presented in this report. It will be divided into two parts as part 1 and part 2.

1.8.1 Part 1-Analysis, Design, Development

There are five chapters for this part:

6

i. Cahpter 1 - Introduction

This chapter gives an introduction to the system and its objectives, as well as an overview, project problem statements, solution for the problems, project objectives, project scopes and project schedule plan.

ii. Chapter 2 – Literature Review

In this chapter, literature review will be done and existing system analysis before the development of the project. Research findings, summarization, analysis and synthesis of all the literature reviewed will be indicated. Part 1 covers several researched issues and field of interest, whereas Part 2 consists critical analysis and features study on available online business card and similar system.

iii. Chapter 3 – Methodology

This chapter clearly identifies the methodology and technical using to solve the problems in the project.

iv. Chapter 4 – System Analysis

This chapter clearly identified related requirements such as functional requirements, non-functional requirements, hardware requirements and software requirements. The quality of the proposed tools refers to the practicality of chosen tools, effectiveness and appropriateness in solving the problem presented.

v. Chapter 5 – System Design

The various components of the proposed system are clearly identified and explained.

The components include the architectural design, functional design, information flow chart, modules and also interface design.

1.8.2 Part 2 – Development, Implementation, Testing and Evaluation

There are three chapters in Part 2:

vi. Chapter 6 – System Implementation

Under the specified design and development – operating environment and in accordance to be designed blueprints, the system is developed. Following that, the system is implemented in the usual environment using real-time data. By doing so, the system is prepared for evaluation and debugging.

vii. 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. The problems faced and the solutions taken during the development period are highlighted.

viii. Chapter 8 – Evaluation and Future Enhancements

Following the evaluation on the finished system, the strengths and limitations of the final product are confirmed. A proposal for the future enhancement is forwarded here. At the end, an overall conclusion based on the project development proposal is provided.

Chapter2: Literature Review

In this chapter, literature review will be done and existing system analysis before the development of the project. Research finding, summarization, analysis and synthesis of all the literature review will be indicated.

2.1 Information Collection Technique

A complete literature review must be carry out for gather all the information of the theories, methods and tools which are needed to develop the project. A well-organizes and convenient literature review will undoubtedly facilitate a lot in analysis and synthesis of proposition system. Several information collection techniques are used consecutively to ensure the success in conducting the research and appropriate planning. The following are techniques used to gather information:

i. Net surfing – using keywords searching technique to find out the appropriate information needed. Further more, browsing several web-sites related to the research topic.

ii. References books – Borrow some books from library and buy some useful reference books from shops.

iii. Newspaper – getting latest information about current computer technology.

iv. Brainstorming – collect all prospective ideas before select the wanted information.

v. Discussion – Discuss with the friend who is also doing their thesis to exchange ideas on design of the system.

2.2 The Internet and World Wide Web (WWW)

The Internet is a network of networks, linking computers to computers sharing the TCP/IP protocols. Each runs software to provide or "serve" information and/or to access and view information. The Internet is the transport vehicle for the information stored in files or documents on another computer. It can be compared to an international communications utility servicing computers. It is sometimes compared to a giant international plumbing system. The Internet itself does not contain information. It is a slight misstatement to say a "document was found *on* the Internet." It would be more correct to say it was found *through* or *using* the Internet. What it was found in (or on) is one of the computers linked to the Internet.

Computers on the Internet may use one or all of the following Internet services:

- Electronic mail (e-mail). Permits you to send and receive mail. Provides access to discussion groups often called Listservs® after the software they operate under.

- Telnet or remote login. Permits your computer to log onto another computer and use it as if you were there.

- FTP or File Transfer Protocol. Allows your computer to rapidly retrieve complex files intact from a remote computer and view or save them on your computer.

- Gopher. An early, text-only method for accessing internet documents. Gopher has been almost entirely subsumed in the World Wide Web, but you may still find gopher documents linked to in web pages.

The WWW incorporates all of the Internet services above and much more. You can retrieve documents, view images, animation, and video, listen to sound files, speak

and hear voice, and view programs that run on practically any software in the world, providing your computer has the hardware and software to do these things.

2.2.1 Introduction

In 1973, the U.S. Defense Advanced Research Projects Agency (DARPA) initiated a research program to investigate techniques and technologies for interlinking packet networks of various kinds. The objective was to develop communication protocols which would allow networked computers to communicate transparently across multiple, linked packet networks. This was called the Internetting project and the system of networks which emerged from the research was known as the "Internet." The system of protocols which was developed over the course of this research effort became known as the TCP/IP Protocol Suite, after the two initial protocols developed: Transmission Control Protocol (TCP) and Internet Protocol (IP).

2.2.2 Internet Technical Evolution

The Internet Activities Board (IAB) was created in 1983 to guide the evolution of the TCP/IP Protocol Suite and to provide research advice to the Internet community.

It now has two primary components: the Internet Engineering Task Force and the Internet Research Task Force. The former has primary responsibility for further evolution of the TCP/IP protocol suite, its standardization with the concurrence of the IAB, and the integration of other protocols into Internet operation. The Internet Research Task Force continues to organize and explore advanced concepts in networking under the guidance of the Internet Activities Board and with support from various government agencies.

A secretariat has been created to manage the day-to-day function of the Internet Activities Board and Internet Engineering Task Force. The IAB meets quarterly face-to-face or by videoconference and at intervening times by telephone, electronic mail and computer-mediated conferences.

Throughout the development of the Internet, its protocols and other aspects of its operation have been documented first in a series of documents called Internet Experiment Notes and, later, in a series of documents called Requests for Comment (RFCs). The Internet Registry (IR) also provides central maintenance of the Domain Name System (DNS) root database which points to subsidiary distributed DNS servers replicated throughout the Internet.

2.2.3 New Users for the Internet

As a communications medium, it can facilitate a variety of types of activities, from information retrieval (ftp, gopher, etc), electronic gatherings (usenet, maillists, chat-groups), to cyber-stores, to electronic malls and electronic billboards. One site on the World Wide Web (an "area" of the internet that provides graphical browsing capabilities) even looks like a Southwest Airlines ticket counter (http://www.iflyswa.com). If you need information about Southwest Airlines, you can simply point your browser at this URL or web address. Similarly, to learn what's going on at IBM (http://www.ibm.com) or Dell Computer (http://www.dell.com), just stop by their web sites.

Silicon Graphics' 3D viewer will significantly enhance the browsing experience. Similarly, NetMarket's Digital Dressing Room (http://www.netmarket.com) allows the browser to assemble an outfit, view the results online and to add them to a "shopping basket."

Ultimately, the internet will foster a lot of interaction among people belonging to small focused interest groups. Similarly, a small but increasing number of companies are hosting mail lists for the purposes of customer interaction.

Consider these groups as private parties. Commercial gatecrashers are simply not welcome. It is not appropriate to post commercial messages here, unless of course the charter of the group specifically allows it.

2.2.4 Commercial Use of the Internet

Overall, the internet is becoming more commercialized, as startups make more interesting tools, utilities, games and sites available. Many corporations are rushing to develop some form of online presence, to get closer to existing customers, to make communications with these customers more efficient, or to reach new customers. Pizza Hut (http://www.pizzahut.com/) received a lot of free publicity in the fall of 1994 when it set up a site allowing people (in the Santa Cruz area) to order pizzas online.

A variety of companies, ranging from the smallest "Hot Hot Hot", the internet's "Culinary Headshop" (http://www.presence.com/hot), to the largest , such as IBM, and American Greetings, are finding growth opportunities on the net. The smaller companies are finding that they can dramatically increase their potential market reach and revenue streams. American Greetings, for instance, allows browsers to design their own

Software companies find that the internet is an ideal medium for both advertising and selling software, with Oracle (http://www.oracle.com) offering free evaluations of its Personal Oracle 7 and related software.

Federal Express, taking yet another long step beyond its competition, put up a useful site on which one can track package shipments (http://www.fedex.com). Many net.

surfers cite the Federal Express web site as the single most useful, although perhaps not most entertaining, site on the internet.

Speaking of entertainment, an increasing number of content providers have gotten online. News and World Report, etc), more entertaining sites are available, including Wired and Playboy (http://www.hotwired.com, http://www.playboy.com).

Each of these sites is more than a faithful reproduction of their traditional paper format. business in your .sig. Some companies, afraid to host such open dialog between their customers, miss the point that such dialog already occurs. In hosting such a dialog, the customers provide immediate feedback to the company and show their appreciation for the forum through increased loyalty (business) for the supplier.

Some companies will publish electronic catalogs for browsing and ordering purposes (http://www.emall.com). As a result, companies like Lands' End and CUC International looking to shift some of their business to online activities. These companies save in transaction costs as well. Online transactions will cost several orders of magnitude less. The online activity will attract new customers. This activity requires several components for success - a browser such as Mosaic or NetCruiser, an internet connection of some sort, and a web server. Awareness and future market opportunities for their secure web server product.

Similarly, thousands of companies have rushed websites onto the internet, looking to bolster their access to millions of potential new customers. Most of these companies seriously overestimate the short-term opportunity and underestimate the long-term costs of conducting business on the internet.

2.2.5 Usage Pattern

Clearly, large companies are looking to move some portion of their communications activities online. Most companies characterized their overall internet usage as relatively minor to non-existent, but did expect that the usage would increase significantly or moderately within the next 12 months.

Some companies are finding new customers through their internet presence. In March and April of 1995, 250,000 people requested information from Fidelity Investments (http://www.fid-inv.com) through its website. According to Neal Litvack, the firm's executive vice president, 80% of those had never requested information from Fidelity prior to hitting the web site.

In talking with large companies about the purpose of their online service usage, IDC uncovered an interesting theme. Ask the satisfied and productive with existing products. Several years ago forward - thinking companies hosted forums.

Today, however, with the vastly increased capabilities of the internet and the much broader demographic reach, companies can conduct virtually any corporate activity online, from advertising, to selling to conducting virtual press conferences. As noted earlier, the smaller company typically has more to gain from vastly increased market access.

The activities can be divided into three major categories, including customer acquisition, customer retention, and supporting activities.

Customer acquisition includes: 1) marketing, 2) advertising, 3) public relations, 4) customer research, 5) secondary research, 6) sales and 7) technical support.

Customer retention includes the following: 1) technical support, 2) customer research, 3) customer support and 4) line extension marketing.

Supporting activities include: 1) recruiting, 2) customer research, 3) secondary research and 4) information gathering (news).

The reach of these activities include both existing and prospective customers. For existing customers, the quality and quantity of contact can be significantly increased with little or no incremental transaction costs. Similarly, prospective customers can be lured from new psychographic groups previously unreachable by traditional marketing.

The effective implementation of each of these activities warrants literally hundreds of pages of discussion. For now, however, the following thumbnail sketch of critical issues should serve as the underpinnings of an effective campaign.

2.3 E-Commerce

2.3.1 Introduction

E-commerce is selling products and taking payments via your web site. Many people would like to have an e-commerce enabled web site but believe it would be too complicated or costly. However these days, it's a lot simpler than you might think. There are many inexpensive "canned" programs that can provide you with just what you need to sell a small inventory or a few products. Don't let "e-commerce" scare you - it's not that complicated and really, isn't that why you really wanted a web site anyway - in the hope it could at least pay for itself and then some. An e-commerce enabled site means:

- You have access to a huge potential market - worldwide
- Increasing sales with little or no extra administration
- Your business is open for business 24 hours a day, 365 days a year
- It will give you a competitive edge over the competition
- You can gain new customers and convince existing ones to return

- Contact with customers in the comfort of their own home

Having an e-commerce site is possibly one of the best ways to make money from the Internet. And the good news is it actually involves very little effort on your part. Today consumers are beginning to look to the Internet to acquire services, products, and more - this trend will only increase as consumers become more comfortable and used to Internet purchasing. Wouldn't it be nice to tap into new market of potential consumers?

2.3.2 Categories of E-Commerce

According to Dictionary.COM, the term commerce is defined as follows: *"The buying and selling of goods, especially on a large scale, as between cities or nations".* This definition is straight forward and easy to understand. From here, we add the "e" for "electronic", and we derive the definition: *"buying and selling of goods electronically".* This typically means that orders and payments pass electronically. However, there is more to this - much more, as follows:

B2B (Business-to-Business) E-Commerce really refers to supply chain technology, which is by far the largest and most successful e-commerce technology employed today. You can read my Insights about B2B E-commerce here.

B2C (Business to Consumer) E-Commerce refers to the selling and buying of goods and services via the web from web retailers to web customers. With B2B implementations, the parties are "Trusted Business Partners" who have an established working relationship. With B2C E-Commerce, the retailers are often selling to unknown, un-trusted strangers. Therefore extra effort must be made to capture customer and payment information.

17

B2E (Business to Employee) E-Commerce generally refers to the requisitioning of supplies by employees for use in their jobs, but this really has grown to encompass much more. Many companies have found that B2E technologies have dramatically reduced the administrative burdens with the human resources department. Admittedly, maintaining employee information has little to do with commerce, but this term has grown to encapsulate this activity into the B2E definition.

C2C (Consumer to Consumer) E-Commerce has also emerged that allows unknown, un-trusted parties to sell goods and services to one-another. To accommodate this activity, several technologies have emerged. Firstly, Ebay allows all sellers and buyers to rate one another. In another example, a prospective purchaser may see a seller who has previously sold only 4 times and all 4 rates the seller poorly. Instead of purchasing items directly from an unknown, un-trusted seller, the buyer can instead send the money to Pay Pal.

B2M (Business to Machines) E-Commerce is a fast emerging area within e-commerce. The general idea is that companies can link to remote machines via the internet. You stop at a high rise building that contains a Coke machine on every floor - now what? With B2M technology, the folks at Coke know exactly how many drinks are in each machine by type of drink, and their accounting system produces a restocking report advising the driver accordingly. In this manner, Coca Cola can monitor their machines from afar to determine if they need repair or restocking.

2.3.3 The Benefits of Electronic Commerce

The benefits of E-Commerce to a small business may include capabilities to: 1) Extend the range of sales territory; 2) Streamline communication to suppliers and clients; 3)

Expand reach to new clients; 4) Improve service to existing clients; 5) Reduce paperwork and time spent on correspondence; 6) Track customer satisfaction; 7) Expand markets beyond geographical, national boundaries; 8) Improve inventory control, order processing; 9) Establish position in emerging E-Commerce marketplace; 10) Monitor competition and industry trends and; 11) Improve or expand product lines - locate new suppliers, products that could be included in catalogue.

2.3.4 Traditional Distribution vs. E-commerce Distribution

Similarity: Both share the same goal and real estate, but that's where the similarity ends

What are the differences between traditional distribution facilities and those that serve online shoppers? Both of these types of facilities have the same objective: to get the right product to the right customer at the right time. And both operate out of the same kind of real estate: warehouses typically located near major transportation arteries. But they aren't as similar as they appear - or as some online marketers might assume. In fact, one can safely say they're as different as night and day. Knowing the key differences between the two facilities could save some headaches for manufacturers purchasing or establishing an online fulfillment effort. More important, it could prevent the loss of thousands of customers.

Differences

o **Higher order volume, lower order quantity**

Many traditional distribution facilities are designed to fill orders in large volume configurations such as cases or pallets. By contrast, as e-commerce fulfillment center may process tens or thousands of orders a day - orders that may be only a hundredth

the size of their traditional counterparts. Instead of shipping 100 turtlenecks to a single Gap store in Atlanta, the facility may send turtlenecks to 100 different customers throughout the country, all via small package delivery. As a result, manufacturers must lay out and equip e-commerce fulfillment centers differently, with more pick-to-light systems. Automation like this doesn't come cheap, which is why companies can expect to pay three to five times as much per square foot for an e-commerce fulfillment center.

o **More products**

A virtual store can do many things a real store can't - including carrying a larger array of products. Delta Air Lines' Skymall, for example, offers 10,000 items on its Web site versus 2,000 items in its in-flight catalogues. This type of inventory presents an incredible challenge for online fulfillment centers. Among other things, they must have more storage areas, pick lines, and people to manage this variety - not to mention more space. They also must be more systems intensive, because the more individual products you have, the more difficult it is to maintain accurate inventory data - and to avoid the most dreaded of e-commerce blunders, the back order.

o **More people**

Traditional distribution facilities that muse pick lines to fill orders typically assign approximately one-quarter to one-third of their labor force to this activity. By contrast, 75 percent to 90 percent of employees may man the pick and customization lines at e-commerce fulfillment centers. The human resources function at an e-commerce fulfillment center is especially critical. Not only will such a center

probably have to hire and maintain more employees, it will need to manage them more efficiently to inspire order-perfect performance. Accommodating this additional staff becomes a critical design issue because the facility will need larger break rooms, more restrooms, and additional parking spaces than normally found in a traditional distribution center.

o **Sending product packaging**

When the term "wrap" is used at a traditional distribution center, it typically refers to encasing a pallet in plastic wrapping for protective purposes. Say that word at an e-commerce fulfillment center and it more likely means the kind of activity that result in a package you'd find under a Christmas tree. E-commerce fulfillment centers must be a small-package expert, which means they need areas dedicated to boxing materials and providing extra touches such as gift-wrapping. They must also be more adept at dealing with small package carriers, whether they use an expedited company or a parcel consolidator.

o **Fulfillment centers may make the sale**

Perhaps the most important difference of all is the critical role e-commerce fulfillment centers play in making a sale. Online customer satisfaction levels are declining, and customers' biggest complaint is product fulfillment, according to a recent Jupiter Communications, Inc. research study. The study also finds that customers eventually cancelled more than 50 percent of orders for back-ordered items. For an online sales effort to be a success, companies must pay as much

attention to their e-commerce fulfillment design as their Web site design. Not only will their fulfillment deliver the goods; it could deliver a future sale.

2.3.5 Management of expectations

How does it integrate with traditional services?

As E-Commerce matures and more traditional businesses enter the electronic marketplace, it will become difficult to distinguish the E-Commerce merchant from traditional merchant. Although some firms operate exclusively as E-Commerce merchants, it appears that the greatest opportunities are for established firms that venture into E-Commerce as a means to refine existing business processes and gain new customers.

E-Commerce may complement or replace traditional commercial activities, depending upon the industry and the functions. Because it is both a threat and an opportunity for various industries, it is worthwhile to:

1. **Study how E-Commerce can integrate into operations.** Determine needs and capabilities. E-Commerce operations may shadow traditional operations to provide redundant services such as product information distribution.
2. **Develop an E-Commerce strategy into the business and marketing plans.** Understanding how an E-Commerce system will strategically fit with the firm's existing operations will help to allocate the management and financial resources necessary for it to be a success. In the long-run, there have to be resources to set-up and sustain a system, making it work best for the type of operation that will be managed.

22

3. **Monitor competitors, suppliers, and customers' movements into E-Commerce.** Special attention to their capabilities will help determine areas of E-Commerce that need development.

4. **Establish a consistent operations review process.** E-Commerce technology and operations are constantly evolving. Changes in technology frequently introduce opportunities to refine or create new services.

2.4 The Web Security of Business Transaction

2.4.1 What is security

Security is the totality of mechanisms and techniques that protect system assets. Security is used in a sense of minimizing the risk of exposure of assets and resources to various vulnerabilities. Security is the protection of system elements from accidental or malicious access, use, modification, destruction, or disclosure

2.4.2 The Basic Security Objectives

1) **Availability:** ensuring access to information; 2) **Confidentiality:** keeping information secret only to those who are authorized to see it; 3) **Anonymity:** concealing the identity of an entity involved in a process; 4) **Privacy:** the rights and responsibilities that govern the acquisition, disclosure, and use of personal information; 5) **Data Integrity:** ensuring information has not been altered by unauthorized means; 6) **Time Integrity:** ensuring that the indicated time of creation of a peace of information is correct; 7) **Identification and Authentication:** corroborating the identity of an entity(person, computer, process, etc.) and; 8) **Access control:** restricting access to resources to authorized entities

23

2.4.3 Threats, risks and attacks

- o **Accidental threats and risks:** Catastrophes, power failure, noise on communication channels, software and hardware bugs, user errors and many more.

- o **Origin of malicious threats:** an intelligent attacker attacks the weakest point such as: 1) hackers, crackers; 2) criminals, criminal organizations (fraud, extortion); 3) disgruntled employees; 4) industrial espionage and; 5) secure services, national intelligence services.

- o **Some types of attacks** such as: 1) steal storage media and devices; 2) penetrate user account or obtain illegitimate privileges (false user authentication or circumvent OS protection); 3) illegitimate access to data channel /e.g. network sniffing); 4) insertion of false data (e.g. network spoofing); 5) deletion of information; 6) denial of generation, transmission or receipt of information; 7) denial of service; 8) traffic analysis and; 9) malicious software: viruses, Trojan horses, logic bombs.

2.4.4 Security measures and mechanisms

- o **Technical defenses:** 1) Cryptography (transformation of information); 2) operating system security; 3) physical at macro-level: buildings, secure areas, shielding against electromagnetic radiation; 4) physical at micro-level: tamper-resistant devices; 5) processor technology and; 6) biometric technology.

- o **Organizational secure and safety protection:** such as develop a security policy, classification of information and provide an authorization level for different level of viewing.

- **People-related**: such as screening, motivation, education and responsibilities about how important the web security for all the organization's daily processes.

- **Legal**: such as liability regulations and insurances for the security of the organization's web.

- **4 Phases of managing** IT risks: 1) **Security policy:** what need to be protected; 2) **Risk analysis:** threats, damage potential, and probabilities; 3) **Risk reduction:** avoid risks, security measures, damage limitation, recovery strategies, insurances and; 4) **Accept remaining risks** (no system is absolutely secure).

2.5 Existing Online Business Card

2.5.1 LateNightPrinters
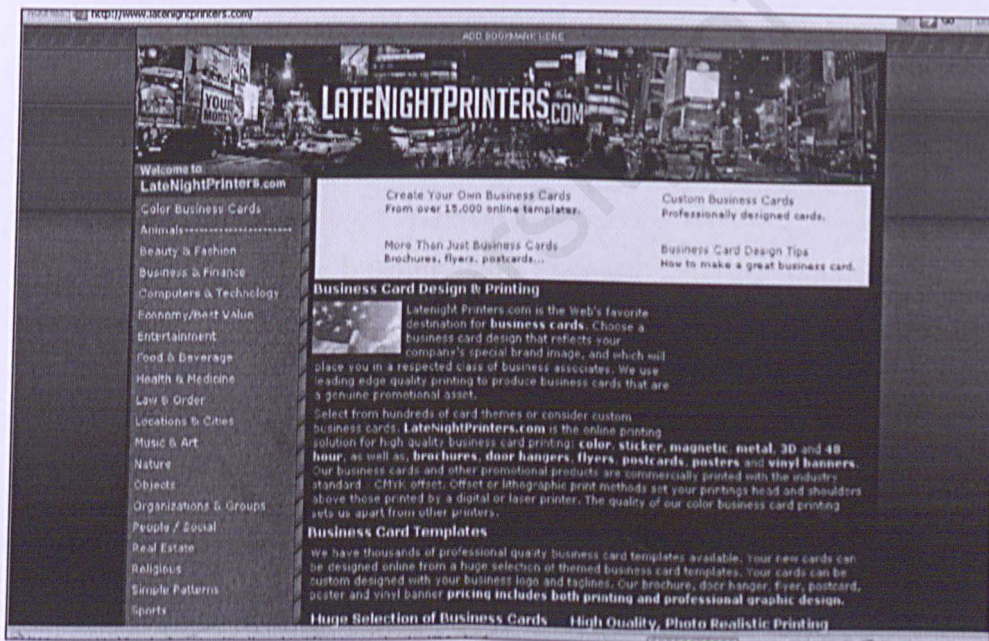
Figure 2.0: LateNightPrinters

Latenight Printers.com is the Web's favorite destination for business cards. Web sites that for the customers to choose a business card design that reflects to their company's special brand image, and which will place their in a respected class of business associates. The LateNightPrinters.com use leading edge quality printing to

produce business cards that are a genuine promotional asset. Customers can select from hundreds of card themes or consider custom business cards. The LateNightPrinters.com business cards and other promotional products are commercially printed with the industry standard - CMYK offset. The quality of this company's color business card printing sets them apart from other printers.

The advantages about the LateNightPrinters.com provide "Create Your Own Business Cards" menu for the customers to create their own business card with many choices. They also provide "Custom Business Card" menu for the professional to create their business card. They also provide the menu for the customers to write a testimonial about them and give the change to customers to ask question when facing problems.

The disadvantages of this web-site are not providing a log-in system or member authorization for the customers during do the creating and payment transaction. It is very dangerous. This web-site also doesn't provide the system for the customers to print their own business card.

With the online business card that will develop, this new system will provide the log-in system as a member for the customers during do the creating and ordering transaction.

26

2.5.2 GreatFX Business Card
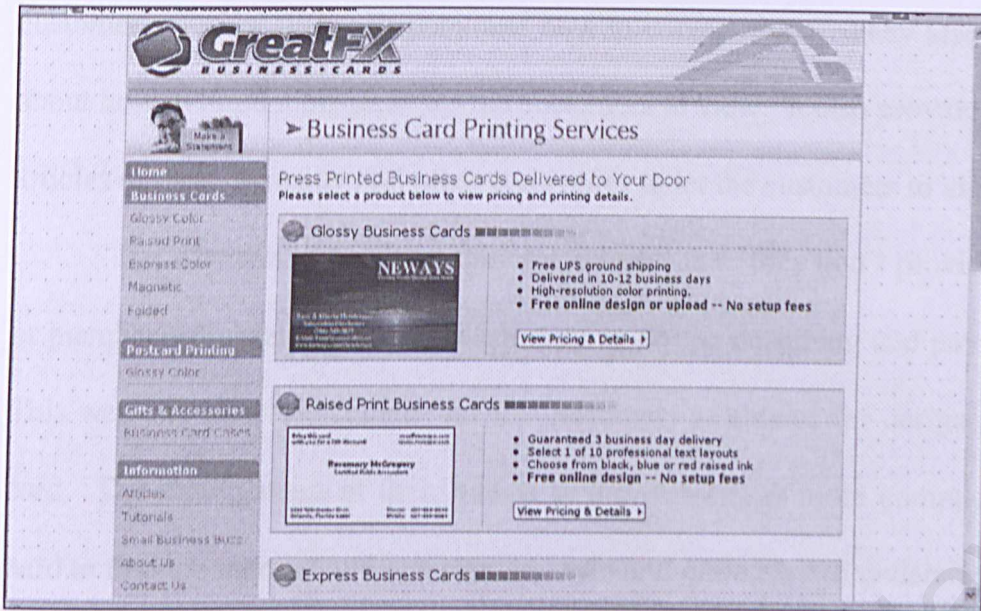
Figure 2.1: GreatFX Business Card

Located in historic downtown Springfield, Missouri, GreatFX and our partners print hundreds of thousands of business cards each year and ship them across the United States and Canada.

Since June 2003, GreatFX has quickly become one of the top-ten internet based business card printers in the country. They strive to meet 3 goals setting GreatFX apart from the competition: 1) Deliver the best "bang-for-your-buck" business cards; 2) Provide free articles to enable business owners to market more effectively with business cards and; 3) Design and maintain a website that is not only easy to use but also an informative and valuable resource for small business owners around the world.

The advantages about this GreatFX Business Card web-site are provide postcard besides business card. The interesting part of this web-site is that they also provide the "present and accessories" menu for the customers to create and print the business card as a present or accessories besides a formal business card. This web-site also provides a tutorial session for the customers to view and learn how to design a business card. They

27

also provide some article for the customers to read. They also provide the menu for the customers to view their company and how to contact them. They also provide the page about how to build a business for the customers to view. It also provides the market sales articles of their company and other companies to let the customers to view.

The disadvantages about this web-site are that, they don't provide a log-in system or member authorization for the customers to do the designing and payment transaction. This web-site also less choices for the customers to choose for designing their business card. The arrangement of their menus in the web-site is more complicated. It is quite hard to find the menu that the customers want and quite hard to understand.

To overcome these problems, our new online business card provides the log-in system to the customers during do the designing and payment transaction. Besides that, this new online system also provides many choices for the customers to choose. Besides that, more simple arrangement of the menus in the websites will be provide to easiest the customers during they are viewing this web-sites.

2.5.3 iPrint.com
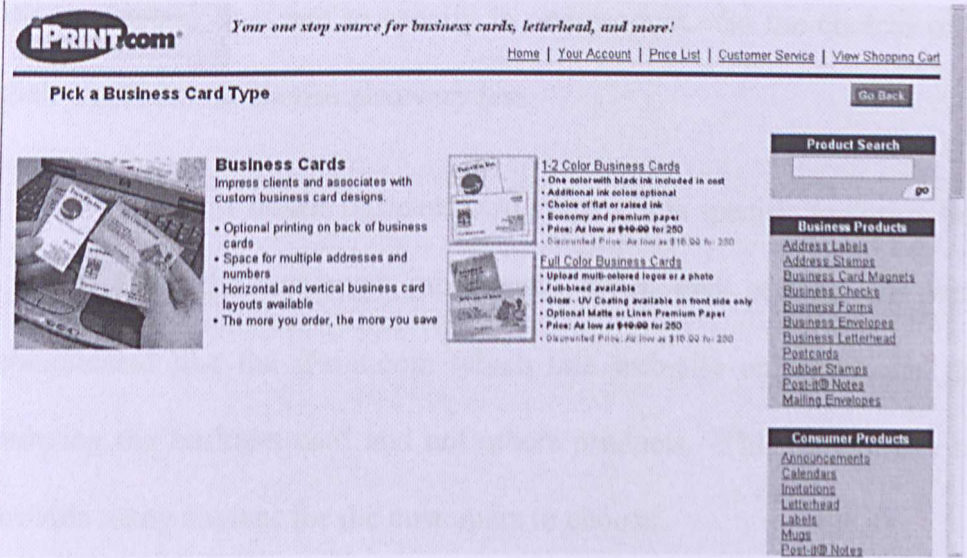
Figure 2.2 iPrin.com

iPrint.com is a personal online printing service, open 24/7 to give the customers low price custom printing delivered to their doorstep in just days. iPrint.com online printing service offers 70 different products with a variety of design options. Business cards, stationery, postcards, Post-it® Notes, announcements, invitations, rubber stamps, address labels, signs, banners, mugs, mouse pads, and apparel are just a few of our items. Besides that, iPrint.com also provide the facilities adding the customers name or logo to any of them – or even creating their own logo from art on their site – is fast and easy.

The advantages of this web-site are providing many products for the customers to print which have two type: business product and customers product. It also provide 30 days satisfaction guarantee for the customers. This web-site has provided the log-in system for their customers during do the business transaction. It is more secure. They also provide the page for the customers' services and show the shopping chart for the customers. They do the latest advertisement every time have new products.

The disadvantages about these web-sites are too many products that provide for the customers. It is not so specify in one product. So the choices of business card for their customers to choose also very less.

In the new online business card system, it is specific to design business card only. It is to make the customers more easily when they serving this web-site. It is not complicated like the iPrint.com which this web-site only provides the designing and ordering the business card and not others products. This new online business card can provide many choices for the customers to choose.

2.5.4 VistaPrint

Figure 2.3: VistaPrint

VistaPrint is making high-quality graphic design and custom printing convenient and affordable for everyone. With more than 5,000,000 customers worldwide, VistaPrint is the source for high-quality graphic design, Internet printing and premium service. They

offer small businesses and consumers a convenient, high-quality solution for graphic design services and full-color printing in small quantities, without the premium price.

Advantage of VistaPrint is that provide many products of cards for the customers which divided into business products and consumer product. They provide log-in system for the customers. They also provide shopping chart for the customers to view. They also provide the help button for the customers to ask question and solution that they face. In their business card menu, they provide free and premium business card for the customers. The customers also can upload their business card.

Disadvantage of VistaPrint is that they provide many products which also is too complex for the customers to search the card that they want. Less choice for the customers to choose.

In this new system, specific products for the customers provided which offer the business card. Besides that, this system can provide many choices for the customers to choose.

2.6 Summary

This chapter is describes the literature review of the existing system to improve this new system. It also describes about the World Wide Web, Internet, the usage of the Internet and even the risk and security of the Internet.

31

Chapter 3: Methodology

3.1 Introduction

Methodology can be defined as collection of procedure, techniques, tools and helping documentation. The purpose of methodology is to explore the processes of developing software and save the time in development system. Each methodology has it own distinct objectives.

3.2 System Development Phases

Theoretically, software is developing in several levels which are call phases. All the phases will form a life cycle which is called System Development Life Cycle. Overall, System Development Life Cycle can be divided into six phases. The six phases are planning phase, analyzing phase, design phase, coding phase, experiment phase, operation phase and maintenance phase.
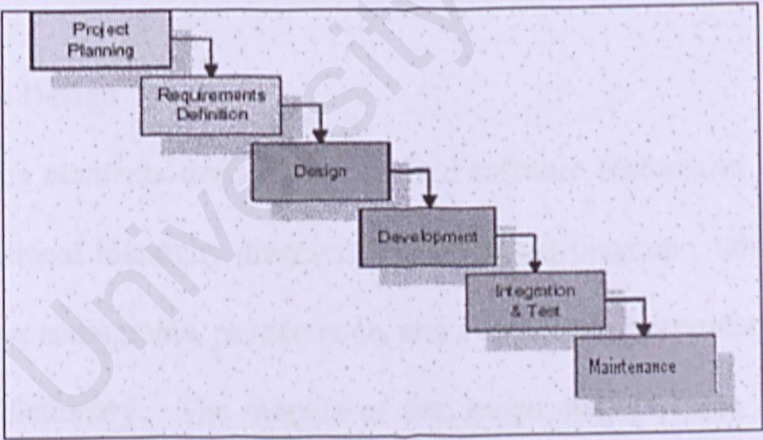
Figure 3.0: System Development Life Cycle

3.2.1 Requirement Specification

The activities in planning phase are to establish objectives and needs, estimate scope, schedule planning, and establish necessity of system and output documentation. The outputs of the project planning stage are the configuration management plan, the

32

quality assurance plan, and the project plan and schedule, with a detailed listing of scheduled activities for the upcoming Requirements stage, and high level estimates of effort for the out stages.

3.2.2 Requirement Analysis

Requirements are identified by unique requirement identifiers and, at minimum, contain a requirement title and textual description. These requirements are fully described in the primary deliverables for this stage: the Requirements Document and the Requirements Traceability Matrix (RTM). In the requirements stage, the RTM consists of a list of high-level requirements, or goals, by title, with a listing of associated requirements for each goal, listed by requirement title. The outputs of the requirements definition stage include the requirements document, the RTM, and an updated project plan.

3.2.3 System Design

Design elements describe the desired software features in detail, and generally include functional hierarchy diagrams, screen layout diagrams, tables of business rules, business process diagrams, pseudo code, and a complete entity-relationship diagram with a full data dictionary. The outputs of the design stage are the design document, an updated RTM, and an updated project plan.

3.2.4 Development

The development stage takes as its primary input the design elements described in the approved design document. Software artifacts include but are not limited to menus,

33

dialogs, and data management forms, data reporting formats, and specialized procedures and functions. The RTM will be updated to show that each developed artifact is linked to a specific design element, and that each developed artifact has one or more corresponding test case items.

3.2.5 System Testing

System testing phase is to evaluate the system's actual functionality in relation to expected or intended functionality. During the integration and test stage, the software artifacts, online help, and test data are migrated from the development environment to a separate test environment. The final reference data (or links to reference data source files) and production user list are compiled into the Production Initiation Plan.

3.2.6 Operation and Maintenance

Operation and maintenance phase is the phase that deploys software into production and maintains the whole system during operation to avoid failure of the system.

3.3 Paradigm of System Development

Paradigm of system development is referred to overall software developing process. Each paradigm of software development will content several phases. Each phase have it own objective. For example, analyzing phases in paradigm waterfall will content the objective that is well defined to satisfy the needs of the users. There are several paradigms which are waterfall model, v model, waterfall with prototyping model and spiral model.

3.3.1 Waterfall Model

After each step is finished, the methodology proceeds to the next step, just as builders don't revise the foundation of a house after the framing has been erected. One source of difficulty is that the number of dependencies among the artifacts (outputs) of the various steps is surprisingly high, much higher in a typical software project than in a typical building project.

In old style (CMM) processes, architecture and design preceded coding, usually by separate people in a separate process step. Although the lesson that the waterfall model doesn't work very well is known among software engineers, that lesson seems lost on many managers or executives. Perhaps the waterfall model appeals to managers because it seems to allow one to plan and carry out a software project as predictably as one might plan and build a house.
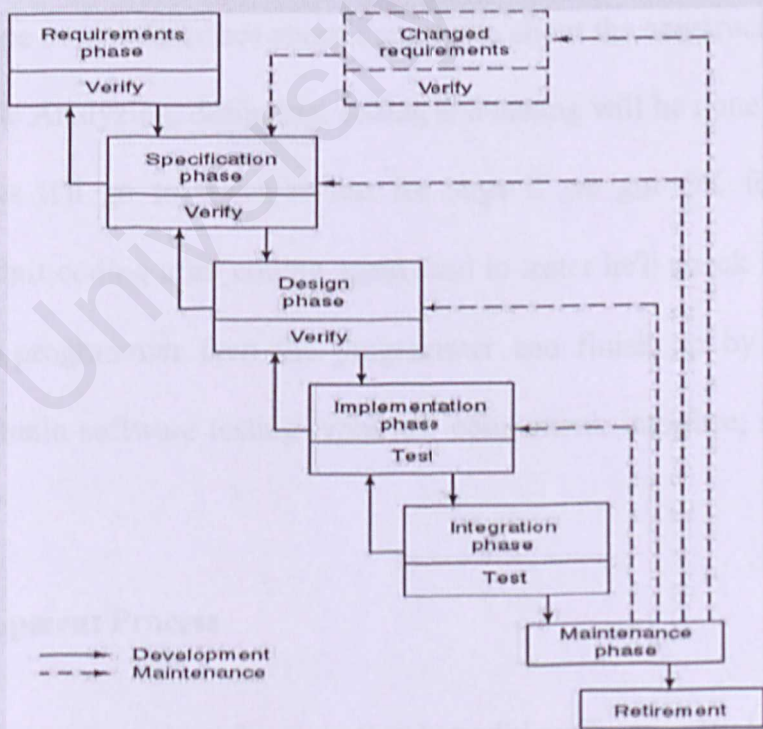
Figure 3.1: Schematic illustrating the Waterfall Model

Advantages of Waterfall Model: 1) Testing is inherent to every phase of the waterfall model; 2) It is an enforced disciplined approach and; 3) It is documentation driven, that is, documentation is produced at every stage.

Disadvantages of Waterfall Model are: 1) It only incorporates iteration indirectly, thus changes may cause considerable confusion as the project progresses; 2) As The client usually only has a vague idea of exactly what is required from the software product, this WM has difficulty accommodating the natural uncertainty that exists at the beginning of the project and; 3) The customer only sees a working version of the product after it has been coded. This may result in disaster any undetected problems are precipitated to this stage.

3.3.2 V Model

'V' shape model describes about the process about the constructing the application at a time all the Analyzing, designing, coding and testing will be done at a time. i.e. once coding finishes it'll go to tester to test for bugs if we got OK form tester we can immediately start coding after coding again send to tester he'll check for BUGS and will send back to programmer then the programmer can finish up by implementing the project. The main software testing types are: component, interface, system, acceptance and release.

o **Development Process**

The development process for a system is traditionally as a Waterfall Model where each step follows the next, as if in a waterfall. It does not imply that any of the steps

in a process have to be completed, before the next step starts, or that prior steps will
not have to be revisited later in development.

o **Business Case**

The first step in development is a business investigation followed by a "Business
Case" produced by the customer for a system. This outlines a new system, or change
to an existing system, which it is anticipated will deliver business benefits, and
outlines the costs expected when developing and running the system.

o **Requirements**

The next broad step is to define a set of "Requirements", which is a statement by the
customer of what the system shall achieve in order to meet the need. These involve
both functional and non-functional requirements.

o **System Specification**

"Requirements" are then passed to developers, who produce a "System
Specification". This changes the focus from what the system shall achieve to how it
will achieve it by defining it in computer terms, taking into account both functional
and non-functional requirements.

o **System Design**

Other developers produce a "System Design" from the "System Specification". This
takes the features required and maps them to various components, and defines the

relationships between these components. The whole design should result in a detailed system design that will achieve what is required by the "System Specification".

o **Component Design**

Each component then has a "Component Design", which describes in detail exactly how it will perform its piece of processing.

o **Component Construction**

Finally each component is built, and then is ready for the test process.

o **Unit Testing**

Unit Test are made to validate the code written against the requirements and design. "Units" are identified, which may be at the function / sub-routine level. Unit Testing stubs are made to test the functionality of each unit. This test plan is executed over the "Units" to be tested to form the Unit Test reports containing the results of this phase.

o **Integration Testing**

The Integration test is developed to test the integration of various sub-modules. The integration test is developed to cover all functional requirements of the software modules. The integration test reports are the output of this module.

o **System Testing**

The System Integration Test is executed on a target system or a prototype. The System Integration results in the final software system that can go for factory testing.

o **Acceptance Testing**

At the end of each phase a deliverable is identified and produced. For e.g., at the end of high-level design phase a high-level document will be generated. The functionality and availability of the system is recognized and ready to be in marketed.
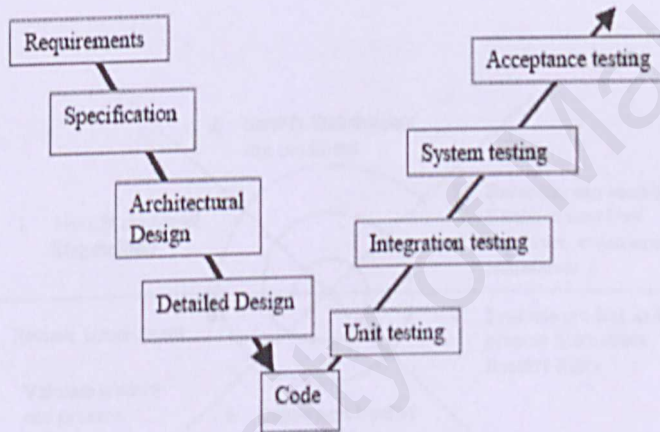
Figure 3.2: V-Model

3.3.3 Spiral Model

The original spiral model [Boehm, 1988] uses a cyclic approach to develop increasingly detailed elaborations of a software system's definition, culminating in incremental releases of the system's operational capability. Each cycle involves four main activities: 1) Elaborate the system or subsystem's product and process objectives, constraints, and alternatives; 2) Evaluate the alternatives with respect to the objectives

and constraints. Identify and resolve major sources of product and process risk; 3) Elaborate the definition of the product and process and; 4) Plan the next cycle, and update the life-cycle plan, including partition of the system into subsystems to be addressed in parallel cycles.

The Spiral Model resolves this difficulty by adding three activities to the front of each spiral cycle: 1) Identify the system or subsystem's key stakeholders; 2) Identify the stakeholders' win conditions for the system or subsystem and; 3) Negotiate reconciliations of the stakeholders' win conditions.
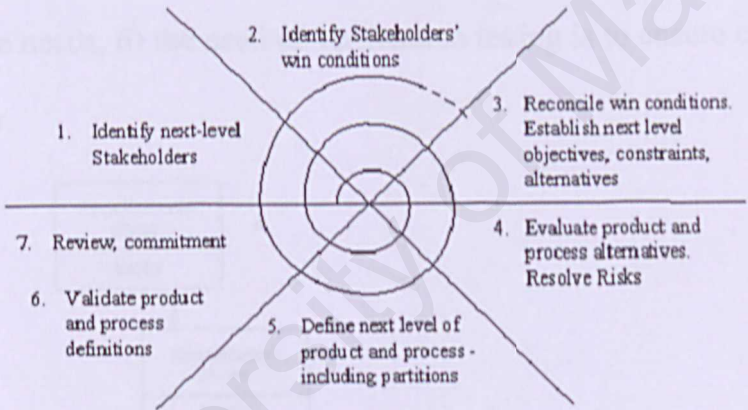
Figure 3.3: Spiral Model

3.3.4 Waterfall with prototyping Model

Each build must be testable. Both of the waterfall model and prototyping model are separate in build. Because product can be introduced into the client's organization gradually. The gradual introduction of the product via the waterfall with prototyping model provides time for the client to adjust to the new product. Change and adaptation

are natural to the waterfall with prototyping model, whereas change can be a threat when products are developed and introduced in one large step.

Client can stop development at any time. The flexibility of the waterfall with prototyping model gives it a major advantage over the waterfall and rapid prototyping models. However, if the product is broken into too few builds, then the waterfall with prototyping model degenerates into the Build-and-fix approach.

Advantages of waterfall with prototyping model are: 1) level of system development can be establish easily, 2) easy to separate one level from the other, 3) estimate the activities that need to be execute in system development, 4) prototyping is used to monitor each level, 5) the used of validation is to ensure that the system will implement all the needs, 6) the need of verification testing is to ensure each function will execute correctly.
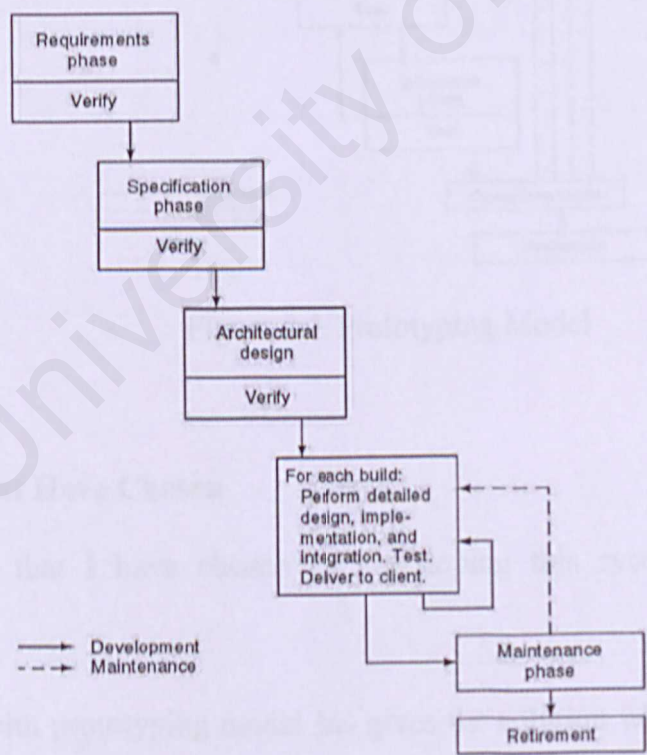
Figure 3.4: Waterfall with prototyping Model

3.3.5 Prototyping Model

A prototyping model is a working model that is functionally equivalent to a subset of the product. The developer first builds prototype, and let client and users experiment. In the waterfall model, implementation of design sometimes leads to design faults coming to light. In specification, planning and design, verification is needed. In implementation and integration, testing is needed.
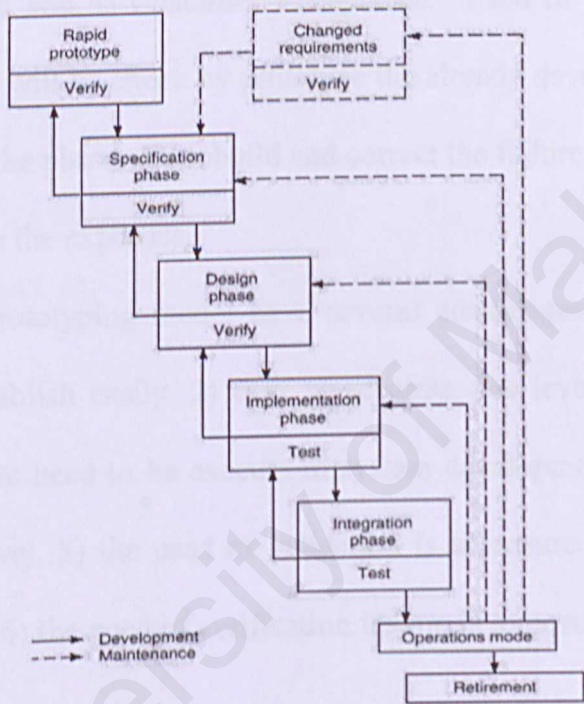
Figure 3.5: Prototyping Model

3.4 The Model That Have Chosen

The model that I have chosen for developing this system is waterfall with prototyping model.

Waterfall with prototyping model has gives the solution which prototyping is for requirements phase and waterfall is for rest of the life cycle. Waterfall model is a separates distinct phases of specification and development. The Waterfall Model Process

depicts a Sequential, Linear Flow (Relationship) among the phases. Waterfall model is characterized by feedback loops and documentation. Advantages of waterfall model are documentation and processes of maintenance easier. Prototyping methodology that starts with analyzing the purpose and the nature of the prototype and building a solution based on a spiral model. The project shall iterate through the phases as specified below, building one or more components at a time. Which provide: 1) Planning, 2) Risk Analysis, 3) Engineering and 4) Customer Acceptance. Each of the processes of the phase in waterfall model will be check by prototype the already developed. If have error or bug, the processes of the phase will rebuild and correct the failure of the system during development. It can save the expenses.

Waterfall with prototyping model have several advantages: 1) level of system development can be establish easily, 2) easy to separate one level from the other, 3) estimate the activities that need to be execute in system development, 4) prototyping is used to monitor each level, 5) the used of validation is to ensure that the system will implement all the needs, 6) the need of verification testing is to ensure each function will execute correctly.

3.5 Summary

This chapter is describes the methodology for developing this project. Besides that, it also describe the others methodology to make the recommendation for this system project. It also describe the SDLC phase in helping the development of project and also the choice of methodology that has make for developing this system and this project.

43

Chapter 4: System Analysis

4.1 Introduction

A complete understanding of software requirements is essential to the success of a software development effort. The requirement analysis task is a process of discovery, refinement, modeling and specification. With requirement analysis, system engineer is able to specify software function and performance indicate software's interface with other system elements and establish constraints that software must met.

4.2 Analysis Procedures

The process of analysis involves the following procedures: 1) Problem identification; 2) Evaluation and Synthesis; 3) Modeling and; 4) Specification.

4.2.1 Problem Identification

Before a new system can be built, we must identify the problem that needs to be solved in order to ensure the success of this project. For Online business card, the problem is how to store, retrieve and manage a large amount of images and word sentiments in a database system in an effective and efficient way. In additional, another problem would be to determine how to improve the performance of the system in transmitting large image files.

4.2.2 Evaluation and Synthesis

In this stage, analysis of the problems needs to be done by dividing the problems into smaller parts so that the problem will be easier to be understood and solved. The following problems are the few examples of system requirements that must be considered: 1) What kind of database used to store the images and sentiments?; 2) Using the relational DBMS or object oriented DBMS?; 3) How are the images and sentiments

stored in the database system?; 4) How to index the images and sentiments? and; 5) What are he most appropriate tools and technology to be used in building the web site?

4.2.3. Modeling

We create models to gain a better understanding of the actual entity to be built. The models focuses on what the system must do, usually a graphical notation (such as DFD) is used to depict information, processing, system behavior and other characteristic.

4.2.4 Specification

The requirement specification is a complete listing that defines what the system should do; it will be used in the system design and system testing.

4.3 Requirement Analysis

Requirement analysis covers the areas of functional and non-functional requirement of Online Business Card project. The functional requirement can be categorizes to the general user section and the administrator section, where both sections will try to give out clear picture on how the user interface is going to be. Whereas, the non-functional requirement will discuss the system's constraints along with the standards the system must meet.

4.3.1 Functional Requirement

Functional requirement is a functions or characteristics expected by user for the system. It is a combination of all the main modules of Online Business Card, which are made to communicate internally or externally. The system user is divided into two categories which are the user who would like to print a business card and the system

45

administrator. The functional requirements for the system are divided into a few modules as follow:

4.3.1.1 System User

❖ **Image (Static Graphic)**

One feature that makes up Online Business Card is an images. User can select any image desired by making a query with the search function provided. This search allows the user to type in a word or phrase and the system will search for the existence in the database whereby the database will display a few images prior to user's request and description. Any images that are loaded into the image area can be shaped to fit the empty working sheet.

❖ **Sentiments**

A sentiment will be a great feature for business cards. For Online Business Card, user can also select a variety word sentiments provided by making a query to the database. After the sentiment have been chosen, the text properties table will be activated. Then user can select the fonts and choose the desired color for the sentiment. The sentiments will then be loaded into the sentiments area to make up a full version of user's own creation of business card.

❖ **Color**

On the screen along the selection image and sentiment, there will also be a select color button for user to choose a background color of the business card. Upon selecting the button, a color palate will appear where user can select the color they wish and then click OK.

❖ Upload Image

To upload the customer desire image for their business card. The customer can
upload the picture that their desire for developing and creating the business card.

4.3.1.2 System Administrator

❖ Authentication and Authorization

An authentication module is to ensure that only administrators (authorized users) can
have access to the system. They are required to submit their identification and
password for authentication purposes. Moreover, the administrators are able to
perform the maintenance tasks such as add, update and delete the existing records in
the database system.

4.3.2 Non-Functional Requirement

Non-functional requirements are the constraints under which a system must operate and
the standard that must be meet by the delivered system. This is a non-functional
requirement or constraints describes a restriction on the system the limits the choice for
constructing a solution to the problem. These constraints usually narrow my selection of
language, platform, or implementation techniques or tools.

❖ Reliability

This system should be reliable which means that it does not produce dangerous or
costly failures when it is need in a reasonable manner.

❖ Efficiency

Efficiency in a computer technology means a procedure that can be called or accessed in an unlimited numbers of times to produce similar outcomes or output at a creditable speed.

❖ Maintainability

A product is maintainability if the programs are easily to modify and tst when updating to meet new requirement, correcting errors or more to a different computer system.

❖ Understandability

Understandability in terms of the coding method used, allows other programmers to understand the logic of the program flows. Thus, changes can be made easily upon the necessary program segments without modifying other essential logic of the program. Simple and clear sentences or instruction are displayed so that users can use the system without difficulty.

❖ Robustness

This requirement is referring to the ability of the Online business card to continue operation in spite f unexpected problems. Online business card is able to detect errors in the user input by having a validation for the input field in the client side before it is sent to the server. Therefore, it would be more robust to user error.

❖ User-friendly

The user interface for this web site should not too crowd so that it would not confuse the user especially when a wizard is used. Online Business Card should provide a

48

clear set of steps-by-steps instructions from choosing a layout preformed to the print instruction. A suitable button such as preview and edit button also must be set before user finally detected t print the card.

4.4 Tools and Technology Considered

This section will identify the suitable programming languages, development tools, server, database system and implementation platform that are used to develop the Online business card system. An analysis has been done in making the decision and after much consideration, I have chosen this project are easy to develop and deploy, and also easy integration with the latest emerging technologies.

❖ **Platform : Windows XP**

There are reasons why I have decided to adapt Windows XP as my operating system in developing this Online Business Card system. First of all, it was built as a next version of Windows 98 so the feature is improved. As the system administrator, day-to-day maintains is easier with Windows XP. I can learn to manage system from a Windows console much more quickly than I can learn with Windows98 because of the easier delegation, a more consistent user interface, and simple to use integrated tools provided in Windows XP server. Furthermore, with Windows XP, I can learn reduce time it takes to create new web sites while reducing the like hood of error. As a conclusion, the improvement of Windows XP makes it a platform that is easier to deploy, configure and use.

❖ **Application Development Too : Microsoft Visual Basic.Net**

After comparing ASP.Net with other applications, I find that ASP.Net is the most suitable tool to help me in developing the Online Business Card system. It is a great

49

tool for creating dynamic web pages. Among the benefits of ASP.Net applications include its ability to have a complete integration with HTML file and also it is easy to create, deploy data, validate user input and upload files. Furthermore, ASP.Net application can work in all browsers including Netscape, Microsoft Internet Explorer and Opera. I am sure that creating a web site will not be a difficult work for me for the future

❖ **Webpage Scripting : ASP.Net (Visual Basic)**

The main reason for me to choose this scripting language is because it is the default language of ASP.Net. VBScript was created to use as a client-server side and as a server-side scripting language. It is use to create the storage and management of the images and sentiments that stored in the database system.

❖ **Web Application Language : HTML**

Basically HTML is the simplest and easy to learn language with a small number of commands, which is very useful for me since I've never had an experience in developing a web site before. It is a special authoring language used to define how text and graphics appear on a web page and how different documents and web resources are linked. My project demand a very high profile, creative layout as well as attractive user interface in order to attract more user to navigate my web site and so, I chose HTML because it is just the right language to help me get started in achieving my goal.

50

❖ **Web-Server : Internet Information Services 5.0 (IIS)**

To run the database system in the Online Business Card system, I have install the IIS software. IIS software needed to operate and linked the web page with the database system in this Online Business Card system.

❖ **Database Management System : Microsoft SQL Server 2000**

Due to the lack of experience of developing a database even during my period of industrial training, I have to do a lot of research to determine which database management system that suits my purpose. And so, I finally decided that Microsoft SQL Server 2000 is just the right choice for my Online Business Card system project. SQL Server 2000 was chosen because it is the best database solution to be used with Windows XP server. Plus, it can handle a large amount of data which useful for me since my system involve a lot of images and sentiments.

4.5 Summary

This chapter of system analysis describes the functional and non – functional requirement of the Online Business Card system project. Summary of the software and technology used to develop the system and the reasons for using those products were explained in this chapter. The functional and non-functional requirements are considered to make sure the effectiveness and efficiency of the system during the creating ad printing processes.

Chapter 5: System Design

5.1 Introduction

Design is the creative process of transforming the problem into a solution. And this definition can be related to system design, which is a process through which requirements are translated into a representation of software. Modularity is a characteristic of a good design. The component has a clearly defined inputs and outputs. And each component has a clearly stated purpose. Thus, to design a system is to determine a set of components and inter-component interfaces that satisfy a specific set of requirement. The design of online business card has considers the following issues: 1) System functionality design; 2) Database design and 3) Interface design.

5.2 System Functionality Design

System functionality design is based on the system requirement stated in previous chapter. It is translates the system requirement into system functionality. This design focuses on the system structure.

As mentioned in the previous chapter, online business card is divided into two main sections, which are the general user section and administration section. Therefore, the functionality of this system is also divided into two main portions as shown in below. The picture at the below show is the general functionality of the system. Later I will discuss the detail function into the system.

52
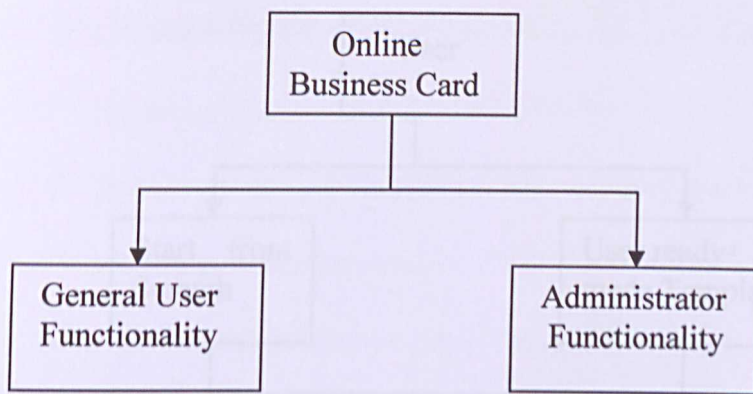
Figure 5.0: Online Business Card System Structure Diagram

5.2.1 General User Functionality

The general user functionality is divided into two main module, which are the start from scratch option and secondly, the use ready-made template option. For the start from scratch option, user is given a blank worksheet and its up to hem to choose whatever images and sentiments they want to make up a business card. The use also can choose any background images they intended for the card. The font and color choices for sentiments can be selected after they have decided in which sentiment they want.

Second module is use ready-made template. For this module user just have to select any template they desire and they can add a sentiment or edit the background images of the template according to their taste.

After all steps have been taken to make a card, then user can preview them simply by clicking the print preview button provided. And after they have satisfied with their creation, they can print them.
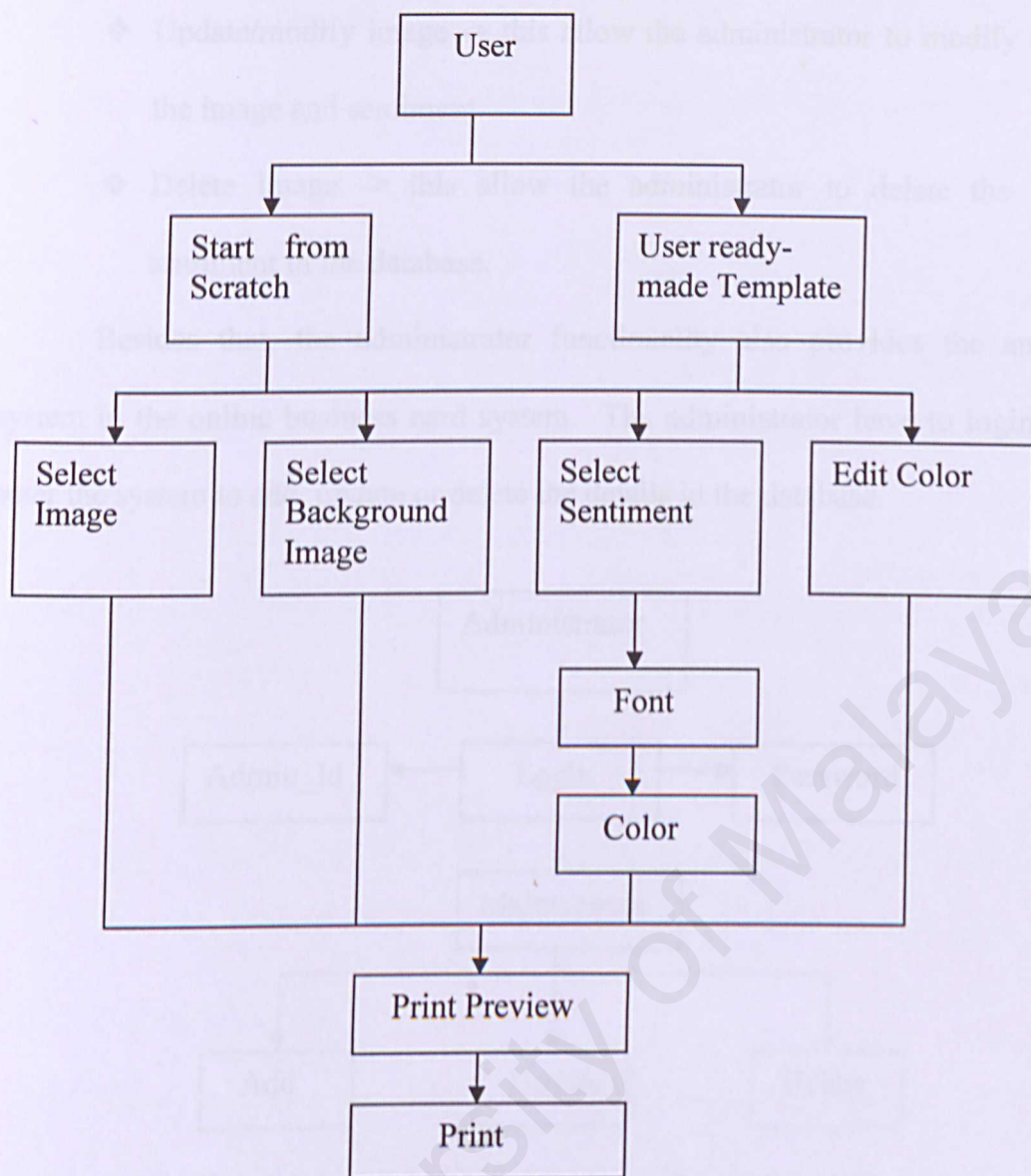
Figure 5.1: User Functionality Structure Diagram

5.2.2 Administrative Functionality

As for the administrative functionality only the administrators is given permission to have access to the system. But first, they are required to submit their identification and password for authentication purpose. Then they are able to perform the maintenance tasks such as add, update and delete the existing records in the database system.

❖ Add image -> this allow the administrator to add new images and sentiment to database.

54

❖ Update/modify image -> this allow the administrator to modify the detail of the image and sentiment.

❖ Delete image -> this allow the administrator to delete the images and sentiment in the database.

Besides that, the administrator functionality also provides the authentication system in the online business card system. The administrator have to login before can enter the system to add, update or delete the details in the database.
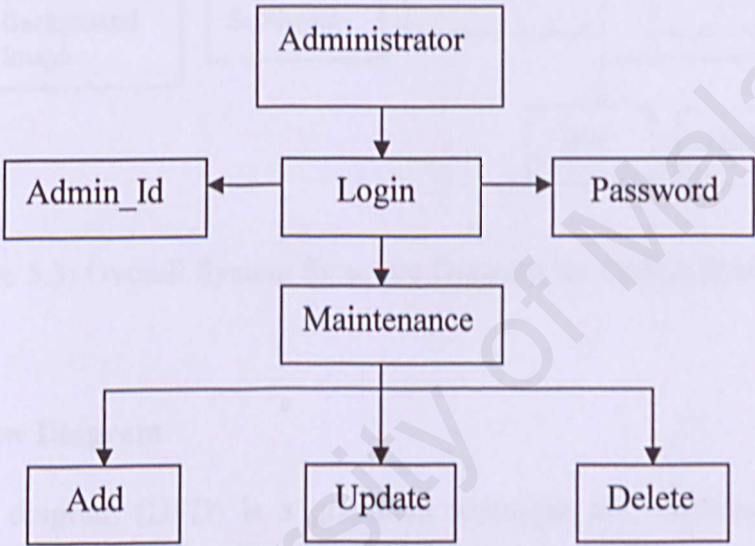
Figure 5.2: Administrator Functionality Structure Diagram

The previous two diagrams show the main sections that make up Online Business Card. And the diagram below show the overall detailed functional design of the system after they are combined.
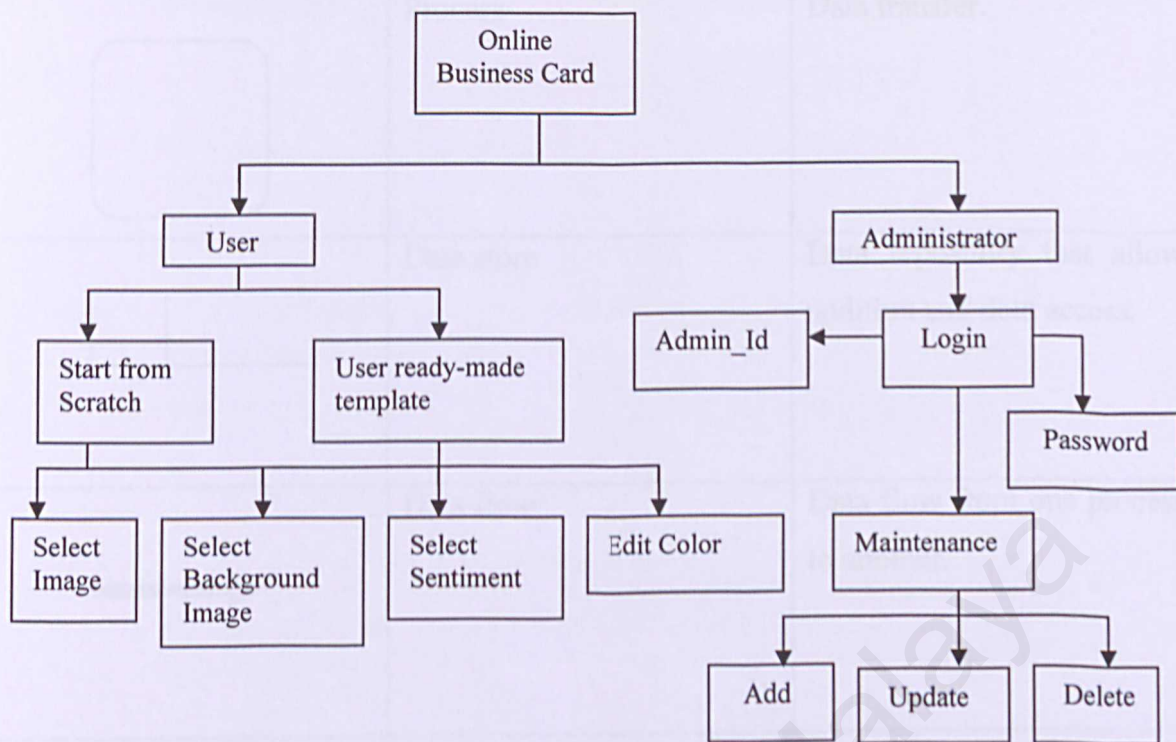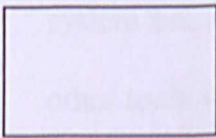
Figure 5.3: Overall System Structure Diagram for Online Business Card

5.2.3 Data Flow Diagram

Data flow diagram (DFD) is a graphical technique that enables analyst to depict information flow in an information system. It shows how the data flow into the system, how they are transformed and how they leave the system. DFD provides a mechanism for functional modeling as well as information flow modeling. The components of the DFD consist of the following items shown in this table.

Symbol	Component	Description
	Entity	A person, group, department or other system that able to send and receive data form the system.

	Process	Data transfer.
	Data store	Data repository that allow addition and data access.
→	Data flow	Data flow from one process to another.

Table 5.0: Data flow diagram

Four main activities:

- Analysis: DFD is used to determine requirements of users.

- Design: DFD is used to map out plan and illustrate solutions to analysts and users while designing a new system.

- Communication: One of the strength of DFD is its simplicity and ease to understand to analysts and users;

- Documents: DFD is used to provide special description of requirements and system design. DFD provide an overview of key functional components of the system but it does not provide any detail on these components. We have to use other tools like database dictionary, process specification to get an idea of which information will be exchanged and how.

❖ Context Diagram
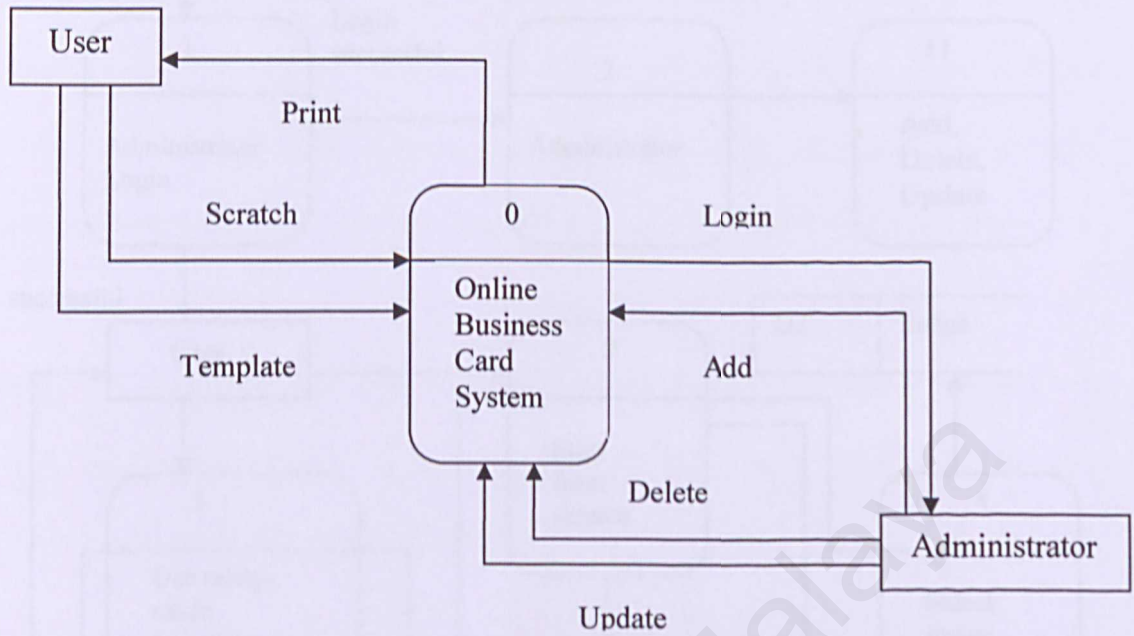
Figure 5.4: Context Diagram for Online Business Card
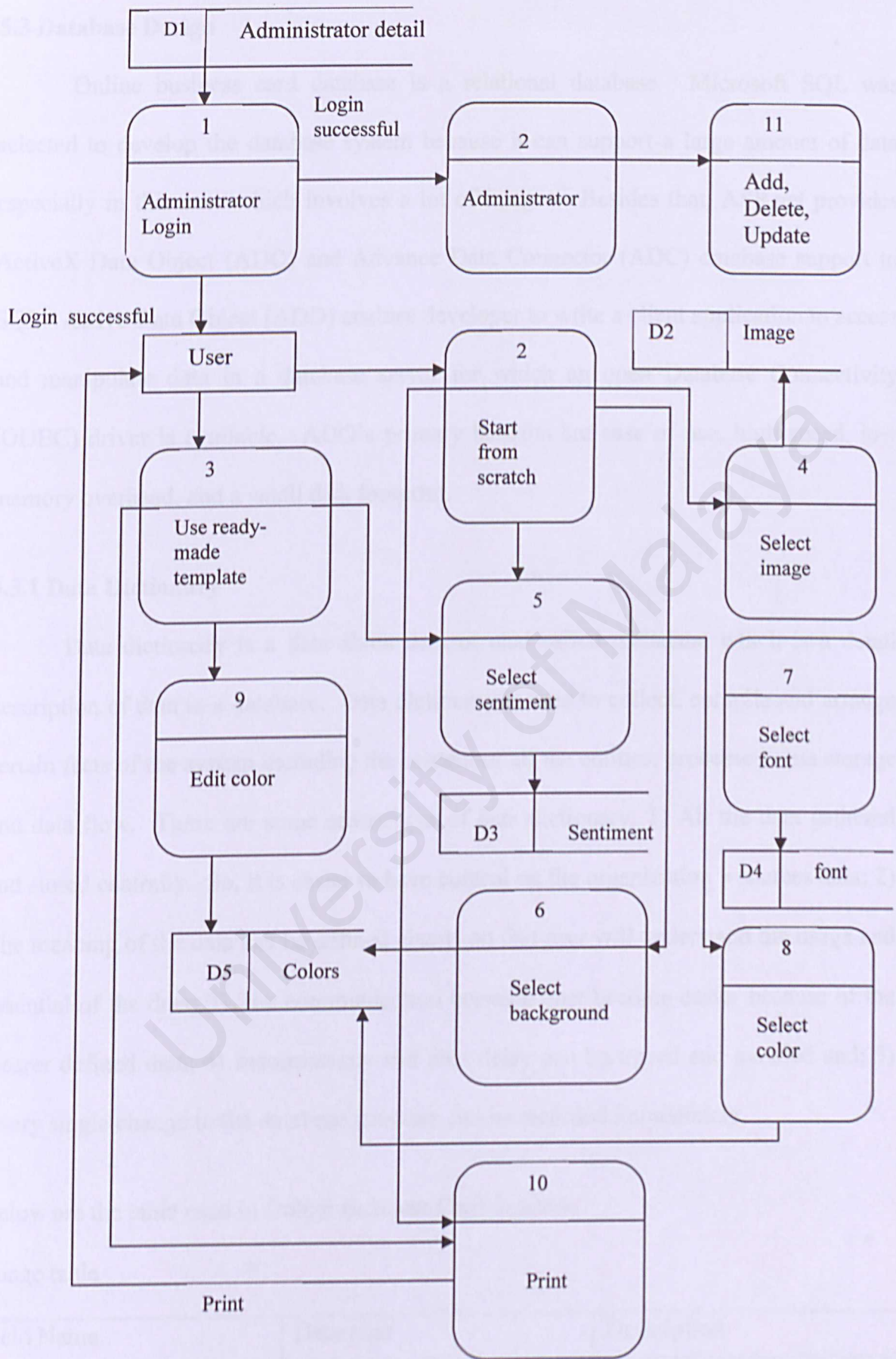
Figure 5.5: Zero Diagram for Online Business Card

5.3 Database Design

      Online business card database is a relational database. Microsoft SQL was selected to develop the database system because it can support a large amount of data especially in this case which involves a lot of images. Besides that, ASP.net provides ActiveX Data Object (ADO) and Advance Data Connector (ADC) database support to SQL. Active Data Object (ADO) enables developer to write a client application to access and manipulate data in a database server for which an open Database Connectivity (ODBC) driver is available. ADO's primary benefits are ease of use, high speed, low memory overhead, and a small disk footprint.

5.3.1 Data Dictionary

      Data dictionary is a data about data or also called metadata, which is a detail description of data in a database. Data dictionary is used to collect, compile and arrange certain facts of the system including the content of all the entities, processes, data storage and data flow. There are some advantages of data dictionary: 1) All the data gathered and stored centrally. So, it is easier to have control on the organization's sources data; 2) The meaning of the data can be defined clearly so that user will understand the usage and essential of the data; 3) The communication between user become easier because of the clearer defined data; 4) Inconsistency and data delay can be traced and avoided and; 5) Every single change to the database structure can be recorded immediately.

Below are the table used in Online Business Card database.

Image table

Field Name	Data type	Description
Img_id	Int	The unique image_id

Fname	Varchar	Image name
Category	Varchar	Category of the image
Description	Varchar	Description of the image
Filename	Varchar	Filename of the image
Img	Image	Binary image

Table 5.1: This table contains all images information. The primary key is Img_id.

Sentiment table

Field Name	Data type	Description
Snt_id	Int	The unique sentiment ID
Fname	Varchar	Sentiment name
Category	Varchar	Category of the sentiment
Description	Varchar	Description of the sentiment
Filename	Varchar	Filename of the sentiment
Snt	Varchar	Sentiment

Table 5.2: This table contains all sentiment's information. The primary key is Snt_id.

Customer table

Filed Name	Data type	Description
User _id	Int	User ID
U_name	Varchar	User sure name
Username	Varchar	Username of the user
U_pass	Varchar	User password
U_birth	Int	User birthday

Table 5.3: This table contains provides he login information of user. The primary key is User_id.

5.3.2 Entity-Relationship Modeling

Entity-relationship modeling is an established methodology for determining the structure of database. Along with it come entity-relationship diagrams, which are used to illustrate the hierarchy of entities and properties within a database. The following is a high level overview of the steps in the entity-relationship model:

- Identify discrete entities – will correspond roughly with the tables in the database, when it's finished
- Identify the properties of those entities – this step is necessary after the entities have been identified
- Identify the relationships between the entities – there are three types of data relationships than can exist, one-to-one (exist when one item is functionality dependent on another), one-to-many (occur when one entity can correspond to several occurrences of the other entity), and many-to-many (is a bit more complex because many entities can included).
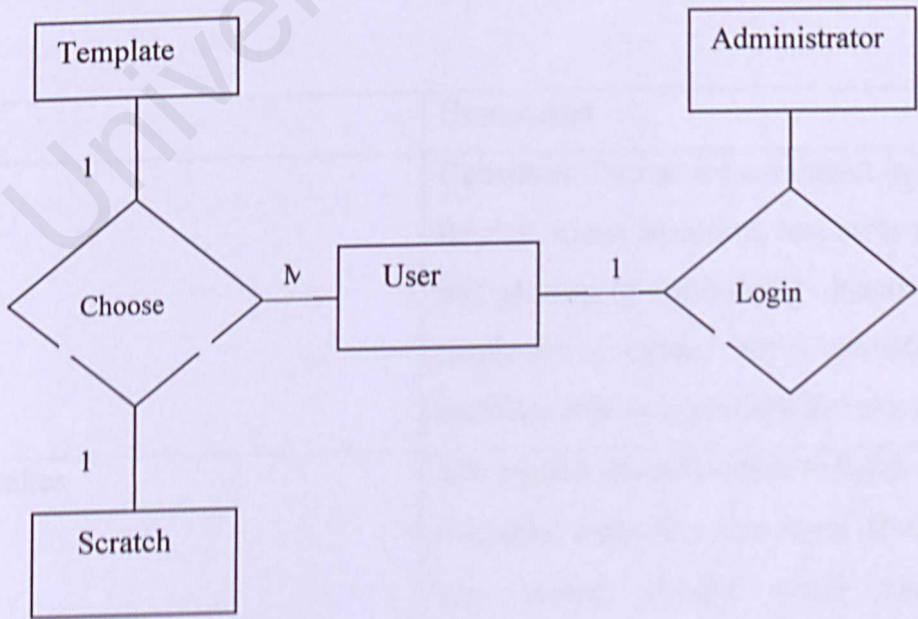
Figure 5.6: Basic E-R Diagram for Online Business Card

62

5.4 Interface Design

User interface plays a very important role in determining the quality of an information system. User interface is the component of the system that communicates with the users. Therefore, the input data collected from the uses and output data generates for the users depend on a well designed user interface. The interface design should meet the objectiveness, accuracy, ease of use, consistency, simplicity and attractiveness. All of these objectives are attainable though the use of basic design principle, knowledge of what is needed as input for the system, and an understanding of how the user should respond to different elements in the forms and servers. There are three main categories of guidelines that are taken into consideration and they are the general interaction, information display and data input.

5.4.1 General Interaction

Guidelines for general interaction often cross the boundary into information display, data entry and overall system control. Below are the guidelines for general interaction.

Guideline	Description
Consistent	Consistent format for command input, data display, menu selection, and error message and placing of the control objects that are displayed to users. An inconsistent user interface will only confuse the users.
Handling mistakes	The system should be able to handle certain mistakes especially the input from users. The system should verify and does validation on them to protect itself from

63

	error that might cause it fail.
Request for verification on certain task	This is important if a task is performed on certain functions that may be critical. For example, when the administrator delete/update any information, a confirm asking for verification is appropriate.
Reduce memorization	Interface should not need users to remember such of the information. For example, having proper and useful messages can remind the user of their current status.
Help facilities	Help in any application is one of the most important modules that assists or serve as a guideline to users using the system.

Table 5.4: Table of the Guideline for General Interaction

5.4.2 Information Display

Information display is an important issue. The misplacing of information may confuse the users and lead to misconception on the results. The following guidelines focus on information display: 1) Display information that is relevant to current context; 2) Use a presentation format that is easy to understand; 3) Use consistent tables, standard abbreviation and predictable color; 4) Provide meaningful error message and; 5) Comments that are not needed in certain context should be deactivated (or made visible) to avoid confusion.

5.4.3 Data Input

The user speeds much of the time doing data input especially in an information retrieval system. The following guidelines focus on data input: 1) Minimize the number of input actions required of the user. The main objective of this is to reduce keyboard typing by users and try as much as possible to use the mouse to select predefined sets of inputs (or results); 2) Maintain consistency between information display and data input and; 3) Allow the user to control the interactive flow.

5.4.4 User Interfaces Design of Online Business Card

The following show the issues that taken into consideration during the user interface of Online Business Card: 1) A consistent format for menu display, data display and format. User can select same menu from any page; 2) When a user an invalid data, an error message will quickly be pop up; 3) Some commands are deactivated if they are not needed, such as the fonts and color selection for sentiments only will be activated if the sentiment has been chosen; 4) The instructions of creating a card must be clear enough so that user will not be having any problem during the creation process and: 5) The images and the sentiments provided must be sufficient in order to satisfy users.

Figure 5.7: SummerPrinter.com main page
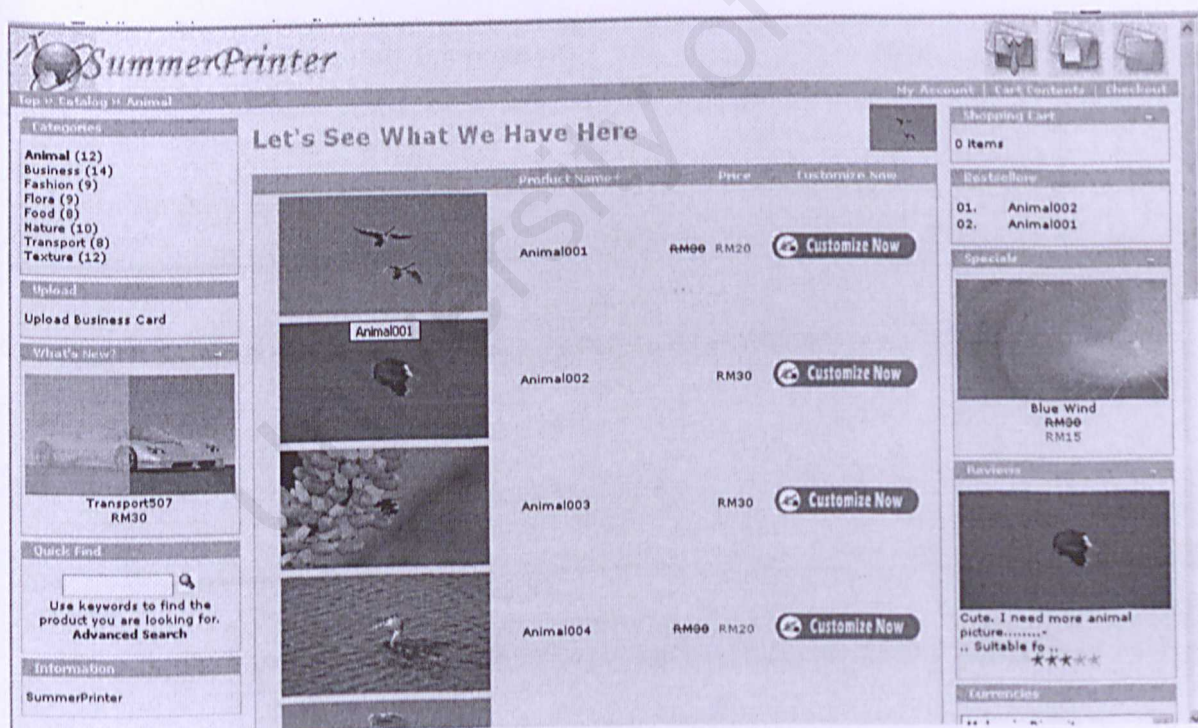
Figure 5.8: Let Customers See and Select the Pictures That Have Provided
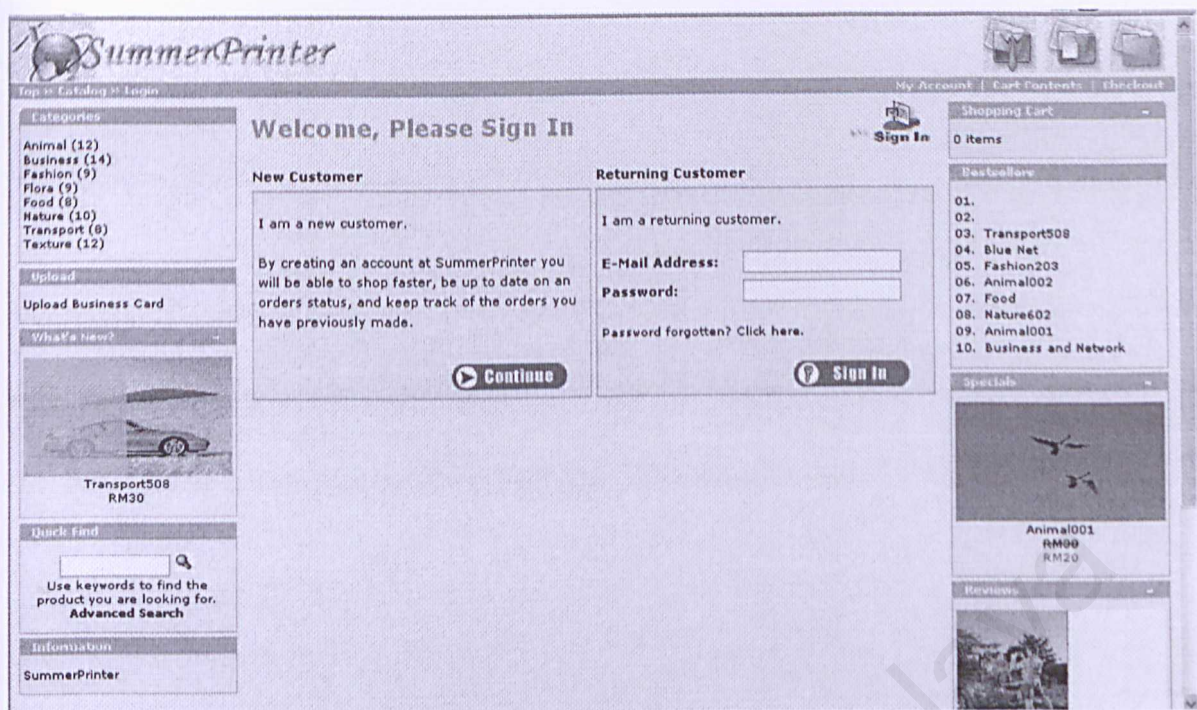
Figure 5.9: Login Page for the Customers

Figure 5.10: Customers' Registration Page
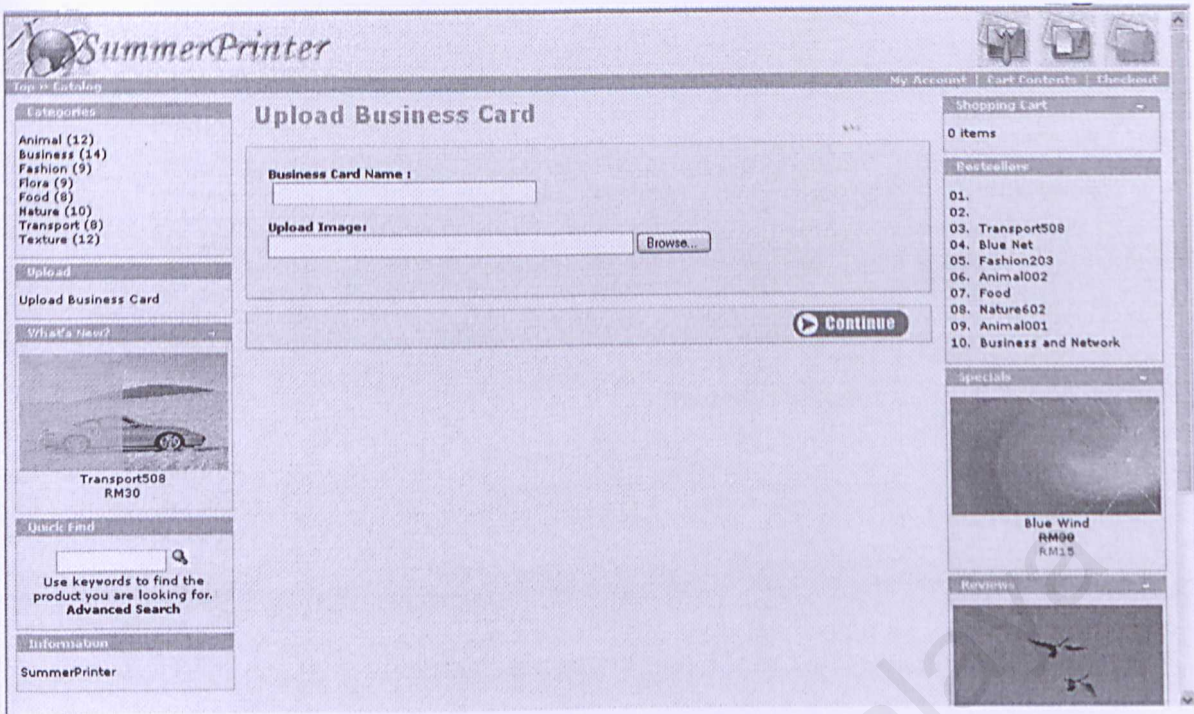
Figure 5.11: Upload Picture that Customers Desired Page
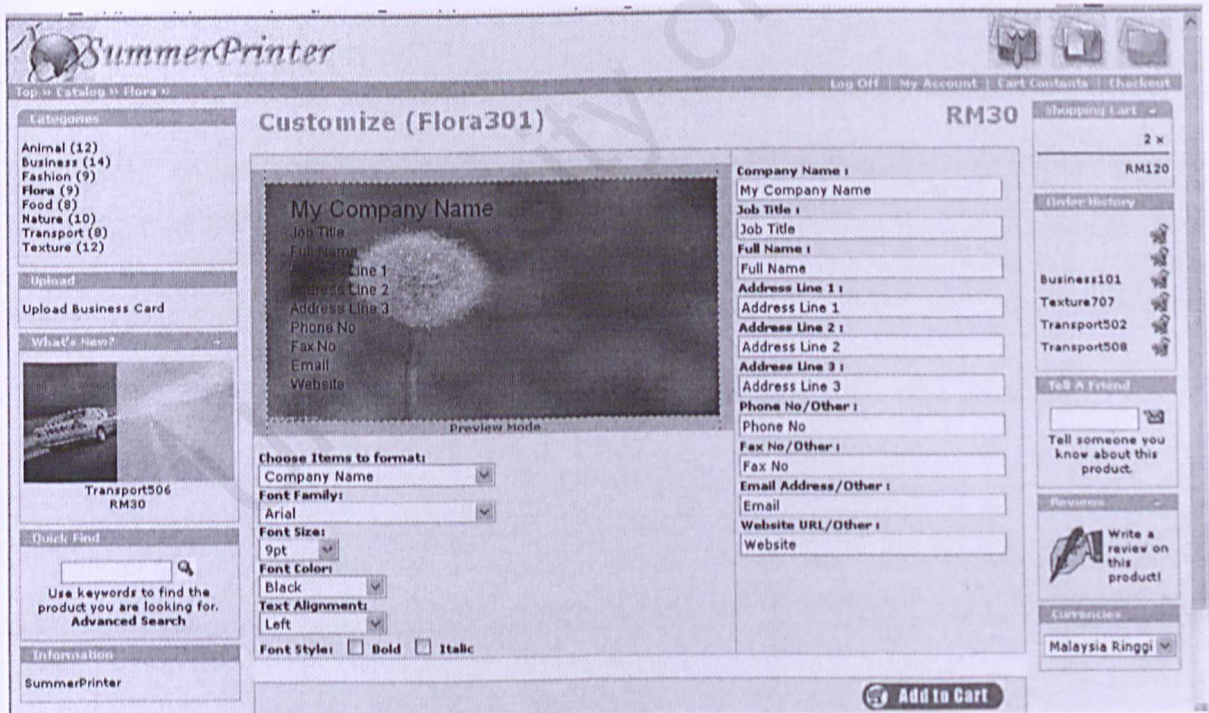
Figure 5.12: Customers Designing and Creating Business Card Page
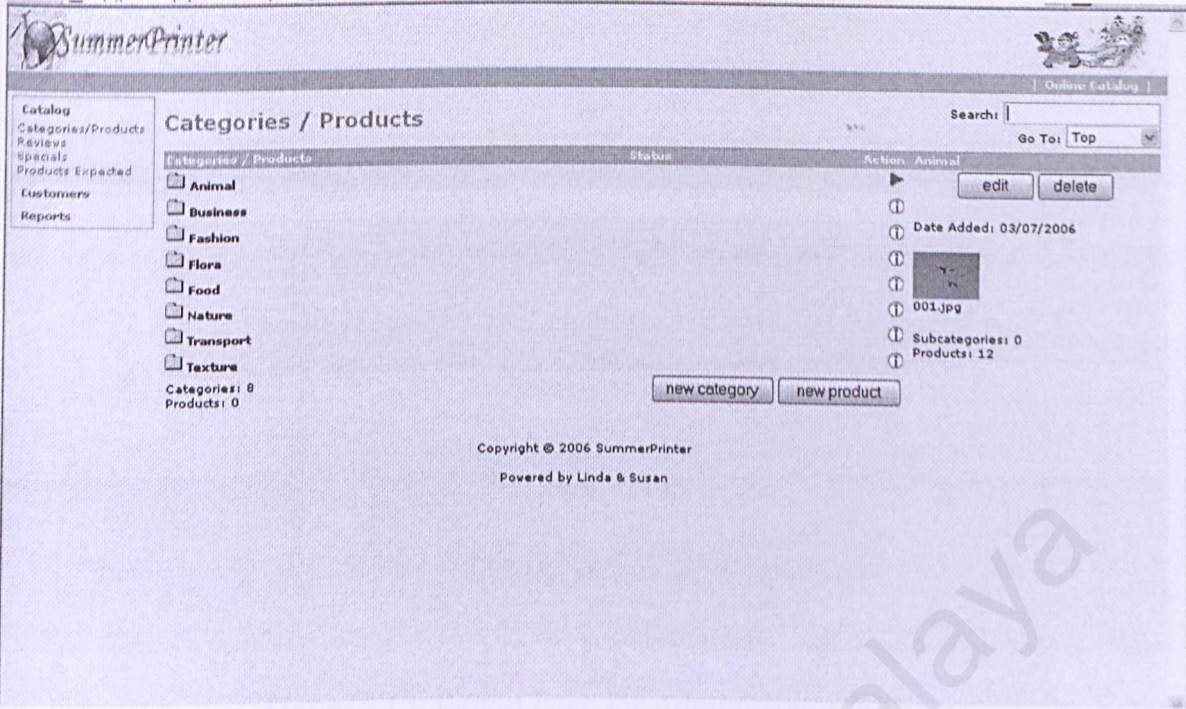
Figure 5.13: Administrator's Main Page
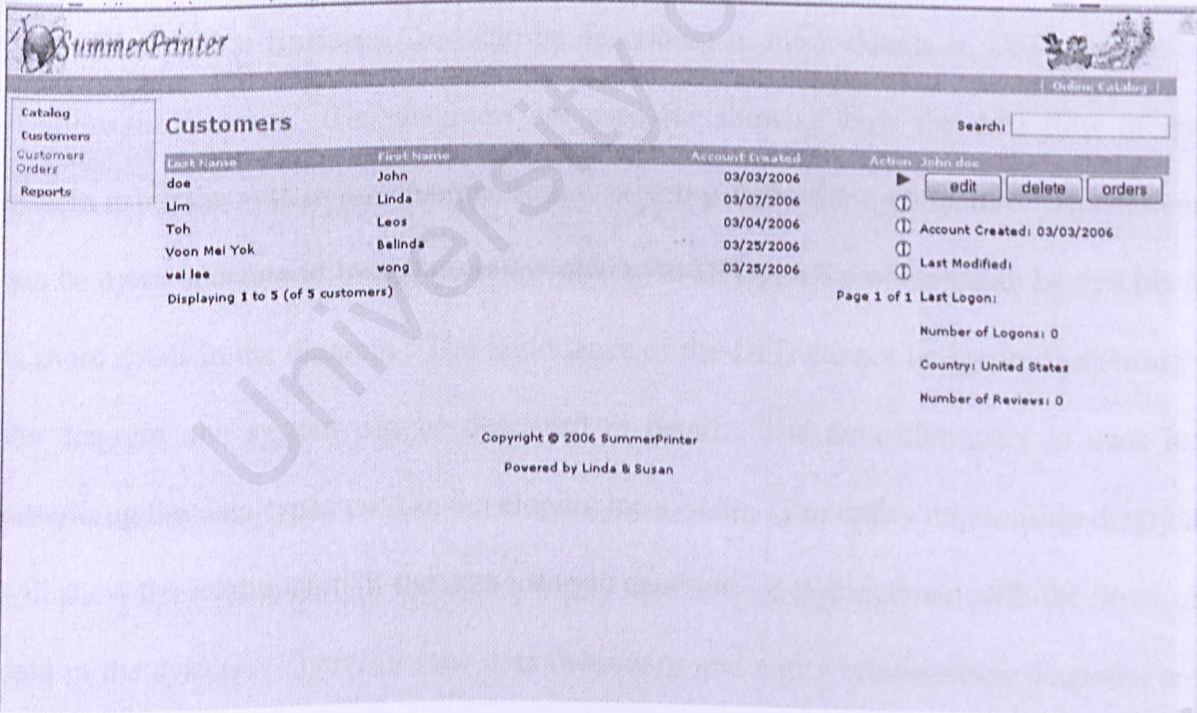
Figure 5.14: View the Customers Information Page
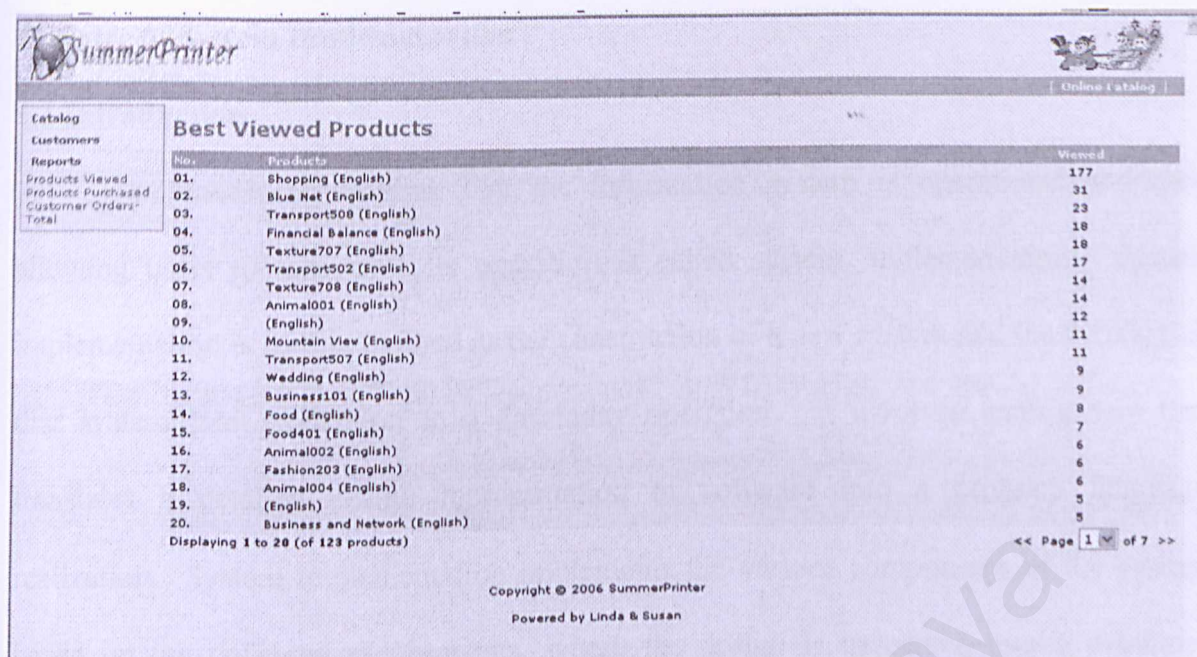
Figure 5.15: Report Page for Administrator to View

5.5 Summary

The Online Business Card can be describing in more details in DFD and entity relationship diagram. The diagrams are used for showing how the data flow of the system using the system architecture design, which is three-tier architecture. The system can be more understood by the users by looking at DFD. All processes can be described in more detail in the diagram. The importance of the DFD cannot be ignored as through the diagram, the system can be described in detail. The data dictionary is used for describing the data types used in developing the system. The entity relationship diagram will show the relationship of the data using in database. It is concerned with the flows of data in the system. Therefore, the data dictionary and entity relationships diagrams are important for making the system run efficiently.

Chapter 6: System Implementation

6.1 Introduction

The process of assuring that the information system is operational and then allowing users to take over its operation is called system implementation. System implementation is further defined as the construction of a new system and the delivery of that system into production in a day-today operation. It involves coding step that translates a detailed design representation of software into a program language realization. System implementation implements the various components of the system based on the collected requirements, where the design is translated into a machine-readable form.

During implementation, all functionality planned in design phased is checked. It should be able to process the correct data and produce accurate information to end-users. Any problem or malfunction occurred is revised carefully and fixed accordingly.

6.2 Development Environment

The development environment is crucial for the completeness and successfulness of any computer system. Development environment plays a major role in determining the speed of developing the system. During development, the weaknesses will be noticed and improved, while the errors found will be removed.

Using suitable hardware and software will help to speed up system development. Thus, the hardware and software are carefully considered to facilitate the development of Online Business Card System. System development consists of the used of development tools and methodology chosen, and coding styles. The details are illustrated as below:

6.2.1 Development Tools

6.2.1.1 Hardware Requirements

The following hardware specifications are required to develop Online Business Card: 1) Processor: 2.4GHz Pentium 4 Processor; 2) Memory: 512 MB RAM; 3) Hard Disk: 80 GB hard disk; 4) CD-ROM drive: 1.44 MB Floppy Drive; 5) Input Device: Mouse, keyboard, scanner, pen-drive and disk drive and; 6) Output device: Printer and monitor.

6.2.1.2 Software Requirements

The following software specifications have been used to develop Online Business Card: 1) Operating System: Microsoft Windows XP; 2) Web technology: Micromedia Dreamweaver MX 2004; 3) Server-side Scripting Language: PHP; 4) Database Management System: MySQL 5.0; 5) Web Development Tool: Micromedia Dreamweaver MX2004 and; 6) Interface Design Tool: Micromedia Dreamweaver MX2004.

6.2.2 Methodology

This project is developed using the waterfall with prototyping approach. The development of this project consists of six stages, which are requirement, specification, design, testing, maintaining and retired. The system is design using logical flow and it allows the estimation of the milestones. Each stage must be completed before proceed to the next stage to ensure that the system is built according to the requirements and specification. But in the testing phase, we can rebuild the system by testing then redevelop or correction the system according to the customers' need.

6.2.3 System Coding

System coding is a set of instruction written in order to enable the code to be executed and perform the required functionality. A good and well-managed program coding will enhance the readability of the whole program. In addition, it provides an easy understanding to the program flow especially for those programs with high degree of complexity.

6.2.3.1 Coding Approach

Some of the approaches used in the coding development are listed as below:

- **Readability**

Code document is important to ease the readability of a system. It begins with the selection of identifier (such as variables and labels) names and continues with the composition and organizing the whole program.

- **Naming Technique**

This is good and meaningful technique of variables, controls and modules that provide easy identification for the program. The naming convention is created with the consistency and standardization in coding.

- **Internal Documentation**

This provides a clear guideline to developers and readers about the function of a particular source code in the program. Therefore, comments provide the developer with the means of communication with other readers of the source code. The statement of the module and descriptive comments are embedded within the body of the source code is used t describe the processing function.

- **Modularity**

The main purpose of modularity is to reduce complexity of system and to facilitate the developer to implement the system by encouraging parallel development of different parts of the system. With the approach of modularity, developer can implement all modules at the same time and does not have to wait for a particular module to complete before going into another module.

6.2.3.2 Coding Style

Coding style is an important component of the source code and it determines the intelligibility of a program. An easy t read source code makes the system easier to be maintained and enhanced in future. Listed below are some of the coding styles used during the coding phase of this project:

- Selection of meaningful identifier names (variables, forms, labels, images and pictures).
- Description and an appropriate comment written in the source code to make it easier for readers to understand the source code.
- Indentation of codes will increase the readability of the program and for a nearer look.
- Meaningful and understandable function and method declaration.
- Keep all complex statements as simple as possible to avoid confusion.

6.3 Project Development

After defining all the hardware and software requirements for implementing this project, it's time to concentrate on the development process that involved activities and results of software production. This section will explain how design and system requirements are

74

translated into the form that can be understood by the machine. There are three steps involved, which are data preparation, database connection and coding for each function. But before I explain more on these three steps, I would like to explain about a few changes that have to be made during this implementation phase.

6.3.1 New Software Requirements

During the implementation of Online Business Card, I have encounter a few problems regarding the software requirements chosen as mentioned in Chapter 4: System Analysis. Due to certain constraint and new discovery of better way to conduct my project, I have decided to change my requirements as stated below:

- **MySQL Server and Apache Web Server**

Instead of using Microsoft SQL Server 7.0, I have decided to use MySQL server. This is because all the data and images required for my project can be put into a folder and can be access by MySQL server. The SQL syntax is used to retrieve and update data in a database. I will explain more on this in the next section.

- **Micromedia Dreamweaver MX 2004**

Secondly, I have change from Visual Basic to Dreamweaver MX to develop this Online Business Card project. This is because it is easier to create a web-site which I can drag the menu, can insert the java script function inside it.

- **PHP Web Scripting Language**

Thirdly, I have used the PHP as my web scripting language. It is because on any environment includes Linux, Solaris, BSD, and Microsoft Windows environments which that PHP and the MySQL can supports. Besides that, PHP it is widely used language by others big companies. So I can get the open-sources just on the web-site. Besides that, it is easier and more functionality than the Visual Basic language that I have used before.

- **Apache Web Server**

Fourthly, I have change the IIS server to Apache web server. This is because the Apache web server is to run the PHP scripting language. So I have to stop the IIS server and run the Apache web server.

6.3.2 Data Preparation

Before developing this project, all of the data involved must be first collected. As for my Online Business Card project, the main feature of my project is the images used to create business card so important thing to do is to look for the images that are suitable for making the business cards. There is a lot of web sites that offer free images for personnel used. There's no problem for me to find the right images for my project. Next, each of the images is saved in a folder which is named as "Image" folder.

6.3.3 Database Connection

The SQL syntax is the common standard for accessing database such as SQL server, Microsoft Access, and also included MySQL server. Knowledge of SQL syntax in MySQL is invaluable for anyone wanting to store or retrieve data from a database. Apart from that, SQL syntax in MySQL server also can delete and update records in a database. It is the time engine for interacting records in a database on the web.

In this application, SQL syntax is used to store, retrieve, delete and update data in MySQL server database. There are thirty four types of tables have created for Online Business Card which includes the tables for administrator, pictures, upload, specials, notification, customers and many more for the sub attributes. Username is use to connect to the database server. An example username is 'mysql_10'. Also need password which is used together with the username, which forms the database user account.

- **Connect to database**

```
Set.conn =Server.CreateObject ("ADODB. Connection")
Conn.Open "Card"
```

- **Select desired image**

```
Sql = "select* from pics where id = " &request.querystring ("id") & ""
Set id = conn.execute(sql)
```

- **Boxex in the web**

```php
<?php
$info_box_contents = array();
$info_box_contents [] = array('text' => BOX_HEADING_INFORMATION );
new infoBoxHeading ($info_box_contents , false, false);
$info_box_contents = array();
$info_box_contents [] = array('text' => '<a href="" . tep_href_link (FILENAME_SHIPPING )
.'">' .
BOX_INFORMATION_SHIPPING . '</a><br>' .
'<a href="" . tep_href_link( FILENAME_PRIVACY) . '">' .
BOX_INFORMATION_PRIVACY . '</a><br>' .
'<a href="" . tep_href_link( FILENAME_CONDITIONS) . '">' .
BOX_INFORMATION_CONDITIONS . '</a><br>' .
'<a href="" . tep_href_link( FILENAME_CONTACT_US) . '">' .
BOX_INFORMATION_CONTACT . '</a><br>' .
'<a href="" . tep_href_link( FILENAME_SITEMAP) . '">' .
BOX_INFORMATION_SITEMAP . '</a>');
new infoBox ($info_box_contents );
?>
</td>
```

6.3.4 Coding For Each Functions

The technology used in implementing this project is Micromedia Dreamweaver MX. Dreamweaver MX is a Microsoft Technology for developing web-site which supported by PHP scripting language. Below are several basic information about Micromedia Dreamweaver MX 2004 in PHP scripting language:

- It is just the same as HTML file.

- It also can contain text, HTML and scripts.

- It is execute in the server.

77

- An PHP file is the file extension ".php".

When a browser requests an PHP file, Apache web server and MySQL server passes the request to the Dreamweaver engine. The Dreamweaver engine read the PHP file, line-by-line and executes the scripts in the file. Finally, the PHP file is returned to the browser as plain HTML.

Basically, there are few reasons that have encouraged me to adopt PHP for the implementation of my project. The ability and features of PHP file are no longer questionable since it has been proven during this implementation phase of Online Business Card. Some of the reasons to adopt PHP are described as follow:

- Dynamically edit, change or add any content of a web page.
- Respond to user queries or data submitted from HTML forms.
- Access any data or database and return results to a program.
- Customize a web page to make it more useful for individual user.
- Provide security since the PHP code cannot be viewed from the browser.
- Since PHP file are returned as plain HTML, they can be viewed in any browser.

6.3.4.1 PHP Scripting Language

PHP scripting language is one of the languages of Micromedia Dreamweaver. As mentioned in Chapter 2: Literature Review, PHP scripting language is more precisely a "scripting environment", which can enhance HTML web pages by making them active, as compared to a simple static display. When a PHP scripting language is inserting into a HTML document, the Internet browser will read the HTML and interpret the PHP script language. The PHP script language can be executed immediately. So for many web-

application developers, PHP script language may very well be the most important programming language.

6.4 Summary

This chapter describes the implementation of the system being developed. It begins with the introduction to the system implementation. System implementation implements the various components of the system based on the collected requirements, where the design is translated into a machine-readable form.

Then, this chapter also describes the development environment and project of hardware and software requirements specification, methodology chosen, and system coding styles. In the project development, it consists of the detailed of the new software requirement, data preparation, and database connection and coding. All of the codes involved are included in Appendices to show the coding environment.

Chapter 7: System Testing

7.1 Introduction

System testing is a critical element of software quality assurance. It is required to ensure that the system is developed according to its specifications and in line with the users' requirements and expectations. Testing is not the first place where faults finding take place but it is focused on finding faults and errors. There are many ways to increase the effectiveness and efficiency of the testing efforts, which will be discussed later in this chapter. Failure of a system can be the results of several reasons:

- The specification may be wrong of have missing requirement and do not state exactly what the customer needs.

- The specification may contain a requirement that is impossible to implement by the given pre-described hardware, software and resources.

- The system design phase may contain fault or error that carried forward to the implementation phase.

- The program code may be wrong. Perhaps the algorithm is implemented improperly.

Faults identification is the process of determining what fault causes the failure of the system. The fault correction or removal is the process of making changes to the system so that the fault can be removed.

7.2 Testing Objectives

The reasons and objectives for performing extensive tests during the design and development of the system are as followed:

80

- Achieve high quality assurance such as completeness, accuracy, reliability and maintainability of the software program and its documentation.

- Ensure that the system can perform its functions as expected.

- Reduce cost in maintaining the system.

- A method for detection and removal errors.

7.3 Testing Technique

The component of a system will be allowed to manipulate the data and the output will be observed. Thus, a wide range of inputs and conditions are chosen in order to test the particular component. A test pont or test case is a particular choice of input data to be used in testing program.

7.3.1 White Box Testing

White box testing is a testing case design method that uses the control structure of the procedural design to derive test cases. By using white box testing methods, the test cases with the following characteristics can be driven:

- Exercise all logical decision on their true or false side.

- Exercise all loops at their boundaries and within their operational bounds.

- Exercise internal data structure to ensure their validity.

- Guarantee hat all independent parts within a module have been exercised at least once.

7.3.2 Black Box Testing

Black box testing focuses on the functionality requirements of the system. It enables the developer to derive sets of inputs condition that will fully exercise all

functional requirements for an application. Black box testing was not used as an alternative to white box testing technique rather than this technique is used complementary approach that is likely to uncover a different class of errors. Black box testing attempts to find errors in the following categories:

- Incorrect or missing functions.
- Interface errors.
- Errors in data structures or external data access.
- Performances access.
- Initialization and termination errors.

It also tests the functionality of the system in an ad hoc basic without knowing the logic structure of the code. Input is provided and output is verified manually to check for accuracy.

7.4 Testing Strategy

A strategy to test this system is actually a series of steps that are implemented sequentially. After a program is completely coded, it will be tested under unit testing. Module testing will start when all the programs under a particular module have been completely coded and tested under unit testing. The integration testing is to recover errors associated with interfacing when integrating all the modules.

7.4.1 Unit Testing

Unit testing focuses on verification effort on the smallest component of the system design. Each component is treated as a stand alone entity and tested individually to

82

ensure that they operate correctly. The unit test is usually white box oriented and the step can be conducted in parallel for multiple components.

The test that occurs as part of unit tests is illustrated schematically in Figure 7.0. The module interface is tested to ensure that information properly flows into and out of the program unit under test. The local data structure is examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm's execution. Boundary conditions are tested to ensure that the module operate properly at boundaries established to limit or restrict processing. All independent paths (basic path) are executed at least once. Finally, all error-handling paths are tested.
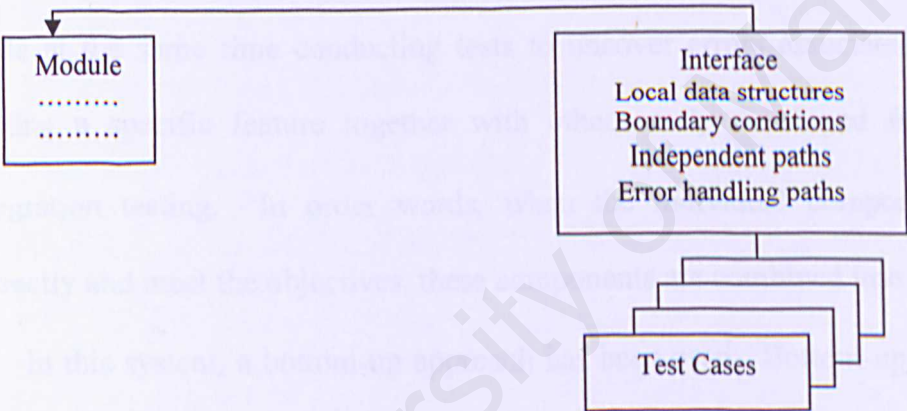
Figure 7.0: Unit Testing

7.4.1.1 Unit Testing Example

Table below show the test cases for unit testing on the Online Business Card program.

Steps	Test Procedure	Expected Outcome	Test Result Analyzing
1	Click one desired image.	The image is loaded and showed in next page.	The image displayed successfully.
2	Choose any button set to customize card.	Customized card is previewed.	The customization card appears in the page successfully.
3	Click "Add to Cart" button to continue ordered.	A new page will display confirmation of ordered card.	The card is successfully ordered.

83

4	Customer registers as a member.	A page for entering the customer's detail appears.	The customers successfully register as new member.

<center>Table 7.0: Unit Testing Examples</center>

7.4.2 Control Object Testing

All the menus are clicked to test their functionality and work stages are tested with the image and uploaded image are supported by this system, which are gif.

7.4.3 Integration Testing

Integration testing is a systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. Testing a specific feature together with other newly developed feature is knownas integration testing. In order words, when the individual components are working correctly and meet the objectives, these components are combined into a working system.

In this system, a bottom-up approach has been used. Bottom-up integration testing begins construction and testing with modules at the lowest levels of the system and then moving upward to the modules at the higher levels of the system. Regression testing is the re-execution of some subset of tests that already been conducted to ensure that changes have not unintended side effects. It is the activity that helps to ensure that change (due to testing or other reason) do not introduce unintended behavior or additional errors.

7.4.4 System Testing

System testing is a series of different tests designed to finally exercise the software system to uncover its limitations and measure its capabilities. The objective is to test an

<center>84</center>

integrated system and verify that it meets specified requirements. Although each test in this system has a difference, all work to verify that the system elements have been properly integrated and perform allocated functions.

7.5 Summary

This chapter is all about testing. These testing include unit testing, control object testing, integration testing and system testing.

Online Business Card has been tested and debugged effectively to achieve the objectives of the system. Through all the testing phases, it is easier to ensure the system's qualities and strengths. Debugging and fixing of the program can be done. The limitations of the system's functionalities can be found and improved.

As a conclusion, testing phases is a very important phase in Online Business Card system and it must be done repeatedly and carefully to assure good system quality.

85

Chapter 8: System Evaluation

8.1 Introduction

In the process of developing a system, various problems have been identified which some have been solved and some of them are yet to be discovered and overcome. These problems were solved through research and reference books. Besides that, a lot of system analysis has been done on technological and programming concepts to grasp to concept of Internet programming.

After all the designing and developing as well as implementing the Online Business Card, the end product of the project is brought up for evaluation. The system was evaluated to identify the strengths and the limitations of it. Besides that, proposal and recommendations are made for the future enhancements of the system.

8.2 Problems Encountered and Solutions

- **Difficulty in choosing a suitable development tools**

    There are too many software tools that are available for developing Online Business Card. It is difficult to choose the most suitable technology and a tool was a critical process as all tools possesses their own strengths and weakness. Some tools were even decided during the implementation process. Besides, the availability of a technology, hardware and supporting software to support, its learning curve, compatibility with the existence operating system and technologies are also the major consideration.

    In order to solve the problem, seeking advices and views from project supervisor, course-mates and even seniors engaging in similar project were carried out. Furthermore, a great deal of reading and research from many resources like

books and Internet regarding the problems helped to solve the problem and choose the suitable tools were done before any decision was made.

- **Lack of knowledge in PHP**

Since there was no prior knowledge of PHP scripting language, there was an uncertainty on how to organize the codes. These programming languages and concepts were never familiar to me before and to implement such an application requires a fair group of the languages. These programming approaches seem to be totally different from other programming languages. Although it really cause a lot of time to learn this coding tool, but choosing to use PHP proved to be a wise move since it is one of the language for Microsoft Dreamweaver MX. Most of the problems faced were manageable through browsing the Internet for related materials and referring to the help function provided in the software. Discussion with friends especially course-mate using the same technology was a great help. A more efficient method was through trail and error during the coding phase.

- **Difficulty in defining the flow logic of the system**

This system is only based on the information gathered from reference books and Internet, as a result, the flow of the system is very hard to define. This system is merely following the flow logic based on my understanding of the requirements and the important of ease of use. The image manipulation knowledge that I have gained from the lecture session also proves to be very useful to design the flow.

8.3 System Strengths

- **Simple, user-friendly and easy to use**

87

The interface design of this system mostly was created using Microsoft Dreamweaver MX. It is designed to be as user-friendly as this system is relatively easy to learn and use. All the menus used to ease the user explore and try this system by themselves. An action is just a click away and the user just needs minimal knowledge of mouse and keyboard to use this system.

- **Support printing function for card**

Administrator will print the business card for the customers and send the cards to the customers. It is convenient the customers who don't have their own printer.

- **Creating and designing business card**

Customers can create and design their own business card. They just have to choose the layout, font, images and color that they want and click the button to confirm their orders.

- **Upload picture**

The customers can upload the picture that they want besides just choose the picture that already prepared for them. The customers can customize it and order it.

8.4 System Constraints

- **No e-mail page**

In this system, I don't provide the e-mail function for the customers. It make the customer can't contact to the system administrator.

- **Less option of customization button**

In this system, I provide less customization system for the customers. It makes the customers difficult to create and design more creative layout for the business card.

- **No Help button**

88

In this system, I don't provide the help button for the customers. It makes the customers having difficulty during creating and ordering the business card. This is because they don't have a guideline to use the system when they faced some difficulty.

8.5 Future Enhancements

System development is a dynamic process and changes must be expected. Due to limited resources, especially time, had caused me to miss or overlooks certain aspect of the system. However, after the development system has been completed and valuable advices and suggestions from my project supervisor and moderator, I have identified certain important aspects that can be improved for future enhancement. The additional features that can be implemented in future are as followed:

- **Support variety of image format**

Since there are many types of images available nowadays, the system should be able to support all of it in order to provide unlimited types of images to user.

- **Add more customization button**

To make this system more utilizable in the future, the customization button selection must be added to give user variety of options. Plus, the customization also must able to be applied to the printable card.

- **Send e-mail function**

Provide the e-mail function for the customer to send e-mail to the administrator. Besides that, the customers can contact to the administrator.

- **Help Button**

Provide a Help button for the customers to have a guideline during creating and ordering the business card. This can make the user more easier and convenient them.

8.6 Knowledge and Experience Gained

Towards the accomplishment of Online Business Card web, from the beginning to the end of the development and final documentation, a number of problems and difficulties are encountered. However, the solutions to these problems and difficulties have brought numerous valuable knowledge and experience. Following are the benefits and knowledge gained from this project:

- **The importance of all phase in SDLC**

    System analysis is an important phase in the System Development Life Cycle (SDLC). This phase captures user requirements and the goal of the system. If this phase is mistakenly defined, it will cause faulty to the system development and later progress. With a complete and through system analysis, the system that is developed will fulfill all the requirements and achieve it goals.

    System testing is also an important and critical phase in SDLC. There is no application that is free of error in this world. However, with the procedures in the system, testing phase, errors and faults in the system can be minimized.

- **Development tools knowledge**

    This project is developed using Microsoft Dreamweaver MX technology with PHP scripting language. Microsoft Dreamweaver is a great tool for creating dynamic web pages. With Microsoft Dreamweaver, it is easy to create, deploy data,

90

validate user input and upload files and also it has helped me improved my skills in PHP scripting language,

Also with the use of other tools such as Microsoft Photoshop, MySQL 5.0 and Microsoft Fireworks MX, my knowledge in developing web site will never be limited anymore.

8.7 Summary

Evaluation of system is indeed to ensure its objectives and intended functions have been achieved. This chapter covers all aspects of the evaluating application software.

The successful development of the system at the present is the first steps towards the future expansion of the system. The problem encountered and experience gained during the development phases should be helpful in future efforts.

Besides that, this chapter also summarizes the system strengths, system constraints and future enhancements that can be added. The future enhancements will equip the system towards more capabilities of doing its daily operations and activities.

CONCLUSION

Online Business Card is one of many creating and designing business card web site available in the World Wide Web nowadays. Besides that, it also provides some types of effect that allow user to enhance their image. However, the system will become more complete and capable of performing more tasks when the enhancement and the new features are added on in the near future.

In the process of developing this system, invaluable insight was gained into complexity and interfaces of programming. The application of software Engineering principles, skills coding writing and others all added up to contribute to the success of developing this system. Adhere the development schedule is crucial in determining that a system will be computed in time. The experience gathered in this project will definitely provide a solid foundation in the system development in the future.

With target goals and objectives in mind even before the development take place, make the development process move systematic. Sometimes, conflicts in real world situation and programming tools capabilities make the programming difficult. However, as an overall review, this project has achieved and fulfilled the objectives through its not meets the requirements determined during the analysis phase entirely.

REFERENCES

1. http://www.isoc.org/HMP/PAPER/128/txt/paper.txt

2. www.tavi.co.uk/ps2pages/ohland/QREF500-390.txt

3. http://csdl2.computer.org/persagen/DLAbsToc.jsp?resourcePath=/dl/trans/ts/&toc=comp/trans/ts/1997/08/e8toc.xml&DOI=10.1109/32.624305

4. http://members.rediff.com/akhil_milb/business_quality.htm

5. http://home.apu.edu/~ckettemborough/CS524/StudentWork/Research/SDLCModels.ppt#10

6. www.LateNightPrinters.com

7. www.GreatFX.Business.Card.com

8. www.iPrinters.com

9. http://www.netnam.vn/unescocourse/sys_ana_des/sys_frm.htm

Sample Coding

```php
<?php

  require('includes/application_top.php');

// the following cPath references come from application_top.php
  $category_depth = 'top';
  if (isset($cPath) && tep_not_null($cPath)) {
    $categories_products_query     =     tep_db_query("select     count(*)     as     total     from     " .
TABLE_PRODUCTS_TO_CATEGORIES . " where categories_id = '" . (int)$current_category_id . "'");
    $categories_products = tep_db_fetch_array($categories_products_query);
    if ($categories_products['total'] > 0) {
      $category_depth = 'products'; // display products
    } else {
      $category_parent_query = tep_db_query("select count(*) as total from " . TABLE_CATEGORIES . "
where parent_id = '" . (int)$current_category_id . "'");
      $category_parent = tep_db_fetch_array($category_parent_query);
      if ($category_parent['total'] > 0) {
        $category_depth = 'nested'; // navigate through the categories
      } else {
        $category_depth = 'products'; // category has no products, but display the 'no products' message
      }
    }
  }

  require(DIR_WS_LANGUAGES . $language . '/' . FILENAME_DEFAULT);
?>
<!doctype html public "-//W3C//DTD HTML 4.01 Transitional//EN">
<html <?php echo HTML_PARAMS; ?>>
<head>
<meta http-equiv="Content-Type" content="text/html; charset=<?php echo CHARSET; ?>">
<title><?php echo TITLE; ?></title>
<base href="<?php echo (($request_type == 'SSL') ? HTTPS_SERVER : HTTP_SERVER) .
DIR_WS_CATALOG; ?>">
<link rel="stylesheet" type="text/css" href="stylesheet.css">
</head>
<body    marginwidth="0"    marginheight="0"    topmargin="0"    bottommargin="0"    leftmargin="0"
rightmargin="0">
<!-- header //-->
<?php require(DIR_WS_INCLUDES . 'header.php'); ?>
<!-- header_eof //-->

<!-- body //-->
<table border="0" width="100%" cellspacing="3" cellpadding="3">
  <tr>
    <td width="<?php echo BOX_WIDTH; ?>" valign="top"><table border="0" width="<?php echo
BOX_WIDTH; ?>" cellspacing="0" cellpadding="2">
<!-- left_navigation //-->
<?php require(DIR_WS_INCLUDES . 'column_left.php'); ?>
<!-- left_navigation_eof //-->
    </table></td>
<!-- body_text //-->
<?php
  if ($category_depth == 'nested') {
```

94

```php
    $category_query  =  tep_db_query("select  cd.categories_name,  c.categories_image  from  "  .
TABLE_CATEGORIES . " c, " . TABLE_CATEGORIES_DESCRIPTION . " cd where c.categories_id =
'"  .  (int)$current_category_id  .  "'  and  cd.categories_id  =  '"  .  (int)$current_category_id  .  "'  and
cd.language_id = '" . (int)$languages_id . "'");
    $category = tep_db_fetch_array($category_query);
?>
    <td width="100%" valign="top"><table border="0" width="100%" cellspacing="0" cellpadding="0">
      <tr>
       <td><table border="0" width="100%" cellspacing="0" cellpadding="0">
         <tr>
          <td class="pageHeading"><?php echo HEADING_TITLE; ?></td>
          <td    class="pageHeading"    align="right"><?php    echo    tep_image(DIR_WS_IMAGES    .
$category['categories_image'],           $category['categories_name'],           HEADING_IMAGE_WIDTH,
HEADING_IMAGE_HEIGHT); ?></td>
         </tr>
        </table></td>
      </tr>
      <tr>
       <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
      </tr>
      <tr>
       <td><table border="0" width="100%" cellspacing="0" cellpadding="2">
        <tr>
         <td><table border="0" width="100%" cellspacing="0" cellpadding="2">
          <tr>
<?php
  if (isset($cPath) && strpos('_', $cPath)) {
// check to see if there are deeper categories within the current category
    $category_links = array_reverse($cPath_array);
    for($i=0, $n=sizeof($category_links); $i<$n; $i++) {
    $categories_query = tep_db_query("select count(*) as total from " . TABLE_CATEGORIES . " c, " .
TABLE_CATEGORIES_DESCRIPTION . " cd where c.parent_id = '" . (int)$category_links[$i] . "' and
c.categories_id = cd.categories_id and cd.language_id = '" . (int)$languages_id . "'");
      $categories = tep_db_fetch_array($categories_query);
      if ($categories['total'] < 1) {
       // do nothing, go through the loop
      } else {
       $categories_query = tep_db_query("select c.categories_id, cd.categories_name, c.categories_image,
c.parent_id from " . TABLE_CATEGORIES . " c, " . TABLE_CATEGORIES_DESCRIPTION . " cd
where  c.parent_id  =  '"  .  (int)$category_links[$i]  .  "'  and  c.categories_id  =  cd.categories_id  and
cd.language_id = '" . (int)$languages_id . "' order by sort_order, cd.categories_name");
       break; // we've found the deepest category the customer is in
      }
    }
  } else {
    $categories_query = tep_db_query("select c.categories_id, cd.categories_name, c.categories_image,
c.parent_id from " . TABLE_CATEGORIES . " c, " . TABLE_CATEGORIES_DESCRIPTION . " cd
where  c.parent_id  =  '"  .  (int)$current_category_id  .  "'  and  c.categories_id  =  cd.categories_id  and
cd.language_id = '" . (int)$languages_id . "' order by sort_order, cd.categories_name");
  }

  $number_of_categories = tep_db_num_rows($categories_query);

  $rows = 0;
  while ($categories = tep_db_fetch_array($categories_query)) {
   $rows++;
   $cPath_new = tep_get_path($categories['categories_id']);
```

```php
    $width = (int)(100 / MAX_DISPLAY_CATEGORIES_PER_ROW) . '%';
    echo '                  <td align="center" class="smallText" width="' . $width . '" valign="top"><a href="' .
tep_href_link(FILENAME_DEFAULT, $cPath_new) . '">' . tep_image(DIR_WS_IMAGES .
$categories['categories_image'], $categories['categories_name'], SUBCATEGORY_IMAGE_WIDTH,
SUBCATEGORY_IMAGE_HEIGHT) . '<br>' . $categories['categories_name'] . '</a></td>' . "\n";
    if ((($rows / MAX_DISPLAY_CATEGORIES_PER_ROW) == floor($rows /
MAX_DISPLAY_CATEGORIES_PER_ROW)) && ($rows != $number_of_categories)) {
      echo '            </tr>' . "\n";
      echo '            <tr>' . "\n";
    }
  }

// needed for the new products module shown below
  $new_products_category_id = $current_category_id;
?>
          </tr>
        </table></td>
      </tr>
      <tr>
        <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
      </tr>
      <tr>
        <td><?php include(DIR_WS_MODULES . FILENAME_NEW_PRODUCTS); ?></td>
      </tr>
    </table></td>
    </tr>
  </table></td>
<?php
  } elseif ($category_depth == 'products' || isset($HTTP_GET_VARS['manufacturers_id'])) {
// create column list
    $define_list = array('PRODUCT_LIST_MODEL' => PRODUCT_LIST_MODEL,
                         'PRODUCT_LIST_NAME' => PRODUCT_LIST_NAME,
                         'PRODUCT_LIST_MANUFACTURER' => PRODUCT_LIST_MANUFACTURER,
                         'PRODUCT_LIST_PRICE' => PRODUCT_LIST_PRICE,
                         'PRODUCT_LIST_QUANTITY' => PRODUCT_LIST_QUANTITY,
                         'PRODUCT_LIST_WEIGHT' => PRODUCT_LIST_WEIGHT,
                         'PRODUCT_LIST_IMAGE' => PRODUCT_LIST_IMAGE,
                         'PRODUCT_LIST_BUY_NOW' => PRODUCT_LIST_BUY_NOW);

    asort($define_list);

    $column_list = array();
    reset($define_list);
    while (list($key, $value) = each($define_list)) {
      if ($value > 0) $column_list[] = $key;
    }

    $select_column_list = '';

    for ($i=0, $n=sizeof($column_list); $i<$n; $i++) {
      switch ($column_list[$i]) {
        case 'PRODUCT_LIST_MODEL':
        $select_column_list .= 'p.products_model, ';
          break;
        case 'PRODUCT_LIST_NAME':
        $select_column_list .= 'pd.products_name, ';
          break;
```

96

```
      case 'PRODUCT_LIST_MANUFACTURER':
        $select_column_list .= 'm.manufacturers_name, ';
        break;
      case 'PRODUCT_LIST_QUANTITY':
        $select_column_list .= 'p.products_quantity, ';
        break;
      case 'PRODUCT_LIST_IMAGE':
        $select_column_list .= 'p.products_image, ';
        break;
      case 'PRODUCT_LIST_WEIGHT':
        $select_column_list .= 'p.products_weight, ';
        break;
    }
  }

// show the products of a specified manufacturer
  if (isset($HTTP_GET_VARS['manufacturers_id'])) {
    if (isset($HTTP_GET_VARS['filter_id']) && tep_not_null($HTTP_GET_VARS['filter_id'])) {
// We are asked to show only a specific category
      $listing_sql = "select " . $select_column_list . " p.products_id, p.manufacturers_id, p.products_price,
p.products_tax_class_id,          IF(s.status,          s.specials_new_products_price,          NULL)          as
specials_new_products_price, IF(s.status, s.specials_new_products_price, p.products_price) as final_price
from " . TABLE_PRODUCTS . " p left join " . TABLE_SPECIALS . " s on p.products_id = s.products_id,
" . TABLE_PRODUCTS_DESCRIPTION . " pd, " . TABLE_MANUFACTURERS . " m, " .
TABLE_PRODUCTS_TO_CATEGORIES . " p2c where p.products_status = '1' and p.manufacturers_id =
m.manufacturers_id and m.manufacturers_id = '" . (int)$HTTP_GET_VARS['manufacturers_id'] . "' and
p.products_id = p2c.products_id and pd.products_id = p2c.products_id and pd.language_id = '" .
(int)$languages_id . "' and p2c.categories_id = '" . (int)$HTTP_GET_VARS['filter_id'] . "'";
    } else {
// We show them all
      $listing_sql = "select " . $select_column_list . " p.products_id, p.manufacturers_id, p.products_price,
p.products_tax_class_id,          IF(s.status,          s.specials_new_products_price,          NULL)          as
specials_new_products_price, IF(s.status, s.specials_new_products_price, p.products_price) as final_price
from " . TABLE_PRODUCTS . " p left join " . TABLE_SPECIALS . " s on p.products_id = s.products_id,
" . TABLE_PRODUCTS_DESCRIPTION . " pd, " . TABLE_MANUFACTURERS . " m where
p.products_status = '1' and pd.products_id = p.products_id and pd.language_id = '" . (int)$languages_id . "'
and    p.manufacturers_id    =    m.manufacturers_id    and    m.manufacturers_id    =    "'    .
(int)$HTTP_GET_VARS['manufacturers_id'] . "'";
    }
  } else {
// show the products in a given categorie
    if (isset($HTTP_GET_VARS['filter_id']) && tep_not_null($HTTP_GET_VARS['filter_id'])) {
// We are asked to show only specific catgeory
      $listing_sql = "select " . $select_column_list . " p.products_id, p.manufacturers_id, p.products_price,
p.products_tax_class_id,          IF(s.status,          s.specials_new_products_price,          NULL)          as
specials_new_products_price, IF(s.status, s.specials_new_products_price, p.products_price) as final_price
from " . TABLE_PRODUCTS . " p left join " . TABLE_SPECIALS . " s on p.products_id = s.products_id,
" . TABLE_PRODUCTS_DESCRIPTION . " pd, " . TABLE_MANUFACTURERS . " m, " .
TABLE_PRODUCTS_TO_CATEGORIES . " p2c where p.products_status = '1' and p.manufacturers_id =
m.manufacturers_id and m.manufacturers_id = '" . (int)$HTTP_GET_VARS['filter_id'] . "' and
p.products_id = p2c.products_id and pd.products_id = p2c.products_id and pd.language_id = '" .
(int)$languages_id . "' and p2c.categories_id = '" . (int)$current_category_id . "'";
    } else {
// We show them all
      $listing_sql = "select " . $select_column_list . " p.products_id, p.manufacturers_id, p.products_price,
p.products_tax_class_id,          IF(s.status,          s.specials_new_products_price,          NULL)          as
specials_new_products_price, IF(s.status, s.specials_new_products_price, p.products_price) as final_price
```

```php
from " . TABLE_PRODUCTS_DESCRIPTION . " pd, " . TABLE_PRODUCTS . " p left join " .
TABLE_MANUFACTURERS . " m on p.manufacturers_id = m.manufacturers_id left join " .
TABLE_SPECIALS . " s on p.products_id = s.products_id, " . TABLE_PRODUCTS_TO_CATEGORIES .
" p2c where p.products_status = '1' and p.products_id = p2c.products_id and pd.products_id =
p2c.products_id and pd.language_id = '" . (int)$languages_id . "' and p2c.categories_id = '" .
(int)$current_category_id . "'";
    }
  }

  if ( (!isset($HTTP_GET_VARS['sort'])) || (!ereg('[1-8][ad]', $HTTP_GET_VARS['sort'])) ||
(substr($HTTP_GET_VARS['sort'], 0, 1) > sizeof($column_list)) ) {
    for ($i=0, $n=sizeof($column_list); $i<$n; $i++) {
      if ($column_list[$i] == 'PRODUCT_LIST_NAME') {
        $HTTP_GET_VARS['sort'] = $i+1 . 'a';
        $listing_sql .= " order by pd.products_name";
        break;
      }
    }
  } else {
    $sort_col = substr($HTTP_GET_VARS['sort'], 0 , 1);
    $sort_order = substr($HTTP_GET_VARS['sort'], 1);
    $listing_sql .= ' order by ';
    switch ($column_list[$sort_col-1]) {
      case 'PRODUCT_LIST_MODEL':
        $listing_sql .= "p.products_model " . ($sort_order == 'd' ? 'desc' : '') . ", pd.products_name";
        break;
      case 'PRODUCT_LIST_NAME':
        $listing_sql .= "pd.products_name " . ($sort_order == 'd' ? 'desc' : '');
        break;
      case 'PRODUCT_LIST_MANUFACTURER':
        $listing_sql .= "m.manufacturers_name " . ($sort_order == 'd' ? 'desc' : '') . ", pd.products_name";
        break;
      case 'PRODUCT_LIST_QUANTITY':
        $listing_sql .= "p.products_quantity " . ($sort_order == 'd' ? 'desc' : '') . ", pd.products_name";
        break;
      case 'PRODUCT_LIST_IMAGE':
        $listing_sql .= "pd.products_name";
        break;
      case 'PRODUCT_LIST_WEIGHT':
        $listing_sql .= "p.products_weight " . ($sort_order == 'd' ? 'desc' : '') . ", pd.products_name";
        break;
      case 'PRODUCT_LIST_PRICE':
        $listing_sql .= "final_price " . ($sort_order == 'd' ? 'desc' : '') . ", pd.products_name";
        break;
    }
  }
?>
  <td width="100%" valign="top"><table border="0" width="100%" cellspacing="0" cellpadding="0">
    <tr>
      <td><table border="0" width="100%" cellspacing="0" cellpadding="0">
        <tr>
          <td class="pageHeading"><?php echo HEADING_TITLE; ?></td>
<?php
// optional Product List Filter
  if (PRODUCT_LIST_FILTER > 0) {
    if (isset($HTTP_GET_VARS['manufacturers_id'])) {
```

```php
  $filterlist_sql = "select distinct c.categories_id as id, cd.categories_name as name from " .
TABLE_PRODUCTS . " p, " . TABLE_PRODUCTS_TO_CATEGORIES . " p2c, " .
TABLE_CATEGORIES . " c, " . TABLE_CATEGORIES_DESCRIPTION . " cd where p.products_status
= '1' and p.products_id = p2c.products_id and p2c.categories_id = c.categories_id and p2c.categories_id =
cd.categories_id and cd.language_id = '" . (int)$languages_id . "' and p.manufacturers_id = '" .
(int)$HTTP_GET_VARS['manufacturers_id'] . "' order by cd.categories_name";
    } else {
      $filterlist_sql= "select distinct m.manufacturers_id as id, m.manufacturers_name as name from " .
TABLE_PRODUCTS . " p, " . TABLE_PRODUCTS_TO_CATEGORIES . " p2c, " .
TABLE_MANUFACTURERS . " m where p.products_status = '1' and p.manufacturers_id =
m.manufacturers_id and p.products_id = p2c.products_id and p2c.categories_id = '" .
(int)$current_category_id . "' order by m.manufacturers_name";
    }
    $filterlist_query = tep_db_query($filterlist_sql);
    if (tep_db_num_rows($filterlist_query) > 1) {
    echo '               <td align="center" class="main">' . tep_draw_form('filter', FILENAME_DEFAULT,
'get') . TEXT_SHOW . ' ';
      if (isset($HTTP_GET_VARS['manufacturers_id'])) {
        echo tep_draw_hidden_field('manufacturers_id', $HTTP_GET_VARS['manufacturers_id']);
        $options = array(array('id' => '', 'text' => TEXT_ALL_CATEGORIES));
      } else {
        echo tep_draw_hidden_field('cPath', $cPath);
        $options = array(array('id' => '', 'text' => TEXT_ALL_MANUFACTURERS));
      }
      echo tep_draw_hidden_field('sort', $HTTP_GET_VARS['sort']);
      while ($filterlist = tep_db_fetch_array($filterlist_query)) {
        $options[] = array('id' => $filterlist['id'], 'text' => $filterlist['name']);
      }
      echo  tep_draw_pull_down_menu('filter_id',  $options,  (isset($HTTP_GET_VARS['filter_id'])   ?
$HTTP_GET_VARS['filter_id'] : ''), 'onchange="this.form.submit()"');
      echo '</form></td>' . "\n";
    }
  }

// Get the right image for the top-right
  $image = DIR_WS_IMAGES . 'table_background_list.gif';
  if (isset($HTTP_GET_VARS['manufacturers_id'])) {
    $image = tep_db_query("select manufacturers_image from " . TABLE_MANUFACTURERS . " where
manufacturers_id = '" . (int)$HTTP_GET_VARS['manufacturers_id'] . "'");
    $image = tep_db_fetch_array($image);
    $image = $image['manufacturers_image'];
  } elseif ($current_category_id) {
    $image = tep_db_query("select categories_image from " . TABLE_CATEGORIES . " where
categories_id = '" . (int)$current_category_id . "'");
    $image = tep_db_fetch_array($image);
    $image = $image['categories_image'];
  }
?>
        <td align="right"><?php echo tep_image(DIR_WS_IMAGES . $image, HEADING_TITLE,
HEADING_IMAGE_WIDTH, HEADING_IMAGE_HEIGHT); ?></td>
      </tr>
    </table></td>
  </tr>
  <tr>
    <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
  </tr>
  <tr>
```

```
    <td><?php include(DIR_WS_MODULES . FILENAME_PRODUCT_LISTING); ?></td>
   </tr>
  </table></td>
<?php
 } else { // default page
?>
   <td width="100%" valign="top"><table border="0" width="100%" cellspacing="0" cellpadding="0">
    <tr>
     <td><table border="0" width="100%" cellspacing="0" cellpadding="0">
      <tr>
       <td class="pageHeading"><?php echo HEADING_TITLE; ?></td>
       <td class="pageHeading" align="right"><?php echo tep_image(DIR_WS_IMAGES .
'table_background_default.gif',          HEADING_TITLE,          HEADING_IMAGE_WIDTH,
HEADING_IMAGE_HEIGHT); ?></td>
      </tr>
     </table></td>
    </tr>
    <tr>
     <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
    </tr>
    <tr>
     <td><table border="0" width="100%" cellspacing="0" cellpadding="0">
      <tr>
       <td class="main"><?php echo tep_customer_greeting(); ?></td>
      </tr>
      <tr>
       <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
      </tr>
      <tr>
       <td class="main">


  <tr>
   <tr>  <td align="justify" class="smallText">Welcome to SummerPrinter.com. 24/7 services. Multiple
choices of business card.

SummerPrinter.com is the Web's favorite destination for business card. Choose a business card design that
reflects your company's special brand image, and which will place you in a respected class of business
associates. We use leading edge quality printing to produce business cards that are a genuine promotional
asset :- color , sticker, magnetic, metal, 3D and 48 hour, as well as, brochures, door hangers, flyers,
postcards, posters and vinyl banners.</td>
  </tr>

       </tr>
      <tr>
       <td><?php echo tep_draw_separator('pixel_trans.gif', '100%', '10'); ?></td>
      </tr>
      <tr>
       <td><?php include(DIR_WS_MODULES . FILENAME_NEW_PRODUCTS); ?></td>
      </tr>
<?php
  include(DIR_WS_MODULES . FILENAME_UPCOMING_PRODUCTS);
?>
     </table></td>
    </tr>
```

```
    </table></td>
<?php
  }
?>
<!-- body_text_eof //-->
    <td width="<?php echo BOX_WIDTH; ?>" valign="top"><table border="0" width="<?php echo
BOX_WIDTH; ?>" cellspacing="0" cellpadding="2">
<!-- right_navigation //-->
<?php require(DIR_WS_INCLUDES . 'column_right.php'); ?>
<!-- right_navigation_eof //-->
    </table></td>
  </tr>
</table>
<!-- body_eof //-->

<!-- footer //-->
<?php require(DIR_WS_INCLUDES . 'footer.php'); ?>
<!-- footer_eof //-->
<br>
</body>
</html>
<?php require(DIR_WS_INCLUDES . 'application_bottom.php'); ?>
```
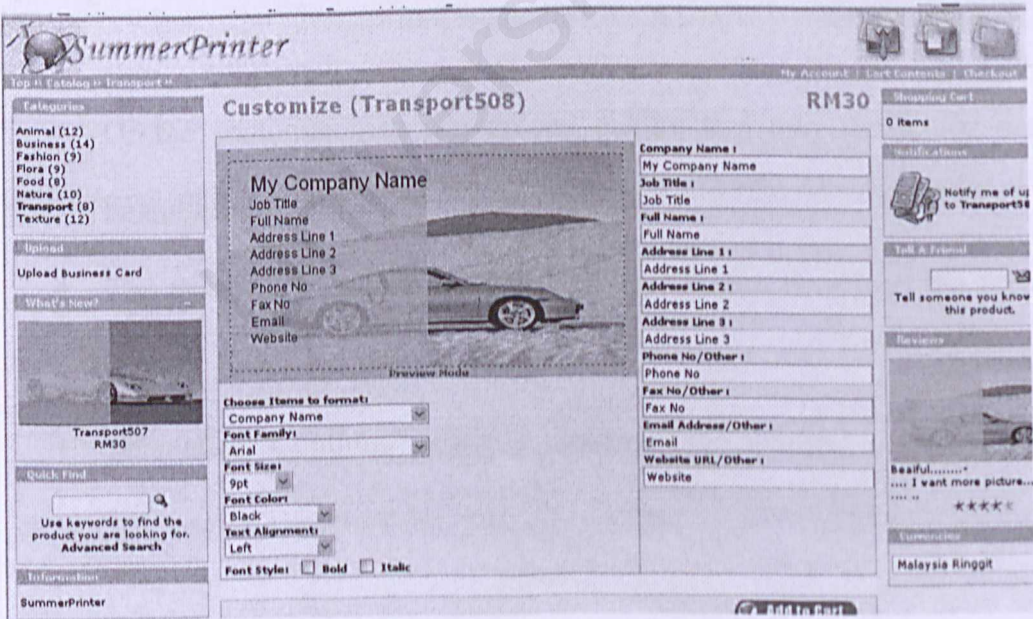
APPENDIX B

User Manual

Step 1: Select image for business card
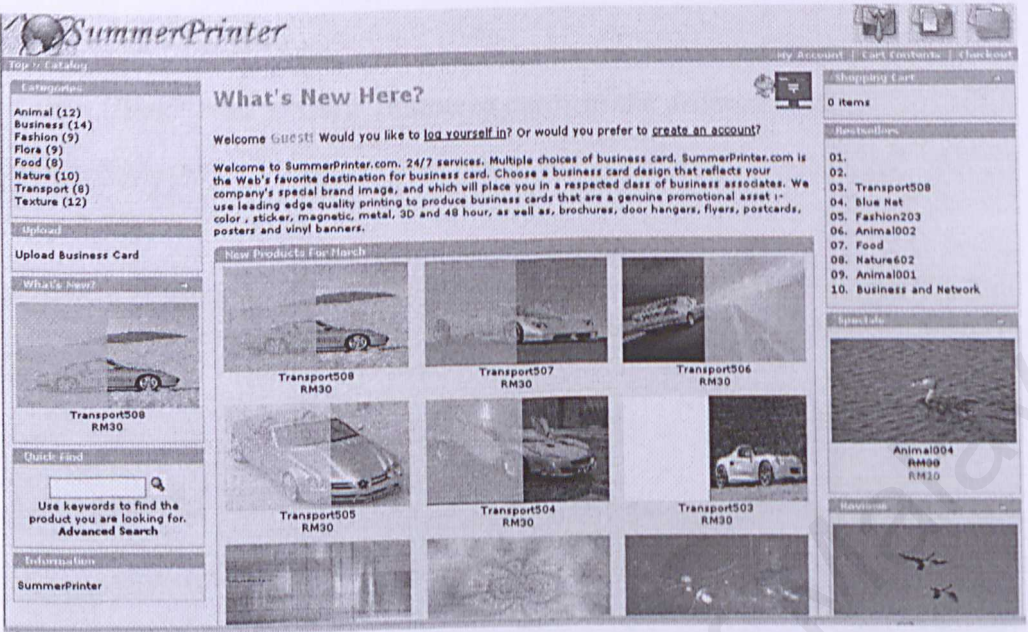
- User must choose one image desired from image shown.

Step 2: Customization

- The information previously entered will appear in this page.

- Then enter the customer's information.

- Now customer is given a few selection of customization style button to enhance the look of their card that is to be ordered. The buttons are: 1) Font type-to select font type; 2) Font color-to select the font color and; 3) Layout-to select the layout that they want.

- Click "Add to Cart" button to confirm the ordered card.

Step 3: Upload Picture
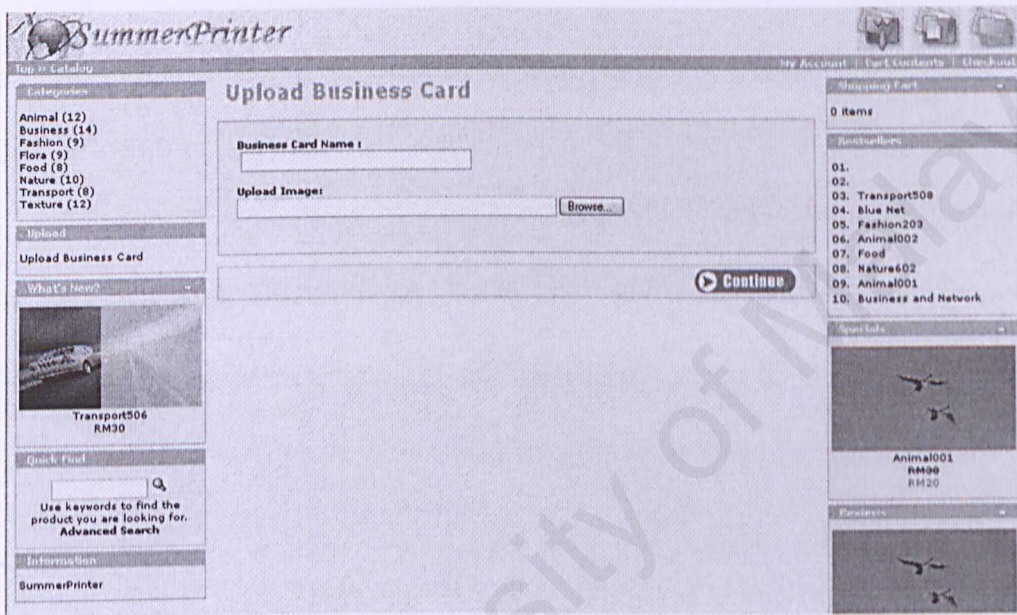
- Or the customer also can upload picture that they desire for designing their business card.

- The customer just has to click "Browse" button to upload the picture that they want.

- Then click "Continue" button to customize the picture.